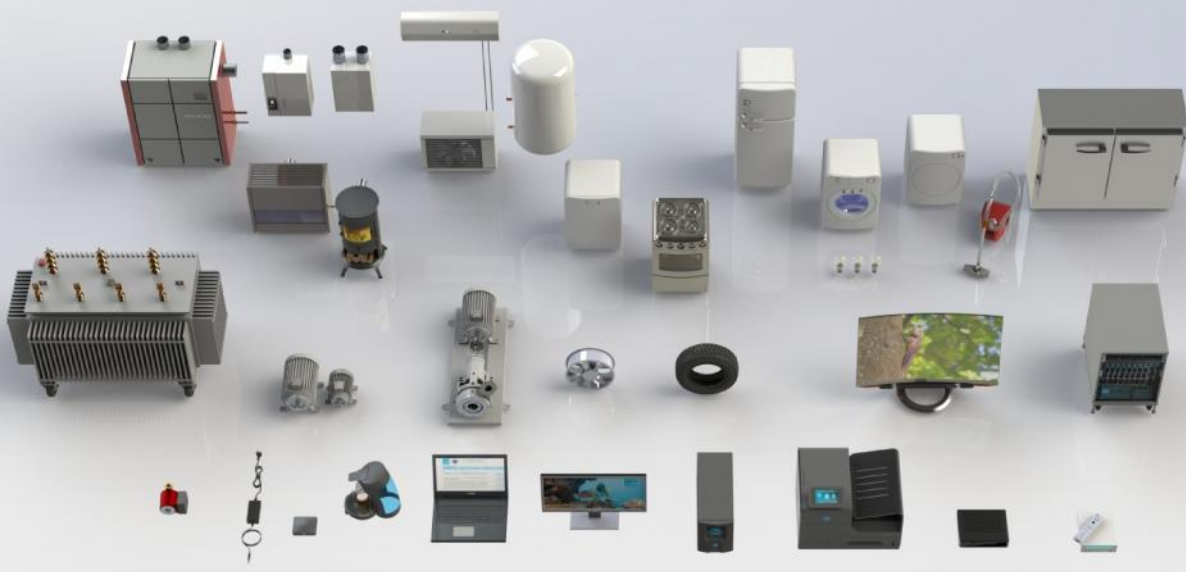




European  
Commission

# Ecodesign Impact Accounting

STATUS REPORT  
**2018**



Prepared by  
VHK for the European Commission  
December 2018 (rev. Jan. 2019)

The information and views set out in this study are those of the author(s) and do not necessarily reflect the official opinion of the European Commission

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## Acronyms & accounting units

<b>../a</b>	.. per annum (year)	<b>EC</b>	European Commission
<b>€</b>	Euro	<b>ECO</b>	Ecodesign (scenario)
<b>AC</b>	Air-Cooled (refrigeration)	<b>ED</b>	Ecodesign
<b>AC</b>	Air Conditioning (electric)	<b>EEL</b>	Energy efficiency index
<b>ACF</b>	Air Conditioning, Fossil fuel fired	<b>EFN</b>	Efficiency of new sold products (EU average of sales)
<b>AHC</b>	Air Heating & Cooling equipment	<b>EFS</b>	Efficiency of the stock of products in use (EU average of stock)
<b>AHE</b>	Air Heaters, Electric	<b>EIA</b>	Ecodesign Impact Accounting
<b>AHF</b>	Air Heaters, Fossil fuel fired	<b>EL</b>	Energy Labelling
<b>BAU</b>	Business as usual (scenario)	<b>elec</b>	(as column header) electricity-related share in primary energy
<b>BC</b>	Base Case	<b>ELEC</b>	Electric energy
<b>BC</b>	Backward curved (fan)	<b>EP</b>	Electrophotographic ('laser')
<b>bn</b>	billion (10 <sup>9</sup> )	<b>EPS</b>	External Power Supply
<b>BW</b>	Black and white (copier, printer)	<b>eq.</b>	equivalent
<b>C1</b>	Tyres designed primarily for vehicles of categories M1, N1, O1 and O2 ('passenger cars')	<b>ES</b>	Energy Star; Enterprise Servers
<b>C2</b>	Tyres designed primarily for vehicles of categories M 2, M3, N, O3 and O4 with a load capacity index in single formation ≤ 121 and the speed category symbol ≥ 'N' ('vans')	<b>FC</b>	Forward curved (fan)
<b>C3</b>	Tyres designed primarily for vehicles of categories M2, M3, N, O3, O4 with specific load capacity indices ('trucks', 'busses')	<b>FNRG</b>	Final energy, sum of ELEC and FUEL
<b>CA</b>	Cooking appliances	<b>FUEL</b>	Non-electric energy (gas, petroleum products, wood, coal, etc.)
<b>CC</b>	electricity to primary energy Conversion Coefficient (CC= 1 /PEF); efficiency of electricity generation and distribution in %	<b>GCV</b>	Gross calorific value
<b>CEXH</b>	Central exhaust VU	<b>GHG</b>	Greenhouse gas emissions
<b>CF</b>	Commercial refrigeration products	<b>GJ</b>	Giga Joule = 10 <sup>9</sup> J
<b>CFL</b>	Compact fluorescent light	<b>GLS</b>	General lighting service ('incandescent')
<b>CH</b>	Central heating	<b>GSR</b>	General Safety Regulation (for vehicles, tyres)
<b>CHAE-L</b>	Chiller, Air-cooled, Electric, Large	<b>GWh</b>	Giga watt hours= 10 <sup>9</sup> Wh
<b>CHAE-S</b>	Chiller, Air-cooled, Electric, Small	<b>GWP</b>	Global warming potential (GWP-100)
<b>CHC</b>	Central heating combi (boiler)	<b>h on/d</b>	Hours 'on' per day
<b>CHF</b>	Chiller combustion engine driven	<b>h sb/d</b>	Hours 'standby' per day
<b>CHWE-L</b>	Chiller, Water-cooled, Electric, Large	<b>h/a</b>	annual (operating) hours
<b>CHWE-M</b>	Chiller, Water-cooled, Electric, Medium	<b>HICP</b>	harmonized index of consumer prices (inflation from Eurostat)
<b>CHWE-S</b>	Chiller, Water-cooled, Electric, Small	<b>HID</b>	High intensity discharge lamp
<b>CIRC</b>	Circulator	<b>HiNA</b>	High network availability
<b>CM</b>	Coffee maker	<b>HT PC</b>	High Temperature Process Chiller
<b>CO</b>	Carbon Monoxide (emission)	<b>IA</b>	Impact Assessment
<b>CO<sub>2</sub></b>	Carbon Dioxide	<b>IJ</b>	Ink jet
<b>CP</b>	Compressor	<b>IND</b>	Industry (manufacturing) sector
<b>CSTB</b>	Complex set-up box	<b>ipm</b>	Images per minute
<b>ctrl</b>	controls (e.g. for lighting)	<b>ipy</b>	Images per year
<b>CU</b>	Condensing Unit	<b>kg</b>	Kilogrammes
<b>cyc</b>	Cycles	<b>km<sup>2</sup></b>	square kilometre
<b>dB(A)</b>	Decibel (A)	<b>kt, kton</b>	Kilo-ton (1 million kg)
<b>dm<sup>2</sup></b>	square decimetre (surface area)	<b>kWh</b>	Kilowatt hour
<b>DP</b>	Electronic Display	<b>kWh cool</b>	kWh cooling output (formula P as for heating output minus possibly losses for condensation)
<b>DS</b>	Data Storage product	<b>kWh elec</b>	kWh electricity
<b>DW</b>	Dishwasher	<b>kWh flow</b>	kWh fluid-dynamic output (P=Δp·Q with P power in W; Δp pressure difference in Pa; Q flow in m <sup>3</sup> /s)

<b>kWh heat</b>	kWh heating output ( $P=\Delta T \cdot V \cdot c$ with P power in W; $\Delta T$ temperature difference in K; V volume in $m^3$ (or mass in kg), c specific heat capacity in $Wh/m^3 \cdot K$ (or $Wh/kg \cdot K$ )	<b>R...1</b>	Rate (price per unit) for residential customers
<b>kWh output</b>	kWh output (for motors: $P=\Omega \cdot \tau$ with P power in W; $\Omega$ angular speed in rad/s; $\tau$ torque in Nm)	<b>R...2</b>	Rate (price per unit) for industry customers
<b>kWh prim</b>	kWh primary energy consumption in -- unless indicated differently-- Net Calorific Value of the fuel(s) used	<b>R...3</b>	Rate (price per unit) for tertiary sector customers
<b>LD</b>	Laundry dryer	<b>R...4</b>	Rate (price per unit) for other sector customers
<b>LED</b>	Light emitting diode	<b>RAC</b>	Room air conditioner
<b>LFL</b>	linear fluorescent lamps	<b>RES</b>	Residential (domestic) sector
<b>LH</b>	Local heaters	<b>rpm</b>	Rotations per minute
<b>LIFE</b>	Lifetime	<b>RR</b>	Rolling resistance
<b>lm</b>	Lumen	<b>RRC</b>	Rolling resistance coefficient
<b>LoNA</b>	Low network availability	<b>RVU</b>	Residential VU
<b>LS</b>	Light source	<b>SB, sb</b>	Standby
<b>LSH</b>	Local Space Heater	<b>SCOP</b>	Seasonal coefficient of performance (for space heating of heat pump)
<b>LT</b>	Low-Temperature (refrigeration)	<b>SEER</b>	Seasonal energy efficiency ratio (for space cooling of heat pump)
<b>ltr</b>	Liters	<b>SFB</b>	Solid fuel boilers
<b>m, mln</b>	million	<b>SFD</b>	Single function device
<b>m €</b>	million euro	<b>SHR</b>	Slow Heat Release (stoves)
<b>max.</b>	maximum	<b>SPL</b>	Special Purpose Lamp
<b>MELISA</b>	Model for European Light Source Analysis	<b>SSTB</b>	Simple set-up box
<b>MeNA</b>	Medium network availability	<b>STB</b>	Set-up box
<b>MFD</b>	Multi function device	<b>t</b>	metric tonne (1000 kg)
<b>mg</b>	milligrammes (0.001 gramme)	<b>TEC</b>	Typical Energy Consumption or Test Energy Consumption
<b>min.</b>	minimum	<b>TER</b>	Tertiary (services) sector
<b>MT</b>	Medium-Temperature (refrigeration)	<b>Th</b>	Tera ( $10^{12}$ ) hours
<b>MT</b>	Industrial motors	<b>Th on</b>	Tera hours 'on'
<b>Mt</b>	Mega tonnes ( $10^9$ kg)	<b>Th sb</b>	Tera hours 'standby'
<b>mtoe</b>	mega tonne oil equivalent	<b>TL, TLR</b>	Tyre Labelling (Regulation)
<b>MWh</b>	Megawatt hours (1000 kWh)	<b>Tlm</b>	Tera lumen
<b>NAS</b>	Network attached storage	<b>Tm<sup>3</sup></b>	Tera cubic metre
<b>NCV</b>	Net calorific value	<b>toe</b>	Tonne of oil equivalent
<b>NMVO</b>	Non-Methane Volatile Organic Compound	<b>TRAFO</b>	Distribution transformer
<b>NOx</b>	Nitrogen Oxides (emission)	<b>TWh</b>	Terawatt hours= $10^{12}$ Wh = $10^9$ kWh
<b>NRG</b>	Primary energy (ELEC / CC + FUEL)	<b>TYRE</b>	Replacement Tyre
<b>NRVU</b>	Non-residential VU	<b>UPS</b>	Uninterruptable Power Supply
<b>OEM</b>	Original Equipment Manufacturer	<b>UV, UVA, UVB, UVC</b>	Ultraviolet, types A, B, C (radiation)
<b>OGC</b>	Organic Gaseous Carbon (emission)	<b>VAT</b>	Value Added Tax
<b>OTH</b>	Other sector (all except RES, TER and IND, e.g. agriculture, forestry, fishing)	<b>VC</b>	Vacuum cleaner
<b>PC</b>	Personal computer	<b>VRF</b>	Variable Refrigerant Flow (AC)
<b>PEF</b>	Primary Energy Factor (inverse of CC)	<b>VU</b>	Ventilation unit
<b>PF</b>	Professional refrigeration products	<b>W</b>	Watt
<b>PJ</b>	Peta Joule = $10^{15}$ J	<b>WC</b>	Water-Cooled (refrigeration)
<b>PM</b>	Particulate Matter (emission)	<b>WH</b>	Water heater
<b>ps</b>	Place setting (dishwasher load unit, consisting of a defined set of different plates, cutlery, etc.)	<b>WM</b>	Washing machine
		<b>WP</b>	Water pump

## Energy units conversion for statistics (source: Eurostat)

From   /To →	TJ	Gcal	Mtoe	GWh
<b>TJ</b>	1	238.8	$2.388 \times 10^{-5}$	0.2778
<b>Gcal</b>	$4.1868 \times 10^{-3}$	1	$1 \times 10^{-7}$	$1.163 \times 10^{-3}$
<b>Mtoe</b>	$4.1868 \times 10^4$	$1 \times 10^7$	1	11630
<b>GWh</b>	3.6	860	$8.6 \times 10^{-5}$	1

## Net Calorific Values, as used in statistics.

(source: Eurostat, 2010)

		<b>kJ (NCV)</b>	<b>kgoe (NCV)</b>
Hard coal	1 kg	17 200 - 30 700	0.411 - 0.733
Recovered hard coal	1 kg	13 800 - 28 300	0.330 - 0.676
Patent fuels	1 kg	26 800 - 31 400	0.640 - 0.750
Hard coke	1 kg	28 500	0.681
Brown coal	1 kg	5 600 - 10 500	0.134 - 0.251
Black lignite	1 kg	10 500 - 21 000	0.251 - 0.502
Peat	1 kg	7 800 - 13 800	0.186 - 0.330
Brown coal briquettes	1 kg	20 000	0.478
Tar	1 kg	37 700	0.9
Benzol	1 kg	39 500	0.943
Oil equivalent	1 kg	41 868	1
Crude oil	1 kg	41 600 - 42 800	0.994 - 1.022
Feedstocks	1 kg	42 500	1.015
Refinery gas	1 kg	50 000	1.194
LPG	1 kg	46 000	1.099
Motor spirit	1 kg	44 000	1.051
Kerosenes, jet fuels	1 kg	43 000	1.027
Naphtha	1 kg	44 000	1.051
Gas diesel oil	1 kg	42 300	1.01
Residual fuel oil	1 kg	40 000	0.955
White spirit	1 kg	44 000	1.051
Lubricants	1 kg	42 300	1.01
Bitumen	1 kg	37 700	0.9
Petroleum cokes	1 kg	31 400	0.75
Other petro. products	1 kg 1 kWh	30 000	0.717
Natural gas	1 MJ(GCV)	900	0.0215
Coke-oven gas	"	900	0.0215
Blast-furnace gas	"	1000	0.0239
Works gas	"	900	0.0215
Nuclear energy	1 MJ(GCV)	1000	0.024
Biomass	1 MJ(GCV)	1000	0.024
Solar energy	"	1000	0.024
Geothermal energy	"	1000	0.024
Hydro energy	1 kWh	3600	0.086
Wind energy	1 kWh	3600	0.086
Derived heat	1 MJ(GCV)	1000	0.024
Electrical energy	1 kWh	3600	0.086

Note: The tonne of oil equivalent is a conventional standardized unit defined on the basis of a tonne of oil with a net calorific value of 41868 kilojoules/kg. The conversion coefficients from the specific units to kgtoe (kilogramme of oil equivalent) are thus computed by dividing the conversion coefficients to the kilojoules by 41868.

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## Executive Summary

The European Commission has identified a need to systematically monitor and report on the impact of Ecodesign, Energy Labelling, Energy Star and Tyre Labelling measures, including potentially new forthcoming actions, with a view to improve its understanding of the impacts over time as well as its forecasting and reporting capacity.

In a previous study <sup>1</sup> that ran from September 2013 to November 2015 an Ecodesign Impact Accounting (EIA) methodology was developed, providing a practical tool to achieve those goals. Specific details of the method are given on the following page. That study also applied the accounting method to the existing Ecodesign preparatory studies and impact assessment reports. The results were published in the Part 1 report <sup>2</sup> of May 2014, which took into account the information available on 1<sup>st</sup> November 2013, and updated and extended in the Part 2 report <sup>3</sup> of December 2015, covering the information available on 1<sup>st</sup> May 2015.

The Ecodesign Impact Accounting is being continued in the current study <sup>4</sup> (EIA II) for a period of three years starting from December 2015. Existing data will be updated following Ecodesign review studies, new product groups will be added to EIA, the accounting method will be detailed and enhanced, and an accounting of material resources will be added.

The present document is the 2018 Annual Report of the EIA II study (status October 2018). The changes in the 2018 report compared to the 2017 report mainly concern:

- Update of data for the following reviewed product groups. The update is based on the 2018 Impact Assessments and Commission Working Documents. Except for tyres, the final vote on the Commission proposals will be in winter 2018-2019, so data may still change:
  - light sources: new data from the Model for European Light Sources Analysis, MELISA, have been inserted in EIA;
  - electronic displays;
  - external power supplies;
  - (enterprise) servers and data storage products;
  - (household) refrigerating appliances;
  - tyres: in May 2018 the European Commission adopted a proposal for a revised Tyre label regulation.
- All monetary data in EIA are now expressed in 2015 euros (were 2010 euros in earlier issues);
- All energy and non-energy rates have been updated with the latest available data from Eurostat, the Oil Bulletin, or other sources. For future projections (beyond 2016-2018), the annual price escalation (4% per year in earlier EIA issues) has

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<sup>1</sup> SPECIFIC CONTRACT No ENER/C3/412-2010/FV575-2012/12/SI2.657835 (previous EIA study)

<sup>2</sup> ECODESIGN IMPACT ACCOUNTING Part 1 – Status Nov. 2013, VHK May 2014 for European Commission, [https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_06\\_ecodesign\\_impact\\_accounting\\_part1.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_06_ecodesign_impact_accounting_part1.pdf)

<sup>3</sup> ECODESIGN IMPACT ACCOUNTING Part 2 - Status May 2015, VHK December 2015 for the European Commission

<sup>4</sup> SPECIFIC CONTRACT No ENER/C3/2013-523/09/FV2015-543/SI2.722015 "Extended impact accounting of Ecodesign, Energy Label and Tyre labelling legislation as well as actions under the Energy Star programme (EIA II)" (current ongoing EIA II study)

been reduced, and diversified per energy carrier, to have EIA rates closer to those used in the PRIMES 2015f reference scenario. Most price escalation rates are now 1-2%/a.

- In addition, new (higher) electricity and natural gas rates have been defined for the tertiary/services sector. In previous EIA issues, the same non-residential rates were applied both to the industry sector and to the tertiary sector. In EIA 2018, each sector has its own set of rates.
- On request of the Commission, new FNRG sheets have been added to the EIA Excel files for data on final energy.
- The presentation of data on the sector subdivision (residential, tertiary, industry, other) has been adapted, to facilitate comparison with similar data from the Eurostat Energy Balance sheets. Sector subdivision data have been added for greenhouse gas emissions.
- For users of the EIA Excel Masterfile, changing the primary energy factor (PEF, or inverse CC) and the energy rates has been facilitated, see revised sheets General\_1 and \_2. A Brexit-factor can also be set by the user.
- Several minor corrections.

The accounting covers projections for the period 2010-2050, with inputs going as far back as 1990 and earlier. Studies of over 35 product groups with over 180 base case products were harmonised and complemented to fit the methodology. For the period up to 2025-2030 inputs were derived from the available studies. The period beyond 2025-2030 is an extrapolation of the existing trend without any new measures, i.e. it is not in the scope of this study to develop new policies.

Projections use two scenarios: a 'business-as-usual' (BAU) scenario, which represents what was perceived to be the baseline without measures at the moment of the (first) decision making, and an ECO scenario that is derived from the policy scenario in the studies which comes closest to the measure taken.

In 2015 the products included in the accounting represent approximately 39 200 PJ (937 Mtoe) of direct and indirect primary energy consumption. This is 58% of total EU-28 gross energy consumption in 2015 (1627 Mtoe).

For these products the following main results were obtained for the EU-28 in 2020 (ECO versus BAU):

- Primary energy saving 6292 PJ (150 mtoe, 1748 TWh), i.e. a saving of 15% versus Business-As-Usual;
- Of this, 3851 PJ (92 mtoe, 1070 TWh) is primary energy saving due to saving 428 TWh (37 mtoe, 1540 PJ) of electricity, and 2441 PJ (58 mtoe, 678 TWh) is direct fuel saving. The sum of electricity saving and direct fuel saving ('final' energy saving) is 1099 TWh (95 mtoe);
- 306 Mt CO<sub>2</sub> equivalent (7% of 2015 EU-total) less greenhouse gas emissions;
- 2545 million m<sup>3</sup> drinking water and 0.4 Mt printer paper saving; avoided 149 kt SO<sub>2</sub> equivalent direct NO<sub>x</sub>-emissions, 189 kt direct CO-emissions, 13 kt direct OGC-emissions and 13 kt direct PM-emissions;
- € 63 bn net saving on consumer expenditure (€ 124 bn energy saving, € 12 consumables saved, € 74 bn extra acquisition costs);
- € 66 bn extra revenue for industry, wholesale, retail and installation sector;



- 0.93 million extra direct jobs for industry, wholesale, retail and installation sector.
- Nearly 58% of the 2020 final energy savings come from the residential sector, 26% from the tertiary sector, 10% from industry, 3% from transport, and 2% from other sectors.

For 2030 these results increase by over 60%. The monetary consumer savings on expenditure increase by a factor 2.4, also due to rising energy prices. The projections for the period 2030-2050 show that without new measures the pace of improvements slows down and eventually evens out.

The 2020 savings represent approximately 9% of the current EU energy consumption total (1627 mtoe in 2015) and 7% of the carbon emission total (4319 MtCO<sub>2</sub> eq. in 2015). In 2030 this is projected to grow to 16% of EU energy consumption and 11% of carbon emission totals. The consumer's monetary saving is 0.4% (in 2020) and 1% (in 2030) of the current GDP of the European Union (14800 billion euros in 2015).

#### Changes in results between recent EIA editions

Primary energy savings and user expense savings have decreased in recent EIA updates while extra business revenues have increased (Table 1).

*Table 1 Main recent changes in EIA results (monetary amounts are in 2010 euros for EIA 2016 and EIA 2017, but in 2015 euros for EIA 2018)*

	Primary Energy Savings (TWh, mtoe)		User Expense Savings (bn euros)		Extra Business Revenues (bn euros)	
	2020	2030	2020	2030	2020	2030
EIA 2016	1918 TWh 164.9 mtoe	3206 TWh 275.7 mtoe	112	338	57	74
EIA 2017	1788 TWh 153.7 mtoe	3064 TWh 263.5 mtoe	104	323	58	75
EIA 2018 (this report)	1748 TWh 150.3 mtoe	2988 TWh 256.9 mtoe	63	152	66	91

Differences between EIA 2016 and EIA 2017 mainly derive from updates for light sources and electric motors, following review studies and new impact assessments for these product groups (section 1.8). E.g. the difference in 2020 primary energy savings between EIA 2016 and EIA 2017 (-11.2 mtoe, -130 TWh) derives from: -35 TWh for light sources, -97 TWh for electric motors, and +3 TWh for changes in EIA methodology for Space Heating - Ventilation interaction.

The main differences in primary energy savings between EIA 2017 and EIA 2018 (-3.4 mtoe, -40 TWh in 2020) derive from the update of product data following review studies and new impact assessments. The largest contribution to the decrease in savings derives from Tyres (21 TWh less savings in 2020). See details in section 3.1.

The increase in extra revenues between EIA 2017 and EIA 2018 derives for the largest part from expressing monetary amounts in 2015 euros instead of 2010 euros. In 2020, this increases the € 58 bn extra revenue of EIA 2017 (in 2010 euros) to € 63 bn extra revenue in EIA 2018 (in 2015 euros). The remaining change in extra revenue (from € 63 bn to € 66 bn) comes from the update of product data. Main increase in revenues is for Tyres (+7 bn euros, e.g. due to addition of OEM tyres in EIA), partly compensated by Lighting (-4 bn euros e.g. due to postponement of LFL T8 phase-out).

The large decrease in user expense savings between EIA 2017 and EIA 2018 derives from a combination of several factors:

- expressing monetary amounts in 2015 euros (EIA 2018) instead of 2010 euros (EIA 2017),
- introduction of new electricity and gas rates for the tertiary sector,
- update of energy rates up to 2018 from Eurostat and Oil Bulletin,
- lower annual escalation rates for future prices of energy and resources,
- update of product data following review studies and impact assessments.

A major contribution to the decrease in expense savings in EIA 2018 comes from the change in escalation rate for energy prices, previously 4%/a for all energy types, now variable 1-2%/a for most energy types (staying close to PRIMES values). See details in section 3.4.5.

### Methodology

Specific details of the ecodesign impact accounting method are:

- In principle, the scope is to establish exclusively the impacts of ecodesign and labelling measures. Possible supply-side measures, e.g. relating to power generation efficiency, are neutralized by using fixed factors for power generation and distribution (40% efficiency)<sup>5</sup>. For possible building-related measures influencing heating and cooling load, the historical trends have been extrapolated with a fixed percentage (minus 1% per year) in both the BAU and the ECO scenarios. However, escalation rates for energy prices are now fuel-specific. In addition, for Greenhouse Gas emissions the continued improvement of the power generation is included.
- Energy accounting is compatible with Eurostat conventions: Fuel energy values are expressed in Net Calorific Value of the fuels and no bonus was given e.g. for biomass being renewable.
- Double counting, e.g. where products are regulated both at component and product level, has been taken into account as well as the increase in load where appropriate, i.e. the trend toward more and bigger appliances, lamps, computers, displays, etc. in households;
- Possible deficiencies in market surveillance and the effectiveness of the policy instruments are not taken into account <sup>6</sup>.
- For some product groups, given a choice, the accounting has been conservative. As regards the effect of labelling of new products (i.e. beyond Ecodesign) there is always uncertainty and it may well be that the IA reports on which the accounting is based, have been too conservative;

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<sup>5</sup> This corresponds to a Primary Energy Factor (PEF) of 2.5. On request of the Commission, the EIA Excel Masterfile now easily permits to use another PEF value, constant or variable over the years. In the latter case, changes due to the efficiency of electricity generation and distribution would interfere with efficiency changes due to Ecodesign and Labelling measures. The printed results in this report are for a constant PEF of 2.5.

<sup>6</sup> However, for some products, the review studies did take these aspects into account for the existing measures, and this may have influenced the estimates in the Impact Assessment for the new proposed measures, which are being used in EIA.

- The BAU scenario is not a 'freeze' scenario; it is derived from extrapolating historical trends at the time of the first preparatory study analysis, including ongoing market trends in energy efficiency improvement and emission abatement;
- A comparison of the current accounting figures with other figures, such as those derived from PRIMES, needs to be done cautiously, since the assumptions of the current accounting and the PRIMES model, or other models, might differ considerably.

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## Contents

EXECUTIVE SUMMARY .....	6
1. INTRODUCTION .....	16
1.1. Background.....	16
1.2. History .....	17
1.3. Tasks.....	17
1.4. Deliverables required.....	18
1.5. Planning.....	19
1.6. Activities for the Interim Report of March 2016.....	20
1.7. Activities for the Annual Report of December 2016.....	23
1.8. Activities for the Annual Report of December 2017.....	23
1.9. Activities for the Annual Report of December 2018.....	28
1.10. Reporting .....	31
2. ACCOUNTING METHOD.....	32
2.1. Overview: parameters and scenarios .....	32
2.2. Scenarios.....	32
2.3. Generic parameters .....	36
2.3.1. Overview .....	36
2.3.2. Time-step and year-index .....	36
2.3.3. Inflation rates.....	37
2.3.4. Value Added Tax (VAT).....	37
2.3.5. Nominal rates (not inflation corrected) .....	37
2.3.6. Real rates (inflation corrected to 2015 euros) .....	38
2.3.7. Efficiency of electricity generation and distribution (CC, PEF) .....	38
2.3.8. Calorific value of fuels .....	39
2.3.9. Global Warming Potential.....	40
2.3.10. Employment parameters .....	40
2.3.11. Brexit factor .....	41
2.3.12. EU population and Households .....	41
2.4. Usage-sector shares .....	41
2.5. Product specific input parameters.....	42
2.5.1. Sales.....	42
2.5.2. Lifetimes.....	43
2.5.3. Load: user demand for product output .....	43
2.5.4. Energy efficiency.....	45
2.5.5. Non-Energy ‘efficiency’ .....	46
2.5.6. Product prices (price-efficiency anchor points).....	46
2.5.7. Installation fraction of product price .....	48

2.5.8.	Share of users paying VAT and VAT fraction of product price .....	48
2.5.9.	Business sector fractions of product price .....	48
2.5.10.	Maintenance costs per unit .....	48
2.6.	Derived (output) variables .....	49
2.6.1.	Stock .....	49
2.6.2.	EU-Load .....	49
2.6.3.	Average energy efficiency of the stock (EFS).....	50
2.6.4.	EU Energy impacts (ELEC, FUEL, FNRG, NRG) .....	51
2.6.5.	EU Emission impacts (EMISS) .....	52
2.6.6.	Other impacts (RESOURCES).....	53
2.6.7.	Product prices (unit prices per year and per scenario).....	53
2.6.8.	EU Acquisition costs .....	54
2.6.9.	EU Energy costs .....	54
2.6.10.	EU Maintenance costs .....	54
2.6.11.	EU Running costs .....	55
2.6.12.	EU Monetary impact for the consumer (EXPENSE) .....	55
2.6.13.	EU Monetary business impacts (revenues) .....	55
2.6.14.	Socio-economic (employment) parameters .....	56
2.7.	Aggregation .....	56
2.7.1.	Double counting and transparency .....	57
2.7.2.	Double counting of components and products .....	57
2.7.3.	Complex double counting issues .....	58
2.7.4.	Multifunctional product groups .....	59
2.8.	Increase in material wealth and rebound effect .....	60
2.9.	Compatibility with Eurostat conventions .....	62
2.10.	Limitations .....	65
3.	ECODESIGN IMPACT ACCOUNTING, STATUS 1.10.2018.....	66
3.1.	Product groups and updates .....	66
3.2.	Available studies.....	67
3.3.	Structure.....	68
3.4.	Main results .....	71
3.4.1.	Introduction .....	71
3.4.2.	Energy.....	71
3.4.3.	Emissions.....	75
3.4.4.	Non-energy resources .....	76
3.4.5.	User expenditure.....	76
3.4.6.	Business revenue .....	79
3.4.7.	Employment.....	79

**Annexes**

- A Ecodesign impact accounting by parameter (324 p.)
- B Status of measures per 1.10.2018 (2 p.)
- C Studies per 1.10.2018 (3 p.)
- D Product groups and defined base cases per 1.10.2018 (9 p.)
- E Key facts: Ecodesign impact accounting by product group (27 p.)
- F Business revenues, summary (6 p.)
- G Direct employment impacts, summary (6 p.)
- H References (5 p.)

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# 1. Introduction

## 1.1. Background

This study on the “*Extended impact accounting of Ecodesign, Energy Label and Tyre labelling legislation as well as actions under the Energy Star programme (EIA II)*” is part of the framework services contract for impact assessment studies of possible implementing measures under the Ecodesign Framework Directive on Energy Related Products and the Framework Directive on Energy Labelling.

The European Commission (EC) is charged with reporting on the progress towards the European 20-20-20 policy goals. Implementing measures, inter alia the dual and related legislations on Energy Labelling (‘EL’) and Ecodesign (‘ED’), are important tools to meet aforementioned policy targets. The EC is charged with following up the member states' implementation of framework legislation in national legislation, and coordination and monitoring of market surveillance. The EC has recently reviewed the EL Directive <sup>7</sup>.

It is important to monitor the implementation and performance of legislation relating to the 20-20-20 goals, and to assess related impacts in real time. Timely and accurate information allows for adjustment of policies and may contribute towards establishing a baseline for reviews. The assessment of impacts will generate information relevant for future policy projections, inter alia for 2020, 2030, 2040 and 2050. Such information is needed in particular with regard to ED (including voluntary agreements), EL and Tyre Labelling (‘TL’) legislation, including their implementing measures, and on the Energy-Star (‘ES’) programme.

The EC has therefore identified a need to systematically monitor and report on impacts of the above legislation and actions, including potentially new forthcoming actions, with a view to improve its:

- Understanding of the impacts of policies, implementing measures and actions over time.
- Forecasting, based on scenarios considered versus the business as usual scenario (baseline).
- Capacity building on reporting.

The first issue of the Ecodesign Impact Accounting of May 2014 was extensively used during the preparation for a possible review of the EL- and ED-Directives and provided important insights <sup>8</sup>.

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<sup>7</sup> Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU

<sup>8</sup> ‘Assistance to the Impact Assessment for the Review of the Energy Labelling Directive and certain aspects of the Ecodesign Directive’, prepared by VHK for the EC, September 2014, and used as a source of information for the EC’s ‘Proposal for a Regulation of the European Parliament and of the Council setting a framework for energy efficiency labelling and repealing Directive 2010/30/EU’ [swd\\_2015\\_0139](#)

## 1.2. History

The Ecodesign Impact Accounting (EIA) methodology was developed under the previous contract No ENER/C3/412-2010/FV575-2012/12/SI2.657835 during the period September 2013 to November 2015. That study also applied the accounting method to the existing Ecodesign preparatory studies and impact assessment reports and the results were published in two reports:

- Part 1 report <sup>9</sup> of May 2014, taking into account the information available on 1 November 2013;
- Part 2 report <sup>10</sup> of December 2015, covering the information available on 1 May 2015.

The EIA-work is being continued under contract No ENER/C3/2013-523/09/FV2015-543/SI2.722015 during the period December 2015 to December 2018. Three (sets of) reports have already been issued under this second contract:

- EIA II Interim Report of June 2016, taking into account the information available on 1 January 2016 <sup>11</sup>;
- EIA II Annual Report 2016 of December 2016, covering information available on 1 September 2016 <sup>12</sup>;
- EIA II Annual Report 2017 of December 2017 (revised March 2018), covering information available on 1 October 2017 <sup>13</sup>;

The description of the methodology is included in chapter 2 of this 2018 Annual Report. A survey of the main differences between this report and the 2017 Annual Report can be found in par. 1.8 and 3.1.

## 1.3. Tasks

The follow-up study (EIA II) is performed under contract No ENER/C3/2013-523/09/FV2015-543/SI2.722015 "*Extended impact accounting of Ecodesign, Energy Label and Tyre labelling legislation as well as actions under the Energy Star programme*". The study foresees the following tasks:

1. Set up the eco-design impact accounting, in accordance with the existing consistent calculation method, for new, not previously regulated products at an average rate of 3 new product groups per year for the next 3 years;

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<sup>9</sup> ECODESIGN IMPACT ACCOUNTING Part 1 – Status Nov. 2013, VHK May 2014 for the European Commission,

[https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_06\\_ecodesign\\_impact\\_accounting\\_part1.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_06_ecodesign_impact_accounting_part1.pdf)

<sup>10</sup> ECODESIGN IMPACT ACCOUNTING Part 2 - Status May 2015, VHK December 2015 for the European Commission

<sup>11</sup> ECODESIGN IMPACT ACCOUNTING – Status Report January 2016 – VHK for the European Commission, June 2016, <https://ec.europa.eu/energy/sites/ener/files/documents/Ecodesign%20Impacts%20Accounting%20%20-%20status%20January%202016%20-%20Final-20160607%20-%20N....pdf>

<sup>12</sup> ECODESIGN IMPACT ACCOUNTING – Status Report September 2016 – VHK for the European Commission, December 2016

<sup>13</sup> ECODESIGN IMPACT ACCOUNTING – Status Report 2017 – VHK for the European Commission, December 2017, <https://ec.europa.eu/energy/en/studies/ecodesign-impact-accounting-0>

2. Update the ecodesign impact accounting, in accordance with the harmonised calculation method, for existing regulated products that have been subject to a review, at an average rate of 10 products per year over the next 3 years;
3. For the purpose of supporting the role of ecodesign in meeting circular economy objectives, develop and implement in the ecodesign impact accounting for all regulated product groups and base cases an extension to account for the non-energy materials inputs. These should be derived from the EcoReport inputs in the preparatory studies, distinguishing between the more than 100 material groups identified in the EcoReport, and valid for the year for which the EcoReport was performed.
4. Provide an indicative subdivision of at least market data and energy/climate data between residential, commercial (tertiary sector), industrial and other (energy and agricultural) sectors for all products.
5. Improve the ecodesign impact accounting method to realize improvements for light sources <sup>14</sup>, products with indirect energy impacts <sup>15</sup>, and accounting for products with a wide variation in sizes <sup>16</sup>.
6. Present the data in EIA Annual Reports, once per year over the next 3 years, supplemented with infographics, examples and other means to communicate/illustrate the ecodesign policy effort.

#### 1.4. Deliverables required

The deliverables of the contract include an interim report and three annual impact assessment reports (IARs), to be delivered to the EC on:

- 3 months after the kick-off meeting (8 April 2016): draft interim report reflecting the work delivered in Tasks 1 to 5;
- Annually, in Nov.- Dec. 2016, 2017 and 2018: draft and final EIA Annual Report, as further specified below.

**EIA Annual Report** in pdf format, targeted at a wider audience and containing the results of all tasks, including:

- Executive summary and overview of new developments in the past period;
- Infographics, illustrated examples and possibly case histories;
- Up-to-date lists of regulated products, relevant legislation, preparatory studies and impact assessments;

<sup>14</sup> For light sources (Lot 8/9/19), EIA I uses 'flat' summary data from the more comprehensive MELISA model that has been used in the preparatory study and is being used in the Impact Assessment. The EIA data in their present form are not suited for a dynamic update of policy scenarios. For that a coupling with the more comprehensive MELISA model is needed.

<sup>15</sup> For ventilation units and other products (e.g. windows) that indirectly impact space heating or other indirect energy users, the accounting in EIA I is not transparent and the indirect impacts are modelled as an ad-hoc subtraction of the overall space heating load. To solve this problem the LOAD parameter could be split between scenarios, e.g. a LOADBAU and LOADECO scenario, to make clear how exactly the partitioning takes place.

<sup>16</sup> For product groups with a wide range of sizes/capacities, e.g. industrial motors, the aggregation with sales-weighted averages poses some specific accounting problems as regards the appropriate weighting of efficiency. These accounting problems may result in deviations of earlier projections and should be solved in a universal way.

- Summary of key facts for each product group with reference years 2010, 2020 and 2030;
- Data tables for all relevant parameters and product groups, including their base cases, for 1990 and for every five years over the period 2010-2050;
- Employment data, i.e. direct jobs as calculated ex-post from business revenues for 1990 and for every five years over the period 2010-2050;
- Annex with a short description of the methodology;
- Annex with acronyms, references, etc.

**EIA Annual Presentation** in ppt format, targeted at a wider audience, entailing:

- Slide presentation of the main results with detailed notes, to further communicate the study and its results.

**EIA Annual Methodology report**, targeted at expert use and interested analysts, consisting of:

- All Word and Excel files (5 year interval) used for the EIA Annual Report;
- Extended methodology report in Word and pdf format, reporting amongst others in detail on the calculation method and the execution of Tasks 3, 4 and 5;
- Extended data report, mainly in Excel format, documenting specific problems and solutions per product group in translating the data from preparatory studies and impact assessments.

## 1.5. Planning

The European Commission sent out a Request for services, ENER.C.3.dir(2015) 6001524, on 30 November 2015.

VHK's proposal for services was sent in 4 December 2015.

The signature date and start of contract was 16 December 2015.

Planning milestones:

- Project start: 16 December 2015
- Kick-off meeting within 10 working days following the signature of the contract, to determine details of the study. Actual date was 8 January 2016.
- Inception report (Interim report): 8 April 2016 (3 months after kick-off)
- Draft and Final Annual report 2016: Nov.-Dec. 2016
- Draft and Final Annual report 2017: Nov.-Dec. 2017
- Draft and Final Annual report 2018: Nov.-Dec. 2018
- Project end: 16 December 2018 (duration of contract 36 months)

An average of three progress meetings per year is foreseen between the contractor and the European Commission, in addition to the presentations of the reports.

See Figure 1 for an overview of the time-plan.

Time-plan																																					
Year	2016												2017												2018												
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
<b>Tasks:</b>																																					
Task 1/ 2	[shaded]												[shaded]												[shaded]												
Task 3/4/5 set-up	[shaded]												[shaded]												[shaded]												
update 3/4	[shaded]												[shaded]												[shaded]												
Task 6	[shaded]												[shaded]												[shaded]												
<b>Reports</b>	IR												DFR												FR												
<b>Meetings EC</b>	ko	ir	p	p								fr	p	p	p									fr	p	p	p										fr

LEGEND: reports: IR=interim report; DFR=Draft Final Annual Reports; FR=Final Annual Reports & slides

meetings: ko=kick-off meeting; ir= discussion interim report; p=progress meeting; fr=presentation and discussion final report

Figure 1 Time-plan for the EIA II project. Tasks refer to par. 1.3.

## 1.6. Activities for the Interim Report of March 2016

The main activities in the period January 2016 (start of project) – April 2016 (due date Interim report) were:

- **Croatia:** Extrapolation of EU-27 sales data to EU-28 sales data, including Croatia. The following data were found in Eurostat:
    - Croatian population on January 1<sup>st</sup> 2015 is 0.84% of EU-27 population;
    - Croatian households in 2014 are 0.71% of EU-27 households;
    - Croatian GDP in 2014 is 0.31% of EU-27 GDP;
    - Croatian gross inland consumption of energy (in mtoe) in 2013 is 0.47% of EU-27 total <sup>17</sup>.
    - Croatian final energy consumption in 2013 is 0.53% of EU-27 total <sup>18</sup>.
- Considering that the Croatian contribution is anyway small and within error margins of the EU-27 data, 0.5% has been added to all EU-27 sales to include the contribution of Croatia, constant for all years and all products <sup>19</sup>.
- **SAVE sheets:** following the request of the European Commission during the kick-off meeting, the MASTER Excel file now also includes, for most parameters, a SAVE sheet (BAU-ECO values) in addition to the BAU and ECO sheets. Three of these sheets, i.e. NRGSAVE, EMISSSAVE and EXPENSSAVE, are also included in Annex A of this report.

<sup>17</sup> Source: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Consumption\\_of\\_energy](http://ec.europa.eu/eurostat/statistics-explained/index.php/Consumption_of_energy)

<sup>18</sup> Source: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tsdpc320&plugin=1>

<sup>19</sup> In principle this resulted in a 0.5% increase in energy, emissions, expenses and associated savings. However, data for Lighting products were not updated as the stock for those products is currently not linked to the sales. See also task 5 in par. 1.3 and footnote 14. This will be improved when updating Lighting products in EIA following the 2015 review study and the corresponding impact assessment (to be performed in the 1<sup>st</sup> half of 2016).

- **Sector shares:** considering task 4 of par. 1.3, a start was made with the subdivision of data over the residential, tertiary, industry and other sectors. A new sheet 'CLASSES' has been added (see start of Annex A) that provides the sector shares for each base case. These shares are to be interpreted as shares in energy consumption, not necessarily identical to shares in e.g. sales, stock, or purchase costs. These shares are used on the NRGBAU, NRGECO and NRSAVE sheets to present the sector subdivision of primary energy consumption. Results are presented near the end of these sheets in three ways:
  - Summary table per sector over all functional groups
  - For each functional group the subdivision over the sectors, in TWh
  - For each functional group the subdivision over the sectors, in %

For the sector subdivision of other parameters additional work is required. This is foreseen for the EIA Annual Report of December 2016.

- **VIDEO, game consoles:** the impacts of the 2015 Voluntary Agreement on game consoles have been added in EIA II.
- **PF Professional Refrigeration:** the impacts of the 2015 Regulations have been inserted in EIA II, substituting the previous data that did not show any savings. This covers storage cabinets, low- and medium-temperature process chillers and condensing units. Regarding the latter, a dedicated study was performed to identify the **double counting of energy between condensing units and other PF and CF products** accounted in EIA. A technical note has been prepared on this topic, and was discussed with the European Commission on 17 February 2016. Taking into consideration that Walk-in cold rooms and Blast cabinets have been removed from EIA for the time being (see next point) and that their energy is consequently not double counted in EIA, it has been established that approximately 60% of the CU-energy reported in EIA would be double counted. This energy has been subtracted when determining the total for the PF product group.
- **CF Commercial Refrigeration:** the data for this product group in the December 2015 issue of EIA are not compatible with the last public Commission proposal for regulation and the associated impact assessment. Walk-in cold rooms are no longer in the scope of the proposed regulation while for Blast cabinets there are only information requirements that are not expected to have relevant energy efficiency effects. It was therefore agreed with the Commission to **remove Walk-in cold rooms and Blast cabinets from EIA II**.

In addition, the impact assessment also reports energy savings that include the effects of the proposed regulation on **non-base-case supermarket display cabinets**. These non-base-case products were not included in the estimates of the preparatory study, but they are subject to the proposed regulation and according to the impact assessment they give a significant contribution to the savings. It was therefore agreed with the Commission to include these non-base-cases in EIA II. JRC provided additional data underlying their impact assessment, but nevertheless a data-gap remained for the non-base-cases. VHK estimated the missing data as good as possible, in such a way that EIA II total savings for the CF product group match the total savings reported in the impact assessment <sup>20</sup>.

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<sup>20</sup> The non-base cases have been represented in EIA II as a single line 'other supermarket displays'. This groups a large variety of product models: vertical and horizontal, chilled and frozen, with plug-in and

- **Emissions:** in addition to the greenhouse gas emissions, the EIA issue of December 2015 also contained a small section on the direct NO<sub>x</sub> emissions resulting from Dedicated water heaters and Central heating boilers and combis. This section has now been expanded with NO<sub>x</sub> emissions from some of the Local Space Heaters and Air heating products. However, insufficient data were available to quantify the NO<sub>x</sub> emissions from Solid Fuel Boilers and from another part of the Local Space Heaters, so direct NO<sub>x</sub> emissions in EIA II remain incomplete.

In addition, direct emissions<sup>21</sup> of CO (carbon monoxide), OGC (organic gaseous carbon) and PM (particulate matter) from Solid Fuel Boilers and from Local Space Heaters have been added to EIA II (near the end of the EMISS... sheets). The corresponding Ecodesign regulations specify limits for these emissions.

- **Utility Transformers / Energy sector:** utility transformers are used in the distribution of electricity. This means that their energy consumption is already represented in the CC=40% that is used in EIA as the efficiency of the electricity generation and distribution. This is modelled in EIA by using NRGBAU=0 as a reference for the Energy sector and considering only the improvement over BAU in the ECO scenario. In the December 2015 edition of EIA, the same principle was used for all parameters except acquisition costs, running costs and total consumer expenses. This was judged confusing and has therefore been changed in EIA II: all parameters now use BAU=0 as reference for the Energy sector and consider only the improvement over BAU in the ECO scenario. This includes the assumption that BAU acquisition costs for utility transformers are already included in some way in the electricity rates and should therefore not be counted again. Revenues and jobs are computed for utility transformers / energy sector in the same way as for all other products. See also par. 2.7.3.
- **Minor corrections:** some minor errors have been encountered in the EIA issue of December 2015 and have now been corrected. This involved revenues and jobs for air conditioners, jobs for compressors, stock efficiencies for stand-by, calculation of SO<sub>2</sub> equivalent for NO<sub>x</sub> emissions, ECO efficiencies for solid fuel boilers using pellets, ECO efficiencies for cross-flow fans after 2020, BAU and ECO efficiencies for external power supplies, sales of C3 truck tyres (rethreading now considered), totals for electronics on some sheets, general total on some sheets. The impact of these corrections on the total energy savings is small, see par. 3.1.
- **Material resources:** for all product groups the information from the Bills-of-Material (BoM) of the various preparatory studies was collected in an Excel file. These data were ordered, checked and integrated and then multiplied by the corresponding EIA sales/stock data to get a first overview of the quantity of materials used in the EIA products. This work will be published in a separate report and a separate Excel file; the material resource data are not included in this report.

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remote configuration. Consequently there is no clear link between this hypothetical average product and the M & N values used in the proposed regulation to compute the Energy Efficiency Index.

<sup>21</sup> Direct emissions are intended here as those that occur during the use of products burning fuels (mainly for heating). This does not include emissions during the generation of electricity or emissions during non-use phases, e.g. manufacturing, distribution, end-of-life.



## 1.7. Activities for the Annual Report of December 2016

No new Ecodesign or Energy Labelling measures were introduced between January and September 2016. New information was available from review studies that completed in 2016, from draft impact assessments, and from proposals for new regulations, but as these did not lead to final measures yet, it was agreed with the Commission that it would be premature to already include new data in EIA. Other study tasks (par. 1.3 point 5) have been postponed for the same reason. Consequently, except for minor error corrections and editorial changes, the figures in the 2016 annual report are identical to those in the interim report of June 2016 **Error! Bookmark not defined.**

The activities in the period April – December 2016 consisted in:

- **Sheet General:** A sheet with general, non-product-specific data has been added to the EIA Excel file, on request of the Commission. This sheet highlights EU population, EU households, Global Warming Potential (GWP) for electricity, and rates for electricity and natural gas. Data sources for these parameters are also indicated.
- **Minor corrections and editorial changes:** these changes had a negligible effect on the overall EIA outcomes.
- **EIA Overview Report:** This is a separately issued report that aims at making EIA data more easily accessible for a wider audience. It illustrates, in non-technical terms, the types of products for which measures have been taken, highlights the major impacts of these measures and provides key facts and figures.
- **EcoReport for the average EIA product:** As a continuation of the June 2016 Special Report on Materials <sup>22</sup>, a single EcoReport for the average EIA product has been created. This provides further insights in the impacts of EIA products during production, distribution and end-of-life. This work is published in a separate report and a separate Excel file.

## 1.8. Activities for the Annual Report of December 2017

Only one new Ecodesign and Energy Labelling measure was published since the 2016 EIA issue <sup>23</sup>, but the corresponding data on air heating products, cooling products, high temperature process chillers and fan coil units had already been considered in the 2016 EIA Annual Report. The changes in the 2017 Annual report are therefore mainly (contractually required) changes in methodology, regarding the interaction between ventilation units and space heating, light sources and electric motors.

The activities in the period December 2016 – December 2017 consisted in:

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<sup>22</sup> Special Report, Material Inputs for Production, pertaining to the study on Ecodesign Impact Accounting, VHK for the European Commission, March 2016.  
<https://ec.europa.eu/energy/sites/ener/files/documents/EIA%20Special%20Report%20Material%20Consumption%2020160607.pdf>

<sup>23</sup> Commission Regulation (EU) 2016/2281 of 30 November 2016 implementing Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy-related products, with regard to ecodesign requirements for air heating products, cooling products, high temperature process chillers and fan coil units.



- **New Excel sheets:** In the 2017 EIA Excel file, the sheets SALES, STOCK, LOAD and EULOAD have been split in a BAU and an ECO version. As regards SALES, there were already two sets of data (BAU and ECO) for light source sales, both presented on the same sheet. The new modelling of electric motors (see below) also requires a difference in sales between BAU and ECO to represent the shift from motors without variable speed drive (VSD) to motors with VSD. Consequently, for clarity, it has been preferred to split the sheet SALES in BAU- and ECO-versions. As STOCK is directly linked to SALES, and EULOAD is directly linked to STOCK, these two sheets have also been split in BAU- and ECO-versions. As calculations use the LOAD sheet (EULOAD is only informative), the sheet LOAD has also been split. For most product groups there is no difference between BAU and ECO data for sales, stock and load, and in that case (for compactness sake) the ECO-data are not displayed in the Annexes to this report.

In addition a sheet EULOADVAR has been added, providing the variation in EULOAD between BAU and ECO. This sheet is mainly used to compute the load reduction for space heating appliances due to heat savings by ventilation units (see below), but it also displays the load variation for light sources and electric motors (due to the shift from motors without VSD (higher load) to motors with VSD (lower load), and due to applied rebound factors on light output and operating hours of LED lighting). Data of this sheet are only displayed in the Annexes to this report if they are non-zero.

- **Ventilation Units (VU) - Space Heating (SH) interaction:** VUs provide a controlled air ventilation so that compared to natural ventilation (e.g. opening windows) less warm air is lost from a heated space. In addition, many VUs can recover heat from the outgoing air stream and use it to pre-warm the incoming air stream. Hence, the installation (and improvement) of VUs reduces the heat to be produced by space heating appliances.

The heat savings due to VUs in the BAU-scenario were (and are) already reflected in the load for space heating appliances, but the (higher) heat savings in the ECO-scenario were not. In the 2016 EIA issue, the energy savings on SH due to the difference (ECO-BAU) in heat savings by VUs were reported under VUs, using the general 75% SH-efficiency of CR 1253/2014<sup>24</sup>.

In the new approach, the additional heat savings due to VUs (ECO-BAU) are treated as a reduction of the ECO-load for space heating appliances, so that the corresponding energy savings automatically become a part of the overall energy savings on space heating (using the efficiency of each SH-appliance). The energy savings continue to be reported also under VUs, because they derive from the ecodesign regulation on VUs, but only as information (not counted anymore in EIA totals).

The procedure for deriving the load reduction for space heating appliances is as follows:

- The NRGBAU- and NRGECO-values for VUs provide the total EU-28 energy savings on SH due to heat savings by VUs, assuming a 75% SH-efficiency.
- Multiplying these NRG values by 75%, the corresponding EU-28 total amounts of heat saved by VUs are obtained. These are now reported near the bottom of the new sheet EULOADVAR, split in residential (res) and non-residential

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<sup>24</sup> COMMISSION REGULATION (EU) No 1253/2014 of 7 July 2014 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for ventilation units

(nres) and separately for BAU and ECO. The reported difference, ECO-BAU, is the total EU-28 heat load reduction for SH in the ECO-scenario.

- There are many different types of space heating appliances in EIA, so the overall heat load reduction has to be distributed in some way over the single SH base cases. This is done in the upper part of sheet EULOADVAR. As explained more in detail on that sheet (see Annex), the distribution of load reduction is made considering the BAU-EUload-share of each SH-appliance in the total BAU-EUload of all SH-appliances (this is done separately for the residential and non-residential parts).
- LOADECO for each unit SH-appliance is now computed as  $LOADBAU - EULOADVAR/STOCK$ , and EULOADECO is then computed as normally, using  $LOADECO * STOCK$ .
- LOADECO for SH is used as normally in EIA to compute NRG-savings for each SH-appliance type. As these appliances have different efficiencies, which also vary with the years, the average SH-efficiency is typically different from the 75% used in the EIA 2016 issue. Consequently the primary energy savings on SH-appliances due to heat savings by VUs result slightly higher than before: 17 TWh/a higher in 2030 (+2%).
- The average load-reduction-weighted SH-efficiency is reported near the bottom of the sheet EULOADVAR and used to compute the 'heat savings' that are still being reported for VUs on the NRG sheets (informative only).
- The new accounting method changes the electricity/fuel mix. In EIA 2016 all energy savings on SH due to heat savings on VUs were considered to be fuel-related, while in EIA 2017 it becomes a mix of electricity and fuel. As GWP-coefficients are different for electricity and fuel, this has an impact also on GHG-emissions. NO<sub>x</sub>-, CO-, OGC- and PM-emissions were previously not accounted for heat savings due to VUs, while in the new approach they are.
- **Light Sources:** There were three light source issues in EIA 2016:
  - EIA data needed an update considering the new data and insights gathered during the preparatory study (2014-2015) and the Impact Assessment (2016-2017 ongoing), including also a new BAU2009 scenario (without any regulation);
  - Considering the fast increase in LED-sales, using a single EIA base case for all LED light sources is no longer an adequate solution and does not provide sufficient insight in the ongoing shift from conventional lighting technologies to LED lighting products;
  - EIA data for light sources were not fully dynamic (e.g. stocks were fixed values, not computed from the sales).

The first two points have been addressed by using in EIA 2017 the most recent data from the MELISA-model <sup>25</sup>, reflecting, for the ECO-scenario, the Commission Working Document of October 2017 <sup>26</sup>. The single EIA base case for LEDs has now been split in five subtypes, respectively for LEDs substituting LFLs, HID-lamps, CFLni, Non-directional (household) lamps (NDLS) and Directional lamps (DLS). The new data lead to lower energy savings for light sources: 57 TWh/a less in 2030 (-16%).

<sup>25</sup> Model for European Light Sources Analysis, VHK for the European Commission, October 2017.

<sup>26</sup> The proposal involves a phase-out of most LFL T8s and almost all Halogen light sources from 2020. LFL T5, HID-lamps and CFLni are continued to be allowed on the market also after 2020.

The third point has intentionally not been resolved. MELISA is a very detailed and complex model, and using standard EIA formulas would lead to large deviations from MELISA-results. It has therefore been preferred to copy MELISA data into EIA as fixed values. An exception has been made only for ELEC (so that changes in primary energy factor have effect also on lighting), EMIS (changes in GWP-values will affect lighting data) and NRG COST (changes in electricity prices will influence lighting data).

This implies that if EIA has to be used dynamically in the future (probably not often), the influence of changes on light source parameters has to be verified, and it may be necessary to go back to the MELISA model, apply changes there, and then recopy data into EIA.

- **Electric motors:** until now, EIA used a single aggregated base case for all electric motors in scope of CR 640/2009<sup>27</sup>. For such an important product group (in terms of energy consumption and energy savings), using a single base case does not provide sufficient insight. In addition, the data used in EIA, based on the first preparatory study and impact assessment, seem to have suffered from the 'aggregated base case problem' (see separate point further below). Moreover, the influence of the use of variable speed drives (VSD) on the motors had to be handled in the existing EIA in a rough and preliminary way.

In the October 2017 Impact Assessment (IA) for electric motors these shortcomings have been resolved. The IA uses a large number of base cases for different motor types and power classes, and also addresses the influence of VSDs more comprehensively. Therefore the 2017 EIA issue now uses the data from this IA. The scope has been extended and new measures have been considered as proposed by the Commission in the Impact Assessment of October 2017 (ECO3 scenario). The new motor data entail lower savings than projected before: ecodesign savings on electric motors are 102 TWh/a less in 2030 (-39%).

- **CHAE-S sales data** (Chiller, Air-cooled, Electric, Small): There was an error in the sales data for CHAE-S in years after 2030. A corrigendum for this was issued with the 2016 EIA report, but did not appear in the published version. The correct data have now been inserted in EIA 2017.
- **Tyres:** Until now EIA only considered replacement tyres, not counting tyres mounted under new vehicles being placed on the market. As pointed out by the Commission, the latter 'new' tyres are not excluded from the tyre labelling regulation and should thus be added to EIA. This would lead to an increase in savings of approximately 25%.

In parallel, the review study by Viegand<sup>28</sup> was published in 2016. This study uses different sales/lifetime/stock and different starting values and development trends for the rolling resistance coefficient (RRC) that would lead to lower energy savings. Although a start was made in transferring these new data to EIA format, they require additional study. In addition it is not clear yet how the Commission will proceed with the review of the tyre labelling regulation; a public consultation is still ongoing.

It would not make sense to now increase the number of tyres and thus the energy savings, and then maybe have to decrease them again during the 2018 EIA

<sup>27</sup> Commission Regulation (EC) No 640/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for electric motors

<sup>28</sup> Final Report, Review study on the Regulation (EC) No 1222/2009 on the labelling of tyres, prepared by Viegand Maagøe A/S for the European Commission, March 2016

revision. It has therefore been preferred not to change anything on tyres in EIA 2017, awaiting a new Commission Working Document and Impact Assessment.

- **'Aggregated base case problem'**: Many Ecodesign product groups show a wide variation in types and sizes, with different loads (user demand for product output), different usage characteristics (e.g. operating hours) and different efficiencies. As indicated in the MEERP <sup>29</sup>, the preparatory and review studies have to simplify this reality by defining one, several, or many base cases, each with its own 'average' characteristics (e.g. sales, lifetime, load, annual operating hours, efficiency, price). For compactness sake, EIA sometimes further reduces the number of base cases, aggregating several more specific base cases into one.

It is not straightforward to determine the average characteristics for an aggregated base case in such a way that the energy consumption and costs calculated from these averages are the same as the sum of the energies and costs for the underlying more specific base cases. In most cases it is not correct to use sales-weighted or stock-weighted averages for each parameter in the energy calculations.

In line with the contract <sup>30</sup>, work was performed to investigate the feasibility of a unified method to determine correct averages for parameters of an aggregated base case.

For energy aspects, something could be done, but it would anyway require to calculate first the energy of the underlying detailed base cases, and then reason backwards to determine the average parameters (sales, lifetime, power, hours, efficiency) for a single aggregated base case such that the same total energy is obtained. A unique solution does not exist: several combinations for average load (power, hours) and average efficiency exist that all give the same energy outcome. In addition it is difficult to establish sales-efficiencies such that desired stock efficiencies are obtained (this has to be done iteratively by hand). Determination of an average lifetime such that reasonable total stocks are obtained from the total sales is also not straightforward. Resulting average loads and efficiencies will be artificial values that have no link with existing products and that sometimes 'look strange' (they are no longer physical values but only calculation values that give the correct outcome when used).

For purchase costs no solution could be found. For the detailed base cases, product prices are linked to efficiencies, but trying to do the same for an average aggregated product using the 'artificial' average efficiencies, is problematic.

Another drawback of using aggregated base cases in EIA is that if data for a detailed base case are changed in the future, the average data for the aggregated base case would have to be determined again. If the detailed base case is directly available in EIA, an update is much easier.

The recommendation is therefore to use detailed base cases also in EIA, and not to try to compact data using a single or few aggregated base cases. This principle has already been applied for electric motors (where it is undesirable to have a single aggregated base case, and where averaging of parameters has presented problems in the past), and for lighting (where it is undesirable to combine all LED lighting products in a single base case). The number of base cases to report in EIA has anyway to be chosen with judgement for each product group.

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<sup>29</sup> Methodology for Ecodesign of Energy-related Products, MEERP 2011, Part 1 (methods) and Part 2 (Environmental policies & data), COWI and VHK for the European Commission, November 2011, [http://ec.europa.eu/growth/industry/sustainability/ecodesign\\_it](http://ec.europa.eu/growth/industry/sustainability/ecodesign_it) (section on Support Tools for Experts)

<sup>30</sup> see Annex I of the Request for Services, point 2.2 Potential method improvement

Consequently, the search for a unified method to determine correct weighted averages for parameters of aggregated base cases has been abandoned.

### 1.9. Activities for the Annual Report of December 2018

The main activities in the period December 2017 – December 2018 consisted of:

- **Data update for Light Sources (LS)**, following the review study. New EIA data are now in line with the May 2018 update of the Model for European Light Sources Analysis (MELISA), with policy option 3 of the 2018 Impact Assessment, and with the proposals for new regulation of the September 2018 Commission Working Documents.

New EIA data for light sources show slightly lower energy savings than in EIA 2017, due to the postponement of the LFL T8 phase-out from 2020 to 2021.

- **Data update for Electronic Displays (DP)**, following the review study. New EIA data are now in line with policy option 3 (ambitious) of the 2018 Impact Assessment, and with the proposals for new regulation of the September 2018 Commission Working Documents.

New EIA data for electronic displays show higher energy savings than in EIA 2017, due to new measures and due to adding Signage displays to the scope. A separate Excel file with details on the preparation of the EIA data is available.

- **Data update for External Power Supplies (EPS)**, following the review study. New EIA data are now in line with policy option 2 of the 2018 Impact Assessment, and with the proposals for new regulation of the September 2018 Commission Working Documents.

New EIA data for EPS are much more detailed than in previous EIA issues. New energy savings are higher than in EIA 2017, even when considering double counting issues, due to the new, more severe measures. A separate Excel file with details on the preparation of the EIA data is available.

- **Data update for (Enterprise) Servers and Data Storage products (ES&DS)**, following the review study. New EIA data are now in line with policy option 3.2 of the 2018 Impact Assessment, and with the proposals for new regulation of the July 2018 Commission Working Documents.

New EIA data for ES & DS are much more detailed than in previous EIA issues (EIA maintained the large number of base cases from the IA study). New energy savings are lower than in EIA 2017, due to a combination of changes in almost all parameters (stock, load, efficiencies) and a less optimistic ECO-scenario in the source studies.

Different from the IA, EIA considers only the savings on the equipment itself, not the potential indirect savings on the space cooling of data centres (savings on infrastructure), in order to avoid double counting issues with space cooling products in EIA. The indirect, infrastructural effects of the ES & DS regulation could be modelled in EIA, at a later stage, available data permitting, as a load reduction for space cooling products, similar to what has been done for the indirect effects of ventilation units on the space heating load.

The new proposed regulation does not apply to small-scale servers, which remain covered by the computer regulation. However, in EIA, the small-scale servers do not seem to be considered under computers, so their data might be missing. This will be reassessed when reviewing the EIA data for computers.

A separate Excel file with details on the preparation of the EIA data is available.

- **Data update for (household) Refrigerating appliances (RF)**, following the review study. New EIA data are now in line with preferred policy option (LLCC scenario) of the 2018 Impact Assessment, and with the proposals for new regulation of the September 2018 Commission Working Documents.

New EIA data for RF show slightly higher energy savings than in EIA 2017, due to new, more severe measures. A separate Excel file with details on the preparation of the EIA data is available.

- **Data update for Tyres**, following the review study. New EIA data are now in line with preferred policy option 4 of the 2017 Impact Assessment, and with the proposals for new regulation of the May 2018 Commission Working Documents.

New EIA data for Tyres include OEM tyres (previous EIA issues were limited to Replacement Tyres). However, notwithstanding the higher stock of tyres, the EIA 2017 fuel savings due to the improvement in rolling resistance have decreased significantly in EIA 2018. This is due to a combination of factors, but mainly to different, less optimistic, assumptions on the rolling resistance coefficients. A separate Excel file with details on the preparation of the EIA data is available.

For all above product updates, except tyres, the vote on the EC proposals by Member States is foreseen for winter 2018-2019 and may lead to an additional change in data in future EIA editions.

- **Change of reference year for monetary data:** All monetary data in EIA are now expressed in 2015 euros (were 2010 euros in earlier issues). All product prices, installation costs, maintenance costs, resource costs (water, paper, toner, detergents, etc.) have been increased by a factor 1.08, which is the difference between Eurostat's harmonized index of consumer prices (HICP) for years 2015 and 2010 (see new sheet General\_2).

In principle this means that all acquisition costs and business revenues in EIA 2018 have increased by around 8% compared to EIA 2017. To avoid that jobs associated with the revenues would change, the revenues per employee have also been adjusted by the same factor. The **revenues per employee** have now been implemented as variables that can be changed by the user of the EIA Masterfile, see sheet General\_1.

- **Change of share paying VAT:** The share of users paying VAT, on sheet PRICE2, sometimes differed from the share of residential users on sheet CLASSES. This inconsistency has been resolved by setting the VAT-share identical to the Residential share. Changing the VAT-share also affects the business revenue shares, and consequently, for some products, business revenues changed also for this reason.
- **Nominal Rates:** All energy and non-energy rates have been **updated** with the latest available data from Eurostat, the Oil Bulletin, or other sources. The nominal rates (not inflation corrected) and their sources are reported on sheet General\_2. The previously existing sheet 'NOMRATES' has been removed.

In addition, the new EIA 2018 energy rates are **defined for four sectors** (residential, tertiary/services, industry and other) instead of the two sectors (residential, non-residential) in EIA 2017. The rate for tertiary (not available in Eurostat, but added for increased compatibility with PRIMES) is obtained by interpolating between the residential and industry rates. The **interpolation %**



**can be set by the user**, see sheet General\_2. The tertiary rate is applied to the tertiary share of energy as defined on sheet Classes; it is also used for the 'Other' sector. For products with a significant share of electricity or natural gas use in the tertiary or other sector, the application of the (higher) tertiary rates instead of the (lower) previous non-residential rates, implies an increase in energy costs. For energy carriers different from electricity and natural gas, the tertiary rate remained identical to the industry rate.

- **Real Rates:** All energy and non-energy rates are now expressed in 2015 euros, see sheet General\_1. Linked copies of the values remain available on sheet Rates. Up to 2016-2018, the real rates are derived from the nominal rates considering the inflation from Eurostat's HICP. From 2016-2018 onwards, an **annual escalation rate** is applied. The escalation rate **can be set by the user**, for each type of energy or resource separately, and separately for the residential, tertiary and industry sectors, see sheet General\_1.

For the printed figures in this report, an escalation rate of 1%/a for electricity, 1.5%/a for natural gas, gas oil for heating, and LPG, 2%/a for wood, and 4%/a for coal has been used. These values are an approximation of the values used in the PRIMES 2015f reference scenario. For petrol and diesel for vehicles, an escalation rate of 2%/a was used, following the approach in the Impact Assessment for Tyres.

Note that these escalation rates are smaller than the generic 4%/a that was applied for all energy types in EIA 2017 and before. For future years, they imply lower savings on energy costs and hence lower savings on total user expense.

- **Primary Energy Factor (PEF):** Until now, EIA used a 40% efficiency for electricity generation and distribution (factor  $CC = 1 / PEF$ ), meaning that 1 kWh of electricity corresponded to 2.5 kWh of primary energy. As agreed with the Commission, this approach continues to be used in the printed figures in this report.

However, the EIA Excel Masterfile has been adapted to facilitate changes in the PEF (or inverse factor CC). On sheet General\_1, the user can choose between 3 sets of CC values: constant 40% (PEF=2.5, used in this report), constant 47.6% (PEF=2.1, considering recent proposals), or variable with the years. The values used inside the sets can be adapted if desired.

To facilitate the introduction of a variable CC, and to increase transparency, a **change in calculation philosophy has been implemented**. Electricity consumption (sheets ELEC) and fuel consumption (sheets FUEL) are now computed first (i.e. no longer derived from primary energy, NRG), without using the user-set factor CC. For those products where the efficiency is expressed in terms of primary energy (mainly space- and water-heating) the resulting computed primary energy is multiplied by 40% to get the corresponding electricity value, because the 40% was used to define those primary efficiencies. In a next step, final energy (FNRG) is computed as  $ELEC + FUEL$ , and primary energy (NRG) is computed as  $ELEC / CC + FUEL$ . Hence, user changes in the factor CC will affect only the primary energy, not the ELEC, FUEL or FNRG.

At the moment EIA does not use a PEF for non-electric energy.

- **Final Energy sheets:** On request of the Commission, sheets FNRGBAU, FNRGECO and FNRGSAVE have been added to EIA. Final Energy is computed as the sum of ELEC and FUEL, as explained in the previous point.
- **Brexit factor:** on sheet General\_1, the user can specify a Brexit factor, to indicatively simulate EIA for an EU-27 without the United Kingdom. All Sales will

be reduced by the user-selected percentage. As a consequence, stock, energy, costs, revenues, jobs, etc. will be reduced by the same percentage. The same user-selected percentage is applied to all product groups. It is assumed that average load and efficiency will not change.

Light sources presented a problem when implementing the Brexit factor, because many LS-data were copied from MELISA into EIA as fixed values, and thus would not update when changing the Sales. Therefore, near the bottom of several sheets, the fixed data from MELISA have been additionally inserted, and the final EIA values are obtained multiplying these values by (1- Brexit factor).

- **Sector Subdivision data:** The presentation of the sector subdivision of energy data (residential, tertiary, industry, other) has been adapted, to facilitate comparison with similar data from the Eurostat Energy Balance sheets. In particular, Transport (tyres) has now been removed from the other sectors and is reported separately. The Energy sector (Distribution Transformers) is also treated separately, and energy totals and savings are now reported with and without the Energy sector. Additional data from the Eurostat Energy Balance sheets have been added to EIA and graphs have been added (in the Masterfile) comparing EIA and Eurostat data. The intention is to further address this comparison in future.

Sector subdivision data have also been added for greenhouse gas emissions (EMISS sheets), comparing with reference data from the European Environment Agency.

- Several minor corrections.

### 1.10. Reporting

This EIA II Annual Report 2018 uses the same layout as the 2016 and 2017 editions. As requested by the contract, the documentation is split in a more detailed Methodology report for analysts and experts (this Status report) and a more general, descriptive Overview report targeting a wider audience (issued separately).

Although the core of the accounting method has not changed, various smaller changes have accumulated during the last 3 years. Consequently, the method description in chapter 2 has been revised and brought up-to-date. The application of the accounting method, i.e. the inventory of impacts per 1 October 2018, is introduced in Chapter 3, but is mostly performed in the MS Excel files. The print-out of those files, for 5 year intervals only, are contained in Annexes A to G of this report. Annex H is a reference list.

The 'EcoReport for the average EIA product' and the 'Special Report Materials' that accompanied the 2016 EIA issue, have not been updated: existing versions remain valid.



## 2. Accounting method

### 2.1. Overview

The calculation method follows the procedures as laid down in the Methodology for Ecodesign of Energy-related Products (MEErP), which takes into account the relevant requirements of the European Commission's Impact Assessment Guidelines. Having said that, the calculation method is streamlined to make maintenance and reporting as simple as possible.

Also, with respect to the definitions in MEErP and Ecodesign regulations, some concessions have been made to be in line with the Eurostat energy balance accounting that is usually the reference for policy studies at an aggregate level (e.g. PRIMES, POTENCIA).

The following paragraphs describe parameters and equations:

- Scenarios: the BAU ('Business-As-Usual') and ECO scenario;
- Generic parameters: e.g. historical energy prices, future energy price escalation (growth rate corrected for inflation), electricity to primary energy conversion coefficient (CC), global warming potential for energy sources (GWP-100);
- Usage-sector shares: subdivision of the energy consumption over the industry-, tertiary-, residential- and 'other' sector;
- Product specific input variables: e.g. Sales volume per year, product Lifetime, user-demand for product output (Load), energy efficiencies (for BAU and ECO), product unit prices (for BAU and ECO), price breakdown factors;
- Derived (output) variables: Stock (volume installed), energy-, emission- and consumable-impacts of the stock, acquisition costs, energy costs, total user expenses, business revenues, employment impacts;
- Aggregation of data and double counting issues.

### 2.2. Scenarios

The ecodesign impact accounting distinguishes a BAU scenario (Business as Usual) and an ECO scenario. The BAU represents the situation without measures as assessed during the first preparatory and IA study for a product<sup>31</sup>. It is not necessarily how a 'Business-as-Usual' would be judged today.

The BAU scenario is not a 'freeze' scenario, i.e. in most preparatory studies ongoing market trends in energy efficiency improvement and emission abatement are taken into account in the BAU. It is derived from extrapolating historical trends at the time of the preparatory study analysis, including possible ongoing market trends in energy efficiency improvement and emission abatement.

During a review study, new data are usually gathered on the actual development of product parameters with the Ecodesign measures in force. These data can be used to check if the previously projected ECO-scenario has been realized. Reasoning backwards from these data, a new projection can also be made for what would have

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<sup>31</sup> Note that for the first products with an Energy Label like household refrigerators and washing machines this may go back to 1992-1993.

happened if the Ecodesign measures had not been introduced, i.e. a new BAU-scenario can be developed. This was done for e.g. light sources, electric motors and tyres, where the new BAU-scenario in EIA, based on new data and insights, is different from the previously used BAU-scenario.

As said, the EIA BAU-scenario represents the situation without any Ecodesign and Energy Labelling measures. This scenario will typically differ from the BAU-scenario in the Impact Assessment for a review of the measures, where it represents the situation in which existing measures are maintained but no new measures are introduced. The IAs aim to determine the change in impacts (savings) only for the new proposed measures, while EIA aims at determining the combined savings due to all measures, old, existing, and new proposed.

The ECO scenario in EIA is the scenario which –in the most recent preparatory and IA studies—comes closest to the (projection of the) situation with measures taken, i.e. with Ecodesign requirements, Energy labelling, Energy Star and Tyre labelling. In most studies, the measures in the ECO scenario work as a catalyst and compass, accelerating the trend towards energy efficient and environmentally friendly products<sup>32</sup>.

Three ground rules for scenarios were followed in the study:

- Scenarios should be based on the existing preparatory and impact assessment (IA) studies. If policy is a ship, accounting is the compass and not the captain. In other words, it is not the task of accounting to propose new measures.
- Scenarios should be as realistic as possible, i.e. the results from the 'bottom-up' approach of the ecodesign impact accounting should ideally be consistent with the results from the 'top down' approach in Eurostat and others.
- Scenarios should be fit for purpose, i.e. in principle they are used to study only the impact of ecodesign and labelling measures, not of other demand-side measures (e.g. EPBD, NEEAP) and not of supply-side measures such as the use of renewables and overall efficiency improvement in electric power generation

In part, these ground rules are conflicting:

#### Based on the existing measures

The time scope of impact scenarios in existing studies runs at the most up to 2030 (and often before that). This is the time by which most installed products have been replaced by products meeting the ecodesign requirements and labelling has lost most of its effectiveness because most of the products are rated in the highest classes. So, given that the study is required to develop scenarios up to 2050, this means that effectively the ECO-scenario assumes that ecodesign and labelling legislation will not be (further) updated and that there will be no measures for new products.

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<sup>32</sup> For some product groups the ECO-scenario has been taken identical to the BAU scenario and consequently no savings are reported.

Simple set-top boxes don't exist anymore and are replaced by complex set-top boxes in all relevant applications, as shown in the Omnibus 2013 study and confirmed by the Commission in the CF of mid-2014. This is a perfectly normal evolution within the ITC market.

For PCs (Lot 3) the minimum requirements were based on the prep. study of 2007 and for this fast-moving sector were not effective when introduced in 2013.

The consequence is that in the 2030-2050 period the effect of the measures diminishes and eventually flattens out.

Such a scenario provides a valuable insight for policy decisions, e.g. as reference baseline, and has been maintained, because there is no alternative within the scope of the study. But with input from policy makers it should be possible to calculate alternative scenarios.

### Realistic

Paragraphs 2.3 to 2.6 describe how accounting from ecodesign studies was converted to be consistent with the statistical accounting units and conventions employed by Eurostat.

Double counting, e.g. where products are regulated both at component and product level, has been taken into account (see par. 2.7) as well as the increase in load where appropriate, i.e. the trend toward more and bigger appliances, lamps, computers, displays, etc. in households.

The example given in par. 2.8 indicates that –historically for the period 1990-2010– the results from ecodesign impact accounting could be made to match Eurostat outcomes with appropriate partitioning between the sectors<sup>33</sup>.

However, for future projections the possible deficiencies in market surveillance or the effectiveness of the policy instruments are not taken into account. Analysts are not commonly asked to correct for fraud and flaws in implementation.

Also not taken into account is an ex post re-evaluation where some specific adopted measures were subject to ‘last-minute’ changes before the vote. Preparatory and impact assessment studies are primarily an input to decision making; ex post re-evaluation for accounting purposes is not a priority.

On the other hand, for some product groups the accounting has been conservative. This has been the case e.g. for personal computers where in November 2013 there were no indications to differentiate between the BAU and the ECO scenario.<sup>34</sup>

Also as regards the effect of labelling of new products -- i.e. beyond the impact of Ecodesign-- there is a large uncertainty and it may well be that the IA reports on which the accounting is based, have been too conservative.

Past experience from household appliances, e.g. household refrigeration appliances which were subject to both energy labelling and a specific directive with minimum requirements in the 1990s, has shown that the energy labelling accounted for two-thirds of the savings and the minimum requirements for one-third. Also the EU Energy Star programme on office equipment has been evaluated in 2011 and proven successful. On the other hand, the energy labelling of light sources (since 1998) has proven to be largely ineffective, while the ecodesign measures introduced in 2009 had a much bigger impact. For professional appliances, where the buyers are assumed to be indeed professionals, stakeholders in all sectors have claimed that energy labelling

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<sup>33</sup> As explained in section 1.9, in the 2018 EIA edition the subdivision of energy over the sectors has been improved, to facilitate comparison with Eurostat data. The intention is to further address the EIA – Eurostat comparison in future EIA editions.

<sup>34</sup> For instance, there is no savings for PCs, because it was not possible to quantify them with the data available.

is not effective at all. Nonetheless, there is the exception of circulator pumps, where manufacturers have pushed for an energy label. Also in other professional sectors it can be observed that 'ErP 2015'-level or similar designations are used in commercial publications.

The transition between BAU and ECO scenario in most studies is smooth. There is no 'big bang' effect whereby large parts of manufacturer's product range are eliminated overnight on the implementation date. Negative impact for industry is avoided, because the design cycle, i.e. the rate at which the products in the catalogue are renewed, is taken into account. Most manufacturers start anticipating imminent measures already 2-3 years before the decision is taken, i.e. at the outset of studies. Once the decision is taken it still takes another 2-3 years before the first tier of measures is implemented, while the most ambitious second or third tier follows a few years later still.

### Fit for purpose

The ecodesign impact accounting aims to identify the impact of ecodesign and labelling measures, not (necessarily) of other measures with the same policy goals, such as building-related measures and supply side measures on renewables, the efficiency of power generation and the fuel mix.

In order to 'neutralize' the possible effect of these other measures:

- fixed factors for power generation and distribution (40% efficiency) are used throughout the projection period 2010-2050. However, the user of the EIA Excel Masterfile can change this on sheet General\_1, see sections 1.9 and 2.3.7;
- in previous EIA issues, a generic 4% annual escalation rate for the pricing of all energy sources was used, independent of the energy type. However, on request of the Commission this has been changed in the EIA 2018 edition, to have EIA energy rates closer to those used in the PRIMES model. Hence, in this report, escalation rates differ per energy type. The user of the EIA Excel Masterfile can change this on sheet General\_1, see sections 1.9 and 2.3.6;
- for space heating and cooling load of buildings, the historical trends are extrapolated using the same percentage for the BAU and ECO scenario <sup>35</sup>;
- the BAU and the ECO scenario use the same performance/load, only the product's efficiency differs <sup>36</sup>.

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<sup>35</sup> However, the heat load reduction for space heating in the ECO-scenario due to heat savings by ventilation units is taken into account in EIA starting from the 2017 issue.

<sup>36</sup> This is the general rule, but there are some exceptions. For lighting, sales are shifting from conventional base cases to LED base cases, leading to a difference in sales between BAU and ECO. In addition, a rebound effect has been considered for lighting: due to the lower energy consumption of LED lamps, users tend to install more lumens and let the lights on for longer periods, causing a difference in load between BAU and ECO.

Similarly, for electric motors there is a shift in sales from motors without VSD to motors with VSD, causing a difference both in sales and in EU-load between the BAU and ECO scenarios. Small load differences also exist for Enterprise Servers; these are related to an expected effect of the information requirement on the SERT metrics, leading to an increase in power per server, a decreasing amount of servers, and an overall decrease in PSU output power). See sheet EULOADVAR.

## 2.3. Generic parameters

### 2.3.1. Overview

Generic parameters are parameters that are not product-specific but apply across the whole range of calculations for regulated products. Furthermore, they are not dependent on a scenario, i.e. they are the same between BAU and ECO scenario.

The most important generic parameters are now defined centrally on sheets General\_1 and General\_2 and can be easily changed by the user of the EIA Excel Masterfile. For this printed report the values are fixed, on the values shown in Annex A.

The generic parameters, further discussed in paragraphs below, include:

- Time-step and year-index;
- Inflation rates;
- EU average percentage VAT;
- Nominal prices/rates of energy and other consumables (not inflation corrected), and the interpolation factors for the rates for the tertiary/services sector;
- Real prices/rates of energy and other consumables (fixed Euros 2015, inflation corrected) and the annual price escalation rates beyond inflation;
- Efficiency of electric power generation and distribution (conversion factor CC; primary energy factor PEF);
- Calorific value of fuels;
- Global Warming Potential (GWP) for a 100 year period in CO<sub>2</sub> equivalent (for electricity, fuels, refrigerants);
- Employment parameters;
- Brexit factor;
- EU population and households.

### 2.3.2. Time-step and year-index

In this printed report, EIA data are reported for year 1990 and for years 2010 to 2050 at 5-year intervals.

The time-step of the calculation method in the underlying EIA Excel Masterfile is 1 year<sup>37</sup>. For some products, fractional years are used for the lifetime, for computation of the stock and of the average stock efficiency<sup>38</sup>. To enable realistic stock and average stock efficiency data (EFS) in 1990, input data for sales and average sales efficiency (EFN) go back to years before 1990, in some cases as far back as 1950 (e.g. distribution transformers with 40 years lifetime).

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<sup>37</sup> Users of the Masterfile can unhide columns to access data in intermediate years

<sup>38</sup> The calculation is first done for full years (rounded down) and then for the remaining fractional (oldest) year. This may introduce a small error (some overlap or gap in subsequent time periods), when the product life over the years varies, but the error is still smaller than with a restriction to use only full integer years.

### 2.3.3. Inflation rates

Inflation rates for the period 1996-2017 have been taken from the Eurostat harmonized index of consumer prices (HICP), reported on sheet General\_2. For years before 1996 and for year 2018, an inflation of 2%/a has been assumed.

Inflation rates have been used to convert nominal rates (not inflation corrected) to real rates in 2015 euros (see sections on rates below) and to convert product prices, maintenance costs, consumables' costs, etc. from 2010 euros (earlier EIA issues) to 2015 euros (this EIA issue).

### 2.3.4. Value Added Tax (VAT)

The EU average percentage of Value Added Tax used in EIA is 20%. This is currently a parameter that cannot be easily changed by the user (hidden in formulas on sheet PRICE2).

All EIA monetary data for the residential sector include VAT. Data for the tertiary, industry and 'other' sectors exclude VAT. The sector-weighted share of VAT in the product prices and in the acquisition costs is reported on sheet PRICE2 (see par. 2.5.8). The sector-weighted share of VAT in energy costs and total user expenses is currently not being reported.

Rates for the residential sector include VAT. Rates for non-residential sectors exclude VAT and other recoverable taxes and levies.

Business revenues (sheets REV) exclude VAT.

### 2.3.5. Nominal rates (not inflation corrected)

The nominal rates for energy and non-energy consumables, i.e. not inflation corrected, are given for the period from 1990 to 2016 - or 2017/2018 where available - on the sheet General\_2 (see Annex A).

For most energy sources, the rates for the residential sector and for the industry sector have been derived from the indicated external sources. The rates for the tertiary/services sector (new in EIA 2018) are computed as:

Tertiary rate =  $(100-x\%)*\text{Industry rate} + x\%*\text{Residential rate}$

where  $x\%$  is a user-selected interpolation factor. If ' $x$ ' is set to 0%, the tertiary rate is identical to the industry rate; if ' $x$ ' is set to 100%, the tertiary rate is identical to the residential rate (including VAT). For electricity,  $x=65\%$  is recommended, and for natural gas  $x=58\%$ , to obtain EIA tertiary rates that are close to the rates used in the PRIMES 2015f reference scenario. For all other energy types,  $x=0\%$  has been used (same rate for tertiary as for industry). The tertiary rate is also used for the 'other' sector (agriculture, forestry, fishing, etc.).

In previous EIA issues there was only one rate for the entire non-residential sector, and essentially this was a (low) industry rate. The new nominal tertiary rate in EIA 2018, for electricity and natural gas, is considerably higher, meaning that energy costs (and savings) for products with a high usage in the tertiary sector increase in EIA 2018 compared to EIA 2017. However, for future years, this effect is counteracted by using lower escalation rates in EIA 2018 (see next paragraph).

Apart from rates for energy, the sheet General\_2 also contains nominal rates for water, printer toner & paper, detergents and vacuum cleaner bags. These rates are not split per sector.

### 2.3.6. Real rates (inflation corrected to 2015 euros)

The inflation corrected rates, i.e. whereby all rates are recalculated to fixed 2015 euros, are given on sheet General\_1, with a linked copy on sheet RATES (see Annex A). These are the values used to compute energy costs and the costs of consumables.

Up to 2016-2018, the real rates are derived from the nominal rates considering the inflation from Eurostat's HICP (see par. 2.3.3). From 2016-2018 onwards, an annual escalation rate (on top of the inflation) is applied. The escalation rate can be set by the user, for each type of energy or resource separately, and separately for the residential, tertiary and industry sectors, see sheet General\_1.

For the printed figures in this report, an escalation rate of 1%/a for electricity, 1.5%/a for natural gas, gas oil for heating, and LPG, 2%/a for wood, and 4%/a for coal has been used. These values are an approximation of the values used in the PRIMES 2015f reference scenario. For petrol and diesel for vehicles, an escalation rate of 2%/a was used, following the approach in the Impact Assessment for Tyres.

Note that these escalation rates are smaller than the generic 4%/a that was applied for all energy types in EIA 2017 and before <sup>39</sup>. Moreover, EIA2017 applied this escalation from 2015, while electricity and natural gas prices actually went down in 2016 and 2017, so the new, lower, escalation rate also starts from a lower rate. For future years, this implies lower EIA savings on energy costs and hence lower savings on total user expense. For the tertiary sector this is partially counteracted by the introduction of new rates in EIA 2018, see previous paragraph.

The escalation rate for water (incl. sewage levies) is 3%, whereas for the other resources the escalation rate is 0% (meaning that their average annual price increase equals inflation).

### 2.3.7. Efficiency of electricity generation and distribution (CC, PEF)

In line with earlier EIA editions, and agreed with the Commission, this EIA report continues to use a constant 40% efficiency for electricity generation and distribution (conversion coefficient  $CC = 1 / PEF$ ), meaning that 1 kWh of electricity corresponds to 2.5 kWh of primary energy.

The default value 2.5 of the Primary Energy Factor (PEF) is currently under discussion in the context of the review of the Energy Efficiency Directive <sup>40</sup>, and lower values have been proposed <sup>41</sup>.

Therefore, as requested by the Commission, the EIA Excel Masterfile has been adapted to facilitate changes in the PEF (or inverse factor CC). On sheet General\_1, the user can choose between 3 sets of CC values: constant 40% (PEF=2.5, used in

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<sup>39</sup> The 4%/a of previous EIA editions corresponded to the MEERp, which in turn followed the price trends of the years 2005-2010. As mentioned in the MEERp, it is advantageous for the simplicity of Life Cycle Costs (LCC) calculations that –at a value of 4%– the energy escalation rate is approximately (within <1%-point) the same as the default 4% discount rate that the European Commission prescribes. Furthermore, using the same escalation for all energy sources neutralized possible price effects that may occur from other (non-ecodesign or non-labelling) measures, whose impact should be excluded from the scope. In the new EIA 2018 approach, these advantages have been lost.

<sup>40</sup> The default value of 2.5 for the PEF is mentioned in footnote 3 of Annex IV of the Energy Efficiency Directive, Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, OJ L 315/1, 14.11.2012.

<sup>41</sup> See also: 'Final report, Evaluation of primary energy factor calculation options for electricity', FhG-ISI, TecNALIA and E7 for the European Commission, 13.05.2016



this report), constant 47.6% (PEF=2.1, considering recent proposals), or variable with the years. The values used inside these sets can also be adapted, if desired.

The factor CC has influence only on the primary energy (NRG) that is calculated as  $ELEC / CC + FUEL$ . Changes in the factor CC will not affect electric energy (ELEC), non-electric energy directly used by products (FUEL), final energy (FNRG), greenhouse gas emissions (EMISS) or energy costs (NRGCOST).

If the user chooses an approach where the PEF varies with the years (CCset3 on sheet General\_1), impacts on the primary energy due to Ecodesign (ED) and Energy Labelling (EL) will mix with impacts from improvements in the efficiency of electricity generation and distribution, thus partially confusing the intention of the Ecodesign Impact Accounting.

At the moment EIA does not use a PEF (or CC) for non-electric energy, meaning that 1 kWh of final 'fuel' equals 1 kWh of primary energy (see also remarks in following paragraph).

### 2.3.8. Calorific value of fuels

With respect to definitions in the MEErP and in most Ecodesign regulations, some concessions have been made to be in line with the Eurostat energy balance accounting.

Notably the Net Calorific Value NCV (a.k.a. lower heating value  $H_i$ ) of fuels has been used as an accounting basis and not the Gross Calorific Value GCV (a.k.a. higher heating value  $H_s$ ). This means that for all products using gaseous and liquid fuels directly, the efficiency values in the preparatory and IA studies –which were usually in GCV-- had to be corrected upwards, e.g. with a factor 1.11 for natural gas, 1.08 for LPG and 1.065 for heating oil. For solid fuels the NCV equals GCV; for solid biomass products the humidity content of the fuel plays a role, but this was already taken into account in the various studies and did not require correction.

In Eurostat energy balances, at the level of the final demand, the NCV (in kWh) relates strictly to the combustion value of the fuel end product (heating oil from the tank, the natural gas from the pipe, etc.). There is no record of, or correction for, the energy needed in their procurement outside the EU (exploration, drilling, mining, transport, etc.). Most LCA (Life Cycle Assessment) literature and standards include this energy expenditure at the level of final demand. Also in the MEErP's *EcoReport* tool there is a correction, depending on the fuel, between 5 and 10%.<sup>42</sup> However, apart from some incompatibility with the *EcoReport* outcomes, this particular practice does not pose too much of a problem, because the (conventional) energy analyses in the various preparatory and IA studies also use the calorific value without an extra correction for fuel extraction and -transport. And also the power generation & distribution coefficient for electricity does not use such a correction and thus a fair comparison between electricity and primary energy is still guaranteed and no correction was applied.<sup>43</sup>

Also in line with Eurostat, no extra energy credit is given to biomass products, because of their renewable character. For the two product groups where this could have an impact, i.e. local heaters (i.e. including biomass stoves) and solid fuel boilers,

<sup>42</sup> MEErP, Part 2, Table 18 (p. 118). For fuel extraction & transport of gas +7%, of oil +10%, of wood pellets and -logs +5% (original data from the GEMIS database v.4).

<sup>43</sup> Note that if such a correction was applied then strictly speaking the conversion would be 1 kWh electricity = 2.7 kWh primary energy, but also 1 kWh natural gas = 1.07 kWh primary energy. And thus it is plausible that the power generation factor CC is still 40% (reverse of factor 2.5)



this does not give a problem because the regulations for these product groups treat the credit (BLF=1.45) as an ex-post factor that is clearly separated from the overall calculation, regarding only the determination of the Energy Efficiency Index for energy labelling purposes.

The same goes for the Global Warming energy efficiency bonus for Room Air Conditioners (RACs) that the RAC Ecodesign regulation applies to RACs using refrigerants with a low-GWP value. This bonus, which is evidently not a part of the Eurostat accounting, is treated separately in the underlying studies and no correction was needed.

A table with NCV-values (from Eurostat) is given in the acronym section at the beginning of this report.

### 2.3.9. Global Warming Potential

In accordance with EU legislation, the GWP-100 emission rates for fuels and refrigerants are given by the latest reports from the IPCC (Intergovernmental Panel on Climate Change). Values for the fuels and the average refrigerant mix for relevant (cooling) products can be found on the sheet EMISSRATES (see Annex A).

The GWP-100 emission rates for electricity production are in accordance with MEErP and given on sheet General\_1 (with a linked copy on EMISSRATES).

The sheet EMISSRATES also contains emission rates for NO<sub>x</sub>, CO, OGC, PM and Noise, but these are product-specific and not generic parameters.

Direct fuel-related NO<sub>x</sub>, CO, OGC and PM emissions were addressed in studies on central heating boilers, water heaters, solid fuel boilers, local space heaters and some air heating products using fuel input. In some cases the associated Ecodesign regulation also specifies emission limits, see details on the EMISS sheets in Annex A.

Indirect fuel-related CO<sub>2</sub> emissions were addressed in all the other studies, i.e. those dealing with electricity consuming products.

GHG emissions from refrigerants were addressed in all studies on cooling appliances: domestic and non-domestic refrigeration as well as domestic and non-domestic air-conditioning. For domestic refrigeration the GHG-emissions did not result in measures because almost all products used low GHG refrigerants (isobutane). For room air-conditioners a bonus on energy efficiency requirements of 10%, when using low GWP refrigerants (GWP = 150), is included in the Ecodesign Regulation.

A similar low-GWP bonus is also present in the regulation on professional refrigeration for Condensing Units and Process Chillers (not for Storage cabinets). The proposed regulation for Commercial refrigerated display cabinets does not foresee a similar bonus.

### 2.3.10. Employment parameters

The direct employment impact of measures - i.e. the increase or decrease of employees in the value-adding chain - is derived from the business revenues in the various sectors, using 'Wages' constants. These are not actual wages but total company revenue divided by staff, expressed in 'million euros / employee'. EIA uses the same 'wages' for all products. Starting from EIA 2018, the 'wages' are expressed in 2015 euros (as all other monetary data in EIA) and implemented as variables that can be changed by the user of the EIA Excel Masterfile on sheet General\_1.

For the printed figures in this report, the following constants have been used (see also Annex A):

- ManuWages: Manufacturer's 'wages' (used with industry revenue):  
0.054 m euro/employee overall.  
For manufacturing alone, the 'wage' would be 0.162 m euro/employee ( $\pm 10\%$ ). It is assumed that associated OEM jobs and Service jobs are each of the same order of magnitude. Including also these jobs the 'wage' reduces to 0.054 m euro/employee (1/3 manufacturing, 1/3 OEM, 1/3 services), which is the quantity used in EIA;
- WholeWages: Wholesaler's 'wages' (used with wholesale revenue):  
0.270 m euro/employee ( $\pm 20\%$ );
- RetailWages: Retailer's 'wages' (used with retail revenue):  
0.065 m euro/employee ( $\pm 20\%$ );
- InstallWages: Installer's 'wages' (used with install revenue):  
0.108 m euro/employee ( $\pm 20\%$ );
- MaintWages: Maintenance & Repair 'wages' (used with maintenance revenue):  
0.108 m euro/employee ( $\pm 20\%$ );

See further remarks regarding jobs in par. 2.6.14.

#### 2.3.11. Brexit factor

On sheet General\_1, the user of the EIA Excel Masterfile can specify a Brexit factor, to indicatively simulate EIA for an EU-27 without the United Kingdom. All Sales will be reduced by the user-selected percentage. As a consequence, stock, energy, costs, revenues, jobs, etc. will be reduced by the same percentage. The same user-selected percentage is applied to all product groups. It is assumed that average load and efficiency will not change.

As agreed with the Commission, the printed figures in this report still consider the EU-28, including the United Kingdom (i.e. Brexit factor is 0%).

#### 2.3.12. EU population and Households

Sheet General\_1 reports the total EU population and number of households. These data are not essential for main EIA outcomes, but used in some occasions to report average data per person or per household.

### 2.4. Usage-sector shares

The sheet CLASSES specifies for each base case product which share of the total energy consumption of the base case product is used in the residential sector (share\_RES), the tertiary or services sector (share\_TER), the industry sector (share\_IND), or the 'other' sector (share\_OTH, e.g. agriculture, forestry, fishing). These sector shares are preliminary estimates, partly derived from information in the preparatory studies, partly 'common sense' estimates.

The shares are assumed to be constant over the years, which is not necessarily true. E.g. for lighting, recent impacts from Ecodesign measures have had effect primarily on the residential energy consumption, and less on the other sectors. Future lighting regulations are expected to have their main impacts on the non-residential sectors. Consequently, the sector shares would change over the years. For this reason, sector

energy data for light sources are taken directly from the MELISA model, and the shares on sheet Classes are for indicative information only.

The usage-sector shares are used on the ELEC, FUEL, FNRG, NRG and EMISS sheets to compute energy consumptions and emissions per sector. This sector subdivision facilitates comparison between EIA and Eurostat data.

The usage-sector shares are also used when computing energy costs (sheets NRG COST): the energy share for a given sector is multiplied by the energy rate for the same sector.

The share for the residential sector is also used as the share of users paying VAT, on sheet PRICE2. This is a first estimate, but uncertain: the sector shares are primarily intended to be energy shares, which are not necessarily identical to purchase cost shares. Considering this doubt, no sector data are being reported yet for the monetary sheets (ACQ, EXPENSE, REV). Sector data could be reported for energy costs (NRG COST), but this would be of limited usefulness without a sector subdivision of the other cost items, and thus has not been implemented yet.

## 2.5. Product specific input parameters

The following subparagraphs discuss the main product-specific input parameters for EIA:

- Sales (annual unit sales for relevant years)
- Lifetimes (product service life in years)
- Load (user demand for product output)
- Energy efficiency (ratio between product output and energy input)
- Non-energy 'efficiency' (input data for emissions and consumables)
- Product prices (three price-efficiency pairs as anchor points for interpolation)
- Price breakdown (fractions for installation, VAT, industry, wholesale, retail)

In principle, the retrieval of these variables from most preparatory and IA studies did not pose too much trouble. Only in some cases, not all of these variables were given and this required the contractor to do additional study.

### 2.5.1. Sales

In principle, the Sales data ( $Sales_t$ , number of units sold in year 't') for the BAU and ECO scenario are assumed to be identical. Only the projected Sales data scenarios (from 2009 onwards) for light sources and electric motors are not identical, since (part of) the key to energy saving lies in the shift of sales between the base-case types (e.g. for lighting from incandescent, fluorescent and high-intensity discharge lamps to LED lamps, and for electric motors from models without VSD to models with VSD).

The SALESBAU sheet presents sales data for all base cases. The SALESECO sheet shows sales data only if they are different from SALESBAU, i.e. for light sources and electric motors <sup>44</sup>.

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<sup>44</sup> In the EIA Excel Masterfile (but not printed in this report) there are additional sheets with Sales data. For the older studies, sales data were for EU-27 (without Croatia), and these data have been kept on sheet

### 2.5.2. Lifetimes

The product life is assumed to be the same for BAU and ECO. For most products, the product life is a fixed integer number  $Life$ . Only when the product life is relatively short, it is sometimes expressed by a fractional number. This is the case for e.g. tyres, external power supplies (EPS), enterprise servers and data storage products (ES&DS), light sources (LS), vacuum cleaners (VC) and electronic displays (DP) (see also par. 2.3.2).

There are two product groups – household vacuum cleaners and televisions - whose product life (expressed by the year index  $Life_t$ ) varies per year. This approach was required in order to ensure that the stock and sales data match with the real figures.

The product life data (in years) appear in the 3<sup>rd</sup> column of the STOCK sheets. For televisions and vacuum cleaners, data are displayed as a time series, below the general table of the STOCK sheets.

Several IA-studies do not use a fixed average lifetime, but a lifetime distribution function (e.g. Weibull) to compute the stock from the sales. This approach can be more realistic, and would be preferable when lifetimes vary with the years, but it requires a lot of (Excel) space and is therefore not suitable for EIA. In some cases, e.g. tyres and external power supplies, this has been resolved in EIA by using slightly higher average lifetimes, such that the stock computed in EIA (see par. 2.6.1) closely matches the stock from the IA study. In these cases the lifetimes reported on sheet STOCK are somewhat 'artificial'. For light sources, where the MELISA model uses variable lifetimes and lifetime distribution, it has been preferred to copy the stock as fixed values from the MELISA model. In this case, the reported lifetimes are indicative only, and not used in the computations.

### 2.5.3. Load: user demand for product output

The ecodesign measures (e.g. minimum required energy efficiencies) do not stand alone, but are linked to the functional performance of the product for the consumer. EIA uses the term 'Load' for this functional performance, which typically represents the user-demand for product output. Unit Load values are defined on sheets LOADBAU and LOADECO in Annex A. Further explanations, including also a brief introduction to the technical and quantitative assessment of the product performance by test standards, can be found in sheet LOADNOTES. The product load is expressed by parameters such as:

- kWh per year heating or cooling for a given nominal product capacity (in kW),
- the energy equivalent in kWh per year of the annual hot-water volume delivered with a certain temperature according to a declared standardised tapping pattern,
- m<sup>3</sup> of ventilation air per m<sup>2</sup> building surface with a certain effectiveness and heat recovery,
- lumens (lm) emitted by light sources,
- dm<sup>2</sup> of viewable surface area of TVs displaying standardized dynamic video content,

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EU-27 SALES. These data are increased by 0.5% to get EU-28 sales including Croatia, on sheet EU-28 BAUSALES. Sales data from the more recent studies, which already considered EU-28 are directly inserted on this sheet. For light sources and electric motors, the ECO sales are inserted on the sheet EU-28 ECOSALES. The final sales used in the computations are on sheets SALESBAU and SALESECO and obtained multiplying the sales from EU-28 BAUSALES and EU-28 ECOSALES by (1 – Brexit factor).

- standard test cycles, mimicking typical (standby- and) usage pattern as well as usage intensity,
- m<sup>3</sup> of storage volume at chill (e.g. +5°C) and/or freezing (e.g. -18°C) conditions, for food preservation,
- dust pick-up (dpu in grams of test dust) on hard floor and/or carpets, for vacuum cleaners,
- kg of laundry washed and dried according to predefined test cycles,
- kWh of mechanical or aero-/ hydrodynamic labour performed by motors, fans, pumps and compressors,
- annual kilometres driven by vehicles (tyres), etc.

The description is simplified. Typically, the load parameters are based on comprehensive European test standards, which guarantee that the tests are accurate, repeatable (i.e. producing the same results independent of the lab), cost-effective, and representative of real-life usage conditions as far as possible.

For some products, the 'load' is established through a test cycle which could include simultaneous testing of several functions that a typical product performs. In these cases the relevant parameter is the energy input (in kWh) for the test cycle. As this is then usually the regulated parameter (maximum allowed cycle energy values specified in the Ecodesign regulation), it is registered in EIA as an efficiency (EFN sheets, see next paragraph). In these cases, the unit Load in EIA is set to 1, with the indication 'TEC' (Test Energy Consumption).

For several products, the unit Load is assumed to be constant over the years. However, EIA takes into account trends in user-demand for product output. Examples include the increase in dm<sup>2</sup> viewing area and in functionality (high-definition, network access) for electronic displays, the increase in capacity for washing machines and dishwashers, the decrease of the average washing temperature, the rebound effect for light sources (more lumens installed, higher burning times), the decrease in space heating load due to better insulation of buildings, etc. Consequently, for various products the Load varies with the years.

In principle, the load in EIA is assumed to be the same for the BAU and ECO scenarios, i.e. the user-demand for product output is assumed not to change due to the ECO-measures. There are three exemptions to this general rule: space heating (SH) appliances, light sources (LS) and enterprise servers (ES).

For SH, the difference in load between BAU and ECO is related to the heat savings by Ventilation Units (VU), as explained in par. 2.6.2.

For LS, the EIA base case products are aggregates of various light sources types, and also represent a mix of usage in the residential and non-residential sectors. The impact of the ECO-measures differs per product and per sector, implying that the average load for the EIA base cases changes with the scenario (see the MELISA model for details).

For ES, small load differences between BAU and ECO are related to an expected effect of the information requirement on the SERT metrics, leading to an increase in power per server, a decreasing amount of servers, and an overall decrease in PSU output power.

The sheet LOADECO in Annex A reports the unit ECO load only when it differs from the unit BAU load, see also sheet EULOADVAR.

Total load data for the entire EU stock of products are provided on the EULOAD sheets (see par. 2.6.2).

The Load data are used in the computations of electric (ELEC) and non-electric (FUEL) energy consumption (par. 2.6.4).

#### 2.5.4. Energy efficiency

The 'energy efficiency'<sup>45</sup> is the ratio between the unit product output (Load, see previous paragraph) and the unit product energy input. Efficiency, not the absolute value of the energy consumption, is the parameter which is usually regulated by the ecodesign and labelling measures, since – as it is explicitly stated in the legislation— there should be no significant negative impact on functional performance as a result of these measures.

The efficiency values for new products, sold on the market in a particular year, are shown on the EFNBAU and EFNECO sheets in Annex A. The efficiency of the average installed product (the 'stock') is a derived parameter (see par. 2.6.3), which is displayed on the EFSBAU and EFSECO sheets, and which is the efficiency being used in EIA energy computations (see par. 2.6.4).

When the product output (Load) and the energy input are expressed in the same measuring unit (typically kWh), the efficiency is given in percentage value. Such is the case, for instance, of space cooling and heating, whose input (Net Calorific Value of the fuel input) and output/load are both expressed in kWh (heat output). The value then becomes 'dimensionless' (usually a decimal value, often expressed in %).

If product output and energy input are expressed in different measuring units, the efficiency is expressed in energy or power per load unit, or its inverse, e.g. lm/W for light sources, W/dm<sup>2</sup> for electronic displays, L/100km fuel losses due to rolling resistance of tyres, W per hour of standby, etc.

For some products, the 'load' is established through a test cycle which could include simultaneous testing of several functions that a typical product performs. In these cases the relevant parameter is the energy input (in kWh) for the test cycle. As this is usually the regulated parameter (maximum allowed values specified in the Ecodesign regulation), it is registered in EIA as an efficiency (EFN sheets). In these cases, the unit Load in EIA is set to 1, with the indication 'TEC' (Test Energy Consumption). If the outcome of a test cycle (expressed by TEC) is weighted against the TEC of a predefined reference product having the same performance, we obtain the so-called 'Energy Efficiency Index' (EEI), a parameter commonly used for many household appliances.

Where possible, for reasons of transparency, the same efficiency-unit has been used in EIA as in the Regulation.

In many cases, the efficiency can easily be converted back to energy consumption. It suffices to divide the load by the energy efficiency (using the EFSBAU and EFSECO sheets). Where the 'efficiency' is expressed by a TEC value, the energy use in kWh per

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<sup>45</sup> Or 'luminous efficacy' for light sources, 'Seasonal space heating/cooling energy efficiency for the heating/cooling performance of heat pumps/air-conditioners, 'Seasonal Energy Performance Ratio, SEPR' for high temperature process chillers, etc.



test cycle and the aggregated kWh data per year are already indicated in the test standard. If for the calculation an EEI has been used, the extraction of the calculation energy consumption from the EEI is less straightforward, because several additional parameters have to be estimated.

The largest difficulties arise when the performance test standards are not conceived according to real-life operation, for reasons such as repeatability and accuracy of the performance test findings. This is for instance the case of household washing machines, where the wash temperatures actually set by the consumer are considerably lower than those used in the test standard. In such a case, where 'real-life operation' and the 'standard' base-case findings are provided in the relevant preparatory studies, for the purpose of ecodesign impact evaluation the 'real life' energy consumption has been favoured, because –even if less accurate—it affords a higher level of consistency with other sources (Eurostat, in-situ measurements, etc.).

#### 2.5.5. Non-Energy 'efficiency'

EIA does not have separate sheets specifying 'emission efficiencies'. Emissions are computed depending on the energy input or on the stock (see par. 2.6.5), multiplying by specific emission factors:

- Generic (product-independent) GWP-factors per energy type (in kgCO<sub>2</sub>eq/kWh, see par. 2.3.9, sheets General\_1 and EMISSRATES);
- Product-specific GWP-factors for refrigerants (in kgCO<sub>2</sub>eq/a/unit, sheet EMISSRATES). Refrigerant data are the same for the BAU and ECO scenario, no savings accounted;
- Product-specific Emission-factors for NO<sub>x</sub>, CO, OGC and PM. These factors are different for the BAU and ECO scenarios (in mg/kWh or g/GJ, sheet EMISSRATES).

EIA does not have separate sheets specifying 'consumable efficiencies'. All data regarding consumption and costs of paper, toner, water, detergents, vacuum cleaner bags, have been collected on sheet RESOURCES in Annex A.

#### 2.5.6. Product prices (price-efficiency anchor points)

The product price in EIA comprises the total acquisition costs per unit, including the installation costs, the price of auxiliary materials (if any), end-of-life costs (if any) and VAT (for the residential sector). In general, the preparatory studies have retrieved the base-case (BC) product prices for various EU countries (Task 2 of the study) and subsequently determined an average sales-weighted price for the reference year of the study, in consensus with the stakeholders.

In order to apply the accounting / calculation method to all products, the authors had to process prices referring to different reference years, and convert them to fixed 2015 prices – i.e. inflation adjusted (par. 2.3.3).

The product price, however, changes not only as a result of inflation, but also as a result of efficiency gains of most products, occurring both in the BAU and in the ECO scenario.

In line with the framework directive and as further detailed in the MEERp, the preparatory and IA studies strive to determine the mix of design options for a product at the least life cycle cost (LLCC) point and the point in the curve with the Best

Available Technology (BAT), for benchmarking. To this end, technical analysis and costing of design options were carried out. Further explanation on LLCC and BAT can be found in the MEErP.

This implies that, beside the BC price referred to above, information should be available on both the energy efficiency (in % or kWh/a) and the price (in euros) at the LLCC point and BAT point of the curve.

By (linear) interpolation between the three anchor points (price-efficiency pairs) – BC, LLCC (MID) and BAT - the price at any efficiency point can be calculated. The relevant information on the three anchor points is given in the PRICE sheet (Annex A). The outcome of the interpolation - expressed, in €/unit for the given efficiency figures (from EFNBAU and EFNECO sheets) -, is reported on the PRICEBAU and PRICEECO sheets.

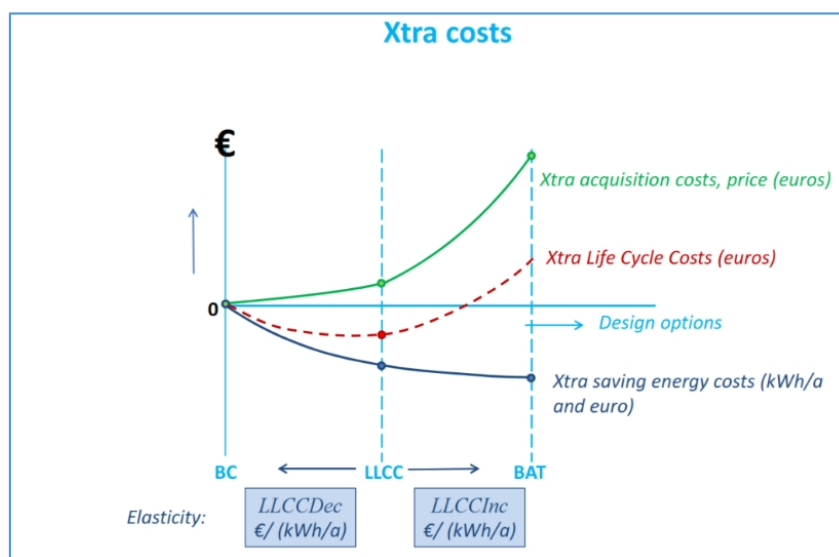


Figure 2. Illustration of anchor points in the calculation of the Least Life Cycle Costs.

Following a change in design, once the product with improved efficiency becomes the baseline and is produced and sold in large quantities, production costs tend to decrease due to the learning curve effect, and prices can be expected to follow. EIA therefore applies an annual price decrease, specified on sheet PRICE in the last column (in %/a). However, in order to avoid that the effects of this price decrease could be misinterpreted as user expense savings due to ECO-measures, the product price is never allowed to drop below the BC price.

For electronic products, there is no clear relation between product price and product efficiency. Recent, more efficient products even tend to cost less than older, less efficient products. It has therefore been preferred to work with a constant price for most of these products, i.e. not varying with the years.

For light sources, average product prices for a given year have been taken directly from the MELISA model, and consequently the three anchor points are not defined on sheet PRICE. The basic LED purchase cost vs. time curves are reported on sheets PRICEBAU and PRICEECO.

For tyres, no clear relation between price and rolling resistance coefficient could be derived from the preparatory and IA studies, mainly because the pricing also depends



on the wet grip coefficient, which is not being reported in EIA. It has therefore been preferred to directly input annual price values on sheets PRICEBAU and PRICEECO.

#### 2.5.7. Installation fraction of product price

Installation costs are a part of the product price (previous paragraph) and thus are assumed to vary with the years, and with the scenarios, in the same way as the product price. To enable separate computation of the business revenue for installers, sheet PRICE2 specifies which fraction of the product price are installation costs (*InstFrac*). This fraction includes VAT for installations in the residential sector.

Several preparatory and IA studies did not consider installation costs, especially when these costs were assumed not to vary with the scenarios. Consequently, installation costs in EIA may be incomplete.

#### 2.5.8. Share of users paying VAT and VAT fraction of product price

The share of consumers paying 20% VAT (see par. 2.3.4) is taken identical to the residential share of sheet CLASSES (see par. 2.4), and also reported on sheet PRICE2 (*VATshare*). The average consumer thus pays  $VATavg\% = 20\% * VATshare$ . This amount of taxes is already included in the product price, so the fraction of VAT in the price is  $VATfrac = VATavg\% / (1 + VATavg\%)$ , see sheet PRICE2.

#### 2.5.9. Business sector fractions of product price

For the estimate of the business revenue for the various stakeholders, a number of constants needs to be assessed to further subdivide the unit prices [P of sheets PRICEBAU/PRICEECO] or the total acquisition costs for EU-28 [ACQ of sheets ACQBAU/ACQECO]. These are given in the PRICE2 sheet <sup>46</sup>:

- Manufacturer fraction of  $P*(1-Instfrac)$  (*ManuFrac*);
- Wholesaler fraction of  $P*(1-Instfrac)$  (*WholeFrac*);
- Retailer fraction of  $P*(1-Instfrac)$  (*RetailFrac*);

Note: the sum of *VATfrac*, *ManuFrac*, *WholeFrac* and *RetailFrac* is 1.

#### 2.5.10. Maintenance costs per unit

Maintenance costs are specified on sheet PRICE2 in 2015 euros per year per unit (*AnnualUnitMaintCost*). They include VAT for the residential sector. Currently, unit maintenance costs in EIA are the same for all years, and the same for the BAU and ECO scenarios.

Several preparatory and IA studies did not consider maintenance costs, especially when these costs were assumed not to vary with the scenarios. Consequently, maintenance costs in EIA may be incomplete.

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<sup>46</sup> *ManuFrac*, *WholeFrac* and *RetailFrac* values differ in principle per product, but –because they tend to be very similar across a large range of products—the current modelling sometimes uses single default values for clusters of products.

## 2.6. Derived (output) variables

From the core input variables the following variables can be derived in the BAU & ECO scenarios:

### 2.6.1. Stock

The Stock is the number of units of a product base case that is installed in EU-28, and that is operating and consuming energy. The stock in a given year consists of products sold in that year and of products sold in previous years that have not yet reached their end-of-life. The stock is calculated as the sum of the annual Sales over a number of (previous) years that equals the product Life. Values are reported on sheets STOCKBAU (calculated from SALESBAU) and STOCKECO (calculated from SALESECO), usually in 000 units (but million units for light sources and tyres).

$$Stock_0 = \sum_{t=0}^{-Life} Sales_t \quad [1]$$

Regarding the use of lifetimes expressed in fractional years, and the use of lifetime distributions in IA studies, see remarks in paragraphs 2.3.2 and 2.5.2.

Values for STOCKECO are shown in Annex A only if they differ from STOCKBAU, i.e. for light sources and for electric motors.

### 2.6.2. EU-Load

The EU-Load represents the total EU user-demand for product output. It is calculated multiplying the average unit Load in a given year by the Stock in that year. This implies the assumption that the Load does not depend on when a product was bought (i.e. in the considered year or a previous year), but only on how the user actually uses the product in the considered year. Values are reported on sheets EULOADBAU (calculated from LOADBAU and STOCKBAU) and EULOADECO (calculated from LOADECO and STOCKECO), in varying measuring units, depending on the type of product output.

$$EULOAD_0 = LOAD_0 \times Stock_0 \quad [2]$$

Values for EULOADECO are shown in Annex A only if they differ from EULOADBAU, i.e. for space heating products, light sources, enterprise servers, and for electric motors.

The sheet EULOADVAR provides the difference in EULOAD between the BAU and ECO scenarios. This difference is reported in Annex A only if it is non-zero.

For all products except Space Heating (SH) appliances, EULOADVAR is simply computed as EULOADBAU – EULOADECO, but for SH-appliances the calculation is more complex, reflecting the reduction in space heating load due to improvements in heat recovery by Ventilation Units (VU). This is further explained below, see also par. 1.8 and 2.7.3, and sheet EULOADVAR in Annex A.

#### Ventilation Units (VU) - Space Heating (SH) interaction on sheet EULOADVAR:

VUs provide a controlled air ventilation so that compared to natural ventilation (e.g. opening windows) less warm air is lost from a heated space. In addition, many VUs

can recover heat from the outgoing air stream and use it to pre-warm the incoming air stream. Hence, the installation (and improvement) of VUs reduces the heat to be produced by space heating appliances.

The heat savings due to VUs in the BAU-scenario are already reflected in the load for space heating appliances. The additional heat savings due to improvements of VUs in the ECO-scenario (ECO heat saving – BAU heat saving) are treated as a reduction of the ECO-load for space heating appliances, so that the corresponding energy savings automatically become a part of the overall energy savings on space heating.

The procedure for deriving the ECO-load reduction for space heating appliances is as follows:

- The NRG<sub>BAU</sub>- and NRG<sub>ECO</sub>-values for VUs provide the total EU-28 energy savings on SH due to heat savings by VUs, assuming the 75% SH-efficiency specified in CR 1253/2014<sup>47</sup>.
- Multiplying these NRG values by 75%, the corresponding EU-28 total amounts of heat saved by VUs are obtained. These are reported near the bottom of sheet EULOADVAR, split in residential (res) and non-residential (nres) and separately for BAU and ECO. The reported difference, ECO-BAU, is the total EU-28 heat load reduction for SH in the ECO-scenario (Q<sub>res</sub>, Q<sub>nres</sub>).
- There are many different types of space heating appliances in EIA, so the overall heat load reduction has to be distributed in some way over the single SH base cases. This is done in the upper part of sheet EULOADVAR. As explained more in detail on that sheet (see Annex A), the load reduction distribution is made considering the share of each SH-appliance in the total EULOAD<sub>BAU</sub> of all SH-appliances (this is done separately for the residential and non-residential parts).
- LOADECO for each unit SH-appliance is now computed as  $LOAD_{BAU} - EULOADVAR/STOCK$ , and EULOADECO is then computed as normally, using  $LOADECO * STOCK$ .
- LOADECO for SH is used as normally in EIA to compute ELEC-, FUEL-, FNRG- and NRG-savings for each SH-appliance type. As these appliances have different efficiencies, which also vary with the years, the average SH-efficiency is typically different from the 75% used in CR 1253/2014. The average load-reduction-weighted SH-efficiency is reported near the bottom of sheet EULOADVAR and used to compute the 'heat savings' that are still being reported for VUs on the NRG sheets (informative only).

### 2.6.3. Average energy efficiency of the stock (EFS)

The stock in a given year consists of products sold in that year and of products sold in previous years that have not yet reached their end-of-life. As energy efficiency typically improves with the years, these products have different energy efficiencies, corresponding to the average sales efficiency (EFN) of the year in which they were bought. The average energy efficiency of the stock in a given year (EFS) is computed as a sales-weighted average over efficiencies (EFN) of the products in the stock. This average stock efficiency is used in EIA energy computations. Values are reported on sheets EFS<sub>BAU</sub> (calculated from SALES<sub>BAU</sub> and EFN<sub>BAU</sub>) and EFS<sub>ECO</sub> (calculated from SALES<sub>ECO</sub> and EFN<sub>ECO</sub>), in the same measuring unit as EFN:

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<sup>47</sup> COMMISSION REGULATION (EU) No 1253/2014 of 7 July 2014 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for ventilation units

$$EFS_0 = \sum_{t=0}^{-Life} Sales_t \times EFN_t \quad [3]$$

#### 2.6.4. EU Energy impacts (ELEC, FUEL, FNRG, NRG)

Starting from the 2018 edition, EIA first calculates electric energy consumption (ELEC) and non-electric energy consumption (FUEL). These two contributions are then summed to obtain the total final energy consumption (FNRG). The corresponding primary energy (NRG) is obtained considering the conversion factor CC (=1/PEF) for electricity (see par. 2.3.7).

The energy impacts are computed per product base case, as EU total for the stock of products in a given year, in TWh/a. The base case contributions are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

ELEC and FUEL are typically computed using one of the following equations, depending on how LOAD and EFN have been defined (see also sheet LoadNotes in Annex A):

$$ELEC_0 = Stock_0 \times LOAD_0 / EFS_0 \times ElecShare \quad [4a]$$

$$FUEL_0 = Stock_0 \times LOAD_0 / EFS_0 \times (1-ElecShare) \quad [5a]$$

$$ELEC_0 = Stock_0 \times LOAD_0 \times EFS_0 \times ElecShare \quad [4b]$$

$$FUEL_0 = Stock_0 \times LOAD_0 \times EFS_0 \times (1-ElecShare) \quad [5b]$$

For products where LOAD and EFS are expressed in terms of primary energy (mainly space- and water-heating), the ELEC is additionally multiplied by 40% (because that was the CC used when determining the efficiency values EFN).

In some cases there are two LOAD terms in the equation (e.g. one for power or lumens and another for annual hours), or additional constants are added to the equation (e.g. to convert daily values or values per cycle to annual values).

Equations [4a], [5a] are typically used when efficiency EFS (and EFN) is expressed as a percentage, or as another output/input ratio. The LOAD then represents the unit product output, and dividing by EFS provides the stock average unit energy input.

Equations [4b], [5b] are typically used when 'efficiency' EFS (and EFN) is already the unit input energy (e.g. TEC, Test Energy Consumption). In this case the LOAD is usually 1.

The values for ElecShare are provided in the third column of the ELEC and FUEL sheets.

Values are presented on sheets ELECBAU and FUELBAU (based on STOCKBAU, LOADBAU, EFSBAU) and ELECECO and FUELECO (based on STOCKECO, LOADECO, EFSECO). Sheets ELECSAVE and FUELSAVE give the energy savings due to the ECO-measures, computed as BAU – ECO, so positive values represent savings and negative values additional energy consumption.

In all cases, final energy (FNRG) and primary energy (NRG) are computed as:

$$FNRG_0 = ELEC_0 + FUEL_0 \quad [6]$$

$$NRG_0 = ELEC_0 / CC_0 + FUEL_0 \quad [7]$$

Values are presented on sheets FNRGBAU and NRGBAU (based on ELECBAU and FUELBAU) and FNRGECO and NRGECO (based on ELECECO and FUELECO). Sheets FNRGSAVE and NRGSAVE give the energy savings due to the ECO-measures, computed as BAU – ECO, so positive values represent savings and negative values additional energy consumption.

The second part of the ELEC, FUEL, FNRG and NRG sheets provides the breakdown of energy consumption per usage-sector (see par. 2.4). The breakdown is obtained multiplying the energy consumption of a base case product by the corresponding usage-sector share from sheet CLASSES and summing the contributions per functional group. Usage-sector subdivisions are presented in three ways:

- Per sector (industry, tertiary, residential, 'other'): total energy consumption per functional group (in TWh/a),
- Per functional group: total energy consumption per sector (in TWh/a),
- Per functional group: energy consumption shares per sector (in %)

Energy consumption for the Transport sector (tyres) and the Energy sector (distribution transformers) are considered separately and not included in the data for the other sectors. This is in line with the approach on the Eurostat Energy Balance sheets. On the ECO-sheets, a comparison is made between EIA data and Eurostat data.

#### 2.6.5. EU Emission impacts (EMISS)

The greenhouse gas (GHG) emission impacts are computed per product base case, as EU total for the stock of products in a given year, in MtCO<sub>2</sub>eq/a. The base case contributions are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

GHG emissions are typically computed using (a variant of) the following equation:

$$EMISS_0 = ELEC_0 \times GWPelec + FUEL_0 \times GWPfuel + STOCK_0 \times GWPrfg \quad [8]$$

GWPelec is the global warming potential for electricity, see par. 2.3.9, in kg/kWh.

GWPfuel is replaced in the equation by the GWP for the type of fuel being used for the base case product. Values in kg/kWh for various fuel types are reported on sheet EMISSRATES. For products that do not consume fuel, the term is omitted.

GWPrfg is replaced in the equation by the GWP for the type of refrigerant being used in the base case product. Values in kgCO<sub>2</sub>eq/a/unit are reported on sheet EMISSRATES. For products that do not use refrigerants, the term is omitted.

Values are presented on sheets EMISSBAU (based on ELECBAU, FUELBAU, STOCKBAU) and EMISSECO (based on ELECECO, FUELECO, STOCKECO). Sheet EMISSSAVE gives the avoided emissions due to the ECO-measures, computed as BAU – ECO, so positive values represent emission reductions and negative values additional emissions.

EIA emissions are compared with values from the European Environment Agency.

The second part of the EMISS sheets provides the breakdown of GHG-emissions per usage-sector (see par. 2.4). The breakdown is obtained multiplying the emissions of a base case product by the corresponding usage-sector share from sheet CLASSES and summing the contributions per functional group. The presentation of data is similar to the one on the energy sheets, see previous paragraph.

The third part of the EMISS sheets regards the emissions of NO<sub>x</sub>, CO, OGC and PM. These are reported in kt/a only for products where this is relevant and where data were available in the preparatory or IA studies (water- and space-heating products). No sector subdivision is provided for these emissions.

The non-GHG emissions are calculated as:

$$EMISS_0 = FUEL_0 \times EMISSrate \times UnitConversionFactor \quad [9]$$

Where EMISSrate is the applicable stock average emission rate specified for the type of emission on sheet EMISSRATES for the BAU or ECO scenario. NO<sub>x</sub> emission rate is specified in mg/kWh NCV; other rates are in g/GJ. The UnitConversionFactor is used to obtain the correct outcome in kt/a.

#### 2.6.6. Other impacts (RESOURCES)

The sheet RESOURCES regards consumption and costs of consumables: paper and toner for imaging equipment, water and detergents for washing machines and dishwashers, and bags for vacuum cleaners.

For consumables, unit data and EU total stock data, for BAU scenario and ECO scenario, are presented on a single sheet. Costs are computed multiplying the consumption by the corresponding rate from sheet General\_2 (copy on sheet RATES).

#### 2.6.7. Product prices (unit prices per year and per scenario)

See paragraph 2.5.6:

For a given product, year and scenario, EIA looks up the efficiency of new sold products in that year on sheet EFNBAU or EFNECO and interpolates the price between the three price anchor points defined on sheet PRICE (price-efficiency pairs for BC, MID and BAT). Considering the learning curve effect, the resulting price is decreased by the *AnnualPriceDec* (in %/a) of sheet PRICE, starting from the reference year for the prices, but the resulting price is not allowed to be lower than the BC-price. The resulting unit prices are reported on sheets PRICEBAU and PRICECO in Annex A.

In situations where the efficiency improvement is relatively low, or where the price-efficiency curve is relatively flat, this procedure leads to a price that is constant over the years (identical to the BC price), or to temporary price increases in a limited number of years following the introduction of ECO-measures. Only where the efficiency improvement is high, or where the price-efficiency curve is steep, the final unit price will show an increase over longer time <sup>48</sup>.

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<sup>48</sup> It is felt that this procedure requires further study in future: in particular in the case of a review of a regulation with new, more severe energy efficiency measures, the current concept presents problems.

### 2.6.8. EU Acquisition costs

Acquisition costs include purchase costs, installation costs, and end-of-life costs. They include VAT for the residential sector.

Acquisition costs are computed per product base case, as EU total for the sales of products in a given year, in bn euros/a. The base case contributions are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

Acquisition costs are computed using the following equation:

$$ACQ_0 = SALES_0 \times UnitPrice_0 \quad [10]$$

Values are presented on sheets ACQBAU (based on SALESBAU and PRICEBAU) and ACQECO (based on SALESECO and PRICEECO). Sheet ACQADD gives the additional acquisition costs due to the ECO-measures, computed as ECO – BAU, so positive values represent additional costs and negative values lower costs.

### 2.6.9. EU Energy costs

Energy costs are computed per product base case, as EU total for the stock of products in a given year, in bn euros/a. The base case contributions are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

Energy costs are computed using (a variant of) the following equation:

$$NRGCOST_0 = ELEC_0 \times \sum_{sectors} SectorShare_i \times SectorElecRate_i \quad [11]$$

$$+ FUEL_0 \times \sum_{sectors} SectorShare_i \times SectorFuelRate_i$$

The sector shares are the usage-sector shares from sheet CLASSES (par. 2.4).

The sector rates are the usage-sector real rates (2015 euros, inflation corrected), for electricity or fuel, from sheets General\_1 and RATES (par. 2.3.6). For fuel, the rate corresponding to the type of fuel consumed by the base case product is used. Where more than one type of fuel is consumed (e.g. diesel and petrol for tyres), each type is considered separately and multiplied by the share of each type in the overall fuel consumption.

Values are presented on sheets NRG COSTBAU (based on ELECBAU and FUELBAU) and NRG COSTECO (based on ELECECO and FUELECO). Sheet NRG COSTSAVE gives the energy cost savings due to the ECO-measures, computed as BAU – ECO, so positive values represent cost savings and negative values additional costs.

### 2.6.10. EU Maintenance costs

Maintenance costs are computed per product base case, as EU total for the stock of products in a given year, in bn euros/a. The base case contributions are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

Maintenance costs are computed using the following equation:



$$MAINT_0 = STOCK_0 \times AnnualUnitMaintCost \quad [12]$$

AnnualUnitMaintCost is the annual maintenance cost per product (in €/a/unit), including VAT for the residential sector. It is identical for BAU and ECO and taken from sheet PRICE2 (par. 2.5.10).

Values are presented on sheets MAINTBAU (based on STOCKBAU) and MAINTECO (based on STOCKECO).

Maintenance costs are included in EIA only for products where preparatory study and/or Impact Assessment study provided the data. Maintenance costs are usually assumed not to change due to the ECO-measures taken, and therefore they are not always being reported in the studies. Maintenance data in EIA therefore tend to be incomplete.

#### 2.6.11. EU Running costs

Running costs are the sum of energy costs, maintenance costs (if any), and costs for consumables (if any). They are computed per product base case, as EU total for the stock of products in a given year, in bn euros/a. The base case contributions are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

Running costs are computed using the following equation:

$$RUN_0 = NRG\text{COST}_0 + MAINT_0 + Resource\text{Cost}_0 \quad [13]$$

Values are presented on sheets RUNBAU (based on NRG\text{COST}BAU, MAINTBAU and BAU values from sheet RESOURCES) and RUNECO (based on NRG\text{COST}ECO, MAINTECO and ECO values from sheet RESOURCES).

#### 2.6.12. EU Monetary impact for the consumer (EXPENSE)

Total user expenses are the sum of acquisition costs and running costs. They are computed per product base case, as EU total for the sales and stock of products in a given year, in bn euros/a. The base case contributions are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

Total user expenses are computed using the following equation:

$$EXPENSE_0 = ACQ_0 + RUN_0 \quad [14]$$

Values are presented on sheets EXPENSBAU (based on ACQBAU and RUNBAU) and EXPENSECO (based on ACQECO and RUNECO). Sheet EXPENSSAVE gives the savings due to the ECO-measures, computed as BAU – ECO, so positive values represent expense savings and negative values additional expenses.

#### 2.6.13. EU Monetary business impacts (revenues)

Business revenues are the fractions of the acquisition costs that end up as revenues in the industry-, wholesale-, retail-, and installation-sectors. In addition, the revenues for the maintenance-sector are the maintenance costs for the consumers, but subtracting VAT. Revenues are computed per product base case, as EU total for the sales or stock of products in a given year, in m euros/a. The base case contributions

are then summed to product group totals, functional group totals, and general totals over all products, taking into account double counting issues where appropriate, see par. 2.7.

Business revenues are computed from the business fractions of product price (see par. 2.5.9) using the following equations (all excluding VAT):

$$REV\_Industry_0 = ACQ_0 \times (1 - InstFrac) \times ManuFrac \quad [15]$$

$$REV\_Wholesale_0 = ACQ_0 \times (1 - InstFrac) \times WholeFrac \quad [16]$$

$$REV\_Retail_0 = ACQ_0 \times (1 - Instfrac) \times Retailfrac \quad [17]$$

$$REV\_Inst_0 = ACQ_0 \times Instfrac / (1 + VATavg\%) \quad [18]$$

$$REV\_Maint_0 = MAINT_0 / (1 + VATavg\%) \quad [19]$$

Values for the BAU scenario are based on ACQBAU and MAINTBAU; for the ECO scenario on ACQECO and MAINTECO. Revenues are reported on the REV\_xxx sheets. A summary is provided in Annex F.

#### 2.6.14. Socio-economic (employment) parameters

The direct employment impact of the measures - i.e. the increase of employees in the value-adding chain - is derived from the business revenues in the various sectors (in m euros), dividing by the 'wages' constants (in m euros / employee) defined in par. 2.3.10. Equations are given below:

$$JOB\_Industry_0 = REV\_Industry_0 / ManuWages \text{ (incl. OEM and Service jobs)} \quad [20]$$

$$JOB\_Whole_0 = REV\_Whole_0 / WholeWages \quad [21]$$

$$JOB\_Retail_0 = REV\_Retail_0 / RetailWages \quad [22]$$

$$JOB\_Install_0 = REV\_Install_0 / InstallWages \quad [23]$$

$$JOB\_Maint_0 = REV\_Maint_0 / MaintWages \quad [24]$$

The calculation of the jobs from the revenues is performed in EIA on the sheet 'KEYFACTS', see Annex E. The calculation is performed per product group, not for each product base case separately. A summary of jobs per sector or per functional group can be found in Annex G.

Currently, EIA does not distinguish between jobs inside and outside the EU.

## 2.7. Aggregation

The data aggregation is done at four levels:

1. Base cases: average products –possibly subdivided—covered by a measure (data in normal font in the tables and spread sheets);
2. Product groups: aggregate of the base cases (data in **bold** font);

3. Functional groups: aggregates of one or more product groups having the same basic functionality. These are: water heating, space heating, space cooling, ventilation, lighting, electronics, food preservation, cooking, cleaning, industry components, energy sector, transport sector. (**COLOURED CAPITAL** font)
4. EU totals: aggregate of the functional groups (**BLACK CAPITAL** font).

In principle, each level is the straight sum of the figures at the previous level. Yet, there are some exceptions, as explained hereafter.

#### 2.7.1. Double counting and transparency

There are several product groups, for which whole or a part of the energy consumption / savings are implicitly included in other parts of the accounting. Ignoring this fact leads to double counting and, consequently, unrealistic energy savings and energy figures, inconsistent with Eurostat total figures.

When tackling this problem, the first priority is transparency. Whatever the accounting solution applied, this means that it must be reversible. In other words, the original data need to be provided and it must be possible to adopt another partitioning or accounting method –for whatever reason-. Hence, the table always presents the original data from the underlying studies, be it at the level of base cases or –only if there is no split-up in base cases—at the level of product group totals.

#### 2.7.2. Double counting of components and products

The most frequent case of (partial) double counting occurs when a product is regulated both at the level of components and at the level of the product as a whole. As an example, a part of the industrial motors is included in the industrial fans and a part of the industrial fans is included in non-residential mechanical ventilation units (e.g. centrifugal fans), air conditioning/heat pump/refrigeration products (e.g. axial convection fans), very large boilers (typically centrifugal combustion fans), etc. In such an instance, the regulation takes place possibly at 3 levels and, by and large, the energy figures in the 3 underlying studies relate to these 3 levels separately. Summing the energy data from these three studies could result in a considerable overestimation of the energy consumption and savings. A double counting correction factor (*db*) has therefore been introduced to avoid this.

The factor *db* is the share of energy of a product base-case that is estimated to be double counted, i.e. the share of energy that is taken into account in EIA totals (double-counted removed) is  $(1-db)$ . A factor *db* applies to:

- circulators ( $db=1$ , auxiliary energy of boilers),
- heat savings by ventilation units ( $db=1$ , details below),
- on-mode of external power supplies ( $db=0-1$ , value depending on base case, partial double counting with e.g. notebook computers, tablets, game consoles, set-top boxes, gateways and NAS),
- condensing units ( $db=0.6$ , double counting with commercial and professional refrigeration products),
- industrial fans ( $db=0.5$ , double counting with e.g. ventilation units, air conditioning, refrigeration products, some space heating products)
- electric motors ( $db=0.45$ ),
- distribution transformers ( $db=1$ , details below).

The factor *db* is listed in the first column of the relevant spreadsheets/tables. For motors and condensing units the value of the *db* is based on a first dedicated study, even if more work remains to be done; for other products the *db* correction factor is a first rough estimate by the author, since there is no comprehensive underlying information on this issue.

For the sake of transparency (see above), the *db* correction is not applied at base case level, but at product-group totals level or –as mentioned above—at the level of functional group totals. The EU total being the sum of the functional groups, a *db* correction applied to a product group or to a functional group total leads to only 50% (*db*=0.5) or 0% (*db*=1) of the original energy data to be taken into account in the EU total.

As already stated, the introduction of the double counting correction is new. In product level studies it has so far been treated only in a qualitative way. The correction is very relevant for policy purposes, when the implication of the overall measures are considered.

### 2.7.3. Complex double counting issues

The *db* correction (*db*=1) also applies to the space heating energy impact (saving) of mechanical ventilation units (VU), and the energy consumption of distribution transformers (TRAFO).

In this case, it is not so much a question of being a physical component of another regulated product group. The double counting issue is more complex.

#### Ventilation units

Ventilation Units (VUs) consume electricity in order to drive fans, etc., which in a regular aggregation is taken into account without *db* correction. However, VUs also reduce heat losses in buildings compared to the reference case (natural ventilation: opening windows and infiltration). They allow for a more effective (controlled) and efficient air exchange and for heat recovery. Since ventilation heat losses account for 30-50% of the net heat load of a building, the load decreases and consequently the space heating products (so-called 'Energy related Products' of ventilation units), use less energy.

In EIA 2017, the method used to consider the interaction between VUs and space heating appliances has changed, see the explanation in par. 1.8 and 2.6.2. The difference in heat savings by VUs between the ECO- and BAU-scenario is now implemented as a heat load reduction in the ECO-scenario for space heating appliances. This means that energy savings on space heating due to VUs are now directly accounted as a part of the overall energy savings on space heating. The energy savings on space heating due to VUs continue to be reported also under VUs (because they are due to the ecodesign regulation on VUs), but as information only. The latter energy savings are not counted when determining EIA totals, i.e. *db*=1 for these energy savings.

#### Distribution transformers

Distribution transformers are part of the 'electricity generation & distribution efficiency' (CC, default 40%, see par. 2.3.7), which is applied to all electricity consumed. Adding their consumption in the EU final demand totals would lead to double counting. The accounting sets the BAU scenario, at the level of functional group

(Energy sector), to zero (0) and only looks at the marginal improvements (the savings), expressed as negative numbers, in the ECO scenario <sup>49</sup>.

This approach also solves the problem when –instead of the 40% default value—a more realistic time series for power generation & distribution efficiency is used.

For reasons similar to the above, and for compatibility with the approach in Eurostat Energy Balance sheets, the energy consumed by distribution transformers is not counted as final energy (FNRG sheets). In addition, EU Electric energy totals (ELECECO and ELECSAVE sheets) are reported both with and without the contribution of distribution transformers.

For all usage-sector subdivisions, the Energy sector is treated separately.

#### 2.7.4. Multifunctional product groups

There are two product groups with possibly –if they are reversible- a double function. This occurs with central air conditioners (AC, part of Lot 6/21) and room air conditioners (RAC, Lot 10). Each function is accounted in a separate aggregated functional group, i.e. space heating and space cooling.

The costs of these products have to be partitioned between those two functions. For the running costs this does not pose any particular problems because the cooling and the heating function each has its own energy consumption and also maintenance costs can be considered proportional to the intensity of use. The multifunctional product can thus be treated as two separate products, a cooling product and a heating product, in the accounting.

For the acquisition costs there is a problem, because it still is one single product with a single price and installation costs. In that case it would be misleading to partition those costs only to one function (e.g. cooling), because it would make the alternative function extremely cheap (zero costs). A partitioning according to the kWh cooling and heating performance would also not be completely fair, because it means that the climate determines the price and –in the average EU climate with a 7 month heating season and a 3-5 month cooling season this results in a dominance of the heating function. It would also not reflect the consideration of the buyer/user of the product, who definitely –and sometimes mainly—is interested in the cooling functionality.

In short, a simple partitioning according to basic functions (cooling and/or heating) seems most appropriate and was applied. The formula for the price split is: sales of product with (also) cooling functionality divided by the sum of sales of products with (also) cooling and sales of products with (also) heating<sup>50</sup>. This split is done in the ACQBAU and ACQECO sheets.

The price-elasticity of the efficiency improvement (in €/‰ or €/kWh) for both functions may be different, i.e. it may be more costly to improve heating efficiency than the

<sup>49</sup> In the December 2015 issue of EIA the use of BAU=0 as reference was applied to all parameters except acquisition costs (ACQ), running costs (RUN) and total consumer expenses (EXPENS). This was judged confusing because running costs and total expenses included the costs of the entire energy consumption while the energy sheets (NRG, ELEC) counted only the energy savings with respect to BAU. In addition it can be argued that the acquisition costs of distribution transformers are already included in the electricity rates (the electricity consumer also pays for the distribution), so that considering them again would be a double counting. Therefore, in EIA II, BAU=0 as a reference is now applied to all parameters, including ACQ, RUN and EXPENS, and the ECO scenario only considers the improvement over BAU. This changed only the BAU and ECO values but not the savings (BAU-ECO). Revenues and jobs for the Energy sector are determined in the same way as for all other products.

<sup>50</sup> Equation e.g.  $PRICE\_COOL = PRICE * COOL\_SALES / (COOL\_SALES + HEAT\_SALES)$  and  $PRICE\_HEAT = PRICE * HEAT\_SALES / (COOL\_SALES + HEAT\_SALES)$

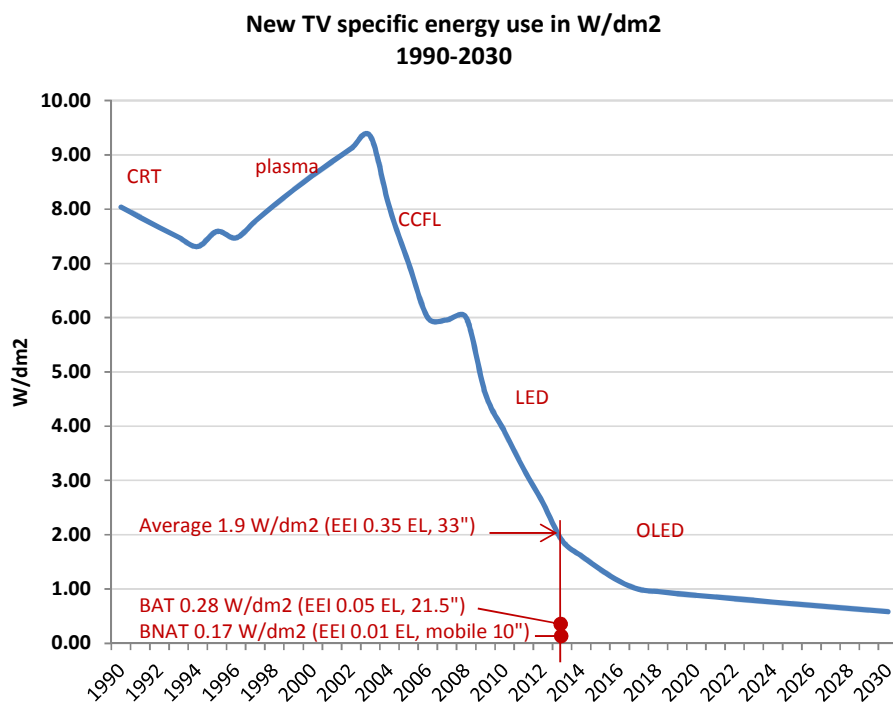
cooling efficiency. So there are in principle, in the PRICEBAU and PRICEECO sheets, two different datasets: one for cooling and one for heating. In a second instance, depending on the measures implemented, it is then determined in the ACQBAU and ACQECO sheets which function leads to the highest price of the single product. In Excel formula the MAX formula is used, e.g. MAX(PRICECOOL, PRICEHEAT), to determine which one is dominant.

## 2.8. Increase in material wealth and rebound effect

As mentioned in par. 2.2, the BAU scenario is not a 'freeze' scenario; it is derived from extrapolating historical trends, at the time of the preparatory study analysis, including possible ongoing market trends in efficiency improvement and emission abatement.

Both the BAU and ECO scenarios are –in most underlying studies- dynamic in the assumptions on market demand and increase in performance. Population is growing and the trend is towards more and bigger appliances, lamps, computers, televisions, etc. in households. For a small part this is a 'rebound' effect, i.e. the effect of lower energy consumption (costs) induce more abundant use of the product's services. But in general it is more a matter of steadily increasing material wealth.

This can be illustrated by the case of televisions, where there has been a –still ongoing-- tremendous growth in screen size and the number of televisions per household. Few people would claim that this is a result of a 'rebound' effect that is linked to the energy consumption of the TVs, even though –since the CRT and plasma TVs were replaced by the LCD TVs—there has been a large increase in television energy efficiency (expressed in W/dm<sup>2</sup> screen area, see Figure 3). It is simply a matter of increased wealth, i.e. satisfying more wants and needs. And both the BAU and ECO scenario assume that these wants and needs continue at roughly the same pace.



The average viewable surface area grew from 10 dm<sup>2</sup> (19" diagonal) in 1990 to 28 dm<sup>2</sup> (32") in 2010 and is projected to rise to an average 68 dm<sup>2</sup> (50") in 2030. In parallel, the number of televisions per households grew from 1.3 in 1990 to 1.7 in 2010 and will be close to 3 TVs per household in 2030. The average viewing hours per TV, or rather per 'electronic display'<sup>51</sup>, are assumed the same.

The result is an increase in TV-performance, i.e. viewable surface area per household, of a factor 16 between 1990 and 2030. In an imaginary 'freeze' scenario, with efficiency at 1990 level, this would lead to an increase in electricity consumption with a factor 20. Instead, due to an efficiency improvement with a factor 20 –with technologies largely known today-- the ECO scenario shows an absolute electricity consumption in 2030 that is even lower than in 1990. The 2030 BAU scenario is higher than in 1990 (factor 2) but still nowhere near the factor 16 of a 'freeze' scenario.

The text box on the next page gives the numbers at EU level, i.e. also taking into account population growth.

The TVs are an extreme case, but many products in the 'electronics' group show a similar pattern. For light sources there has been, and is projected to be, a steady increase in the number per household (and non-residential applications). Water heaters and combi-boilers show a continuous trend for more hot water (mainly due to more showers). Most household appliances, like fridges, freezers, laundry appliances, etc., showed an increase in capacity (larger refrigerated volume, larger drum of washing machine, etc.) often considerably beyond population growth. The numbers are given in the LOAD and EULOAD sheets of Annex A. The summary per product group in Annex E gives a short overview of these trends.

The only product groups where the load per product actually diminishes –following the ongoing historical trend from the last decades—is 'space heating' and 'space cooling'. In general, both the BAU and ECO scenarios (so there is no effect on the differences between the scenarios, see par. 2.2) assume a fixed heating/cooling load-reduction of 1% per year, as a result of the building related measures.

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<sup>51</sup> There has been a convergence of functionality between TVs and (non-integrated) computer monitors. Therefore the latest Commission proposals combine them as 'electronic displays'.



## CASE: Televisions

The accumulated EU viewable surface area grew from 21 km<sup>2</sup> in 1990 to 102 km<sup>2</sup> in 2010. This is a factor 5 growth, while the energy consumption grew only by a factor 2.5. This is a 50% efficiency improvement, but because the absolute energy use went up it passed largely unnoticed.

In 2030 the total viewable surface area is projected to be 415 km<sup>2</sup>, a surface comparable to that of the city of Paris. With the latest miniaturisation in electronics and ever more efficient LED backlighting the energy efficiency improvement will be stronger and is projected to result –in the BAU scenario—in an electricity consumption that is only slightly higher than in 2010 (going from 75 to 90 TWh/a). In the ECO scenario it is projected that in 2030, with technologies largely known today, a further 58% reduction versus BAU is possible and the electricity consumption can be contained at 38 TWh according to the latest impact assessment. Compared to 1990 this is an efficiency improvement, in W per dm<sup>2</sup> of viewable area, of around a factor 16.

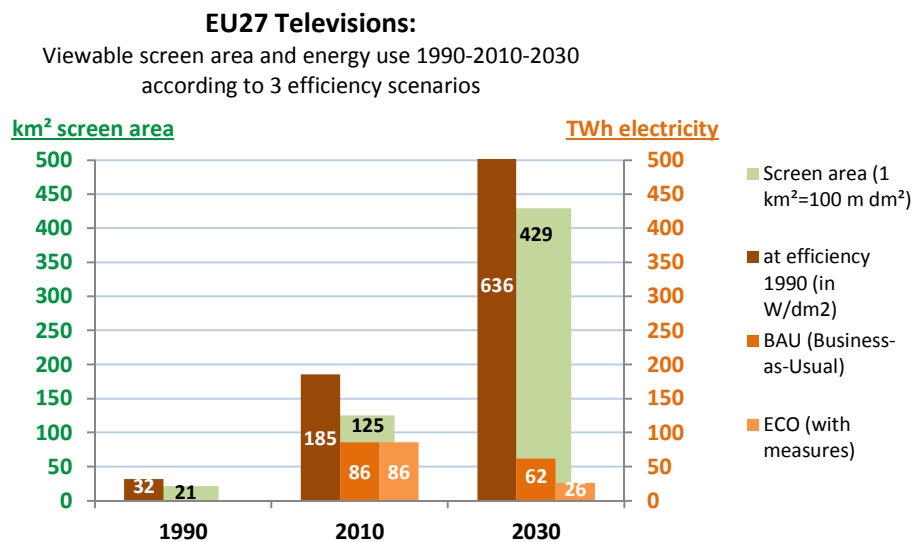


Figure 4. EU-28 television 1990-2030. Evolution of the load as well as the energy consumption according to 'freeze', BAU and ECO scenarios<sup>52</sup>

## 2.9. Compatibility with Eurostat conventions

The results of the calculation method are used for EU policy purposes. This means that they should be comparable to Eurostat data for the whole of Europe and thus preferably be compatible with the main Eurostat conventions in the field of energy statistics.

The efficiency units are thus in line with the conventions used in the Eurostat energy balance, i.e.

- a) The efficiency of fossil fuel fired space heating devices is expressed in Net Calorific Value (NCV) of the fuel, which means that the latent heat of the

<sup>52</sup> Graphs for BAU and ECO scenario are based on EIA 2017 data and may slightly differ from EIA 2018 data reported in the Annexes.

combustion is not taken into account and therefore can lead to efficiency numbers higher than 100% for gaseous and liquid fossil fuels.

- b) In line with the convention under point a) there is no credit for the renewable character of pellets- or biomass driven space heating devices.
- c) As a result of convention under point b), the efficiency of micro-CHP (cogeneration) is the ratio between the sum of kWh heat and kWh electricity output and Net Calorific Value of the fuel input, i.e. there is no credit for the fact that the electricity output is displacing electricity output, generated with a CC (default 40%) efficiency, from the grid.

The above Eurostat conventions are in line with other national statistics, but they are not in line with the metrics used in most current and upcoming Ecodesign and Energy Labelling (delegated) regulations. There –for various technical and political reasons-- indeed bonuses and penalties may be taken into account and for engineering purposes it is considered more appropriate to use the Gross Calorific Value (GCV) of fuels.

In order to check compatibility with Eurostat data, the contractor performed a cursory analysis, to verify whether there could be a match with EIA II data also in the results. This was done for the sector with the most complete coverage, i.e. the **residential** electricity consumption.

On average, over the period 1990-2017 the residential electricity consumption estimated in EIA is approximately 10% higher than the Eurostat data. The deviation is somewhat larger in the period 1990-2002 and lower in the period 2003-2017. In 2017 there is a perfect match. Figure 5 shows the comparison. This is a surprisingly good match, considering that the Ecodesign impact accounting was always performed at individual product level, without any attempt to match the outcome with the aggregate Eurostat energy balance data. There are several possible reasons for the (small) difference between EIA and Eurostat:

- The average useful lifetime of products is difficult to determine and could be slightly lower than estimated in the various studies. For most products EIA assumes a constant lifetime (same value for all years); in addition, EIA does not apply a lifetime distribution (some products are substituted earlier, others later) but one average value. These are (necessary) approximations. Note that a 10% lower average lifetime would imply a 10% lower stock and hence a 10% lower energy consumption.
- The various sources for sales data (e.g. Eurostat Prodcom, stakeholder information, market research reports) often show differences, and a 10% error in the estimates made in the studies would not be surprising. In addition, not all studies reported the sales back to 1990, so that EIA sales in earlier years are often a backwards extrapolation of trends in later periods. This could contribute to the larger deviation between EIA and Eurostat in the period 1990-2002. Also in this case, 10% lower sales would imply 10% lower energy consumption.
- For several products, the efficiencies according to standard measurement procedures are not identical to the real-time efficiencies during actual use. Related to this, there is a difference between the nominal power of products and the average power at which they actually operate. In addition, the actual operating time of the products (at the various load levels) typically shows a wide spread and it is not an easy task to determine an average value for the annual operating hours. Although most studies tried to take these aspects into account, this is a possible cause for differences between EIA and Eurostat: efficiencies, load factors and annual operating hours have a direct effect on the energy consumption.

- Especially for water- and space-heating appliances, the electricity in EIA is derived from primary energy values using a constant 40% efficiency for electricity generation and distribution for all years. In earlier years, the real efficiency was lower (maybe around 33% in 1990), which could be one of the factors explaining the larger difference between EIA and Eurostat in earlier years.
- The EIA residential electricity data depend on the assumed residential energy shares (see sheet CLASSES in Annex A). These shares are preliminary estimates and for several product groups data on the sector subdivision was lacking. In addition the same share is assumed for all years, which is not necessarily true: e.g. in recent years legacy incandescent lamps remained only in the residential sector, but in 1990 they were still widespread also in the other sectors.
- Although very useful as a reference and widely used, Eurostat data also have an error margin <sup>53</sup>. Instead of judging that EIA residential electricity data are slightly on the high side, it is also possible that Eurostat data are slightly on the low side, or a mix of the two.
- The EIA assumes perfect market surveillance for the ECO-scenario. Reality is different, and consequently the real energy consumption (assumed to be represented by Eurostat data) will tend to be higher than the EIA ECO-data.

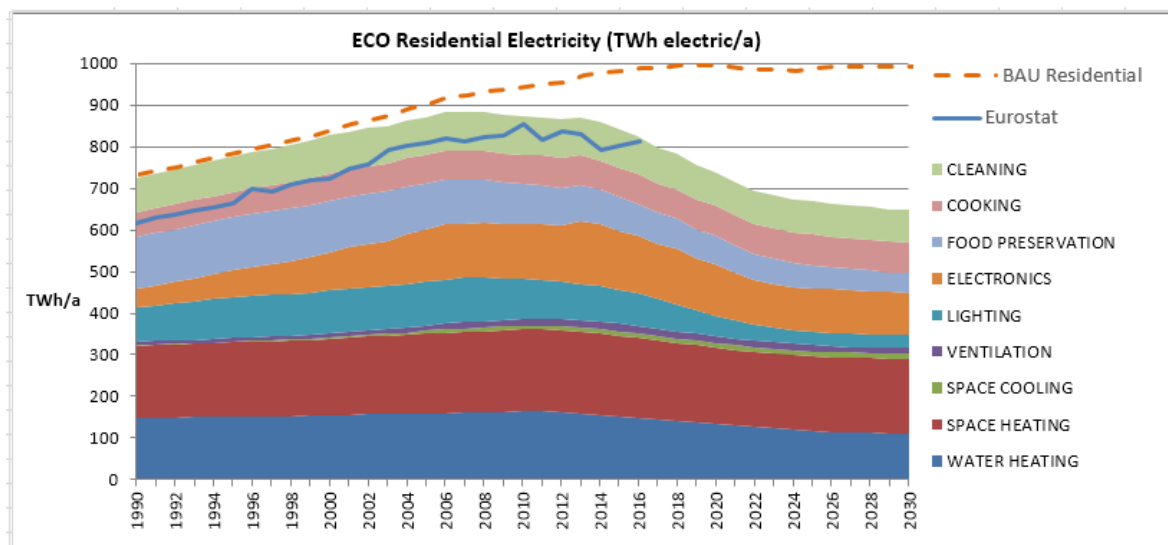


Figure 5. Comparison of data from eco design impact accounting (ECO: coloured graph; BAU total: dotted orange line) versus Eurostat energy balance outcomes (dark blue line), for the EU residential electricity consumption in TWh/a. (VHK, December 2018).

The exercise shows that there is a large potential, also with regards to other policy instruments such as POTENCIA and PRIMES, for future work to realize consistent 'bottom-up' and 'top-down' analyses between the data-sets. In EIA 2018 the distribution of energy consumption over the usage-sectors has been modified to be easier comparable with Eurostat data, and additional data from Eurostat have been inserted in EIA. Intention is to perform additional work on the comparison in future.

<sup>53</sup> Eurostat data is based on input of national statistics offices in the 28 EU Member States. Only a few (UK, NL) base their assessments on direct utility data, i.e. billing of private residential customers, but many of them use their own or third-party (e.g. utility association) surveys or consumer panels to subdivide aggregate utility data.

## 2.10. Limitations

Uninterruptable Power Supplies (UPS) and External Power Supplies (EPS) pass on a large part of their energy input to primary loads connected to their output. Some of these primary loads are also addressed in EIA themselves. Therefore, for UPS and EPS, EIA considers only the energy losses of these devices, not the entire energy input.

For Enterprise Servers and Data Storage products (ES & DS), EIA considers only the effects of ECO-measures on the equipment itself, not the potential indirect savings on the space cooling of data centres (savings on infrastructure). This avoids double counting issues with space cooling products in EIA. The indirect, infrastructural effects of the ES & DS regulation could be modelled in EIA, at a later stage, available data permitting, as a load reduction for space cooling products, similar to what has been done for the indirect effects of ventilation units on the space heating load.

For tyres, EIA takes into account only the effects of changes in rolling resistance of the tyres. In particular, the reported fuel consumption and emissions are not the total for the vehicles, but only the parts related to the rolling resistance (this is different from the approach in the impact assessment for tyres).

EIA does not take into account changes in societal costs due to the ECO-measures. E.g. the effects of changes in wet grip for tyres, related changes in vehicle safety, and associated changes in number of victims/injuries due to road incidents, and related changes in health costs, are not reported. Health-related aspects of emission reductions are also not taken into account.

### 3. Ecodesign Impact Accounting, Status 1.10.2018

#### 3.1. Product groups and updates

The accounting method from the previous chapter is applied to the data from preparatory and/or impact assessment studies that were available on the 1<sup>st</sup> of October 2018. This includes studies for product groups where measures have been taken (published in the OJ or at least a positive vote by the Ecodesign Regulatory Committee on a final text).

It also includes products for which enough data is available to calculate at least a BAU ('Business-as-Usual') scenario. The ECO-scenario, i.e. the one that gives the closest matches to the final regulation(s), will then be provisional, using either a scenario that matches a draft Working Document of the Commission, a preferred scenario in the preparatory or impact assessment study or even –if none of the above is available– just a repetition of the BAU scenario.

Table 2 gives an overview of the main changes with energy impact, implemented in the accounting between the previous EIA issue (December 2017) and the current issue (December 2018). All changes are due to new information from review studies and recent impact assessments accompanying new EC proposals for measures<sup>54</sup>. Compared to EIA 2017, the total primary energy savings in 2030 decreased by 76 TWh, from 3064 to 2988 TWh, 2.5% less. This is mainly due to changes on tyres and enterprise servers.

*Table 2 List of main energy impact changes in EIA 2018 compared to EIA 2017*

Product Group added or updated in EIA 2018	Change in BAU Primary Energy Consumption in TWh/a in year 2010	Change in Primary Energy Savings in TWh/a in year 2020	Change in Primary Energy Savings in TWh/a in year 2030	Main reason for change in savings
Light Sources	EIA 2017: 1059 EIA 2018: 1059 <b>Variation: 0</b>	2017 saving: 247 2018 saving: 237 <b>Variation: -10</b>	2017 saving: 298 2018 saving: 283 <b>Variation: -15</b>	E.g. postponement of LFL T8 phase-out from 2020 to 2021 in EC proposals
Electronic Displays	EIA 2017: 255 EIA 2018: 235 <b>Variation: -20</b>	2017 saving: 68 2018 saving: 60 <b>Variation: -8</b>	2017 saving: 125 2018 saving: 151 <b>Variation: +26</b>	Review study and EC proposal for new measures.
Enterprise Servers and Data Storage products	EIA 2017: 62 EIA 2018: 137 <b>Variation: +75</b>	2017 saving: 10 2018 saving: 6 <b>Variation: -4</b>	2017 saving: 33 2018 saving: 8 <b>Variation: -25</b>	Review study and EC proposal for new measures.
External Power Supplies (double counted subtracted)	EIA 2017: 9 EIA 2018: 19 <b>Variation: +10</b>	2017 saving: 2 2018 saving: 8 <b>Variation: +6</b>	2017 saving: 1 2018 saving: 9 <b>Variation: +8</b>	Review study and EC proposal for new measures.
Household Refrigeration	EIA 2017: 347 EIA 2018: 347 <b>Variation: 0</b>	2017 saving: 168 2018 saving: 163 <b>Variation: -5</b>	2017 saving: 218 2018 saving: 222 <b>Variation: +4</b>	Review study and EC proposal for new measures.
Tyres	EIA 2017: 492 EIA 2018: 733 <b>Variation: +241</b>	2017 saving: 58 2018 saving: 37 <b>Variation: -21</b>	2017 saving: 139 2018 saving: 66 <b>Variation: -73</b>	Review study and EC proposal for new tyre labelling measures; addition in EIA of OEM tyres.
<b>Sum all products</b>	EIA 2017: 11202 EIA 2018: 11508 <b>Variation: +306</b>	2017 saving: 1788 2018 saving: 1748 <b>Variation: -40</b>	2017 saving: 3064 2018 saving: 2988 <b>Variation: -76</b>	All the above

<sup>54</sup> In winter 2018-2019, Regulatory Committee meetings are foreseen for various products, and this might lead to changes in the EC proposed measures. If any, these changes are not included in the EIA 2018 data, which are based on the EC proposals.

Table 3 gives an overview of the main changes with energy impact that occurred in the previous EIA update, between EIA 2016 and EIA 2017. Due to the method change (interaction between ventilation units and space heating) and data updates (lighting and electric motors), the 2020 primary energy savings decreased by 130 TWh/a (from 1918 to 1788 TWh/a) and the 2030 savings decreased by 142 TWh/a (from 3206 to 3064 TWh/a). See also section 1.8.

*Table 3 List of main energy impact changes in EIA 2017 compared to EIA 2016*

Product Group added or updated in EIA II	Change in BAU Primary Energy Consumption in TWh/a <b>in year 2010</b>	Change in Primary Energy Savings in TWh/a <b>in year 2020</b>	Change in Primary Energy Savings in TWh/a <b>in year 2030</b>	Main reason for change in savings
Space Heating total	EIA 2016: 3435 EIA 2017: 3435 Variation: 0	2016 saving: 521 2017 saving: 613 <b>Variation: +92</b>	2016 saving: 868 2017 saving: 1035 <b>Variation: + 167</b>	applying heat saving due to VUs as ECO load reduction for space heating
Ventilation Units, Heat savings only	EIA 2016: 0 EIA 2017: 0 Variation: 0	2016 saving: 89 2017 saving: 0 <b>Variation: -89</b>	2016 saving: 149 2017 saving: 0 <b>Variation: -149</b>	no longer counting heat savings due to VUs here, but under space heating
Light Sources	EIA 2016: 1047 EIA 2017: 1059 Variation: +12	2016 saving: 282 2017 saving: 247 <b>Variation: - 35</b>	2016 saving: 356 2017 saving: 298 <b>Variation: - 58</b>	Update following MELISA model and Commission WD of October 2017
Electric Motors (without double counting)	EIA 2016: 1405 EIA 2017: 1837 Variation: +432	2016 saving: 176 2017 saving: 79 <b>Variation: - 97</b>	2016 saving: 261 2017 saving: 159 <b>Variation: -102</b>	Update following October 2017 Impact Assessment (with scope extension)
<b>Sum all products</b>	EIA 2016: 10757 EIA 2017: 11202 <b>Variation: +445</b>	2016 saving: 1918 2017 saving: 1788 <b>Variation: - 130</b>	2016 saving: 3206 2017 saving: 3064 <b>Variation: - 142</b>	All the above

Compared to the EIA 2017 edition, monetary data have changed for all products. All prices and costs are now expressed in 2015 euros (was 2010 euros), energy rates have been updated with latest Eurostat data, new (higher) rates have been introduced for electricity and natural gas in the tertiary sector, and the annual escalation of energy rates following year 2016 has been reduced from 4%/a in EIA 2017 to 1-2% for most energy types in EIA 2018. As a result, the total user expense in the ECO scenario went up from 1230 to 1379 bn euros in 2015, but down from 1700 to 1568 bn euros in 2030. Total user expense savings in 2030 due to ECO measures are now projected to be 152 bn euros (was 323 bn euros in EIA 2017). This decrease is mainly due to the lower escalation rate for energy prices (see also par. 3.4.5).

**Annex B** gives an overview of the various ED, EL, ES and TL measures and their status on the 1<sup>st</sup> of October 2018. The full references are given in **Annex H**.

### 3.2. Available studies

In principle, the accounting is strictly based on the information in the available preparatory and impact assessment reports. An overview of these reports is given in **Annex C**.

On the 1<sup>st</sup> of October 2018 useable data were available for over 35 product groups. Assuming 2-3 man-years of research for preparatory studies and 5-6 months for impact assessment studies, it means that the available studies represent an accumulated research effort of over 100 man-years over the period 2006-2017 (10 years).

The contractor did not change --and does not assume responsibility for-- the original data in preparatory and IA studies, but performed the following tasks:

- checking calculation methods and formats

- retrieving Excel files, IA reports, prep. studies for ca. 40 product groups (>130 base cases),
- understanding and selectively copying data from Excel files to templates,
- updating data where newer data are available (from later Review or IA studies),
- complementing/estimating lacking core data (exception where external sources were consulted),
- correcting calculation errors (contractors not following MEEuP/MEErP),
- updating and harmonising tariffs and price data as much as possible,
- transforming product databases to statistical distribution tables,
- preliminary total calculations to check compatibility with Eurostat conventions

The overview in Annex C shows studies, product groups where data have been used. **Annex D** gives a complete overview of also studies (product groups, base cases) that are still ongoing and have not yet rendered sufficient data to produce at least a BAU-scenario.

### 3.3. Structure

A harmonized accounting method aims to treat the same parameter across all product groups in the same way. Therefore, in **Annex A**, which summarizes the core calculation in the MS Excel Masterfile, the sheets are organized per parameter.

Figure 6 gives the structure with the sheet-names. A short description of the items is given below:

- The SALES- and STOCK- (incl. Life) sheets are essential to most calculations and expressed in **1000 units per year** (light sources and tyres in million units).
- LOAD-, EFN- and EFS-sheets give the product performance, the respective efficiencies of new products (EFN) and of the average product installed (EFS). They are expressed **per unit**. The RATES, PRICE, PRICE2 and EMISSRATES are rates expressed **per unit and per Eco-impact unit**, e.g. €/kWh, €/%, and kg CO<sub>2</sub> eq./kWh. All other sheets relate to **EU totals** in TWh/a, Mt CO<sub>2</sub>/a, bn €/a, etc.
- The product performance parameter in the **LOAD** sheets is product-dependent, e.g. space heat in kWh/a, laundry load in kg/a, viewable screen surface of a television in dm<sup>2</sup>, cups of coffee/a, etc. The energy efficiency (**EFN** or **EFS**) may be an actual efficiency percentage (% of ratio between in- and output) or – e.g. for computers and other products where it is difficult to quantify an output—an annual energy consumption during use in kWh/a.
- The **LOADnotes** sheet gives a short description of the test- and calculation procedures that are used to arrive at the efficiency or consumption figures. The **EULOAD** sheet aggregates the LOAD data to EU totals, expressed in appropriately upscaled units like TWh/a, Mt/a, km<sup>2</sup>, bn cups/a. Both the LOADnotes and EULOAD sheets only give background information; they are not an input for other parts of the calculation.
- The **ELEC-** and **FUEL-**sheets give the electric and non-electric energy consumption for the whole of the EU stock, derived from LOAD- and EFS-, and expressed in TWh/a. Results are summed to final energy (**FNRG**) and primary energy (**NRG**), considering the efficiency of electricity generation and



distribution (**CC**=1/PEF). At the end of these sheets there is a summary calculation per functional group. Here also the mtoe equivalent of the TWh is given for reasons of convenience for readers that are more familiar with that unit. Separate **-SAVE**-sheets provide a survey of the energy savings (BAU-ECO). Near the end of all energy-sheets a subdivision per functional group is provided for the residential, tertiary, industry and 'other' sectors.

- Using the **EMISSRATES** sheet, the **EMISS**-sheets calculate the EU totals for CO<sub>2</sub> (in Mt/a, both fuel-related and from refrigerants) and the emissions of NO<sub>x</sub>, CO, OGC and PM (in kt/a). It also gives data on the noise regulations in the relevant products. A separate **EMISSSAVE** sheet provides details on the reduction of emissions.
- The **RESOURCES** sheet combines monetary cost and usage data as well as the BAU and ECO scenarios per unit, because it relates only to few products: imaging equipment (using paper and toner) washing machines and dishwashers (detergent, water) as well as vacuum cleaners (bags, filters). In the structure it is given only as part of the monetary calculation, but it does also supply the physical savings on resources.
- **NRGCOST**-sheets calculate the EU expenditure on energy, in bn euros. Together with the maintenance costs (incl. VAT when appropriate, **MAINT**-sheets) and possibly the costs of auxiliary resources (**RESOURCES** sheet) they constitute the annual running costs, given in the **RUN**-sheets.
- The total acquisition costs (including installation and VAT) are given in the **ACQ**-sheets and they are calculated using parameters from the **PRICE** sheet.
- The total consumer expenditure is given in the **EXPENS**-sheets. The difference between the BAU and ECO expenses, calculated on the **EXPENSSAVE** sheet, gives the total annual saving in consumer expenditure.
- The revenues of the measures for the various sectors are derived from the ACQ-scenarios. For the BAU scenario they are given in the **REV\_IND\_BAU** (for industry), **REV\_IND\_WHOLE** (for wholesale), **REV\_RETAIL\_BAU** (for the retail sector), **REV\_INST\_BAU** (revenue for installers) and **REV\_MAINT\_BAU** (maintenance revenue). Similarly, but with suffix ECO instead of BAU, these revenues are calculated for the ECO scenario.
- The number of **direct jobs** that are a result from these various revenues are not calculated in Annex A, but in the summary sheets of Annex G.

**Annex E** gives the key facts per product. In the Excel Masterfile it takes its data from the calculations per parameter in Annex A.

**Annex F** shows the summary tables of the Business Revenues per product group and functional group.

The direct employment (jobs) is calculated in **Annex G**, on the basis of the stakeholder revenues.

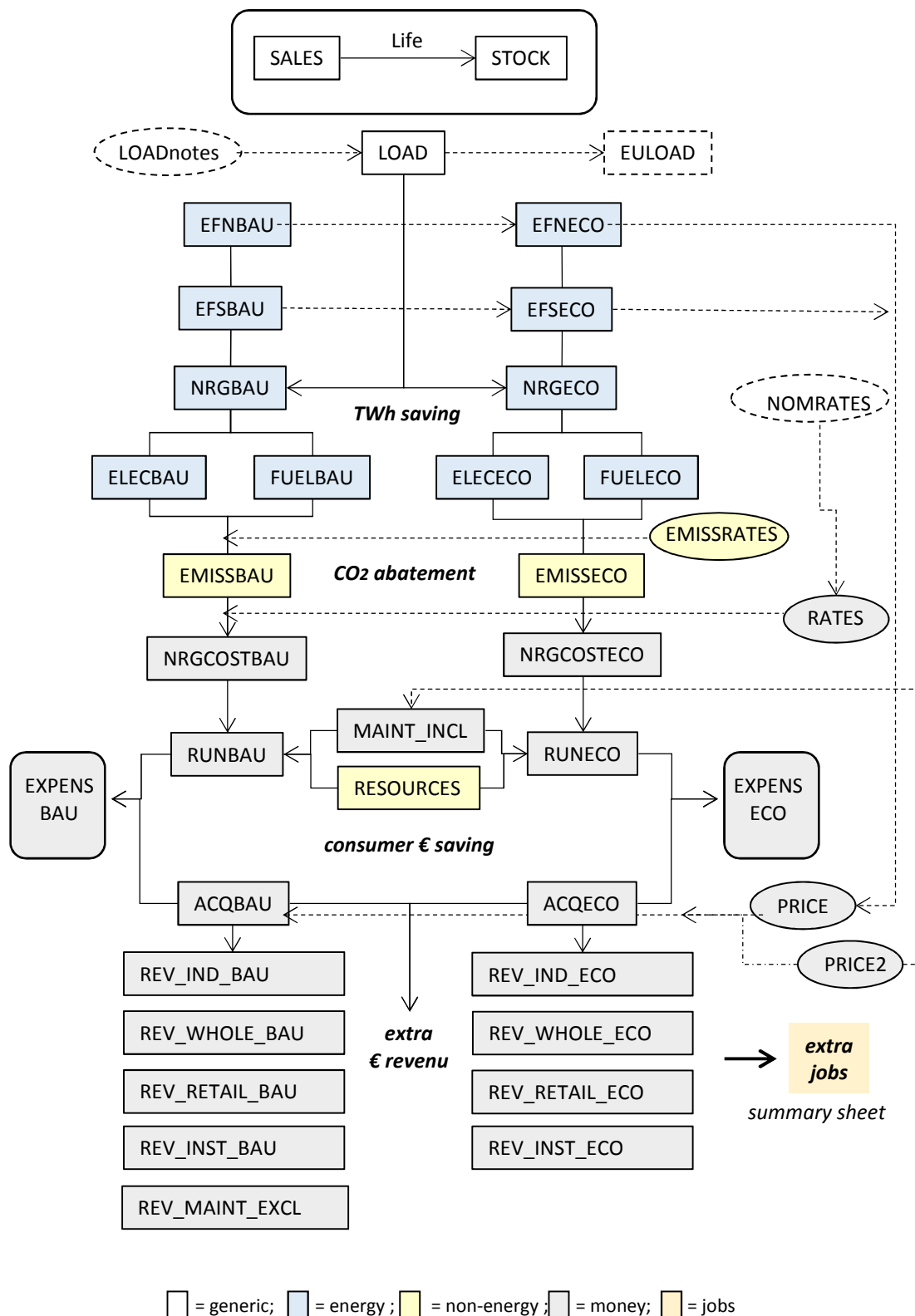


Figure 6. Structure of Annex A (core calculation) <sup>55</sup>.

<sup>55</sup> This scheme is not completely up-to-date with the latest EIA version, but anyway gives a good idea of the computation methodology.

## 3.4. Main results

### 3.4.1. Introduction

The ecodesign impact accounting is based on preparatory studies and impact assessments performed for the ecodesign and labelling measures in the scope. These studies vary considerably in data availability and quality of the analyses performed. The contractors have tried to harmonise at least the calculation method and, where it was indispensable for the accounting, to complete data.

Nonetheless, the aggregate ecodesign impact accounting will contain a large part of the imperfections of the sources used. As mentioned in par.2.9, the individual studies were never conceived from the 'top down' perspective of having to be consistent with overall energy and monetary data. Thus, at individual product level there is always a margin for specific interest groups to exaggerate or downplay the results.

Secondly, often there is no perfect match between the measure in the ECO scenario, i.e. the scenario that comes closest to what was (or will probably be) decided as a measure, and the actual measure. The scenarios in preparatory studies and impact assessments are primarily used as an ex-ante input for decision making. Rarely there is room, unless at a review several years after the implementation, for an ex-post analysis that would take into account all aspects of the final legislation.

Finally, as regards the implementation-phase of measures, all preparatory studies and impact assessments have to assume an ideal implementation and effective market surveillance, despite the fact that such perfection is rare in the real world. Also, a few studies do not anticipate 'rebound' effects from efficiency improvements, i.e. that the lower energy impacts and costs induce the users to consume more.

The results follow from the most comprehensive accounting of ecodesign and labelling measures to date. The following paragraphs show only a small fraction of the assessments that can be made with the Excel files, which are summarized in the appendices in this report.

### 3.4.2. Energy

In 2015 the products included in the accounting represent approximately 39 200 PJ (937 Mtoe) of direct and indirect primary energy consumption. This is 58% of total EU-28 gross energy consumption in 2015 (1627 Mtoe).

For these products the following main results were obtained for the EU-28 in 2020 (ECO versus BAU):

- Primary energy saving 6292 PJ (150 mtoe, 1748 TWh), i.e. a saving of 15% versus Business-As-Usual;
- Of this, 3851 PJ (92 mtoe, 1070 TWh) is primary energy saving due to saving 428 TWh (37 mtoe, 1540 PJ) of electricity, and 2441 PJ (58 mtoe, 678 TWh) is direct fuel saving. The sum of electricity saving and direct fuel saving ('final' energy saving) is 1099 TWh (95 mtoe);
- Nearly 58% of the 2020 final energy savings come from the residential sector, 26% from the tertiary sector, 10% from industry, 3% from transport, and 2% from other sectors;

The 2020 savings represent approximately 9% of the current EU energy consumption total (1627 mtoe in 2015). In 2030 this is projected to grow to 15% of EU energy consumption

For 2030, when there has been a full change of the stock of most regulated products, the primary energy saving increases by more than 70%, to 10 758 PJ (257 mtoe, 2988 TWh) with an average saving on the included products near 24%. The projections for the period 2030-2050 show that without new measures the pace of improvements slows down and eventually evens out.

The graphs below, taken from the summary at the end of sheets NRGECO and NRGSAVE (Annex A), show the primary energy consumption time series for the period 1990-2050.

Figure 7 demonstrates that, without new measures, the savings even out after 2030. For instance, in 2050 the saving is still 25% for the average included product.

Figure 8 emphasizes that, not unexpectedly, the space- and water heating products as well as the light sources are the main contributors to the savings.

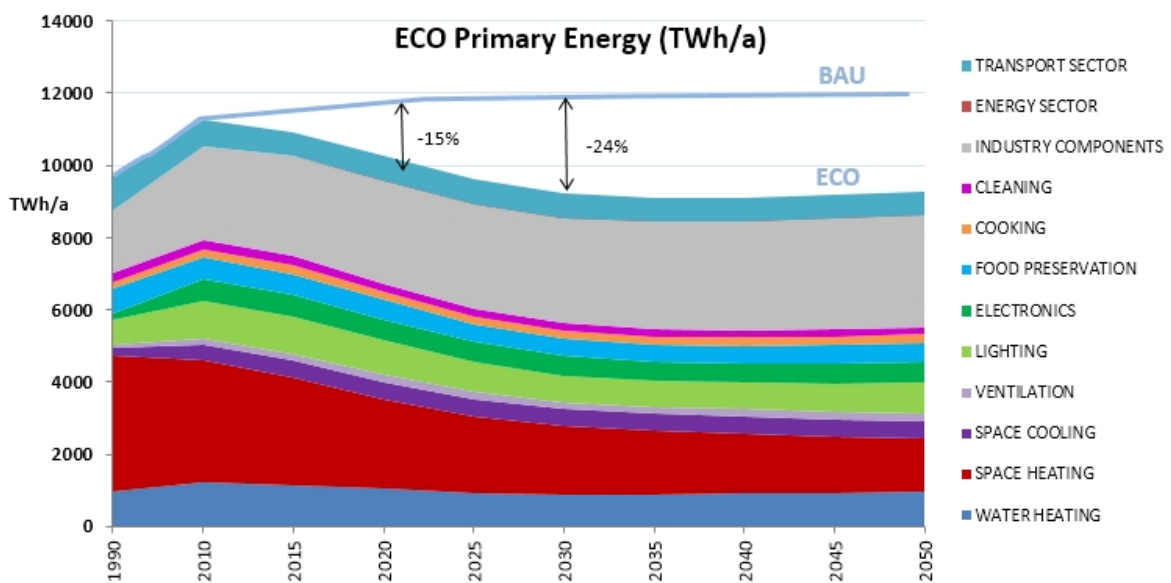


Figure 7. Primary energy consumption of products included in ecodesign impact accounting, status 1 October 2018 (energy sector impact not shown)

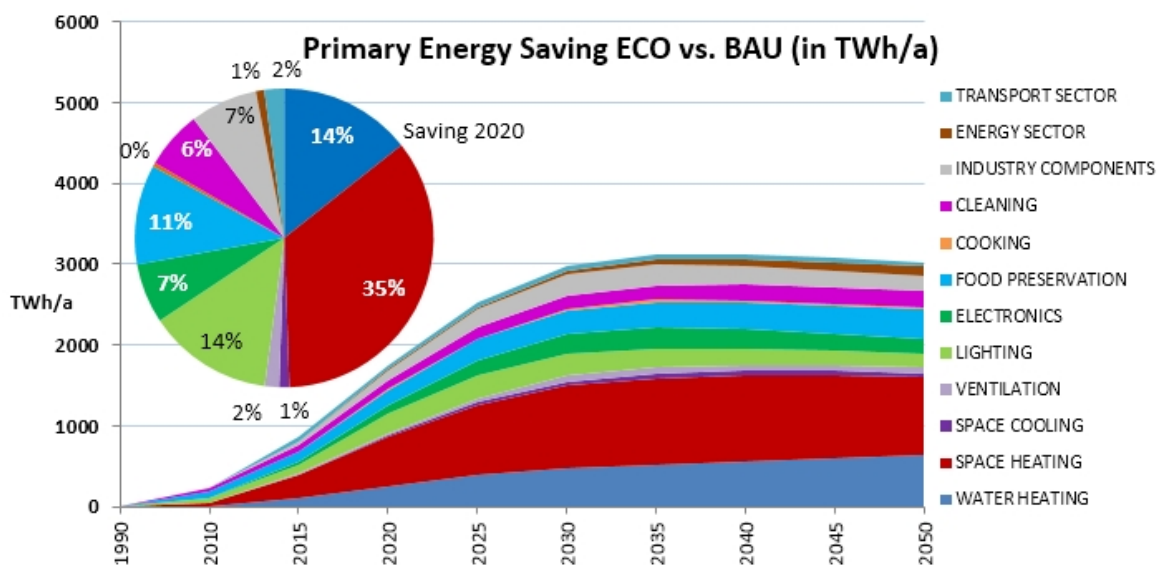


Figure 8. Primary energy saving of ECO versus BAU of products in ecodesign impact accounting, status 1 October 2018

### Changes in savings between EIA editions

Primary energy savings have been decreasing in recent EIA updates. For example the 2020 savings were 164.9 mtoe (1918 TWh) in EIA 2016, 153.7 mtoe (1788 TWh) in EIA 2017, and now 150.3 mtoe (1748 TWh) in EIA 2018.

As further explained in section 1.8 and Table 3, the main differences in 2020 primary energy savings between EIA 2016 and EIA 2017 (-11.2 mtoe, -130 TWh) derive from: +3 TWh for changes in SH-VU interaction methodology, -35 TWh for light sources (LS), and -97 TWh for electric motors (MT), using new LS and MT product data from review studies and impact assessments.

As further explained in section 1.9 and Table 2, the main differences in 2020 primary energy savings between EIA 2017 and EIA 2018 (-3.4 mtoe, -40 TWh) derive from the update of product data following review studies and new impact assessments. The largest contribution to the decrease in savings derives from Tyres (21 TWh less savings in 2020).

### Sector subdivision

EIA provides the subdivision of the energy consumption over the usage-sectors: residential, tertiary, industry and other <sup>56</sup>. This subdivision is based on the sector energy shares per base case that are defined on sheet CLASSES in Annex A. The results are reported near the end of the ELEC-, FUEL-, FNRG- and NRG-sheets in Annex A, in three ways:

- Summary table per sector over all functional groups
- For each functional group the subdivision over the sectors, in TWh
- For each functional group the subdivision over the sectors, in %

Figure 9 shows the 2010 ECO Primary Energy consumption per sector (total is 11 272 TWh/a). The sectors contribute for respectively 36% (residential), 32% (tertiary), 21% (industry), 5% (other) and 6% (transport).

ECO Primary Energy (TWh/a) per sector (2010)

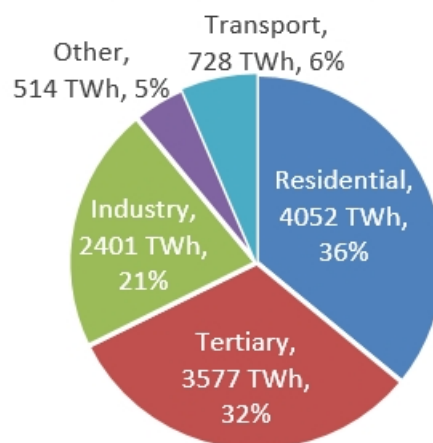


Figure 9. Subdivision per sector of the ECO primary energy consumption in 2010, for products in scope of the ecodesign impact accounting.

<sup>56</sup> The 'other' sector includes e.g. agriculture, forestry, fishing. Transport sector (tyres) and Energy sector (distribution transformers) are considered separately and not included in the data for the other four sectors.

The residential sector is the major energy consumer for water heating, space heating, electronics, cooking and cleaning (Table 4). The tertiary sector is dominant for space cooling (includes high temperature process cooling), ventilation and lighting, and the industry sector for industry components (fans, pumps, motors, compressors). For food preservation and transport (tyres) the energy consumption in the residential and tertiary sector is close to 40% each.

For many functional groups the 2010 sector distribution shown in Table 4 is approximately valid also for other years, although overall the share of residential tends to decrease while the share of industry increases. Around 2030, residential, tertiary and industry are projected to all have a share close to 30%.

2010 Primary Energy shares	Residential	Tertiary	Industry	Other
WATER HEATING	65%	31%	4%	1%
SPACE HEATING	58%	27%	12%	3%
SPACE COOLING & HT PROCESS	6%	66%	22%	6%
VENTILATION	21%	68%	9%	2%
LIGHTING	23%	61%	15%	1%
ELECTRONICS	56%	39%	5%	1%
FOOD PRESERVATION	39%	43%	16%	2%
COOKING	89%	11%	0%	0%
CLEANING	92%	8%	1%	0%
INDUSTRY COMPONENTS	0%	27%	60%	13%
TRANSPORT SECTOR* (separate)	46%	34%	17%	3%

The 2020 primary energy savings of 1748 TWh/a derive for 58% from the residential sector, 27% tertiary, 10% industry and 4% other and transport sector (Figure 10).

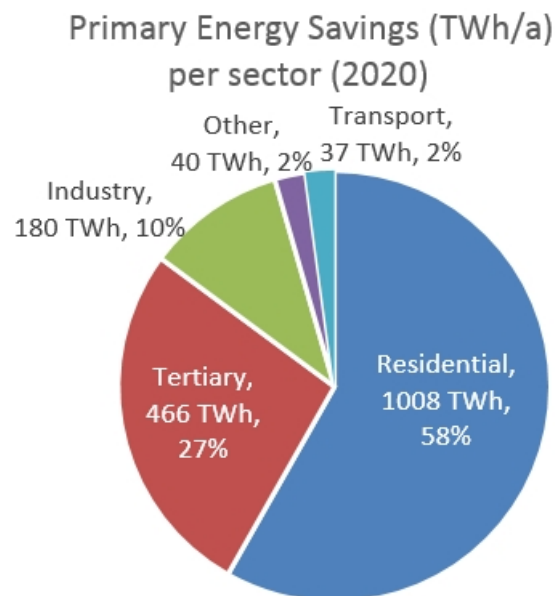


Figure 10. Subdivision per sector of the primary energy savings in 2020 (Energy sector not shown).

### Space heating load

In the EU Building Heat Demand (BHD) report <sup>57</sup>, the total EU space heating load is estimated as 2823 TWh, of which 60.3% in the residential sector, 24% in the tertiary sector and 15.7% in the industrial sector. Of this total, 2009 TWh (71%) is estimated to be in the scope of heating systems addressed by the Ecodesign directive. The rest relates to buildings heated by district heating, process waste heat, the low-temperature output of large (steam) boilers and CHP installations, etc.

In EIA the total EU space heating load is 1946 TWh/a (in 2010), which corresponds well with the 2009 TWh from the BHD. The 60%-24%-16% sector distribution from the BHD is in good agreement with the 58%-27%-12%-3% distribution in EIA.

#### 3.4.3. Emissions

The reduction of greenhouse gas emissions, due to fuel-related CO<sub>2</sub> and to losses of refrigerants, amounts to 306 Mt CO<sub>2</sub> equivalent in the EU in 2020 (ECO versus BAU). This is 17% of the total emissions of the products included in EIA and 7% of the EU 2015 total (4319 Mt CO<sub>2</sub> <sup>58</sup>). For 2030 a reduction of 496 Mt CO<sub>2</sub> equivalent is expected. This is a 25% reduction for the average included product and 11% of the EU 2015 total.

The reduction of nitrogen-oxides (NO<sub>x</sub>) emission, acidifying agent and ozone precursor (smog), is 149 kt SO<sub>2</sub> equivalent <sup>59 60</sup> in the EU 2020 (ca. 1.3% of EU 2010 total NO<sub>x</sub> emissions <sup>61</sup>). This is a result from the Ecodesign emission limits set for heating boilers, water heaters, solid fuel boilers, local space heaters and air heating products. However, this result is incomplete because insufficient data were available from the preparatory studies and impact assessments to quantify the NO<sub>x</sub> emissions for the Solid Fuel Boilers and for a part of the Local Space Heaters.

EIA also reports the reductions of CO- (carbon monoxide), OGC- (organic gaseous carbon) and PM- (particulate matter) emissions. Limits on these emissions have been set in the regulations on Solid Fuel Boilers and Local Space Heaters.

The reduction of CO-emissions is 189 kt/a in 2020 and 568 kt/a in 2030. The latter is 20% of the 2799 kt/a emissions of products involved in 2010. For comparison: in 2008 the total European CO-emission (including transport sector) were 27 500 kt/a <sup>62</sup>.

The reduction of OGC-emissions is 13 kt/a in 2020 and 25 kt/a in 2030. The latter is 11% of the 219 kt/a emissions of the products involved in 2010. For comparison: in 2008 the total European NMVOC-emission <sup>63</sup> (including the transport sector) were 12 500 kt/a <sup>62</sup>.

<sup>57</sup> "Average EU building heat load for HVAC equipment", VHK for the European Commission, 2014, [https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_final\\_report\\_eu\\_building\\_heat\\_demand.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_final_report_eu_building_heat_demand.pdf)

<sup>58</sup> Total EU-28 GHG emissions, excluding LULUCF, in MtCO<sub>2</sub>eq, from 'Annual European Union greenhouse gas inventory 1990–2016, Table ES-6', European Environment Agency, 27 May 2018,

<sup>59</sup> Equals 206 kt NO<sub>x</sub>. (factor 0.7)

<sup>60</sup> In the December 2015 edition of EIA, NO<sub>x</sub> emissions and SO<sub>2</sub> equivalent emissions were mixed up, so the new values in this report are considerably different from the previous ones.

<sup>61</sup> 11 150 kt SO<sub>2</sub> equivalent in 2010 (source: European Environmental Agency (EEA), National emissions reported to the Convention on Long-range Transboundary Air Pollution (LRTAP Convention), EU-27 (national territory), 2007.

<sup>62</sup> Source: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR), release version 4.2. [http://edgar.jrc.ec.europa.eu/datasets\\_list.php?v=42](http://edgar.jrc.ec.europa.eu/datasets_list.php?v=42)

<sup>63</sup> NMVOC= Non-Methane Volatile Organic Compounds, similar to OGC but without the methane contribution.



The reduction of PM-emissions is 13 kt/a in 2020 and 43 kt/a in 2030. The latter is 22% of the 193 kt/a emissions of the products involved in 2010. For comparison: in 2008 the total European PM10-emission (including the transport sector) were 2 750 kt/a <sup>62</sup>.

The trend line for greenhouse gas emissions is similar to that of energy (see summary at the end of the EMISSECO and EMISSAVE sheets in Annex A).

#### 3.4.4. Non-energy resources

The water consumption of washing machines and dishwashers is addressed through measures, resulting in a drinking water saving of 2545 million m<sup>3</sup> in the EU 2020 (1.2% of EU residential total<sup>64</sup>).

The self-regulatory initiative under Ecodesign for imaging equipment (copiers, printers) sets targets for duplexing to reduce printer paper consumption. The impact assessment estimates that 0.4 Mt/a of printing paper will be saved in 2020 (15% of EU total paper for imaging equipment).

More details can be found in the RESOURCES sheet, Annex A.

#### 3.4.5. User expenditure

In 2020 approximately € 63 bn (in 2015 euros) will be saved by end-users resulting from Ecodesign and labelling measures. This is the result from a € 136 bn gross saving on running costs (€ 124 bn energy costs, € 12 bn consumables) and € 74 bn extra acquisition costs for more efficient products. Given BAU-totals in the EU 2020 of € 1475 bn spent on running costs (€ 959 bn) and acquisition costs (€ 516 bn) for the products included in the accounting, the consumer will save some 4% in total. The saving on running costs is close to 14%, while the average product price <sup>65</sup> will rise by 14% for these products.

In 2030 the net saving (ECO versus BAU) will have grown to € 152 bn, saving the EU consumers nearly 9% on total costs versus the situation without measures. The top-part of Figure 11 gives the total expenditure in the ECO scenario (running + acquisition costs) per product group and –in orange—the saving versus the BAU scenario.

The figure is a snapshot of the status on the 1<sup>st</sup> October 2018. It should be interpreted with caution, because for some product groups no final decision has been taken yet and the ECO scenario is absent or provisional.

Nonetheless, it shows that the highest expense savings in 2030 (€ 30 bn) come from the cleaning group. Other product groups with high expense savings are water-heating and lighting (€ 23 bn each), food preservation (€ 22 bn) and electronics (€ 21 bn). Moderate expense savings are found for industry components and space-heating (€ 14 bn each). Finally, lower expense savings are projected for space cooling (€ 3 bn), ventilation (€ 2 bn), energy sector (€ 1 bn) and cooking (€ 0.5 bn). With the assumed 2%/a escalation of petrol and diesel rates, user expense savings for tyres result slightly negative (€ -0.8 bn).

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<sup>64</sup> EU residential total water consumption, from public grid, is 27 billion m<sup>3</sup> in 2008 (source: VHK, MEERp, 2011).

<sup>65</sup> Prices include installation and VAT and are all expressed in fixed euros 2015. The energy escalation rate (real annual increase above inflation) is assumed 1-4% (similar to PRIMES, see sheet General\_1).

### Changes in user expense savings between EIA editions

Savings on total user expenses have been decreasing in recent EIA updates. The 2020 expense savings were € 112 bn in EIA 2016, € 104 bn in EIA 2017, and now € 63 bn in EIA 2018. For 2030 the expense savings are respectively 338, 323 and 152 bn euros.

The decrease between EIA 2016 and EIA 2017 derives from updates for lighting and electric motors, following review studies and impact assessments for these product groups, see section 1.8.

The much larger difference in expenditure savings between EIA 2017 and EIA 2018 derives from a combination of several factors:

- expressing monetary amounts in 2015 euros (EIA 2018) instead of 2010 euros (EIA 2017) (section 1.9),
- introduction of new electricity and gas rates for the tertiary sector (sections 1.9, 2.3.5),
- update of energy rates up to 2018 from Eurostat and Oil Bulletin (sections 1.9, 2.3.5),
- lower annual escalation rates for future prices of energy and resources (1-2%/a instead of 4%/a) (sections 1.9, 2.3.6),
- update of product data following review studies and impact assessments (section 1.9)

A large contribution to the decrease in expense savings in EIA 2018 comes from the change in escalation rate for energy prices, previously 4%/a for all energy types, now variable 1-2%/a for most energy types (staying close to PRIMES values, see sheet General\_1). As an illustration, the bottom-part of Figure 11 shows how 2030 user expense savings in EIA 2018 would change if the 4%/a escalation rate would be used again. Expense savings for all functional groups increase, but in particular the difference in savings for space-heating is noteworthy. For space-heating the additional acquisition costs are relatively high (€ 62 bn). With a 4%/a escalation, energy cost savings are € 104 bn, leading to € 42 bn expense savings. With a 1-2%/a escalation, energy cost savings reduce to € 76 bn (27% less due to lower average energy rates in 2030), leading to only € 14 bn expense savings.

More information on user expenses can be found especially in the summaries at the end of the sheets EXPENSECO, EXPENSSAVE, ACQECO, ACQADD, NRGCOSTECO and NRGCOSTSAVE in Annex A.

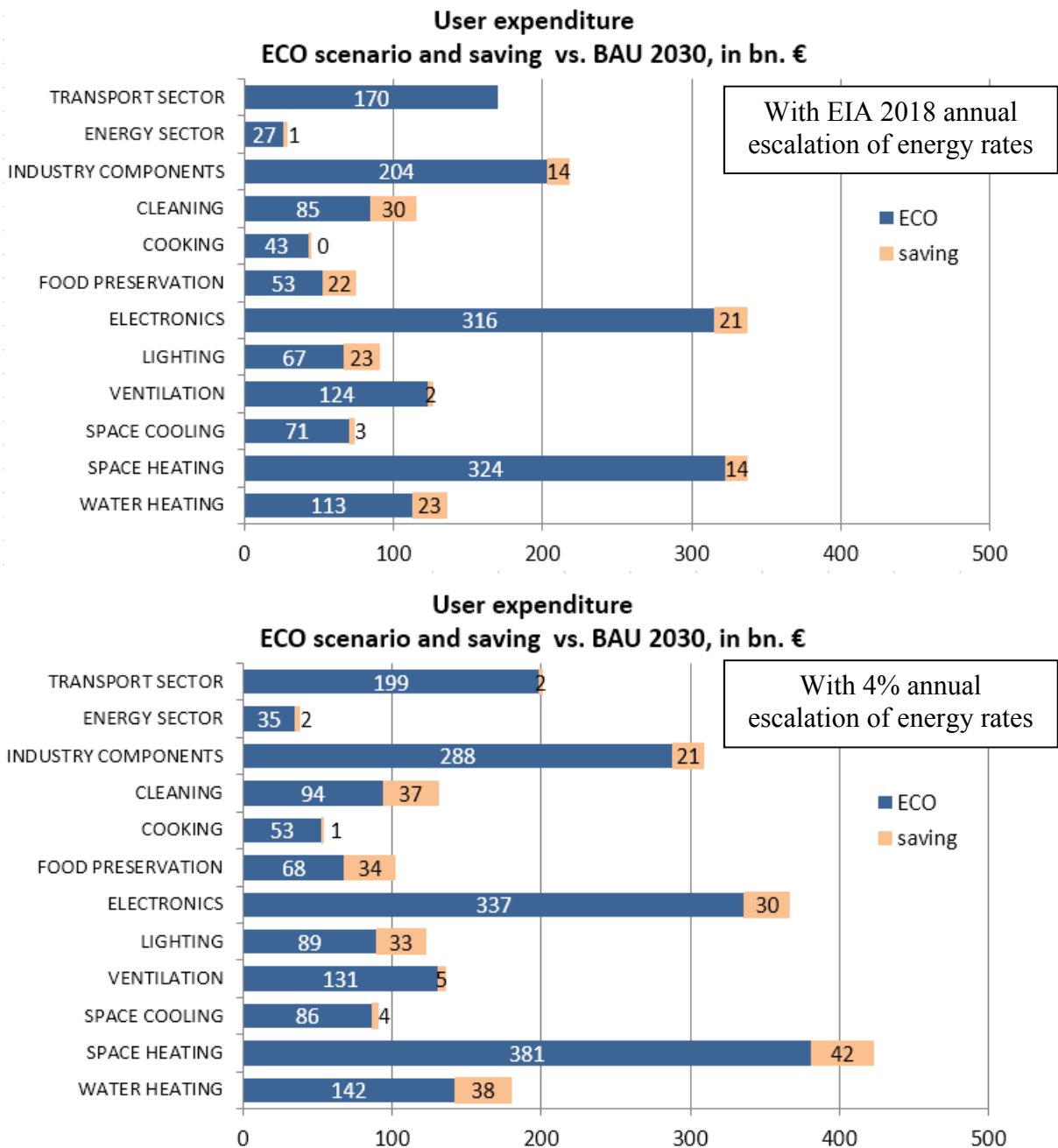


Figure 11. User expenditure EU 2030 on products included in the accounting. The top figure gives the result for the current EIA 2018 annual escalation of energy rates (1-2%/a, except for coal, see sheet General\_1 in Annex A). The bottom figure gives the result for a 4%/a escalation for all energy rates, as was used in previous EIA editions.

### 3.4.6. Business revenue

The increase in acquisition costs for the users translates into higher business revenue for market actors (plus taxes). It is calculated that for 2020 the extra revenue will be € 66 bn and for 2030 it will grow to € 91 bn compared to a situation without measures. Approximately 45% of the extra revenue in 2030 will go to industry, 11% to wholesale, 16% to retail, 27% to installers (there is a large share of installed products) and none to maintenance (EIA does not consider differences in maintenance due to ECO measures).

#### Changes in additional revenues between EIA editions

Additional business revenues have been increasing in recent EIA updates. For example the 2020 extra revenues were € 57 bn in EIA 2016, € 58 bn in EIA 2017, and now € 66 bn in EIA 2018.

The small increase between EIA 2016 and EIA 2017 derives from updates for lighting and electric motors, following review studies and impact assessments, see section 1.8.

The increase in extra revenues between EIA 2017 and EIA 2018 derives for the largest part from expressing monetary amounts in 2015 euros instead of 2010 euros. This increases the € 58 bn extra revenue of EIA 2017 (in 2010 euros) to € 63 bn extra revenue in EIA 2018 (in 2015 euros). The remaining change in extra revenue (from € 63 bn to € 66 bn) comes from the update of product data, following review studies and impact assessments, see section 1.9. Main increase in revenues is for Tyres (+7 bn euros, e.g. due to addition of OEM tyres in EIA), somewhat compensated by Lighting (-4 bn euros e.g. due to postponement of LFL T8 phase-out).

More information on revenues can be found in Annex F (summary sheets) and in the REV-sheets in Annex A.

### 3.4.7. Employment

The direct jobs are calculated from the increase in revenue and the average turnover per employee in the various sectors (see par. 2.3.10, 2.6.14). The results and split up are given in Annex G.

All in all, an estimated 0.93 million additional direct jobs due to the measures are calculated in 2020. The total employment effect (including indirect jobs) is difficult to assess, as there is no consensus on the indirect employment factor (i.e. the new employees spending their money on goods and services, thereby creating new jobs for people that in turn also spend their money, etc.). In literature estimates are found setting indirect employment a factor 3-5 times the direct number of jobs.

For comparison, a recent report by Cambridge Econometrics (CE) <sup>66</sup> has been studied. Based on jobs/GWh-saved ratios, CE estimates maximum additional jobs related to energy efficiency of 275 000 in 2010 (EIA: 86 000), 740 000 in 2020 (EIA: 933 000) and 1 300 000 in 2030 (EIA 1 260 000). Hence, the CE-data and EIA-data seem to be in good agreement.

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<sup>66</sup> "Assessing the Employment and Social Impact of Energy Efficiency", Final report, Volume 1: Main report and Volume 2: Appendices, Cambridge Econometrics, November 2015.

However, caution is needed when comparing these data because the scope (products and services considered) and the definitions in the two studies are not the same<sup>67</sup>. In fact there are also CE-data that differ from those in EIA:

- CE reports jobs per million euro contract value ranging from 3.1 to 7.8 jobs/m€<sup>68</sup>. EIA uses the higher figure of 18.5 jobs/m€ for industry (including OEM and services), with additional jobs for wholesale, retail, installation and maintenance.
- In 2010 the EIA-products account for a total of 6.5 million jobs in EU28. This is almost three times the 2.4 million estimated by CE for their 'broad definition of energy efficient goods and services', notwithstanding that CE includes many items that are not (yet) included in EIA, such as 'public mass transit' (0.7 m jobs), 'energy-saving building materials' (insulation, glazing, composite doors; 0.4 m jobs), 'green architecture and construction services', 'professional energy services', 'smart meters', 'smart grids', 'electric vehicles', etc..
- There are only three product groups for which CE-data can be more or less directly compared to EIA data:

For HVAC and building control systems CE states 158 000 jobs in 2010 (EIA 2 000 000 for space heating, space cooling and ventilation).

For Appliances CE gives 100 000 jobs in 2010 (EIA 820 000 for food preservation, cooking and cleaning; electronics excluded)

For Lighting CE gives 39 000 jobs in 2010 (EIA 220 000).

Concluding, some CE-data and EIA-data correspond, while others do not. The job-differences are probably caused by differences in scope and in definitions between the two studies. EIA does not distinguish between jobs in EU-28 and extra-EU jobs, while CE might consider only jobs in EU. No clear reason was found to change the job-parameters currently used in EIA.

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<sup>67</sup> The CE-report focuses on building and transport related products, and only a part of the data can be compared with those from EIA. CE seems to count only the jobs created in EU-28, while EIA considers all jobs associated with the considered products, regardless if they are in- or outside the EU. It is not clear if the CE values include jobs for wholesale, retail, installation and maintenance, while EIA does include these. Both CE and EIA consider only 'gross' and 'direct' jobs.

<sup>68</sup> Depending on the type of product and the type of contract (domestic or not). The product groups considered by CE that are relevant for comparison with EIA are: High-efficiency burning chiller, Boiler waste heat recovery, CHP installation, Variable Speed Drives, Motors, pumps, fans and compressors, Advanced process controllers, Pumps, water heaters and circulators, Ventilation, fans and air-conditioning.

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# Appendices



## ANNEX A: Ecodesign Impact Accounting by Parameter

## CONTENTS

<i>worksheet</i>	<i>description</i>
<b>GENERAL_1</b>	general, non product-specific input data (PEF (CC), GWP, rates in 2015 euros (inflation corrected), annual escalation % for rates, employment parameters, brexit factor, EU population and households)
<b>GENERAL_2</b>	general, non product-specific input data (inflation, nominal rates, factor for tertiary rates, sources for rates)
<i>Market &amp; performance</i>	
<b>CLASSES</b>	sector subdivision data (share residential, tertiary, industry, other)
<b>SALESBAU</b>	sales data in 000 units (mln units for lighting and tyres), for EU-28 BAU scenario, incl. brexit-factor
<b>SALESECO</b>	sales data in 000 units (mln units for lighting and tyres), for EU-28 ECO scenario (printed only if different from BAU)
<b>STOCKBAU</b>	stock calculated from product life and SALES in 000 units (mln units for lighting and tyres), BAU scenario
<b>STOCKECO</b>	stock in 000 units (mln units for lighting and tyres), ECO scenario (printed only if different from BAU)
<b>LOADnotes</b>	Notes on functional performance per unit, on description of test- & calculation method:
<b>LOADBAU</b>	Unit functional performance, product output characterization, consumer demand for product function, BAU scenario
<b>LOADECO</b>	Unit functional performance, consumer demand for product function, ECO scenario (printed only if different from BAU)
<b>EULOADBAU</b>	EU functional performance of total products, calculated from STOCK and LOAD, for BAU scenario
<b>EULOADVAR</b>	Variation of EU functional performance of total products due to ECO measures (printed only if not zero)
<b>EULOADECO</b>	EU functional performance of total products, for ECO scenario (printed only if different from BAU)
<i>Energy</i>	
<b>EFNBAU</b>	Efficiency of New products, Business-As-Usual (no measures) scenario
<b>EFNECO</b>	Efficiency of New products, Ecodesign (with all measures) scenario
<b>EFSBAU</b>	Efficiency of products in Stock (in use), derived from EFNBAU and product life (STOCK), in % or kWh/a, BAU scenario
<b>EFSECO</b>	Efficiency of products in Stock (in use), derived from EFNECO and product life (STOCK), in % or kWh/a, ECO scenario
<b>ELECB AU</b>	Total electricity use in TWh electricity, for BAU scenario, derived from Load, Stock, Efficiency and share electrici
<b>ELECECO</b>	Total electricity use in TWh electricity, for ECO scenario, derived from Load, Stock, Efficiency and share electrici
<b>ELECSAVE</b>	ELECB AU - ELECECO, TWh electric energy savings due to ecodesign measures
<b>FUELBAU</b>	Total non-electric energy use in TWh primary (NCV), for BAU, derived from Load, Stock, Efficiency and share non-electrici
<b>FUELECO</b>	Total non-electric energy use in TWh primary (NCV), for ECO, derived from Load, Stock, Efficiency and share non-electrici
<b>FUELSAVE</b>	FUELBAU - FUELECO, TWh non-electric energy savings due to ecodesign measures
<b>FNRGBAU</b>	Total final energy use in TWh, sum of ELEC and FUEL, for BAU scenario
<b>FNRGECO</b>	Total final energy use in TWh, sum of ELEC and FUEL, for ECO scenario
<b>FNRGSAVE</b>	FNRGBAU - FNRGECO, TWh final energy savings due to ecodesign measures
<b>NRGBAU</b>	Total primary energy use in TWh, derived as ELEC*PEF + FUEL, for BAU scenario
<b>NRGECO</b>	Total primary energy use in TWh, derived as ELEC*PEF + FUEL, for ECO scenario
<b>NRGSAVE</b>	NRGBAU - NRGECO, TWh primary energy savings due to ecodesign measures
<i>Emissions</i>	
<b>EMISSRATES</b>	Emission rates of greenhouse gases (e.g. in kg CO <sub>2</sub> eq./kWh or for refrigerants in kg CO <sub>2</sub> eq./a) and Nox, CO, OGC, PM; Noise
<b>EMISSBAU</b>	Total emissions of greenhouse gases (GHG), from energy use and from F-gases, in Mt CO <sub>2</sub> -eq.; Emissions of NO <sub>x</sub> ; BAU
<b>EMISSECO</b>	Total emissions of greenhouse gases (GHG), from energy use and from F-gases, in Mt CO <sub>2</sub> -eq.; Emissions of NO <sub>x</sub> ; ECO
<b>EMISSSAVE</b>	EMISSBAU - EMISSECO, avoided GHG emissions due to ecodesign measures
<i>Consumer expenditure</i>	
<b>PRICE</b>	Unit price defined in function of efficiency for 3 efficiency/price anchor points (BaseCase, a Midpoint and BAT)
<b>PRICE2</b>	Unit price split, between unit/kit/install/other, and between VAT/retailer/wholesale/manufacturer/install/maintenance
<b>PRICEBAU</b>	Unit price for BAU efficiency of each year, interpolated between the 3 efficiency/price anchor point
<b>PRICEECO</b>	Unit price for ECO efficiency of each year, interpolated between the 3 efficiency/price anchor point
<b>ACQBAU</b>	Total acquisition costs in bn euros, from PRICEBAU and SALES, BAU scenario
<b>ACQECO</b>	Total acquisition costs in bn euros, from PRICEECO and SALES, ECO scenario
<b>ACQADD</b>	ACQECO-ACQBAU, additional acquisition costs due to ecodesign measures
<b>NOMRATES</b>	Nominal energy and consumable rates in euro/kWh, etc.
<b>RATES</b>	Nominal energy and consumable rates in euro/kWh, etc., inflation corrected (in Euro 2015), with escalation rate
<b>NRGCOSTBAU</b>	Total annual energy costs, from ELECB AU, FUELBAU, PRICE2, RATES, in bn euros, BAU scenario
<b>NRGCOSTECO</b>	Total annual energy costs, from ELECECO, FUELECO, PRICE2, RATES, in bn euros, ECO scenario
<b>NRGCOSTSAVE</b>	NRGCOSTBAU - NRGCOSTECO, energy cost savings in bn euros due to ecodesign measures
<b>MAINTBAU</b>	Total annual maintenance costs INCL VAT, in m euros (for BAU stock)
<b>MAINTECO</b>	Total annual maintenance costs INCL VAT, in m euros (for ECO stock)
<b>RESOURCES</b>	Total annual quantity and costs of water and other consumables (both for BAU and ECO), in bn euros and in Volume
<b>RUNBAU</b>	Total running costs in bn euros, from NRGCOSTBAU, MAINTBAU and RESOURCES, BAU scenario
<b>RUNECO</b>	Total running costs in bn euros, from NRGCOSTECO, MAINTECO and RESOURCES, ECO scenario
<b>EXPENSBAU</b>	Total customer expenditure, from RUNBAU+ACQBAU, in bn euros
<b>EXPENSECO</b>	Total customer expenditure, from RUNECO+ACQECO, in bn euros
<b>EXPENSSAVE</b>	EXPENSBAU - EXPENSECO, total consumer expense savings in bn euros due to ecodesign measures

## A-CONTENTS

### *Revenue of market actors*

<b>REV_IND_BAU</b>	Revenue industry (including OEM, services), in m euros/a, BAU scenario
<b>REV_IND_ECO</b>	Revenue industry (including OEM, services), in m euros/a, ECO scenario
<b>REV_WHOLE_BAU</b>	Revenue wholesale (including agents, importers), in m euros/s, BAU scenario
<b>REV_WHOLE_ECO</b>	Revenue wholesale (including agents, importers), in m euros/s, ECO scenario
<b>REV_RETAIL_BAU</b>	Revenue retail, in m euros/a, BAU scenario
<b>REV_RETAIL_ECO</b>	Revenue retail, in m euros/a, ECO scenario
<b>REV_INST_BAU</b>	Revenue from installation, in m euros/a, BAU scenario
<b>REV_INST_ECO</b>	Revenue from installation, in m euros/a, ECO scenario
<b>REV_MAINT_BAU</b>	Revenue from maintenance EXCL VAT, in m euros (for BAU scenario)
<b>REV_MAINT_ECO</b>	Revenue from maintenance EXCL VAT, in m euros (for ECO scenario)

### **Notes:**

The BAU scenario is usually not a 'freeze' scenario; it is derived from extrapolating historical trends at the time of the prep. study analysis including possible ongoing trends in energy efficiency improvement and emission abatement.

In the case of a regulation review, the BAU scenario in the Ecodesign Impact Accounting represents the expected situation in the absence of any measures, so without the original measures and without the reviewed measures. This is usually different from the BAU scenario in the Impact Assessment for the review, that includes the measures already in force at the time of the review study.

The ECO scenario is the scenario with the impact of known Ecodesign, Energy Labelling, Energy Star, Tyre Label and VAs. Up to 2020-2030 it is derived from IA and prep. study scenarios for the selected/ proposed measures. Longer term scenarios are extrapolations of the trends, but do **NOT** assume that new measures will be introduced (It is not within the study scope to predict new long-term measures).

In the case of a regulation review, the ECO scenario in the Ecodesign Impact Accounting represents the expected situation considering the latest, reviewed measures.

All prices, rates and euro amounts are in 2015 euros, i.e. inflation corrected to 2015.

Annual growth rates of tariffs and prices are escalation rates, i.e. they represent the real increase after inflation correction. The nominal rates are given strictly as background information and are not used in the calculation of impacts. See sheets General.

All primary energy from fossil fuels is in Net Calorific Value (NCV), i.e. where measures use Gross Calorific Values (GCV) values, these values were corrected to NCV to be in line with Eurostat data.

For the efficiency of power generation and distribution, the default value is 40% (the so-called primary energy factor PEF), but also dynamic values may be used, see sheets General.

VHK has harmonised, completed, corrected and extrapolated the values given in preparatory studies, review studies and IA reports that were available 1 Oct. 2018. VHK has not added new information that could not be derived from what was already given and therefore assumes no responsibility for the correctness of the information. VHK assumes no liability whatsoever for damages from any use of the data given here.

## GENERAL Data used in EIA (part 1)

This sheet groups some general data used in EIA, i.e. data that are not product-specific  
For some data the user can choose an option; input fields have cyan coloured background  
See notes [x] at the end of the sheet for further information. See also sheet 'General\_2'.

Efficiency of Electricity Generation and Distribution (CC=1/PEF) (PEF=Primary Energy Factor) [1]											
Choose set to use:	CCset1	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
CCset1: constant 40%, EIA traditional	CCset1	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
CCset2: constant, user value	CCset2	47.6%	47.6%	47.6%	47.6%	47.6%	47.6%	47.6%	47.6%	47.6%	47.6%
CCset3: variable, user values	CCset3	32.8%	39.9%	41.5%	43.3%	45.2%	47.0%	48.8%	50.6%	52.3%	54.1%
<b>CCactive, now in use:</b>	<b>CCact</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>

Global Warming Potential (GWP-100) for electricity generation and distribution [2]										
	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>GWP Electricity (kg CO2 eq/kWh)</b>	<b>0.500</b>	<b>0.410</b>	<b>0.395</b>	<b>0.380</b>	<b>0.360</b>	<b>0.340</b>	<b>0.320</b>	<b>0.300</b>	<b>0.280</b>	<b>0.260</b>
(for GWP-values for fuels and refrigerants, see sheet EMISRATES)										

## Energy Rates

All rates presented on this sheet are in 2015-euros (inflation corrected).

They are derived from the nominal rates (not inflation corrected) presented on sheet 'General\_2', see also source information and possible user-settings there. The inflation indexes applied are the HICP for all items, from Eurostat (see sheet 'General\_2').

For years following the last year for which nominal rates are available, an x%/a annual price increase is assumed (on top of the inflation). This percentage (escalation rate) can be set by the user below, for each entry separately. Until the 2017 edition, EIA used 4%/a, which is the value recommended in the MEErP. The PRIMES reference scenario 2015f uses much lower escalation rates (0-1%).

Residential rates include taxes and levies (20% VAT assumed)

Non-residential rates (industry, services, other sector) exclude VAT and other recoverable taxes and levies

See sheet 'General\_2' for user-settings regarding the tertiary/services sector rates.

The rates for the tertiary/services sector are also applied to the 'other sector' (agriculture, fishing, forestry).

(inflation corrected, 2015-euros)

Electricity Rates (€/kWh)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	1%	0.202	0.184	0.210	0.207	0.217	0.228	0.240	0.252	0.265	0.278
Industry sector	1%	0.128	0.112	0.119	0.114	0.120	0.126	0.133	0.139	0.146	0.154
Tertiary/Services & Other sector	1%	0.176	0.159	0.178	0.174	0.183	0.192	0.202	0.213	0.223	0.235

(inflation corrected, 2015-euros)

Natural Gas Rates (€/kWh NCV)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	1.5%	0.058	0.065	0.076	0.069	0.074	0.080	0.086	0.093	0.100	0.108
Industry sector	1.5%	0.027	0.038	0.039	0.033	0.035	0.038	0.041	0.044	0.048	0.051
Tertiary/Services & Other sector	1.5%	0.045	0.054	0.061	0.054	0.058	0.062	0.067	0.072	0.078	0.084

(inflation corrected, 2015-euros)

Gas Oil for Heating Rates (€/kWh NCV)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	1.5%	0.041	0.079	0.069	0.077	0.083	0.090	0.097	0.104	0.112	0.121
Industry sector	1.5%	0.035	0.066	0.057	0.064	0.069	0.075	0.080	0.087	0.093	0.101
Tertiary/Services & Other sector	1.5%	0.035	0.066	0.057	0.064	0.069	0.075	0.080	0.087	0.093	0.101

(inflation corrected, 2015-euros)

LPG Rates (€/kWh NCV)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	1.5%	0.059	0.100	0.085	0.088	0.095	0.102	0.110	0.119	0.128	0.138
Industry sector	1.5%	0.050	0.083	0.071	0.073	0.079	0.085	0.092	0.099	0.106	0.115
Tertiary/Services & Other sector	1.5%	0.050	0.083	0.071	0.073	0.079	0.085	0.092	0.099	0.106	0.115

(inflation corrected, 2015-euros)

Petrol (auto) Rates (€/kWh NCV)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	2%	0.116	0.158	0.153	0.156	0.172	0.190	0.210	0.232	0.256	0.282
Industry sector	2%	0.099	0.132	0.128	0.130	0.143	0.158	0.175	0.193	0.213	0.235
Tertiary/Services & Other sector	2%	0.099	0.132	0.128	0.130	0.143	0.158	0.175	0.193	0.213	0.235

(inflation corrected, 2015-euros)

Diesel (auto) Rates (€/kWh NCV)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	2%	0.076	0.129	0.126	0.135	0.149	0.164	0.181	0.200	0.221	0.244
Industry sector	2%	0.065	0.108	0.105	0.112	0.124	0.137	0.151	0.167	0.184	0.203
Tertiary/Services & Other sector	2%	0.065	0.108	0.105	0.112	0.124	0.137	0.151	0.167	0.184	0.203

(inflation corrected, 2015-euros)

Firewood (logs) Rates (€/kWh NCV)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	2%	0.028	0.033	0.049	0.051	0.057	0.063	0.069	0.076	0.084	0.093
Industry sector	2%	0.023	0.027	0.041	0.043	0.047	0.052	0.058	0.064	0.070	0.078
Tertiary/Services & Other sector	2%	0.023	0.027	0.041	0.043	0.047	0.052	0.058	0.064	0.070	0.078

(inflation corrected, 2015-euros)

Wood pellets Rates (€/kWh NCV)	x% /a	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Residential sector	2%	0.043	0.051	0.053	0.056	0.061	0.068	0.075	0.083	0.091	0.101
Industry sector	2%	0.036	0.042	0.045	0.046	0.051	0.057	0.062	0.069	0.076	0.084
Tertiary/Services & Other sector	2%	0.036	0.042	0.045	0.046	0.051	0.057	0.062	0.069	0.076	0.084

(inflation corrected, 2015-euros)

<b>Wood chips Rates (€/kWh NCV)</b>	<b>x% /a</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Residential sector	2%	0.021	0.030	0.034	0.036	0.040	0.044	0.049	0.054	0.060	0.066
Industry sector	2%	0.017	0.025	0.028	0.030	0.033	0.037	0.041	0.045	0.050	0.055
Tertiary/Services & Other sector	2%	0.017	0.025	0.028	0.030	0.033	0.037	0.041	0.045	0.050	0.055

(inflation corrected, 2015-euros)

<b>Coal Rates (€/kWh NCV)</b>	<b>x% /a</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Residential sector	4%	0.017	0.031	0.018	0.029	0.035	0.043	0.052	0.064	0.077	0.094
Industry sector	4%	0.014	0.026	0.015	0.024	0.029	0.036	0.044	0.053	0.064	0.078
Tertiary/Services & Other sector	4%	0.014	0.026	0.015	0.024	0.029	0.036	0.044	0.053	0.064	0.078

(inflation corrected, 2015-euros)

<b>Fossil Fuel Rates (€/kWh NCV) [3]</b>		<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Residential sector	share	0.054	0.068	0.075	0.071	0.076	0.082	0.088	0.095	0.102	0.110
Industry sector	gas:	0.029	0.043	0.043	0.039	0.042	0.045	0.049	0.053	0.057	0.061
Tertiary/Services & Other sector	80%	0.043	0.056	0.060	0.056	0.060	0.065	0.070	0.075	0.081	0.087

**Non-Energy Rates (for consumables)**

All rates presented on this sheet are in 2015-euros (inflation corrected).

They are derived from the nominal rates (not inflation corrected) presented on sheet 'General\_2', see also source information and possible user-settings there. The inflation indexes applied are the HICP, all items, from Eurostat (see sheet 'General\_2').

For years following the last year for which nominal rates are available, an x%/a annual price increase is assumed (on top of the inflation). This percentage (escalation rate) can be set by the user below, for each item separately. Until the 2017 edition, EIA used 3%/a for water and 0% for other consumables.

(inflation corrected, 2015-euros)

<b>Non-Energy Rates (2015 €)</b>	<b>x% /a</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
water & sewage, residential, €/m3	3%	2.95	3.76	4.09	4.49	5.20	6.03	6.99	8.10	9.39	10.89
toner for copier/printer, all sectors, €/page	0%	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
paper for copier/printer, all sectors, €/page	0%	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
detergent dishwasher, residential, €/cycle	0%	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097
detergent wash.machine, residential, €/cycle	0%	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162
bags for vacuum cleaner, residential, €/year	0%	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56

**Employment parameters (million 2015-euros of sector revenue per employee) [4]**

Manufacturer's 'wages'	[5]	0.054
Wholesale 'wages'	[6]	0.270
Retail 'wages'	[6]	0.065
Installation 'wages'	[6]	0.108
Maintenance 'wages'	[6]	0.108

**Brexit factor [7]**

Sales reduction due to Brexit	0.0%
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**EU population and households [8]**

		<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
EU-28 population (in millions)	[9]	475.2	503.2	508.2	512.5	515.5	518.5	521.0	523.5	524.5	525.5
EU-28 households (in millions)	[10]	171.6	210.6	218.1	222.8	224.1	225.4	226.5	227.6	228.1	228.5

Notes:

- [1] Efficiency of Electricity Generation and Distribution: The calculation method uses a correction coefficient CC (with reverse also known as primary energy factor PEF) to convert electricity to primary energy. The CC value approximately represents the efficiency of electricity generation & distribution. The user of the Excel file can choose a set of CC-values to use throughout the entire file (cyan input field; use dropdown menu).

In all EIA reports until 2017 a constant value of 40% was used (CCset1; corresponding to PEF=2.5), meaning that 1 kWh of electricity corresponds to 2.5 kWh of primary energy. The 40% is a consensual value, first introduced in Ecodesign accounting following the Energy Services Directive (now replaced by the Energy Efficiency Directive, EED) where for the first time Member States had to come to an agreement on a harmonized value. The 40% (factor 2.5) is mentioned as default value in Directive 2012/27/EU, footnote 3 of Annex IV.

In the context of the review of the EED (2018), lower values for PEF have been proposed, ranging from 2.0 to 2.3. The values for CCset2 are by default set to 48% efficiency (PEF=2.1), but this value can be changed by the user to examine the effects of variations in PEF.

CCsets 1 and 2 use values constant over the years. This ensures that the computation of impacts of Ecodesign and Energy Labelling measures (the aim of this Excel file) is not disturbed by impacts due to changes in the efficiency of electricity generation. CCset3 can be used if efficiency values variable with the years are desired. The default values have been derived from Eurostat data (details in the main text of the EIA Status report), but can be changed by the user.

When changing values for CCset3 remember that some years (columns) are hidden. For hidden years, by default the sheet will interpolate linearly between values for the displayed years. If this is not desired, columns should be unhidden and values changed manually.

For products where the efficiency (EFN) is expressed in terms of primary energy (mainly space- and water-heating products), the usual EIA energy calculation of Load\*Stock / Efficiency (or Load\*Stock\*Efficiency, depending on how efficiency is defined) yields an amount of primary energy. In these cases, any included electricity-part is first calculated as (Load\*Stock / Efficiency) \* electricity part \* 40%, because the original EFN was based on a CC=40%. Any included final fuel-part is calculated as (Load\*Stock / Efficiency) \* (1-electricity part). Next, primary energy is always computed as Final Fuel + Electricity/CC, where CC depends on the user-selection. Consequently, a change in CC will change only the electricity-related part of the primary energy, not the electricity, not the fuel, and not the efficiencies.

Currently, the accounting does not consider a PEF for fuels, i.e. final fuel consumption and associated primary energy are the same.

- [2] Global Warming Potential (GWP-100) for electricity generation and distribution taken from MEErP Part 1 table 30, [http://ec.europa.eu/growth/industry/sustainability/ecodesign\\_en](http://ec.europa.eu/growth/industry/sustainability/ecodesign_en) (section on 'support tools for experts'). For years following 2030 extrapolation with same downward trend.

When changing values remember that some years (columns) are hidden. These hidden values will not update automatically

- [3] Fossil fuel rates are taken as z% natural gas rate plus (100-z)% heating gas oil rate. The value of 'z' can be set by the user. No nominal rates are defined for fossil fuel. This special rate is used for several water- and space-heating appliances. Traditionally, EIA used 80% gas and 20% oil (z=80%).

## GENERAL\_1

- [4] The direct employment impact of the measures - i.e. the increase of employees in the value-adding chain - is derived from the business revenues in the various sectors (manufacturing, retail, wholesale, installation, maintenance), using the 'Wages' constants shown. The same constants are used for all products. The constants are not actual 'Wages' but total company revenue divided by staff. The number of jobs is calculated as sector revenue (in million euros) divided by 'sector wage' (in million euros / employee). (see sheet Gjob)
- [5] Manufacturer's 'wages': 0.15 m euro/employee  $\pm$ 10%. It is assumed that associated OEM jobs and Service jobs are each of the same order of magnitude. Including also these jobs the 'wage' reduces to 0.05 m euro/employee, which is the quantity used in EIA. Currently no distinction is made if these jobs are inside or outside EU-28.
- [6] Wholesale, Retail, Installation and Maintenance 'wages': m euro/employee  $\pm$ 20%.
- [7] Brexit factor: This factor can be used to roughly simulate the effects of Brexit on the Ecodesign Impact Accounting. All product sales quantities will be reduced by the user-supplied percentage. The same % reduction is applied for all products. It is assumed that other data, such as average load, average efficiency, and average price, do not change. Where EIA data are compared to Eurostat or EEA data for EU-28, these reference data are NOT corrected for the Brexit factor. If used, a value of 13-15% is recommended, see reference data below. If not used, set to 0%.  
For reference:  
UK 2017 population was 12.9% of EU-28 population (Eurostat [demo\_pjan])  
UK 2017 households were 13% of EU-28 households (Eurostat [fst\_hhnhtych])  
UK 2017-2018 GDP at current prices was around 15% of total EU-28 GDP (Eurostat table teina010)
- [8] These data are mainly provided as background information. They do not change EU-totals, but have influence where data per person or per household are presented as additional information. Normally there would be no need to change them.
- [9] Population for years 1990-2015 from Eurostat at 1st of January of each year, <http://appsso.eurostat.ec.europa.eu/nui/show.do>  
Population for years 2020-2030-2040-2050 from Eurostat projections, [http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/main\\_tables](http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/main_tables); interpolated in intermediate years
- [10] Households for years 2005-2014 based on Eurostat <http://appsso.eurostat.ec.europa.eu/nui/show.do>  
Households for years 2015-2050 computed as population divided by 2.3  
Households for years 1990-2004 based on MEErP 2011 Part 2 table 31, scaled up from EU-25 to EU-28

## GENERAL Data used in EIA (part 2)

This sheet groups some general data used in EIA, i.e. data that are not product-specific  
 For some data the user can choose an option; input fields have cyan coloured background  
 See notes [x] at the end of the sheet for further information

<b>Harmonized Index of Consumer Prices (Inflation) [1]</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
Eurostat HICP (2015=100)	62.5	69.0	74.7	82.9	92.6	95.5	98.0	99.5	100.0	100.0	100.3	102.0	104.0
corresponding % inflation per year		2.0%	1.9%	2.2%	2.1%	3.1%	2.6%	1.5%	0.5%	0.0%	0.3%	1.7%	2.0%

<b>Nominal Energy Rates (not inflation corrected)</b>													
All rates presented on this sheet are Nominal Rates (not inflation corrected). See sheet 'General_1' or sheet 'Rates' for rates in 2015-euros (inflation corrected) and for the projection beyond 2017/2018.													
Residential rates include taxes and levies (20% VAT assumed)													
Non-residential rates (industry, services, other sector) exclude VAT and other recoverable taxes and levies													
For the tertiary/services sector the rates are interpolated between residential rate and industry rate using a user-supplied factor (settable below).													
The rate for tertiary is determined as $(100-x\%)*\text{Industry rate} + x\%*\text{Residential rate}$													
The rates for the tertiary/services sector are also applied to the 'other sector' (agriculture, fishing, forestry).													
(nominal (not inflation corrected))													
<b>Electricity Rates (€/kWh)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="65%"/>												
Residential sector	[2]	0.126	0.134	0.133	0.134	0.170	0.183	0.193	0.201	0.206	0.210	0.205	0.204
Industry sector	[3]	0.080	0.077	0.069	0.077	0.104	0.110	0.115	0.118	0.121	0.119	0.115	0.113
Tertiary/Services & Other sector	[4]	0.110	0.114	0.110	0.114	0.147	0.157	0.165	0.172	0.176	0.178	0.174	0.172
(nominal (not inflation corrected))													
<b>Natural Gas Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="58%"/>												
Residential sector	[5]	0.036	0.035	0.041	0.045	0.060	0.067	0.073	0.075	0.077	0.076	0.070	0.067
Industry sector	[6]	0.017	0.016	0.020	0.027	0.035	0.038	0.042	0.045	0.042	0.039	0.034	0.032
Tertiary/Services & Other sector	[7]	0.028	0.027	0.032	0.038	0.050	0.055	0.060	0.062	0.062	0.061	0.055	0.052
(nominal (not inflation corrected))													
<b>Gas Oil for Heating Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[8]	0.025	0.036	0.046	0.060	0.073	0.091	0.098	0.093	0.088	0.069	0.059	0.068
Industry sector	[9]	0.022	0.030	0.039	0.050	0.061	0.076	0.082	0.077	0.073	0.057	0.049	0.065
Tertiary/Services & Other sector	[10]	0.022	0.030	0.039	0.050	0.061	0.076	0.082	0.077	0.073	0.057	0.049	0.065
(nominal (not inflation corrected))													
<b>LPG Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[11]	0.037	0.051	0.064	0.078	0.092	0.106	0.113	0.108	0.106	0.085	0.076	0.085
Industry sector	[12]	0.031	0.043	0.054	0.065	0.077	0.088	0.094	0.090	0.088	0.071	0.063	0.071
Tertiary/Services & Other sector	[13]	0.031	0.043	0.054	0.065	0.077	0.088	0.094	0.090	0.088	0.071	0.063	0.071
(nominal (not inflation corrected))													
<b>Petrol (automotive) Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[14]	0.072	0.091	0.109	0.128	0.146	0.164	0.178	0.173	0.169	0.153	0.142	0.149
Industry sector	[15]	0.062	0.077	0.091	0.107	0.122	0.137	0.148	0.144	0.140	0.128	0.118	0.124
Tertiary/Services & Other sector	[16]	0.062	0.077	0.091	0.107	0.122	0.137	0.148	0.144	0.140	0.128	0.118	0.124
(nominal (not inflation corrected))													
<b>Diesel (automotive) Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[14]	0.047	0.067	0.086	0.106	0.120	0.140	0.153	0.148	0.143	0.126	0.115	0.124
Industry sector	[15]	0.040	0.056	0.072	0.088	0.100	0.117	0.127	0.123	0.119	0.105	0.096	0.103
Tertiary/Services & Other sector	[16]	0.040	0.056	0.072	0.088	0.100	0.117	0.127	0.123	0.119	0.105	0.096	0.103
(nominal (not inflation corrected))													
<b>Firewood (logs) Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[17]	0.017	0.019	0.021	0.023	0.030	0.038	0.043	0.042	0.050	0.049	0.048	
Industry sector	[18]	0.014	0.016	0.018	0.020	0.025	0.032	0.036	0.035	0.042	0.041	0.040	
Tertiary/Services & Other sector	[19]	0.014	0.016	0.018	0.020	0.025	0.032	0.036	0.035	0.042	0.041	0.040	
(nominal (not inflation corrected))													
<b>Wood pellets Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[17]	0.027	0.030	0.033	0.036	0.047	0.048	0.052	0.056	0.056	0.053	0.052	
Industry sector	[18]	0.022	0.025	0.027	0.030	0.039	0.040	0.043	0.047	0.045	0.045	0.043	
Tertiary/Services & Other sector	[19]	0.022	0.025	0.027	0.030	0.039	0.040	0.043	0.047	0.045	0.045	0.043	
(nominal (not inflation corrected))													
<b>Wood chips Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[17]	0.013	0.014	0.016	0.017	0.028	0.031	0.031	0.032	0.034	0.034	0.034	
Industry sector	[18]	0.011	0.012	0.013	0.014	0.023	0.026	0.026	0.027	0.028	0.028	0.028	
Tertiary/Services & Other sector	[19]	0.011	0.012	0.013	0.014	0.023	0.026	0.026	0.027	0.028	0.028	0.028	
(nominal (not inflation corrected))													
<b>Coal Rates (€/kWh NCV)</b>													
	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Choose factor for Tertiary sector:</b>	<input type="text" value="0%"/>												
Residential sector	[20]	0.011	0.012	0.011	0.019	0.029	0.038	0.029	0.025	0.023	0.018	0.019	0.026
Industry sector	[21]	0.009	0.010	0.009	0.016	0.024	0.032	0.024	0.021	0.020	0.015	0.016	0.022
Tertiary/Services & Other sector	[22]	0.009	0.010	0.009	0.016	0.024	0.032	0.024	0.021	0.020	0.015	0.016	0.022

### Nominal Rates for Non-energy Consumables (not inflation corrected)

All rates presented on this sheet are Nominal Rates (not inflation corrected). See sheet 'General\_1' or sheet 'Rates' for rates in 2015-euros (inflation corrected) and for the projection beyond 2017/2018.  
The non-energy rates are defined only for residential users

(nominal (not inflation corrected))

Non-energy Rates	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
water & sewage, residential, €/m <sup>3</sup>	[23]	1.84	2.13	2.47	2.85	3.48	3.62	3.77	3.89	4.00	4.09	4.13	4.19
toner for copier/printer, all sectors, €/page	[24]	0.027	0.030	0.032	0.036	0.040							
paper for copier/printer, all sectors, €/page	[25]	0.008	0.009	0.010	0.011	0.012							
detergent dishwasher, residential, €/cycle	[26]	0.061	0.067	0.073	0.081	0.090							
detergent wash.machine, residential, €/cycle	[26]	0.101	0.112	0.121	0.134	0.150							
bags for vacuum cleaner, residential, €/year	[27]	4.72	5.21	5.65	6.26	7.00							

Notes:

- [1] Source for years 1996-2017: Eurostat HICP (2015 = 100) - annual average index [prc\_hicp\_aind], over all items, for EU-composition of the given year. Data extracted 10/09/2018. For years < 1996 and for 2018, rate of change set to 2%/a.
- [2] Residential electricity rate. Eurostat data extracted on 07/09/18. Data for year taken as average of 1st and 2nd semester. All taxes and levies included.  
Before 2007: Electricity prices for domestic consumers - bi-annual data (until 2007) [nrg\_pc\_204\_h]; Households - Dc (Annual consumption: 3 500 kWh of which night 1 300); EU27 data where available, otherwise EU25, EU15.  
After 2007: Electricity prices for household consumers - bi-annual data (from 2007 onwards) [nrg\_pc\_204]; Band DC : 2 500 kWh < Consumption < 5 000 kWh; data for EU current composition (EU28).
- [3] Industry electricity rate. Eurostat data extracted on 07/09/18. Data for year taken as average of 1st and 2nd semester. Excluding VAT and other recoverable taxes and levies.  
Before 2007: Electricity prices for industrial consumers - bi-annual data (until 2007) [nrg\_pc\_205\_h]; Industry - Ie (Annual consumption: 2 000 MWh; maximum demand: 500 kW; annual load: 4 000 hours); EU27 data where available, otherwise EU25, EU15.  
After 2007: Electricity prices for non-household consumers - bi-annual data (from 2007 onwards) [nrg\_pc\_205]; Band IC : 500 MWh < Consumption < 2 000 MWh; EU current composition (EU28).
- [4] Tertiary electricity rate. Interpolated between residential rate (incl. VAT) and industry rate (excl. VAT), but then considered to be excl. VAT and other recoverable taxes and levies. The rate for tertiary is determined as  $(100-x)\% \text{Industry rate} + x\% \text{Residential rate}$ . User can choose the value for 'x'. For reference: In PRIMES scenario REF2015f, the factor x is around 60% in earlier years and 70% in later years.
- [5] Residential natural gas rate. Eurostat data extracted on 07/09/18. Data for year taken as average of 1st and 2nd semester. All taxes and levies included. Original Eurostat data in euros per GJ GCV, converted to euros per kWh NCV dividing by 277.7 (kWh/GJ) and multiplying by 1.106 (GCV/NCV).  
Before 2007: Gas prices for domestic consumers - bi-annual data (until 2007) [nrg\_pc\_202\_h]; Households - D3 (Annual consumption: 83.70 GJ); EU27 data where available, otherwise EU25, EU15.  
After 2007: Gas prices for household consumers - bi-annual data (from 2007 onwards) [nrg\_pc\_202]; Band D2 : 20 GJ < Consumption < 200 GJ; data for EU current composition (EU28).
- [6] Industry natural gas rate. Eurostat data extracted on 07/09/18. Data for year taken as average of 1st and 2nd semester. Excluding VAT and other recoverable taxes and levies. Original Eurostat data in euros per GJ GCV, converted to euros per kWh NCV dividing by 277.7 (kWh/GJ) and multiplying by 1.106 (GCV/NCV).  
Before 2007: Gas prices for industrial consumers - bi-annual data (until 2007) [nrg\_pc\_203\_h]; Industry - I3-1 (Annual consumption: 41 860 GJ; load factor: 200 days, 1 600 hours); EU27 data where available, otherwise EU25, EU15.  
After 2007: Gas prices for non-household consumers - bi-annual data (from 2007 onwards) [nrg\_pc\_203]; Band I3 : 10 000 GJ < Consumption < 100 000 GJ; EU current composition (EU28).
- [7] Tertiary natural gas rate. Interpolated between residential rate (incl. VAT) and industry rate (excl. VAT), but then considered to be excl. VAT and other recoverable taxes and levies. The rate for tertiary is determined as  $(100-x)\% \text{Industry rate} + x\% \text{Residential rate}$ . User can choose the value for 'x'. For reference: In PRIMES scenario REF2015f, the factor x is 57-60%.
- [8] Residential rate for gas oil for heating. Oil Bulletin data (<https://ec.europa.eu/energy/en/data-analysis/weekly-oil-bulletin>) extracted on 12/09/18. Data for year taken as average over all available weekly prices. Inclusive of duties and taxes. Original Oil Bulletin data in euros per 1000 litres, converted to euros per kWh NCV using 42.9 MJ/kg, 0.85 kg/litre, 277.7 kWh/GJ => 10.11 kWh/litre.  
For 2005-2018 the rates derived from Oil Bulletin have been used. For year 2004 and before, Oil Bulletin provides rates per country but no weighted EU-28 average. For these years, the rates already present in EIA2017 have been scaled by factor 1.2 to create approximate continuity with Oil Bulletin rates in 2005.
- [9] Industry rate for gas oil for heating. Oil Bulletin data (<https://ec.europa.eu/energy/en/data-analysis/weekly-oil-bulletin>) extracted on 12/09/18. Data for year taken as average over all available weekly prices. Oil Bulletin price inclusive of duties and taxes has been used, but subtracting 20% VAT. Original Oil Bulletin data in euros per 1000 litres, converted to euros per kWh NCV using 42.9 MJ/kg, 0.85 kg/litre, 277.7 kWh/GJ => 10.11 kWh/litre.  
For 2005-2018 the rates derived from Oil Bulletin have been used. For year 2004 and before, Oil Bulletin provides rates per country but no weighted EU-28 average. For these years, the rates already present in EIA2017 have been scaled by factor 1.2 to create approximate continuity with Oil Bulletin rates in 2005.
- [10] Tertiary rates for gas oil for heating. Interpolated between residential rate (incl. VAT) and industry rate (excl. VAT), but then considered to be excl. VAT and other recoverable taxes and levies. The rate for tertiary is determined as  $(100-x)\% \text{Industry rate} + x\% \text{Residential rate}$ . User can choose the value for 'x'. For reference: In PRIMES scenario REF2015f, tertiary/services rates are 82-99% of the industry rates. This comes close to using x=0%.
- [11] Residential rate for LPG. Oil Bulletin data (<https://ec.europa.eu/energy/en/data-analysis/weekly-oil-bulletin>) extracted on 12/09/18. Data for year taken as average over all available weekly prices. Inclusive of duties and taxes. Original Oil Bulletin data in euros per 1000 litres, converted to euros per kWh NCV using 46 MJ/kg, 0.508 kg/litre, 277.7 kWh/GJ => 6.49 kWh/litre.  
For 2005-2018 the rates derived from Oil Bulletin have been used. For year 2004 and before, Oil Bulletin provides rates per country but no weighted EU-28 average. For these years, the rates already present in EIA2017 have been scaled by factor 0.95 to create approximate continuity with Oil Bulletin rates in 2005.
- [12] Industry rate for LPG. Oil Bulletin data (<https://ec.europa.eu/energy/en/data-analysis/weekly-oil-bulletin>) extracted on 12/09/18. Data for year taken as average over all available weekly prices. Oil Bulletin price inclusive of duties and taxes has been used, but subtracting 20% VAT. Original Oil Bulletin data in euros per 1000 litres, converted to euros per kWh NCV using 46 MJ/kg, 0.508 kg/litre, 277.7 kWh/GJ => 6.49 kWh/litre.  
For 2005-2018 the rates derived from Oil Bulletin have been used. For year 2004 and before, Oil Bulletin provides rates per country but no weighted EU-28 average. For these years, the rates already present in EIA2017 have been scaled by factor 0.95 to create approximate continuity with Oil Bulletin rates in 2005.
- [13] Tertiary rates for LPG. Interpolated between residential rate (incl. VAT) and industry rate (excl. VAT), but then considered to be excl. VAT and other recoverable taxes and levies. The rate for tertiary is determined as  $(100-x)\% \text{Industry rate} + x\% \text{Residential rate}$ . User can choose the value for 'x'. For reference: In PRIMES scenario REF2015f, tertiary/services rates are around 91% of the industry rates. This comes close to using x=0%.
- [14] Residential rate automotive Petrol (Euro Super 95) and Diesel. Oil Bulletin data (<https://ec.europa.eu/energy/en/data-analysis/weekly-oil-bulletin>) extracted on 12/09/18. Data for year taken as average over all available weekly prices. Inclusive of duties and taxes. Original Oil Bulletin data in euros per 1000 litres, converted to euros per kWh NCV using 44 MJ/kg, 0.745 kg/litre, 277.7 kWh/GJ => 9.10 kWh/litre (for Petrol), and 42.3 MJ/kg, 0.832 kg/litre, 277.7 kWh/GJ => 9.77 kWh/litre (for Diesel).  
For 2005-2018 the rates derived from Oil Bulletin have been used. For year 2004 and before, Oil Bulletin provides rates per country but no weighted EU-28 average. For these years, the rates already present in EIA2017 have been scaled by factor 1.15 to create approximate continuity with Oil Bulletin rates in 2005.
- [15] Industry rate for automotive Petrol (Euro Super 95) and Diesel. Oil Bulletin data (<https://ec.europa.eu/energy/en/data-analysis/weekly-oil-bulletin>) extracted on 12/09/18. Data for year taken as average over all available weekly prices. Oil Bulletin price inclusive of duties and taxes has been used, but subtracting 20% VAT. Original Oil Bulletin data in euros per 1000 litres, converted to euros per kWh NCV using 44 MJ/kg, 0.745 kg/litre, 277.7 kWh/GJ => 9.10 kWh/litre (for Petrol) and 42.3 MJ/kg, 0.832 kg/litre, 277.7 kWh/GJ => 9.77 kWh/litre (for Diesel).  
For 2005-2018 the rates derived from Oil Bulletin have been used. For year 2004 and before, Oil Bulletin provides rates per country but no weighted EU-28 average. For these years, the rates already present in EIA2017 have been scaled by factor 1.15 to create approximate continuity with Oil Bulletin rates in 2005.
- [16] Tertiary rates for automotive Petrol and Diesel. Interpolated between residential rate (incl. VAT) and industry rate (excl. VAT), but then considered to be excl. VAT and other recoverable taxes and levies. The rate for tertiary is determined as  $(100-x)\% \text{Industry rate} + x\% \text{Residential rate}$ . User can choose the value for 'x'.



- [17] Residential rate for Firewood logs, Wood pellets and Wood chips. Main references are the 2005 rate reported in the prep. study on Solid Fuel Boilers, Task 2, table 2-25, and the 2010 rate reported in the Impact Assessment on Solid Fuel Boilers, Part 1/3, SWD(2015)92 final, 28.4.2015, table 20.  
For other years following 2005, data sources included: <https://www.forestfuels.co.uk/wood-fuel-price-comparison/>, MONITORING OF WOOD FUEL PRICES IN SLOVENIA, AUSTRIA, ITALY, CROATIA, ROMANIA, GERMANY, SPAIN AND IRELAND, Report No. 6, March 2014; Eubionet3, Solutions for biomass fuel market barriers and raw material availability - IEE/07/777/SI2.499477, WP3 - Wood fuel price statistics in Europe - D 3.3, Univ. of Uppsala, August 2011; Global Wood Pellet Industry and Trade Study 2017, IEA Bioenergy: Task 40: June 2017; [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Sales\\_price\\_of\\_wood\\_in\\_chips\\_or\\_particles,\\_EU-28,\\_2005-2015.png&oldid=351688](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Sales_price_of_wood_in_chips_or_particles,_EU-28,_2005-2015.png&oldid=351688).  
For data conversion: 277.7 kWh/GJ and 4800 kWh/ton (30% moisture content).  
Before year 2005 a 2%/a decrease in prices has been assumed.
- [18] Industry rate for Firewood logs, Wood pellets and Wood chips. Derived from the residential rate by subtracting 20% VAT. For firewood logs and pellets the non-residential rates are of minor importance. For wood chips, the base rate is the non-residential one and the residential one has been derived adding 20% VAT.
- [19] Tertiary rates for Firewood logs, Wood pellets and Wood chips. Interpolated between residential rate (incl. VAT) and industry rate (excl. VAT), but then considered to be excl. VAT and other recoverable taxes and levies. The rate for tertiary is determined as  $(100-x)\% \cdot \text{Industry rate} + x\% \cdot \text{Residential rate}$ . User can choose the value for 'x'. For reference: In PRIMES scenario REF2015f for solid fuels, tertiary/services rates are around 80% of the residential rates. For biomass, services rates are 73-90% of residential rates. This comes close to using  $x=0\%$ .
- [20] Residential rate for Coal. Main reference is the 2010 rate reported in the Impact Assessment on Solid Fuel Boilers, Part 1/3, SWD(2015)92 final, 28.4.2015, table 20.  
Consumer rates are assumed to vary with the years according to the CIF prices for coal reported in 'BP Statistical review of world energy 2018', <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/coal/coal-prices.html>  
Before year 1997 a 2%/a decrease in prices has been assumed.
- [21] Industry rate for Coal. Derived from the residential rate by subtracting 20% VAT. For coal the non-residential rates are of minor importance.
- [22] Tertiary rates for Coal. Interpolated between residential rate (incl. VAT) and industry rate (excl. VAT), but then considered to be excl. VAT and other recoverable taxes and levies. The rate for tertiary is determined as  $(100-x)\% \cdot \text{Industry rate} + x\% \cdot \text{Residential rate}$ . User can choose the value for 'x'. For reference: In PRIMES scenario REF2015f for solid fuels, tertiary/services rates are around 80% of the residential rates. This comes close to using  $x=0\%$ .
- [23] Residential rates for Water.  
The 2000, 2011 and 2013 rates are based on 'MEErP Preparatory Study on Taps and Showers, Task 2 report: Market (version 2), JRC 2014, par. 2.4.4.2'.  
For other years in the period 2001-2017, the annual variation of rates has been based on Eurostat, HICP (2015 = 100) - annual data (average index and rate of change) [prc\_hicp\_aind], for items: water supply and sewerage collection, data extracted 26.09.2018.  
For years before 2000, an average annual price decrease of 3%/a has been applied.
- [24] Residential rates for Toner (2010):  
IJ, B/W, 0.04 €/page, share 7%  
IJ, Colour, 0.10 €/page, share 7%  
EP, B/W, 0.02 €/page, share 60%  
EP, Colour, 0.08 €/page, share 26%  
Average: 0.04 €/page (indicative 2010; variation with inflation)
- [25] Average paper cost 0.012 €/page in 2010; variation with inflation.
- [26] Detergent (inc. salt, rinsing agent, etc.) costs/cycle in 2010; variation with inflation.  
Household dishwasher €0.09 per cycle  
Household washing machine €0.15 per cycle
- [27] Vacuum cleaner bags and filters, per year (57h use/year), in 2010; variation with inflation.  
Average household VC (1/3 bagless, 2/3 bags & filter at €12/a) => € 7.00  
Note: The bag price is for 57 h operation. This is 1 year for a household with a single vacuum cleaner. For households with multiple VCs the bag costs per VC are less. For professional VCs the bag costs are more (proportional to the number of hours operation)

CLASSES

Lot	Shares per sector	% RESidential	% TERtiary	% INDUstry	% OTHER
2	<b>WH dedicated Water Heater</b>	65%	31%	3%	1%
1	<b>CHC Central Heating combi, water heating</b>	64%	30%	5%	1%
	CH non-electric	60%	25%	12%	3%
	CH electric resistance boiler, 1st estimate	60%	25%	12%	3%
	CH heat pump, 1st estimate	60%	25%	12%	3%
	CH auxiliary electricity (incl. circulator), 1st estimate	60%	25%	12%	3%
1	<b>CH Central Heating boiler, space heating</b>	60%	25%	12%	3%
15	SFB Wood Manual	90%	8%	2%	0%
15	SFB Wood Direct Draft	90%	8%	2%	0%
15	SFB Coal	90%	8%	2%	0%
15	SFB Pellets	70%	24%	5%	1%
15	SFB Wood chips	0%	30%	50%	20%
15	<b>SFB Solid Fuel Boilers</b>				
21 /E6	CHAE-S (<= 400 kW)	5%	94%	0%	1%
21 /E6	CHAE-L (> 400 kW)	0%	71%	29%	0%
21 /E6	CHWE-S (<= 400 kW)	5%	95%	0%	0%
21 /E6	CHWE-M (> 400 kW; <= 1500 kW)	0%	71%	29%	0%
21 /E6	CHWE-L (> 1500 kW)	0%	71%	29%	0%
21 /E6	CHF	5%	95%	0%	0%
21 /E6	HT PCH-AE-S	0%	60%	30%	10%
21 /E6	HT PCH-AE-L	0%	60%	30%	10%
21 /E6	HT PCH-WE-S	0%	60%	30%	10%
21 /E6	HT PCH-WE-M	0%	60%	30%	10%
21 /E6	HT PCH-WE-L	0%	60%	30%	10%
21 /E6	AC rooftop	0%	81%	17%	2%
21 /E6	AC splits	5%	84%	9%	2%
21 /E6	AC VRF	1%	95%	4%	0%
21 /E6	ACF	3%	82%	13%	2%
21 /E6	<b>AHC central Air Cooling</b>				
21 /E6	AC rooftop (rev)	0%	81%	17%	2%
21 /E6	AC splits (rev)	5%	84%	9%	2%
21 /E6	AC VRF (rev)	1%	95%	4%	0%
21 /E6	ACF (rev)	3%	82%	13%	2%
21 /E6	AHF	2%	42%	42%	14%
21 /E6	AHE	2%	42%	42%	14%
21 /E6	<b>AHC central Air Heating (rev double)</b>				
21 /E6	<b>AHC total Heating &amp; Cooling</b>				
20	LH open fireplace	90%	9%	1%	0%
20	LH closed fireplace/inset	90%	9%	1%	0%
20	LH wood stove	90%	9%	1%	0%
20	LH coal stove	90%	9%	1%	0%
20	LH cooker	90%	9%	1%	0%
20	LH SHR stove	90%	9%	1%	0%
20	LH pellet stove	90%	9%	1%	0%
20	LH open fire gas	90%	9%	1%	0%
20	LH closed fire gas	90%	9%	1%	0%
20	LH flueless fuel heater	90%	9%	1%	0%
20	LH elec.portable	66%	30%	4%	0%
20	LH elec.convector	66%	30%	4%	0%
20	LH elec.storage	66%	30%	4%	0%
20	LH elec.underfloor	66%	30%	4%	0%
20	LH luminous heaters	0%	2%	12%	86%
20	LH tube heaters	0%	2%	12%	86%
20	<b>LH Local Heaters</b>				
10	RAC cooling, all RAC types <12 kW	45%	49%	5%	1%
10	o/w RAC reversible (also heating)	45%	49%	5%	1%
10	<b>RAC Room Air Conditioner</b>				
11	<b>CIRC Circulator pumps &lt;2.5 kW</b>	60%	25%	12%	3%
E6 /10	NRVU Central Balanced >125W/fan	0%	86%	12%	2%
E6 /10	RVU Central Unidir. <125W/fan	100%	0%	0%	0%
E6 /10	RVU Central Balanced <125W/fan	100%	0%	0%	0%
E6 /10	RVU Local Balanced	100%	0%	0%	0%
E6 /10	<b>VU Ventilation Units (res &amp; nonres)</b>				
<i>LS, indicative shares, not constant over years</i>					
8 /9 /19	LFL (T12,T8h,T8t,T5,other)	5%	72%	22%	1%
8 /9 /19	HID (HPM, HPS, MH)	0%	92%	7%	1%
8 /9 /19	CFLni (all shapes)	30%	65%	4%	1%
8 /9 /19	CFLi (retrofit for GLS, HL)	60%	30%	10%	0%
8 /9 /19	GLS (DLS & NDLS)	80%	14%	5%	1%
8 /9 /19	HL (DLS & NDLS, LV & MV)	65%	25%	8%	2%
8 /9 /19	LED replacing LFL (retrofit & luminaire)	5%	72%	22%	1%
8 /9 /19	LED replacing HID (retrofit & luminaire)	0%	92%	7%	1%
8 /9 /19	LED replacing CFLni (retrofit & luminaire)	20%	74%	5%	1%
8 /9 /19	LED replacing DLS (retrofit & luminaire)	65%	25%	8%	2%
8 /9 /19	LED replacing NDLS (retrofit & luminaire)	75%	18%	6%	1%
8 /9 /19	<i>Special Purpose Lamps (exempt)</i>	0%	76%	23%	1%
8 /9 /19	<i>Lighting controls and standby</i>	0%	76%	23%	1%
8 /9 /19	<b>LS Light Sources</b>				

CLASSES

Lot	Shares per sector	% RESidential	% TERtiary	% INDUstry	% OTHer
5	DP TV on-mode, total all types	90%	10%	0%	0%
5	DP TV standby, standard (NoNA)	90%	10%	0%	0%
5	DP TV standby, LoNA	90%	10%	0%	0%
5	DP TV standby, HINA ('Smart')	90%	10%	0%	0%
5	DP TV standby, total all types	90%	10%	0%	0%
5	<b>DP TV total on-mode + standby</b>	90%	10%	0%	0%
5	DP Monitor on-mode	49%	44%	6%	1%
5	DP Monitor standby	49%	44%	6%	1%
5	<b>DP Monitor total</b>	49%	44%	6%	1%
5	DP Signage on-mode	0%	90%	10%	0%
5	DP Signage standby	0%	90%	10%	0%
5	<b>DP Signage total</b>	0%	90%	10%	0%
18	SSTB Simple STB	90%	10%	0%	0%
18	CSTB Complex STB	90%	10%	0%	0%
<b>18</b>	<b>STB Set Top Boxes</b>				
E3	VIDEO DVD players/recorders	90%	9%	1%	0%
E3	VIDEO projectors	3%	93%	3%	1%
E3	VIDEO game consoles	100%	0%	0%	0%
<b>E3</b>	<b>VIDEO</b>				
E9	ES tower 1-socket traditional	0%	86%	12%	2%
E9	ES rack 1-socket traditional	0%	86%	12%	2%
E9	ES rack 2-socket traditional	0%	86%	12%	2%
E9	ES rack 2-socket cloud	0%	86%	12%	2%
E9	ES rack 4-socket traditional	0%	86%	12%	2%
E9	ES rack 4-socket cloud	0%	86%	12%	2%
E9	ES rack 2-socket resilient trad.	0%	86%	12%	2%
E9	ES rack 2-socket resilient cloud	0%	86%	12%	2%
E9	ES rack 4-socket resilient trad.	0%	86%	12%	2%
E9	ES rack 4-socket resilient cloud	0%	86%	12%	2%
E9	ES blade 1-socket traditional	0%	86%	12%	2%
E9	ES blade 2-socket traditional	0%	86%	12%	2%
E9	ES blade 2-socket cloud	0%	86%	12%	2%
E9	ES blade 4-socket traditional	0%	86%	12%	2%
E9	ES blade 4-socket cloud	0%	86%	12%	2%
<b>E9</b>	<b>ES Enterprise Servers total</b>				
E9	DS Online 2	0%	86%	12%	2%
E9	DS Online 3	0%	86%	12%	2%
E9	DS Online 4	0%	86%	12%	2%
<b>E9</b>	<b>DS Data Storage products total</b>				
3	PC Desktop	66%	29%	4%	1%
3	PC Notebook	66%	29%	4%	1%
3	PC Tablet/slate	90%	9%	1%	0%
3	PC Thin client	0%	86%	12%	2%
3	PC Workstation	0%	86%	12%	2%
<b>3</b>	<b>PC Personal Computers</b>				
4	EP-Copier mono	4%	82%	12%	2%
4	EP-Copier colour	4%	82%	12%	2%
4	EP-printer mono	5%	82%	11%	2%
4	EP-printer colour	5%	82%	11%	2%
4	IJ SFD printer	94%	5%	1%	0%
4	IJ MFD printer	94%	5%	1%	0%
<b>4</b>	<b>EP &amp; IJ imaging equipment</b>				
	paper	27%	63%	9%	2%
6/26	SB Home Gateway	100%	0%	0%	0%
6/26	SB Home NAS	100%	0%	0%	0%
6/26	SB Home Phones (fixed)	100%	0%	0%	0%
6/26	SB Office Phones (fixed)	0%	86%	12%	2%
6/26	SB Home Gateway sb	100%	0%	0%	0%
6/26	SB Home NAS sb	100%	0%	0%	0%
6/26	SB Home Phones (fixed) sb	100%	0%	0%	0%
6/26	SB Office Phones (fixed) sb	0%	86%	12%	2%
6/26	SB Home Gateway idle	100%	0%	0%	0%
6/26	SB Home NAS idle	100%	0%	0%	0%
6/26	SB Home Phones (fixed) idle	100%	0%	0%	0%
6/26	SB Office Phones (fixed) idle	0%	86%	12%	2%
6/26	<b>SB (networked) Stand-By (rest)</b>				
	<i>EPS Active mode (for electricity losses)</i>				
7	EPS ≤ 6W, low-V	75%	25%	0%	0%
7	EPS 6–10 W	75%	25%	0%	0%
7	EPS 10–12 W	75%	25%	0%	0%
7	EPS 15–20 W	75%	25%	0%	0%
7	EPS 20–30 W	75%	25%	0%	0%
7	EPS 30–65 W, multiple-V	75%	25%	0%	0%
7	EPS 30–65 W	75%	25%	0%	0%
7	EPS 65–120 W	75%	25%	0%	0%
7	EPS 65–120 W, multiple-V	75%	25%	0%	0%
7	EPS 12–15 W	75%	25%	0%	0%
	<i>EPS No-load mode</i>				
7	EPS ≤ 6W, low-V	75%	25%	0%	0%
7	EPS 6–10 W	75%	25%	0%	0%
7	EPS 10–12 W	75%	25%	0%	0%
7	EPS 15–20 W	75%	25%	0%	0%
7	EPS 20–30 W	75%	25%	0%	0%
7	EPS 30–65 W, multiple-V	75%	25%	0%	0%
7	EPS 30–65 W	75%	25%	0%	0%
7	EPS 65–120 W	75%	25%	0%	0%
7	EPS 65–120 W, multiple-V	75%	25%	0%	0%
7	EPS 12–15 W	75%	25%	0%	0%
7	<b>EPS, total for no-load mode</b>				

CLASSES

Lot	Shares per sector	% RESidential	% TERtiary	% INDUstry	% OTHer
27	UPS below 1.5 kVA	10%	90%	0%	0%
27	UPS 1.5 to 5 kVA	5%	90%	5%	0%
27	UPS 5 to 10 kVA	0%	90%	10%	0%
27	UPS 10 to 200 kVA	0%	80%	15%	5%
<b>27</b>	<b>UPS Total</b>				
<b>13</b>	<b>RF Household Refrigeration</b>	92%	6%	1%	1%
12	CF open vertical chilled multi deck (RVC2)	0%	100%	0%	0%
12	CF open horizontal frozen island (RHF4)	0%	100%	0%	0%
12	CF other supermarket display (non-base cases)	0%	100%	0%	0%
12	CF Plug in one door beverage cooler	0%	100%	0%	0%
12	CF Plug in horizontal ice cream freezer	0%	100%	0%	0%
12	CF Spiral vending machine	0%	76%	23%	1%
	<b>CF Commercial Refrigeration</b>				
E1	PF Storage cabinets All types	0%	100%	0%	0%
E1	PF Process Chiller All MT&LT	0%	2%	90%	8%
E1	PF Condensing Unit, All MT&LT	0%	85%	10%	5%
<b>E1</b>	<b>PF Professional Refrigeration, Total</b>				
22 /23	CA El. Hobs	100%	0%	0%	0%
22 /23	CA El. Ovens	80%	20%	0%	0%
22 /23	CA Gas Hobs	80%	20%	0%	0%
22 /23	CA Gas Ovens	90%	10%	0%	0%
22 /23	CA Range Hoods	80%	20%	0%	0%
<b>22 /23</b>	<b>CA Cooking Appliances</b>				
25	CM Dripfilter (glass)	95%	5%	0%	0%
25	CM Dripfilter (thermos)	95%	5%	0%	0%
25	CM Dripfilter (full automatic)	95%	5%	0%	0%
25	CM Pad filter	95%	5%	0%	0%
25	CM Hard cap espresso	95%	5%	0%	0%
25	CM Semi-auto espresso	95%	5%	0%	0%
25	CM Fully-auto espresso	95%	5%	0%	0%
25	CM				
25	CM Dripfilter (glass) sb	95%	5%	0%	0%
25	CM Dripfilter (thermos) sb	95%	5%	0%	0%
25	CM Dripfilter (full automatic) sb	95%	5%	0%	0%
25	CM Pad filter sb	95%	5%	0%	0%
25	CM Hard cap espresso sb	95%	5%	0%	0%
25	CM Semi-auto espresso sb	95%	5%	0%	0%
25	CM Fully-auto espresso sb	95%	5%	0%	0%
<b>25</b>	<b>CM household Coffee Makers</b>				
<b>14</b>	<b>WM household Washing Machine</b>	97%	3%	0%	0%
<b>14</b>	<b>DW Household Dishwashers</b>	93%	7%	0%	0%
16	LD eI.vented	95%	5%	0%	0%
16	LD eI.condensor	95%	5%	0%	0%
16	LD gas.dryer	95%	5%	0%	0%
<b>16</b>	<b>LD household Laundry Drier</b>				
17	VC household	100%	0%	0%	0%
17	VC professional	0%	86%	12%	2%
<b>17</b>	<b>VC Vacuum Cleaners</b>				
11	FAN Axial<300Pa (all FAN types >125W)	0%	75%	23%	2%
11	FAN Axial>300Pa	0%	75%	23%	2%
11	FAN Centr.FC	0%	75%	23%	2%
11	FAN Centr.BC-free	0%	75%	23%	2%
11	FAN Centr.BC	0%	75%	23%	2%
11	FAN Cross-flow	0%	75%	23%	2%
<b>11</b>	<b>FAN Industrial Fans &gt;125W</b>				
11/30	Medium (S) 3-phase 0.75-7.5 kW no VSD	0%	20%	70%	10%
11/30	Medium (M) 3-phase 7.5-75 kW no VSD	0%	20%	70%	10%
11/30	Medium (L) 3-phase 75-375 kW no VSD	0%	20%	70%	10%
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW without VSD</b>				
11/30	Medium (S) 3-phase 0.75-7.5 kW with VSD	0%	20%	70%	10%
11/30	Medium (M) 3-phase 7.5-75 kW with VSD	0%	20%	70%	10%
11/30	Medium (L) 3-phase 75-375 kW with VSD	0%	20%	70%	10%
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW with VSD</b>				
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW w/wo VSD</b>				
11/30	Small 1 phase 0.12-0.75 kW no VSD	0%	20%	70%	10%
11/30	Small 1 phase 0.12-0.75 kW with VSD	0%	20%	70%	10%
<b>11/30</b>	<b>Total Small 1-phase 0.12-0.75 kW</b>				
11/30	Small 3 phase 0.12-0.75 kW no VSD	0%	20%	70%	10%
11/30	Small 3 phase 0.12-0.75 kW with VSD	0%	20%	70%	10%
<b>11/30</b>	<b>Total Small 3-phase 0.12-0.75 kW</b>				
11/30	Large 3-phase LV 375-1000 kW no VSD	0%	20%	70%	10%
11/30	Large 3-phase LV 375-1000kW with VSD	0%	20%	70%	10%
<b>11/30</b>	<b>Total Large 3-phase LV 375-1000 kW</b>				

## CLASSES

Lot	Shares per sector	% RESidential	% TERtiary	% INDUstry	% OTHer
11/30	Explosion motors (S) 3-phase 0.75-7.5 kW	0%	20%	70%	10%
11/30	Explosion motors (M) 3-phase 7.5-75 kW	0%	20%	70%	10%
11/30	Explosion motors (L) 3-phase 75-375 kW	0%	20%	70%	10%
<b>11/30</b>	<b>Total Explosion 0.75-375 kW (no VSD)</b>				
11/30	Brake motors (S) 3-phase 0.75-7.5 kW	0%	20%	70%	10%
11/30	Brake motors (M) 3-phase 7.5-75 kW	0%	20%	70%	10%
11/30	Brake motors (L) 3-phase 75-375 kW	0%	20%	70%	10%
<b>11/30</b>	<b>Total Brake motors 0.75-375 kW (no VSD)</b>				
11/30	8-pole motors (S) 3-phase 0.75-7.5 kW	0%	20%	70%	10%
11/30	8-pole motors (M) 3-phase 7.5-75 kW	0%	20%	70%	10%
11/30	8-pole motors (L) 3-phase 75-375 kW	0%	20%	70%	10%
<b>11/30</b>	<b>Total 8-pole motors 0.75-375 kW (no VSD)</b>				
<b>11/30</b>	<b>Single phase motors &gt; 0.75 kW (no VSD)</b>	0%	20%	70%	10%
<b>11/30</b>	<b>MT Electric Motors LV 0.12-1000 kW</b>				
<b>11</b>	<b>WP Water pumps</b>	0%	29%	30%	41%
31	CP Fixed Speed 5-1280 l/s	0%	1%	83%	16%
31	CP Variable speed 5-1280 l/s	0%	0%	100%	0%
31	CP Pistons 2-64 l/s	0%	80%	20%	0%
<b>31</b>	<b>CP Standard Air Compressors</b>				
	(separate: Energy sector)				
E2	TRAF0 Distribution	0%	0%	0%	0%
E2	TRAF0 Industry oil	0%	0%	0%	0%
E2	TRAF0 Industry dry	0%	0%	0%	0%
E2	TRAF0 Power	0%	0%	0%	0%
E2	TRAF0 DER oil	0%	0%	0%	0%
E2	TRAF0 DER dry	0%	0%	0%	0%
E2	TRAF0 Small	0%	0%	0%	0%
<b>E2</b>	<b>TRAF0 Utility Transformers</b>				
T	Tyres C1, replacement for cars	80%	15%	4%	1%
T	Tyres C1, OEM for cars	80%	15%	4%	1%
T	<b>Tyres C1, total</b>				
T	Tyres C2, replacement for vans	0%	60%	35%	5%
T	Tyres C2, OEM for vans	0%	60%	35%	5%
T	<b>Tyres C2, total</b>				
T	Tyres C3, replacement for trucks/busses	0%	60%	35%	5%
T	Tyres C3, OEM for trucks/busses	0%	60%	35%	5%
T	<b>Tyres C3, total</b>				
<b>T</b>	<b>Tyres, total C1+C2+C3</b>				

SALESBAU

Lot	SALESBAU, 000 units (light, tyres m units)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>2</b>	<b>WH dedicated Water Heater</b>	<b>9855</b>	<b>10918</b>	<b>11159</b>	<b>11398</b>	<b>11638</b>	<b>11878</b>	<b>12118</b>	<b>12358</b>	<b>12599</b>	<b>12839</b>
<b>1</b>	<b>CHC Central Heating combi, water heating</b>	<b>3624</b>	<b>6065</b>	<b>6505</b>	<b>6946</b>	<b>7386</b>	<b>7826</b>	<b>8266</b>	<b>8706</b>	<b>9147</b>	<b>9587</b>
<b>1</b>	<b>CH Central Heating boiler, space heating</b>	<b>4802</b>	<b>6987</b>	<b>7469</b>	<b>7951</b>	<b>8729</b>	<b>9508</b>	<b>10287</b>	<b>11066</b>	<b>11845</b>	<b>12624</b>
15	SFB Wood Manual	226	136	88	50	28	26	23	21	19	17
15	SFB Wood Direct Draft	5	223	227	232	206	251	305	371	451	549
15	SFB Coal	64	28	4	3	3	2	2	2	2	2
15	SFB Pellets	0	46	71	71	71	79	87	96	106	117
15	SFB Wood chips	0	5	5	6	7	8	9	9	10	12
<b>15</b>	<b>SFB Solid Fuel Boilers</b>	<b>294</b>	<b>438</b>	<b>395</b>	<b>362</b>	<b>315</b>	<b>365</b>	<b>426</b>	<b>499</b>	<b>588</b>	<b>696</b>
21 /E6	CHAE-S (<= 400 kW)	21	88	97	107	119	130	141	152	163	173
21 /E6	CHAE-L (> 400 kW)	2	6	6	7	7	7	7	8	8	8
21 /E6	CHWE-S (<= 400 kW)	2	9	10	11	12	13	14	15	16	17
21 /E6	CHWE-M (> 400 kW; <= 1500 kW)	1	2	2	2	2	2	2	2	2	2
21 /E6	CHWE-L (> 1500 kW)	0	1	1	1	1	1	1	1	1	1
21 /E6	CHF	0	0	1	1	1	1	1	1	1	1
21 /E6	HT PCH-AE-S	9	15	16	17	18	19	19	20	21	22
21 /E6	HT PCH-AE-L	3	5	5	5	6	6	6	6	7	7
21 /E6	HT PCH-WE-S	2	4	4	4	5	5	5	5	5	6
21 /E6	HT PCH-WE-M	2	3	3	3	4	4	4	4	4	4
21 /E6	HT PCH-WE-L	0	0	0	0	0	0	0	0	0	0
21 /E6	AC rooftop	11	36	36	28	16	4	4	4	4	4
21 /E6	AC splits	92	335	350	338	326	313	301	289	278	266
21 /E6	AC VRF	0	91	119	173	218	263	307	346	379	403
21 /E6	ACF	0	0	1	1	1	1	1	1	1	1
<b>21 /E6</b>	<b>AHC central Air Cooling</b>	<b>146</b>	<b>595</b>	<b>650</b>	<b>697</b>	<b>734</b>	<b>769</b>	<b>815</b>	<b>856</b>	<b>891</b>	<b>917</b>
21 /E6	AC rooftop (rev)	7	22	21	17	10	2	0	0	0	0
21 /E6	AC splits (rev)	67	231	241	234	226	217	209	200	192	184
21 /E6	AC VRF (rev)	0	80	99	152	185	212	235	252	263	266
21 /E6	ACF (rev)	0	1	1	1	1	2	2	2	2	3
21 /E6	AHF	134	88	82	77	73	69	65	61	57	53
21 /E6	AHE	3	5	5	5	5	5	5	5	5	5
<b>21 /E6</b>	<b>AHC central Air Heating (rev double)</b>	<b>210</b>	<b>426</b>	<b>450</b>	<b>486</b>	<b>499</b>	<b>507</b>	<b>515</b>	<b>521</b>	<b>519</b>	<b>511</b>
<b>21 /E6</b>	<b>AHC total Heating &amp; Cooling</b>	<b>282</b>	<b>688</b>	<b>738</b>	<b>780</b>	<b>812</b>	<b>843</b>	<b>885</b>	<b>922</b>	<b>953</b>	<b>975</b>
20	LH open fireplace	517	754	759	764	759	754	753	753	753	753
20	LH closed fireplace/inset	316	854	953	1052	1066	1079	1082	1082	1082	1082
20	LH wood stove	341	402	446	489	496	503	504	504	504	504
20	LH coal stove	156	121	111	101	75	50	46	46	46	46
20	LH cooker	250	503	607	712	730	748	751	751	751	751
20	LH SHR stove	216	302	374	447	500	553	564	564	564	564
20	LH pellet stove	0	231	291	352	377	402	407	407	407	407
20	LH open fire gas	63	90	101	111	111	111	111	111	111	111
20	LH closed fire gas	325	366	376	387	397	407	409	409	409	409
20	LH flueless fuel heater	250	503	477	452	402	352	342	342	342	342
20	LH elec.portable	5930	7236	7465	7695	8043	8390	8460	8460	8460	8460
20	LH elec.convectector	9357	11417	11779	12141	12689	13238	13349	13349	13349	13349
20	LH elec.storage	272	332	342	353	369	385	388	388	388	388
20	LH elec.underfloor	1071	1307	1348	1389	1452	1515	1528	1528	1528	1528
20	LH luminous heaters	20	24	24	24	24	24	24	24	24	24
20	LH tube heaters	20	24	24	24	24	24	24	24	24	24
<b>20</b>	<b>LH Local Heaters</b>	<b>19103</b>	<b>24464</b>	<b>25478</b>	<b>26492</b>	<b>27513</b>	<b>28534</b>	<b>28740</b>	<b>28740</b>	<b>28740</b>	<b>28740</b>
10	RAC cooling, all RAC types <12 kW	394	4705	7226	9089	10032	10359	10539	10719	10899	11080
10	o/w RAC reversible (also heating)	111	3491	6370	8036	8880	9178	9345	9513	9680	9848
<b>10</b>	<b>RAC Room Air Conditioner</b>	<b>394</b>	<b>4705</b>	<b>7226</b>	<b>9089</b>	<b>10032</b>	<b>10359</b>	<b>10539</b>	<b>10719</b>	<b>10899</b>	<b>11080</b>
<b>11</b>	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>5502</b>	<b>8065</b>	<b>8593</b>	<b>9120</b>	<b>9648</b>	<b>9542</b>	<b>9015</b>	<b>8487</b>	<b>7960</b>	<b>7432</b>
E6 /10	NRVU Central Unidir. >125W/fan CEXH	169	277	284	291	298	306	313	320	328	335
E6 /10	NRVU Central Balanced >125W/fan	61	257	279	302	328	353	378	404	429	455
E6 /10	RVU Central Unidir. <=125W/fan	1042	2336	2073	1949	2109	2269	2429	2589	2748	2908
E6 /10	RVU Central Balanced <=125W/fan	37	257	636	816	917	1018	1119	1220	1321	1422
E6 /10	RVU Local Balanced	7	85	186	302	424	546	668	790	912	1035
<b>E6 /10</b>	<b>VU Ventilation Units (res &amp; nonres)</b>	<b>1315</b>	<b>3212</b>	<b>3457</b>	<b>3660</b>	<b>4076</b>	<b>4492</b>	<b>4908</b>	<b>5324</b>	<b>5739</b>	<b>6155</b>
8 /9 /19	LS: BAU, million units										
8 /9 /19	LFL (T12,T8h,T8t,T5,other)	269	390	351	267	183	135	112	88	68	52
8 /9 /19	HID (HPM, HPS, MH)	17	41	35	24	19	10	5	3	1	1
8 /9 /19	CFLni (all shapes)	23	87	76	73	59	29	15	9	4	3
8 /9 /19	CFLi (retrofit for GLS, HL)	28	350	227	271	162	120	65	45	28	18
8 /9 /19	GLS (DLS & NDLS)	1688	1370	1150	796	469	275	161	94	55	32
8 /9 /19	GLS from storage	0	0	0	0	0	0	0	0	0	0
8 /9 /19	HL (DLS & NDLS, LV & MV)	88	559	741	796	491	252	133	72	40	23
8 /9 /19	HL from storage	0	0	0	0	0	0	0	0	0	0
8 /9 /19	LED replacing LFL (retrofit & luminaire)	0	0	6	38	98	170	187	217	259	303
8 /9 /19	LED replacing HID (retrofit & luminaire)	0	0	0	4	10	15	18	21	25	28
8 /9 /19	LED replacing CFLni (retrofit & luminaire)	0	0	2	11	34	55	64	71	75	82
8 /9 /19	LED replacing DLS (retrofit & luminaire)	0	0	7	64	118	91	66	54	48	47
8 /9 /19	LED replacing NDLS (retrofit & luminaire)	0	2	15	337	459	425	345	280	240	225
8 /9 /19	SUBTOTAL non-LED (excl. SPL, ctrl)	2112	2797	2581	2227	1382	822	491	310	196	128
8 /9 /19	SUBTOTAL LED	0	2	29	455	719	756	681	643	646	685
<b>8 /9 /19</b>	<b>LS Lighting (excl. SPL, ctrl) mln units</b>	<b>2112</b>	<b>2799</b>	<b>2610</b>	<b>2682</b>	<b>2102</b>	<b>1578</b>	<b>1172</b>	<b>953</b>	<b>842</b>	<b>814</b>

SALESBAU

Lot	SALESBAU, 000 units (light, tyres m units)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
5	DP TV, standard (NoNA)	26000	56240	420	0	0	0	0	0	0	0
5	DP TV, LoNA	0	8880	21000	13000	0	0	0	0	0	0
5	DP TV, HiNA ('Smart')	0	8880	20580	39000	60000	69000	70000	70000	70000	70000
5	<b>DP TV total</b>	<b>26000</b>	<b>74000</b>	<b>42000</b>	<b>52000</b>	<b>60000</b>	<b>69000</b>	<b>70000</b>	<b>70000</b>	<b>70000</b>	<b>70000</b>
5	DP Monitor	10000	25000	14000	14000	14000	14000	14000	14000	14000	14000
5	DP Signage	0	400	1750	4000	3000	3000	3000	3000	3000	3000
5	<b>DP Electronic Displays, total</b>	<b>36000</b>	<b>99400</b>	<b>57750</b>	<b>70000</b>	<b>77000</b>	<b>86000</b>	<b>87000</b>	<b>87000</b>	<b>87000</b>	<b>87000</b>
18	SSTB Simple STB	0	26633	6030	0	0	0	0	0	0	0
18	CSTB Complex STB	0	33416	40944	44117	44626	43501	47263	51025	54787	58549
18	<b>STB Set Top Boxes</b>	<b>0</b>	<b>60049</b>	<b>46974</b>	<b>44117</b>	<b>44626</b>	<b>43501</b>	<b>47263</b>	<b>51025</b>	<b>54787</b>	<b>58549</b>
E3	VIDEO DVD players/recorders	39	35400	30500	4000	0	0	0	0	0	0
E3	VIDEO projectors	30	2100	1781	725	313	0	0	0	0	0
E3	VIDEO game consoles	0	17748	15000	11500	13622	13622	13622	13622	13622	13622
E3	<b>VIDEO</b>	<b>69</b>	<b>55248</b>	<b>47281</b>	<b>16225</b>	<b>13935</b>	<b>13622</b>	<b>13622</b>	<b>13622</b>	<b>13622</b>	<b>13622</b>
E9	ES tower 1-socket traditional	8	222	231	199	171	146	146	146	146	146
E9	ES rack 1-socket traditional	21	559	543	571	600	630	630	630	630	630
E9	ES rack 2-socket traditional	70	1073	487	592	721	877	877	877	877	877
E9	ES rack 2-socket cloud	0	764	1147	1395	1697	2065	2065	2065	2065	2065
E9	ES rack 4-socket traditional	4	60	26	31	38	46	46	46	46	46
E9	ES rack 4-socket cloud	0	43	60	73	89	108	108	108	108	108
E9	ES rack 2-socket resilient trad.	1	18	8	10	12	15	15	15	15	15
E9	ES rack 2-socket resilient cloud	0	13	19	23	29	35	35	35	35	35
E9	ES rack 4-socket resilient trad.	0	1	0	1	1	1	1	1	1	1
E9	ES rack 4-socket resilient cloud	0	1	1	1	2	2	2	2	2	2
E9	ES blade 1-socket traditional	16	180	170	178	187	197	197	197	197	197
E9	ES blade 2-socket traditional	53	348	153	186	226	275	275	275	275	275
E9	ES blade 2-socket cloud	0	248	359	437	532	647	647	647	647	647
E9	ES blade 4-socket traditional	3	19	8	10	12	15	15	15	15	15
E9	ES blade 4-socket cloud	0	14	19	23	28	35	35	35	35	35
E9	<b>ES total traditional</b>	<b>177</b>	<b>2481</b>	<b>1626</b>	<b>1777</b>	<b>1967</b>	<b>2202</b>	<b>2202</b>	<b>2202</b>	<b>2202</b>	<b>2202</b>
E9	<b>ES total cloud</b>	<b>0</b>	<b>1081</b>	<b>1606</b>	<b>1954</b>	<b>2377</b>	<b>2892</b>	<b>2892</b>	<b>2892</b>	<b>2892</b>	<b>2892</b>
E9	<b>ES Enterprise Servers total</b>	<b>177</b>	<b>3562</b>	<b>3231</b>	<b>3731</b>	<b>4344</b>	<b>5093</b>	<b>5093</b>	<b>5093</b>	<b>5093</b>	<b>5093</b>
E9	DS Online 2	13	305	283	309	341	377	377	377	377	377
E9	DS Online 3	9	190	136	148	164	181	181	181	181	181
E9	DS Online 4	2	39	35	39	43	47	47	47	47	47
E9	<b>DS Data Storage products total</b>	<b>25</b>	<b>535</b>	<b>454</b>	<b>496</b>	<b>548</b>	<b>605</b>	<b>605</b>	<b>605</b>	<b>605</b>	<b>605</b>
E9	<b>ES + DS total</b>	<b>201</b>	<b>4097</b>	<b>3685</b>	<b>4227</b>	<b>4892</b>	<b>5698</b>	<b>5698</b>	<b>5698</b>	<b>5698</b>	<b>5698</b>
3	PC Desktop	6666	22221	16583	15075	15075	15075	15075	15075	15075	15075
3	PC Notebook	503	36180	16583	15578	15578	15578	15578	15578	15578	15578
3	PC Tablet/slate	0	3814	60300	97988	126630	150750	158288	165825	173363	180900
3	PC Thin client	101	1206	1206	1206	1206	1206	1206	1206	1206	1206
3	PC Workstation	80	804	804	804	804	804	804	804	804	804
3	<b>PC Personal Computers</b>	<b>7350</b>	<b>64225</b>	<b>95475</b>	<b>130650</b>	<b>159293</b>	<b>183413</b>	<b>190950</b>	<b>198488</b>	<b>206025</b>	<b>213563</b>
4	EP-Copier mono	2349	943	565	239	176	113	50	0	0	0
4	EP-Copier colour	0	189	823	1234	1407	1533	1658	1784	1910	2035
4	EP-printer mono	3552	3364	2945	2404	2060	1834	1583	1332	1080	829
4	EP-printer colour	0	1300	1929	2598	3116	3618	4120	4623	5125	5628
4	IJ SFD printer	6099	9704	6758	4774	3518	3015	2387	1759	1131	503
4	IJ MFD printer	4999	16174	22191	25628	28140	30653	33165	35678	38190	40703
4	<b>EP &amp; IJ imaging equipment</b>	<b>17000</b>	<b>31674</b>	<b>35212</b>	<b>36876</b>	<b>38416</b>	<b>40765</b>	<b>42964</b>	<b>45175</b>	<b>47436</b>	<b>49697</b>
6 /26	SB Home Gateway	0	30914	39858	48803	57747	66692	75636	84581	93525	102470
6 /26	SB Home NAS	0	2814	4824	6834	8844	10854	12864	14874	16884	18894
6 /26	SB Home Phones (fixed)	4623	23000	27594	29432	29432	29432	29432	29432	29432	29432
6 /26	SB Office Phones (fixed)	5858	11199	11916	12634	13352	14070	14788	15506	16224	16941
6 /26	<b>SB (networked) Stand-By (rest)</b>	<b>10481</b>	<b>67927</b>	<b>84193</b>	<b>97703</b>	<b>109376</b>	<b>121048</b>	<b>132720</b>	<b>144393</b>	<b>156065</b>	<b>167737</b>
7	EPS ≤ 6W, low-V	6044	76850	54278	36811	26536	13885	6161	2734	1213	538
7	EPS 6–10 W	16129	220422	236899	251379	263427	276816	283806	290972	298320	305853
7	EPS 10–12 W	0	122172	145103	155387	156820	157797	158777	159764	160756	161755
7	EPS 15–20 W	0	770	4618	8831	9797	10926	11483	12069	12685	13332
7	EPS 20–30 W	302	14904	15353	14104	13505	12709	11709	10709	9709	8709
7	EPS 30–65 W, multiple-V	0	0	0	1540	2283	3177	4177	5177	6177	7177
7	EPS 30-65 W	0	0	0	1235	3048	5243	5243	5243	5243	5243
7	EPS 65–120 W	111	5413	5245	3979	2214	53	0	0	0	0
7	EPS 65–120 W, multiple-V	0	24144	8706	2549	2573	2589	2589	2589	2589	2589
7	EPS 12–15 W	286	11486	23167	28041	28299	28475	28475	28475	28475	28475
7	<b>EPS, total</b>	<b>22873</b>	<b>476159</b>	<b>493369</b>	<b>503856</b>	<b>508503</b>	<b>511670</b>	<b>512421</b>	<b>517732</b>	<b>525168</b>	<b>533672</b>
27	UPS below 1.5 kVA	505	1000	1041	1265	1489	1709	1915	2094	2234	2325
27	UPS 1.5 to 5 kVA	203	402	419	509	599	687	770	842	898	935
27	UPS 5 to 10 kVA	13	26	27	32	38	44	49	54	57	60
27	UPS 10 to 200 kVA	7	13	14	17	20	23	25	28	30	31
27	<b>UPS Total</b>	<b>728</b>	<b>1441</b>	<b>1500</b>	<b>1823</b>	<b>2145</b>	<b>2463</b>	<b>2760</b>	<b>3018</b>	<b>3219</b>	<b>3350</b>
13	<b>RF Household Refrigeration</b>	<b>17588</b>	<b>19196</b>	<b>19497</b>	<b>19799</b>	<b>20100</b>	<b>20402</b>	<b>20703</b>	<b>21005</b>	<b>21306</b>	<b>21608</b>
12	CF open vertical chilled multi deck (RVC2)	81	89	88	90	91	92	94	95	97	98
12	CF open horizontal frozen island (RHF4)	8	9	9	9	9	10	10	10	10	10
12	CF other supermarket display (non-base cases)	314	372	393	408	423	438	454	469	486	503
12	CF Plug in one door beverage cooler	675	823	818	848	877	907	937	968	1000	1033
12	CF Plug in horizontal ice cream freezer	289	353	351	363	376	389	401	415	428	443
12	CF Spiral vending machine	105	80	65	67	70	73	76	78	81	85
12	<b>CF Commercial Refrigeration</b>	<b>1474</b>	<b>1726</b>	<b>1724</b>	<b>1785</b>	<b>1847</b>	<b>1908</b>	<b>1971</b>	<b>2035</b>	<b>2102</b>	<b>2171</b>



SALESBAU

Lot	SALESBAU, 000 units (light, tyres m units)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
E1	PF Storage cabinet Chilled Vertical (CV)	144	187	195	203	212	222	232	242	251	261
E1	PF Storage cabinet Frozen Vertical (FV)	64	83	87	90	94	98	103	107	111	116
E1	PF Storage cabinet Chilled Horizontal (CH)	62	80	84	87	91	95	99	104	108	112
E1	PF Storage cabinet Frozen Horizontal (FH)	27	36	37	38	40	42	44	46	48	50
<b>E1</b>	<b>PF Storage cabinets All types</b>	<b>297</b>	<b>386</b>	<b>403</b>	<b>418</b>	<b>438</b>	<b>458</b>	<b>478</b>	<b>498</b>	<b>518</b>	<b>538</b>
E1	PF Process Chiller AC MT S ≤ 300 kW	1.1	2.2	2.4	2.6	2.9	3.2	3.5	3.7	4.0	4.3
E1	PF Process Chiller AC MT L > 300 kW	0.3	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.3
E1	PF Process Chiller AC LT S ≤ 200 kW	0.8	1.6	1.8	1.9	2.1	2.3	2.5	2.7	2.9	3.1
E1	PF Process Chiller AC LT L > 200 kW	0.2	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0
E1	PF Process Chiller WC MT S ≤ 300 kW	0.3	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.3
E1	PF Process Chiller WC MT L > 300 kW	0.1	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6
E1	PF Process Chiller WC LT S ≤ 200 kW	0.3	0.6	0.6	0.7	0.8	0.8	0.9	1.0	1.0	1.1
E1	PF Process Chiller WC LT L > 200 kW	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5
<b>E1</b>	<b>PF Process Chiller All MT&amp;LT</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>
E1	PF Condensing Unit MT S 0.2-1 kW	325	259	265	285	308	331	357	385	414	446
E1	PF Condensing Unit MT M 1-5 kW	195	156	159	171	185	199	214	231	249	268
E1	PF Condensing Unit MT L 5-20 kW	98	78	80	86	92	99	107	115	124	134
E1	PF Condensing Unit MT XL 20-50 kW	33	26	27	29	31	33	36	38	41	45
E1	PF Condensing Unit LT S 0.1-0.4 kW	47	37	38	41	44	48	51	55	60	64
E1	PF Condensing Unit LT M 0.4-2 kW	62	50	51	55	59	64	69	74	79	86
E1	PF Condensing Unit LT L 2-8 kW	31	25	25	27	30	32	34	37	40	43
E1	PF Condensing Unit LT XL 8-20 kW	16	12	13	14	15	16	17	18	20	21
<b>E1</b>	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>807</b>	<b>643</b>	<b>657</b>	<b>708</b>	<b>763</b>	<b>822</b>	<b>885</b>	<b>953</b>	<b>1027</b>	<b>1107</b>
<b>E1</b>	<b>PF Professional Refrigeration, Total</b>	<b>1108</b>	<b>1035</b>	<b>1067</b>	<b>1134</b>	<b>1210</b>	<b>1289</b>	<b>1374</b>	<b>1463</b>	<b>1558</b>	<b>1658</b>
22 /23	CA El. Hobs	6576	10401	11307	12230	12955	13649	14344	15038	15732	16427
22 /23	CA El. Ovens	9660	10520	10986	12481	12637	12796	12957	13120	13285	13451
22 /23	CA Gas Hobs	7403	6220	5921	5625	5355	5098	4841	4584	4327	4070
22 /23	CA Gas Ovens	2688	2116	1992	1982	1958	1933	1909	1886	1862	1839
22 /23	CA Range Hoods	5780	7067	7429	7808	8207	8625	9044	9463	9881	10300
<b>22 /23</b>	<b>CA Cooking Appliances</b>	<b>32107</b>	<b>36324</b>	<b>37635</b>	<b>40126</b>	<b>41112</b>	<b>42102</b>	<b>43095</b>	<b>44090</b>	<b>45087</b>	<b>46086</b>
25	CM Dripfilter (glass)	18299	12733	10791	8945	8694	8694	8694	8694	8694	8694
25	CM Dripfilter (thermos)	2353	3682	3746	3809	3873	3930	3961	3993	4025	4057
25	CM Dripfilter (full automatic)	0	1841	2084	2326	2569	2812	3054	3297	3539	3782
25	CM Pad filter	0	5261	5753	6245	6737	7228	7720	8212	8704	9196
25	CM Hard cap espresso	336	1430	3058	4591	4800	4800	4800	4800	4800	4800
25	CM Semi-auto espresso	575	658	619	580	541	502	463	424	385	346
25	CM Fully-auto espresso	575	658	763	869	974	1080	1185	1291	1396	1502
<b>25</b>	<b>CM household Coffee Makers</b>	<b>22138</b>	<b>26262</b>	<b>26813</b>	<b>27365</b>	<b>28187</b>	<b>29045</b>	<b>29878</b>	<b>30711</b>	<b>31543</b>	<b>32376</b>
<b>14</b>	<b>WM household Washing Machine</b>	<b>9045</b>	<b>13164</b>	<b>13164</b>	<b>14151</b>	<b>13585</b>	<b>13585</b>	<b>13585</b>	<b>13585</b>	<b>13585</b>	<b>13585</b>
<b>14</b>	<b>DW Household Dishwashers</b>	<b>3216</b>	<b>7034</b>	<b>8157</b>	<b>9280</b>	<b>10402</b>	<b>11524</b>	<b>12646</b>	<b>13768</b>	<b>14889</b>	<b>16011</b>
16	LD el.vented	1938	2088	1969	1752	1788	1803	1813	1822	1832	1842
16	LD el.condensor	835	3161	3698	4152	4236	4272	4296	4320	4344	4368
16	LD gas.dryer	10	19	23	27	28	28	29	29	30	30
<b>16</b>	<b>LD household Laundry Drier</b>	<b>2783</b>	<b>5268</b>	<b>5690</b>	<b>5932</b>	<b>6052</b>	<b>6103</b>	<b>6137</b>	<b>6171</b>	<b>6205</b>	<b>6239</b>
17	VC household	16746	53120	74504	90645	100079	109514	118948	128383	137817	147252
17	VC professional	1110	1289	1355	1424	1496	1569	1642	1714	1787	1859
<b>17</b>	<b>VC Vacuum Cleaners</b>	<b>17856</b>	<b>54409</b>	<b>75858</b>	<b>92069</b>	<b>101576</b>	<b>111083</b>	<b>120590</b>	<b>130097</b>	<b>139604</b>	<b>149111</b>
11	FAN Axial<300Pa (all FAN types >125W)	1605	5260	6038	6816	6816	6816	6816	6816	6816	6816
11	FAN Axial>300Pa	1660	5743	6058	6374	6374	6374	6374	6374	6374	6374
11	FAN Centr.FC	824	2095	2417	2740	2740	2740	2740	2740	2740	2740
11	FAN Centr.BC-free	253	616	700	784	868	885	901	918	935	952
11	FAN Centr.BC	258	685	785	885	984	1004	1104	1204	1304	1404
11	FAN Cross-flow	238	530	604	678	752	766	840	914	988	1062
<b>11</b>	<b>FAN Industrial Fans &gt;125W</b>	<b>4837</b>	<b>14928</b>	<b>16602</b>	<b>18275</b>	<b>18533</b>	<b>18584</b>	<b>18775</b>	<b>18965</b>	<b>19156</b>	<b>19346</b>
11/30	Medium (S) 3-phase 0.75-7.5 kW no VSD	5169	7034	7301	7372	7254	7078	6837	6515	6100	5573
11/30	Medium (M) 3-phase 7.5-75 kW no VSD	691	915	940	936	906	865	812	745	661	604
11/30	Medium (L) 3-phase 75-375 kW no VSD	54	67	67	65	60	54	46	37	37	38
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW without VSD</b>	<b>5914</b>	<b>8017</b>	<b>8308</b>	<b>8373</b>	<b>8219</b>	<b>7997</b>	<b>7695</b>	<b>7297</b>	<b>6798</b>	<b>6215</b>
11/30	Medium (S) 3-phase 0.75-7.5 kW with VSD	551	1398	1711	2048	2405	2824	3316	3893	4572	5368
11/30	Medium (M) 3-phase 7.5-75 kW with VSD	98	248	303	363	427	501	588	690	811	905
11/30	Medium (L) 3-phase 75-375 kW with VSD	12	30	37	44	51	60	71	83	86	88
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW with VSD</b>	<b>661</b>	<b>1675</b>	<b>2051</b>	<b>2455</b>	<b>2883</b>	<b>3385</b>	<b>3975</b>	<b>4667</b>	<b>5468</b>	<b>6361</b>
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW w/wo VSD</b>	<b>6575</b>	<b>9692</b>	<b>10358</b>	<b>10828</b>	<b>11102</b>	<b>11382</b>	<b>11669</b>	<b>11964</b>	<b>12266</b>	<b>12576</b>
11/30	Small 1 phase 0.12-0.75 kW no VSD	11631	15746	16115	16212	16295	16372	16441	16502	16555	16598
11/30	Small 1 phase 0.12-0.75 kW with VSD	237	1750	2156	2335	2485	2644	2814	2995	3187	3392
<b>11/30</b>	<b>Total Small 1-phase 0.12-0.75 kW</b>	<b>11869</b>	<b>17496</b>	<b>18271</b>	<b>18547</b>	<b>18780</b>	<b>19016</b>	<b>19255</b>	<b>19497</b>	<b>19742</b>	<b>19990</b>
11/30	Small 3 phase 0.12-0.75 kW no VSD	3262	4350	4518	4634	4686	4734	4775	4809	4835	4851
11/30	Small 3 phase 0.12-0.75 kW with VSD	78	574	721	812	896	990	1094	1208	1334	1473
<b>11/30</b>	<b>Total Small 3-phase 0.12-0.75 kW</b>	<b>3340</b>	<b>4924</b>	<b>5239</b>	<b>5445</b>	<b>5583</b>	<b>5724</b>	<b>5868</b>	<b>6017</b>	<b>6169</b>	<b>6324</b>

SALESBAU

Lot	SALESBAU, 000 units (light, tyres m units)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
11/30	Large 3-phase LV 375-1000 kW no VSD	5.9	6.1	5.3	5.1	5.1	5.1	5.1	5.0	5.0	4.9
11/30	Large 3-phase LV 375-1000kW with VSD	0.7	3.6	5.0	5.6	5.9	6.2	6.5	6.8	7.2	7.6
<b>11/30</b>	<b>Total Large 3-phase LV 375-1000 kW</b>	<b>7</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>
11/30	Explosion motors (S) 3-phase 0.75-7.5 kW	217	320	342	357	366	375	385	395	405	415
11/30	Explosion motors (M) 3-phase 7.5-75 kW	44	64	69	72	74	76	77	79	81	83
11/30	Explosion motors (L) 3-phase 75-375 kW	3	5	5	5	5	6	6	6	6	6
<b>11/30</b>	<b>Total Explosion 0.75-375 kW (no VSD)</b>	<b>264</b>	<b>389</b>	<b>416</b>	<b>434</b>	<b>445</b>	<b>457</b>	<b>468</b>	<b>480</b>	<b>492</b>	<b>505</b>
11/30	Brake motors (S) 3-phase 0.75-7.5 kW	271	400	427	447	458	469	481	493	506	519
11/30	Brake motors (M) 3-phase 7.5-75 kW	55	80	86	90	92	94	97	99	102	104
11/30	Brake motors (L) 3-phase 75-375 kW	4	6	6	7	7	7	7	7	8	8
<b>11/30</b>	<b>Total Brake motors 0.75-375 kW (no VSD)</b>	<b>330</b>	<b>486</b>	<b>519</b>	<b>543</b>	<b>557</b>	<b>571</b>	<b>585</b>	<b>600</b>	<b>615</b>	<b>631</b>
11/30	8-pole motors (S) 3-phase 0.75-7.5 kW	11	16	17	18	18	19	19	20	20	21
11/30	8-pole motors (M) 3-phase 7.5-75 kW	2	3	3	4	4	4	4	4	4	4
11/30	8-pole motors (L) 3-phase 75-375 kW	0	0	0	0	0	0	0	0	0	0
<b>11/30</b>	<b>Total 8-pole motors 0.75-375 kW (no VSD)</b>	<b>13</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>25</b>
<b>11/30</b>	<b>Single phase motors &gt; 0.75 kW (no VSD)</b>	<b>6633</b>	<b>9778</b>	<b>10450</b>	<b>10925</b>	<b>11200</b>	<b>11483</b>	<b>11773</b>	<b>12070</b>	<b>12375</b>	<b>12688</b>
<b>11/30</b>	<b>MT Electric Motors LV 0.12-1000 kW</b>	<b>29031</b>	<b>42794</b>	<b>45285</b>	<b>46755</b>	<b>47701</b>	<b>48667</b>	<b>49654</b>	<b>50664</b>	<b>51696</b>	<b>52751</b>
<b>11</b>	<b>WP Water pumps</b>	<b>1233</b>	<b>1675</b>	<b>1800</b>	<b>1935</b>	<b>2080</b>	<b>2225</b>	<b>2371</b>	<b>2516</b>	<b>2661</b>	<b>2806</b>
31	CP Fixed Speed 5-1280 l/s	51	45	42	43	45	46	48	49	51	52
31	CP Variable speed 5-1280 l/s	0	9	13	14	15	15	16	16	17	17
31	CP Pistons 2-64 l/s	50	52	54	56	58	60	61	63	65	67
<b>31</b>	<b>CP Standard Air Compressors</b>	<b>101</b>	<b>106</b>	<b>109</b>	<b>113</b>	<b>117</b>	<b>121</b>	<b>125</b>	<b>129</b>	<b>133</b>	<b>137</b>
E2	TRAFO Distribution	61	96	103	110	118	127	136	145	154	163
E2	TRAFO Industry oil	18	30	32	34	37	39	42	45	48	51
E2	TRAFO Industry dry	3	6	6	6	7	7	8	8	9	9
E2	TRAFO Power	2	3	4	4	4	4	5	5	5	6
E2	TRAFO DER oil	0	1	2	3	4	7	11	14	17	21
E2	TRAFO DER dry	0	4	6	11	17	29	42	56	70	83
E2	TRAFO Small	38	38	38	38	38	38	38	38	38	38
<b>E2</b>	<b>TRAFO Utility Transformers</b>	<b>122</b>	<b>177</b>	<b>190</b>	<b>205</b>	<b>225</b>	<b>252</b>	<b>282</b>	<b>311</b>	<b>341</b>	<b>371</b>
	<b>Tyres in m units</b>										
T	Tyres C1, replacement for cars	206	250	243	270	299	332	332	332	332	332
T	Tyres C1, OEM for cars	62	75	78	81	90	100	100	100	100	100
<b>T</b>	<b>Tyres C1, total</b>	<b>268</b>	<b>324</b>	<b>321</b>	<b>351</b>	<b>389</b>	<b>432</b>	<b>432</b>	<b>432</b>	<b>432</b>	<b>432</b>
T	Tyres C2, replacement for vans	23	28	27	30	33	37	37	37	37	37
T	Tyres C2, OEM for vans	5	5	6	6	7	8	8	8	8	8
<b>T</b>	<b>Tyres C2, total</b>	<b>28</b>	<b>33</b>	<b>33</b>	<b>36</b>	<b>40</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>
T	Tyres C3, replacement for trucks/busses	12	12	13	14	16	18	18	18	18	18
T	Tyres C3, OEM for trucks/busses	3	3	4	4	4	5	5	5	5	5
<b>T</b>	<b>Tyres C3, total</b>	<b>15</b>	<b>14</b>	<b>17</b>	<b>18</b>	<b>20</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>
<b>T</b>	<b>Tyres, total C1+C2+C3</b>	<b>311</b>	<b>371</b>	<b>370</b>	<b>406</b>	<b>450</b>	<b>499</b>	<b>499</b>	<b>499</b>	<b>499</b>	<b>499</b>

SALESECO

Lot	SALESECO, 000 units (light, tyres m units)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Note for printed version: for products not listed below, ECO-sales are identical to BAU-sales											
8/9/19	LS: ECO, million units										
8/9/19	LFL (T12,T8h,T8t,T5,other)	269	390	285	209	66	37	21	14	8	5
8/9/19	HID (HPM, HPS, MH)	17	41	28	17	11	4	1	0	0	0
8/9/19	CFLni (all shapes)	23	87	66	47	29	8	2	1	0	0
8/9/19	CFLi (retrofit for GLS, HL)	28	480	155	83	0	0	0	0	0	0
8/9/19	GLS (DLS & NDLS)	1688	697	58	0	0	0	0	0	0	0
8/9/19	GLS from storage	0	112	187	0	0	0	0	0	0	0
8/9/19	HL (DLS & NDLS, LV & MV)	88	650	738	168	1	0	0	0	0	0
8/9/19	HL from storage	0	90	124	10	0	0	0	0	0	0
8/9/19	LED replacing LFL (retrofit & luminaire)	0	0	13	80	201	221	217	239	281	325
8/9/19	LED replacing HID (retrofit & luminaire)	0	0	6	6	13	17	19	22	25	28
8/9/19	LED replacing CFLni (retrofit & luminaire)	0	0	12	34	49	62	66	69	76	86
8/9/19	LED replacing DLS (retrofit & luminaire)	0	6	90	132	88	27	29	32	35	39
8/9/19	LED replacing NDLS (retrofit & luminaire)	0	3	252	961	408	274	141	147	161	178
8/9/19	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	2112	2345	1330	524	106	50	24	15	9	5
8/9/19	SUBTOTAL LED	0	8	372	1213	759	601	472	510	580	657
<b>8/9/19</b>	<b>LS Lighting (excl. SPL, ctrl) mln units</b>	<b>2112</b>	<b>2353</b>	<b>1702</b>	<b>1737</b>	<b>865</b>	<b>650</b>	<b>496</b>	<b>525</b>	<b>588</b>	<b>662</b>
11/30	Medium (S) 3-phase 0.75-7.5 kW no VSD	5169	7021	6850	5789	5749	5731	5702	5660	5605	5536
11/30	Medium (M) 3-phase 7.5-75 kW no VSD	691	912	780	669	658	647	633	617	599	604
11/30	Medium (L) 3-phase 75-375 kW no VSD	54	67	52	45	43	41	38	36	37	38
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW without VSD</b>	<b>5914</b>	<b>7999</b>	<b>7682</b>	<b>6502</b>	<b>6450</b>	<b>6419</b>	<b>6374</b>	<b>6314</b>	<b>6241</b>	<b>6177</b>
11/30	Medium (S) 3-phase 0.75-7.5 kW with VSD	551	1411	2162	3632	3910	4171	4451	4749	5066	5405
11/30	Medium (M) 3-phase 7.5-75 kW with VSD	98	251	463	630	674	719	767	818	873	905
11/30	Medium (L) 3-phase 75-375 kW with VSD	12	30	52	63	68	73	78	83	86	88
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW with VSD</b>	<b>661</b>	<b>1693</b>	<b>2676</b>	<b>4326</b>	<b>4652</b>	<b>4963</b>	<b>5296</b>	<b>5650</b>	<b>6025</b>	<b>6399</b>
<b>11/30</b>	<b>Total 3-phase 0.75-375 kW w/wo VSD</b>	<b>6575</b>	<b>9692</b>	<b>10358</b>	<b>10828</b>	<b>11102</b>	<b>11382</b>	<b>11669</b>	<b>11964</b>	<b>12266</b>	<b>12576</b>
11/30	Small 1 phase 0.12-0.75 kW no VSD	11631	15746	16115	16212	16295	16372	16441	16502	16555	16598
11/30	Small 1 phase 0.12-0.75 kW with VSD	237	1750	2156	2335	2485	2644	2814	2995	3187	3392
<b>11/30</b>	<b>Total Small 1-phase 0.12-0.75 kW</b>	<b>11869</b>	<b>17496</b>	<b>18271</b>	<b>18547</b>	<b>18780</b>	<b>19016</b>	<b>19255</b>	<b>19497</b>	<b>19742</b>	<b>19990</b>
11/30	Small 3 phase 0.12-0.75 kW no VSD	3262	4350	4518	4634	4686	4734	4775	4809	4835	4851
11/30	Small 3 phase 0.12-0.75 kW with VSD	78	574	721	812	896	990	1094	1208	1334	1473
<b>11/30</b>	<b>Total Small 3-phase 0.12-0.75 kW</b>	<b>3340</b>	<b>4924</b>	<b>5239</b>	<b>5445</b>	<b>5583</b>	<b>5724</b>	<b>5868</b>	<b>6017</b>	<b>6169</b>	<b>6324</b>
11/30	Large 3-phase LV 375-1000 kW no VSD	5.9	6.1	5.3	5.1	5.1	5.1	5.1	5.0	5.0	4.9
11/30	Large 3-phase LV 375-1000kW with VSD	0.7	3.6	5.0	5.6	5.9	6.2	6.5	6.8	7.2	7.6
<b>11/30</b>	<b>Total Large 3-phase LV 375-1000 kW</b>	<b>7</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>
11/30	Explosion motors (S) 3-phase 0.75-7.5 kW	217	320	342	357	366	375	385	395	405	415
11/30	Explosion motors (M) 3-phase 7.5-75 kW	44	64	69	72	74	76	77	79	81	83
11/30	Explosion motors (L) 3-phase 75-375 kW	3	5	5	5	5	6	6	6	6	6
<b>11/30</b>	<b>Total Explosion 0.75-375 kW (no VSD)</b>	<b>264</b>	<b>389</b>	<b>416</b>	<b>434</b>	<b>445</b>	<b>457</b>	<b>468</b>	<b>480</b>	<b>492</b>	<b>505</b>
11/30	Brake motors (S) 3-phase 0.75-7.5 kW	271	400	427	447	458	469	481	493	506	519
11/30	Brake motors (M) 3-phase 7.5-75 kW	55	80	86	90	92	94	97	99	102	104
11/30	Brake motors (L) 3-phase 75-375 kW	4	6	6	7	7	7	7	7	8	8
<b>11/30</b>	<b>Total Brake motors 0.75-375 kW (no VSD)</b>	<b>330</b>	<b>486</b>	<b>519</b>	<b>543</b>	<b>557</b>	<b>571</b>	<b>585</b>	<b>600</b>	<b>615</b>	<b>631</b>
11/30	8-pole motors (S) 3-phase 0.75-7.5 kW	11	16	17	18	18	19	19	20	20	21
11/30	8-pole motors (M) 3-phase 7.5-75 kW	2	3	3	4	4	4	4	4	4	4
11/30	8-pole motors (L) 3-phase 75-375 kW	0	0	0	0	0	0	0	0	0	0
<b>11/30</b>	<b>Total 8-pole motors 0.75-375 kW (no VSD)</b>	<b>13</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>25</b>
<b>11/30</b>	<b>Single phase motors &gt; 0.75 kW (no VSD)</b>	<b>6633</b>	<b>9778</b>	<b>10450</b>	<b>10925</b>	<b>11200</b>	<b>11483</b>	<b>11773</b>	<b>12070</b>	<b>12375</b>	<b>12688</b>
<b>11/30</b>	<b>MT Electric Motors LV 0.12-1000 kW</b>	<b>29031</b>	<b>42794</b>	<b>45285</b>	<b>46755</b>	<b>47701</b>	<b>48667</b>	<b>49654</b>	<b>50664</b>	<b>51696</b>	<b>52751</b>

STOCKBAU

STOCKBAU (000 units, LS&tyre m units)	Life	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WH dedicated Water Heater</b>	<b>15</b>	<b>136,218</b>	<b>158,079</b>	<b>162,549</b>	<b>166,018</b>	<b>169,531</b>	<b>173,129</b>	<b>176,730</b>	<b>180,333</b>	<b>183,936</b>	<b>187,539</b>
<b>CHC Central Heating combi, water heat</b>	<b>15</b>	<b>42,753</b>	<b>82,237</b>	<b>89,729</b>	<b>95,497</b>	<b>101,543</b>	<b>108,145</b>	<b>114,748</b>	<b>121,351</b>	<b>127,954</b>	<b>134,556</b>
<b>CH Central Heating boiler, space heat</b>	<b>18</b>	<b>69,520</b>	<b>111,531</b>	<b>120,335</b>	<b>128,929</b>	<b>138,007</b>	<b>148,980</b>	<b>161,514</b>	<b>175,355</b>	<b>189,375</b>	<b>203,395</b>
SFB Wood Manual	18	6,659	2,933	2,502	2,013	1,461	936	611	461	407	368
SFB Wood Direct Draft	18	71	1,040	2,092	3,116	3,915	4,070	4,346	4,924	5,943	7,231
SFB Coal	20	2,176	909	685	457	261	110	55	49	44	40
SFB Pellets	20	-	329	616	924	1,196	1,396	1,508	1,613	1,766	1,950
SFB Wood chips	20	-	80	103	123	122	124	140	157	174	192
<b>SFB Solid Fuel Boilers</b>		<b>8,906</b>	<b>5,292</b>	<b>5,999</b>	<b>6,633</b>	<b>6,955</b>	<b>6,636</b>	<b>6,661</b>	<b>7,204</b>	<b>8,334</b>	<b>9,781</b>
CHAE-S (≤ 400 kW)	20	288	1,210	1,526	1,790	1,984	2,181	2,397	2,621	2,845	3,063
CHAE-L (> 400 kW)	25	29	103	126	146	159	166	171	177	184	191
CHWE-S (≤ 400 kW)	20	29	122	154	180	199	219	240	262	285	306
CHWE-M (> 400 kW; ≤ 1500 kW)	25	8	30	36	42	46	48	50	52	54	56
CHWE-L (> 1500 kW)	25	3	10	12	14	15	16	17	17	18	19
CHF	15	0	2	5	7	8	10	12	14	16	17
HT PCH-AE-S	15	108	191	215	236	253	265	277	288	299	310
HT PCH-AE-L	15	34	60	68	75	80	84	87	91	95	98
HT PCH-WE-S	15	28	49	55	61	65	68	71	74	77	80
HT PCH-WE-M	15	21	38	42	47	50	52	54	57	59	61
HT PCH-WE-L	20	2	4	4	5	5	6	6	6	6	6
AC rooftop	15	126	502	550	537	454	307	168	86	63	63
AC splits	15	1,059	4,506	4,933	5,087	5,097	4,960	4,768	4,591	4,413	4,236
AC VRF	15	0	707	1,142	1,724	2,282	2,988	3,691	4,330	4,934	5,459
ACF	15	0	2	5	7	8	10	12	14	16	17
<b>AHC central Air Cooling</b>		<b>1,735</b>	<b>7,538</b>	<b>8,874</b>	<b>9,957</b>	<b>10,706</b>	<b>11,380</b>	<b>12,022</b>	<b>12,681</b>	<b>13,362</b>	<b>13,983</b>
AC rooftop (rev)	15	78	311	338	324	271	181	90	28	2	0
AC splits (rev)	15	767	3,110	3,402	3,512	3,522	3,430	3,300	3,178	3,055	2,932
AC VRF (rev)	15	0	622	991	1,467	1,939	2,501	3,013	3,367	3,653	3,850
ACF (rev)	15	0	5	9	13	17	20	24	28	31	35
AHF	16	1,589	1,573	1,441	1,345	1,262	1,189	1,122	1,058	993	929
AHE	10	24	86	73	50	50	50	50	50	50	50
<b>AHC central Air Heating (rev double)</b>		<b>2,459</b>	<b>5,706</b>	<b>6,255</b>	<b>6,710</b>	<b>7,060</b>	<b>7,373</b>	<b>7,600</b>	<b>7,708</b>	<b>7,785</b>	<b>7,797</b>
<b>AHC total Heating &amp; Cooling</b>		<b>3,348</b>	<b>9,196</b>	<b>10,389</b>	<b>11,352</b>	<b>12,018</b>	<b>12,619</b>	<b>13,194</b>	<b>13,789</b>	<b>14,406</b>	<b>14,963</b>
LH open fireplace	25	10,408	15,205	16,497	17,561	18,351	18,815	18,939	18,919	18,874	18,834
LH closed fireplace/inset	25	4,661	12,757	15,884	19,063	21,970	24,240	25,713	26,556	26,903	27,012
LH wood stove	25	7,754	9,132	9,593	10,202	10,846	11,446	11,986	12,364	12,523	12,576
LH coal stove	25	5,291	3,490	3,244	3,025	2,774	2,437	2,052	1,708	1,414	1,215
LH cooker	15	2,981	6,028	7,185	8,539	9,787	10,663	11,071	11,216	11,270	11,270
LH SHR stove	25	4,455	6,228	6,908	7,860	9,018	10,330	11,687	12,778	13,505	13,928
LH pellet stove	15	-	1,955	2,970	3,980	4,809	5,432	5,829	6,031	6,106	6,106
LH open fire gas	20	990	1,563	1,706	1,864	2,008	2,121	2,191	2,211	2,211	2,211
LH closed fire gas	20	6,106	6,930	7,135	7,341	7,548	7,754	7,939	8,070	8,151	8,181
LH flueless fuel heater	7	1,584	3,207	3,427	3,271	3,020	2,673	2,423	2,194	2,394	2,394
LH elec.portable	9	51,316	62,657	65,401	67,602	70,022	73,009	75,446	76,144	76,144	76,144
LH elec.convactor	9	80,966	98,858	103,188	106,661	110,479	115,192	119,037	120,138	120,138	120,138
LH elec.storage	15	3,807	4,648	4,865	5,059	5,243	5,444	5,641	5,769	5,817	5,817
LH elec.underfloor	30	27,915	34,076	35,738	37,352	38,966	40,613	42,151	43,381	44,362	45,136
LH luminous heaters	15	277	338	352	360	362	362	362	362	362	362
LH tube heaters	20	360	440	459	472	480	482	482	482	482	482
<b>LH Local Heaters</b>		<b>208,872</b>	<b>267,511</b>	<b>284,553</b>	<b>300,212</b>	<b>315,681</b>	<b>331,013</b>	<b>342,951</b>	<b>348,522</b>	<b>350,655</b>	<b>351,805</b>
RAC cooling, all RAC types <12 kW	12	4,730	49,470	65,440	82,524	104,672	117,785	123,573	126,251	128,414	130,577
o/w RAC reversible (also heating)	12	1,327	28,633	46,453	68,618	91,815	104,245	109,476	111,943	113,954	115,965
<b>RAC Room Air Conditioner</b>		<b>4,730</b>	<b>49,470</b>	<b>65,440</b>	<b>82,524</b>	<b>104,672</b>	<b>117,785</b>	<b>123,573</b>	<b>126,251</b>	<b>128,414</b>	<b>130,577</b>
<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>10</b>	<b>50,049</b>	<b>75,601</b>	<b>81,179</b>	<b>86,455</b>	<b>91,731</b>	<b>95,108</b>	<b>94,053</b>	<b>89,621</b>	<b>84,345</b>	<b>79,068</b>
NRVU Central Unidir. >125W/fan CEXH (1 fan)	17	1,879	4,157	4,501	4,726	4,875	4,998	5,123	5,247	5,372	5,497
NRVU Central Balanced >125W/fan	17	233	2,826	3,614	4,329	4,902	5,318	5,742	6,174	6,606	7,039
RVU Central Unidir. ≤125W/fan	17	17,148	33,878	38,186	37,438	35,790	35,435	36,991	39,653	42,373	45,093
RVU Central Balanced ≤125W/fan	17	163	2,140	4,245	7,492	11,019	14,191	16,265	17,999	19,716	21,433
RVU Local Balanced	17	33	633	1,295	2,439	4,042	5,991	8,038	10,113	12,190	14,266
<b>VU Ventilation Units (Res &amp; nonRes)</b>		<b>19,456</b>	<b>43,634</b>	<b>51,841</b>	<b>56,423</b>	<b>60,627</b>	<b>65,933</b>	<b>72,158</b>	<b>79,186</b>	<b>86,257</b>	<b>93,328</b>



STOCKBAU

STOCKBAU (000 units, LS&tyre m units)	Life	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
UPS below 1.5 kVA	4	1,880	4,027	4,065	4,791	5,686	6,575	7,421	8,173	8,783	9,208
UPS 1.5 to 5 kVA	8	1,378	2,994	3,242	3,599	4,285	5,002	5,698	6,334	6,871	7,274
UPS 5 to 10 kVA	10	105	230	258	281	330	388	444	495	540	574
UPS 10 to 200 kVA	12	62	140	155	170	198	233	268	301	329	352
<b>UPS Total</b>		<b>3,425</b>	<b>7,392</b>	<b>7,720</b>	<b>8,840</b>	<b>10,500</b>	<b>12,199</b>	<b>13,830</b>	<b>15,303</b>	<b>16,523</b>	<b>17,408</b>
<b>RF Household Refrigerators &amp; freezers</b>	<b>16</b>	<b>269,340</b>	<b>299,289</b>	<b>304,716</b>	<b>309,540</b>	<b>314,364</b>	<b>319,188</b>	<b>324,012</b>	<b>328,836</b>	<b>333,660</b>	<b>338,484</b>
CF open vertical chilled multi deck (RVC2)	10	724	863	886	893	897	911	926	940	955	970
CF open horizontal frozen island (RHF4)	10	75	90	92	93	93	95	96	98	99	101
CF other supermarket display (non-BCs)	10	2,794	3,448	3,734	3,938	4,095	4,246	4,397	4,552	4,712	4,877
CF Plug in one door beverage cooler	9	5,893	7,097	7,346	7,419	7,683	7,948	8,214	8,486	8,766	9,056
CF Plug in horizontal ice cream freezer	9	2,526	3,041	3,148	3,179	3,293	3,406	3,520	3,637	3,757	3,881
CF Spiral vending machine	11	948	1,161	916	744	742	771	800	831	863	896
<b>CF Commercial Refrigeration</b>		<b>12,960</b>	<b>15,700</b>	<b>16,122</b>	<b>16,266</b>	<b>16,803</b>	<b>17,376</b>	<b>17,953</b>	<b>18,543</b>	<b>19,152</b>	<b>19,781</b>
PF Storage cabinet Chilled Vertical (CV)	9	1,173	1,613	1,699	1,772	1,845	1,930	2,017	2,105	2,193	2,280
PF Storage cabinet Frozen Vertical (FV)	9	520	715	753	785	817	855	894	933	971	1,010
PF Storage cabinet Chilled Horizontal (CH)	9	503	691	728	760	791	827	865	902	940	977
PF Storage cabinet Frozen Horizontal (FH)	9	223	306	323	336	350	366	383	400	416	433
<b>PF Storage cabinets All types</b>	<b>9</b>	<b>2,418</b>	<b>3,326</b>	<b>3,502</b>	<b>3,653</b>	<b>3,803</b>	<b>3,978</b>	<b>4,158</b>	<b>4,339</b>	<b>4,520</b>	<b>4,701</b>
PF Process Chiller AC MT S ≤ 300 kW	15	12	25	30	34	38	42	46	50	54	58
PF Process Chiller AC MT L > 300 kW	15	3	8	9	10	11	12	14	15	16	17
PF Process Chiller AC LT S ≤ 200 kW	15	9	19	22	25	28	31	34	37	40	43
PF Process Chiller AC LT L > 200 kW	15	3	6	7	8	9	10	11	11	12	13
PF Process Chiller WC MT S ≤ 300 kW	15	3	8	9	10	11	13	14	15	16	17
PF Process Chiller WC MT L > 300 kW	15	2	4	4	5	5	6	6	7	8	8
PF Process Chiller WC LT S ≤ 200 kW	15	3	7	8	9	10	11	12	13	14	15
PF Process Chiller WC LT L > 200 kW	15	1	3	3	4	4	5	5	5	6	6
<b>PF Process Chiller All MT&amp;LT</b>	<b>15</b>	<b>36</b>	<b>78</b>	<b>91</b>	<b>105</b>	<b>117</b>	<b>129</b>	<b>141</b>	<b>154</b>	<b>166</b>	<b>179</b>
PF Condensing Unit MT S 0.2-1 kW	8	2,710	2,159	2,080	2,169	2,337	2,517	2,712	2,922	3,147	3,391
PF Condensing Unit MT M 1-5 kW	8	1,626	1,295	1,248	1,302	1,402	1,510	1,627	1,753	1,888	2,034
PF Condensing Unit MT L 5-20 kW	8	813	648	624	651	701	755	814	876	944	1,017
PF Condensing Unit MT XL 20-50 kW	8	271	216	208	217	234	252	271	292	315	339
PF Condensing Unit LT S 0.1-0.4 kW	8	390	311	299	312	336	362	390	421	453	488
PF Condensing Unit LT M 0.4-2 kW	8	520	414	399	416	448	483	520	561	604	651
PF Condensing Unit LT L 2-8 kW	8	260	207	200	208	224	242	260	280	302	325
PF Condensing Unit LT XL 8-20 kW	8	130	104	100	104	112	121	130	140	151	163
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>8</b>	<b>6,720</b>	<b>5,354</b>	<b>5,157</b>	<b>5,379</b>	<b>5,795</b>	<b>6,243</b>	<b>6,725</b>	<b>7,245</b>	<b>7,805</b>	<b>8,408</b>
<b>PF Professional Refrigeration, Total</b>		<b>9,173</b>	<b>8,758</b>	<b>8,751</b>	<b>9,137</b>	<b>9,715</b>	<b>10,349</b>	<b>11,025</b>	<b>11,738</b>	<b>12,491</b>	<b>13,288</b>
CA El. Hobs	15	84,107	134,450	149,860	164,384	177,350	189,487	200,514	210,990	221,404	231,818
CA El. Ovens	19	175,517	192,782	200,328	210,549	221,607	233,220	240,287	246,820	252,921	259,921
CA Gas Hobs	15	117,121	97,967	93,983	90,174	86,235	82,036	78,038	74,156	70,301	66,445
CA Gas Ovens	19	56,974	44,958	42,602	40,477	38,941	37,841	37,102	36,646	36,190	35,740
CA Range Hoods	14	75,365	92,833	97,597	102,571	107,804	113,304	119,020	124,856	130,717	136,578
<b>CA Cooking Appliances</b>		<b>509,084</b>	<b>562,989</b>	<b>584,370</b>	<b>608,154</b>	<b>631,937</b>	<b>655,889</b>	<b>674,961</b>	<b>690,406</b>	<b>705,432</b>	<b>720,501</b>
CM Dripfilter (glass)	6	114,257	79,704	70,885	58,791	52,498	52,162	52,162	52,162	52,162	52,162
CM Dripfilter (thermos)	6	7,293	21,887	22,285	22,666	23,046	23,420	23,674	23,864	24,054	24,244
CM Dripfilter (full automatic)	6	-	10,184	11,775	13,231	14,686	16,141	17,597	19,052	20,507	21,963
CM Pad filter	6	-	29,098	33,041	35,992	38,943	41,895	44,846	47,798	50,749	53,700
CM Hard cap espresso	6	588	7,931	13,233	23,294	28,521	28,800	28,800	28,800	28,800	28,800
CM Semi-auto espresso	6	2,652	3,908	3,829	3,595	3,362	3,129	2,895	2,662	2,428	2,195
CM Fully-auto espresso	6	2,652	3,908	4,262	4,895	5,528	6,162	6,795	7,428	8,061	8,694
<b>CM household Coffee Makers</b>		<b>127,442</b>	<b>156,621</b>	<b>159,311</b>	<b>162,465</b>	<b>166,586</b>	<b>171,709</b>	<b>176,769</b>	<b>181,766</b>	<b>186,762</b>	<b>191,759</b>
<b>WM household Washing Machine</b>	<b>15</b>	<b>121,605</b>	<b>186,757</b>	<b>197,805</b>	<b>201,809</b>	<b>203,662</b>	<b>205,768</b>	<b>204,912</b>	<b>203,780</b>	<b>203,780</b>	<b>203,780</b>
<b>DW Household Dishwashers</b>	<b>15</b>	<b>36,816</b>	<b>83,213</b>	<b>98,836</b>	<b>115,611</b>	<b>132,456</b>	<b>149,295</b>	<b>166,129</b>	<b>182,957</b>	<b>199,783</b>	<b>216,610</b>
LD el.vented	13	19,926	28,763	27,670	25,544	24,106	23,272	23,382	23,538	23,664	23,791
LD el.condensor	13	3,492	34,062	40,442	46,328	51,712	54,541	55,406	55,786	56,097	56,406
LD gas.dryer	13	88	212	246	288	328	354	364	370	377	384
<b>LD household Laundry Drier</b>		<b>23,505</b>	<b>63,037</b>	<b>68,358</b>	<b>72,160</b>	<b>76,146</b>	<b>78,167</b>	<b>79,151</b>	<b>79,694</b>	<b>80,138</b>	<b>80,581</b>
VC household		150,940	358,502	382,871	413,169	481,529	538,709	575,873	623,045	670,217	717,389
VC professional	6	6,578	7,545	7,930	8,335	8,760	9,196	9,631	10,067	10,503	10,939
<b>VC Vacuum Cleaners</b>		<b>157,518</b>	<b>366,047</b>	<b>390,801</b>	<b>421,504</b>	<b>490,288</b>	<b>547,904</b>	<b>585,504</b>	<b>633,112</b>	<b>680,720</b>	<b>728,327</b>
FAN Axial<300Pa (all FAN types >125W)	15	24,068	66,073	77,557	86,583	95,235	100,682	102,238	102,238	102,238	102,238
FAN Axial>300Pa	15	24,905	73,340	84,119	88,978	92,764	94,973	95,604	95,604	95,604	95,604
FAN Centr.FC	15	12,360	26,015	31,629	35,281	38,192	40,449	41,094	41,094	41,094	41,094
FAN Centr.BC-free	15	3,790	7,865	9,349	10,257	11,255	12,289	13,011	13,397	13,673	13,925
FAN Centr.BC	15	3,863	8,709	10,452	11,497	12,669	13,887	14,985	16,083	17,461	18,959
FAN Cross-flow	15	3,564	6,327	7,290	8,470	9,725	10,625	11,437	12,249	13,267	14,373
<b>FAN Industrial Fans &gt;125W (excl. box/ roof)</b>		<b>72,551</b>	<b>188,329</b>	<b>220,396</b>	<b>241,065</b>	<b>259,840</b>	<b>272,904</b>	<b>278,368</b>	<b>280,664</b>	<b>283,337</b>	<b>286,193</b>

STOCKBAU

STOCKBAU (000 units, LS&tyre m units)	Life	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Medium (S) 3-ph 0.75-7.5 kW no VSD	9	43,397	59,564	63,607	65,798	66,058	64,940	63,240	60,914	57,847	53,899
Medium (M) 3-ph 7.5-75 kW no VSD	11	6,990	9,386	9,982	10,284	10,242	9,940	9,489	8,904	8,160	7,297
Medium (L) 3-ph 75-375 kW no VSD	16	766	994	1,038	1,060	1,042	986	899	788	683	617
<b>Total 3-ph 0.75-375 kW no VSD</b>		<b>51,154</b>	<b>69,944</b>	<b>74,627</b>	<b>77,142</b>	<b>77,341</b>	<b>75,867</b>	<b>73,628</b>	<b>70,606</b>	<b>66,690</b>	<b>61,813</b>
Medium (S) 3-ph 0.75-7.5 kW with VSD	9	4,134	10,483	13,139	16,031	19,086	22,428	26,335	30,922	36,309	42,634
Medium (M) 3-ph 7.5-75 kW with VSD	11	857	2,171	2,732	3,350	4,004	4,716	5,537	6,502	7,634	8,897
Medium (L) 3-ph 75-375 kW with VSD	16	134	342	430	533	644	765	900	1,057	1,208	1,322
<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>5,125</b>	<b>12,996</b>	<b>16,301</b>	<b>19,915</b>	<b>23,734</b>	<b>27,909</b>	<b>32,772</b>	<b>38,481</b>	<b>45,151</b>	<b>52,852</b>
<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>56,279</b>	<b>82,940</b>	<b>90,928</b>	<b>97,057</b>	<b>101,076</b>	<b>103,775</b>	<b>106,400</b>	<b>109,087</b>	<b>111,841</b>	<b>114,665</b>
Small 1 ph 0.12-0.75 kW no VSD	8	87,882	119,313	126,855	129,167	129,898	130,547	131,140	131,674	132,143	132,542
Small 1 ph 0.12-0.75 kW with VSD	8	694	11,289	15,016	17,649	19,037	20,260	21,561	22,945	24,419	25,987
<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>88,576</b>	<b>130,602</b>	<b>141,871</b>	<b>146,816</b>	<b>148,935</b>	<b>150,806</b>	<b>152,701</b>	<b>154,619</b>	<b>156,562</b>	<b>158,529</b>
Small 3 ph 0.12-0.75 kW no VSD	8	24,701	33,051	35,166	36,466	37,195	37,606	37,969	38,281	38,532	38,716
Small 3 ph 0.12-0.75 kW with VSD	8	228	3,707	4,957	5,979	6,696	7,396	8,169	9,023	9,966	11,007
<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>24,929</b>	<b>36,757</b>	<b>40,123</b>	<b>42,446</b>	<b>43,891</b>	<b>45,002</b>	<b>46,138</b>	<b>47,303</b>	<b>48,498</b>	<b>49,722</b>
Large 3-ph LV 375-1000 kW no VSD	18	93	114	111	105	98	94	92	92	91	90
Large 3-ph LV 375-1000kW with VSD	18	6	34	52	71	88	101	108	113	119	125
<b>Total Large 3-ph LV 375-1000 kW</b>		<b>99</b>	<b>148</b>	<b>163</b>	<b>176</b>	<b>187</b>	<b>194</b>	<b>200</b>	<b>205</b>	<b>210</b>	<b>215</b>
Explosion motors (S) 3-ph 0.75-7.5 kW	9	1,802	2,656	2,910	3,103	3,229	3,313	3,397	3,482	3,570	3,660
Explosion motors (M) 3-ph 7.5-75 kW	11	434	639	703	754	788	811	831	852	874	896
Explosion motors (L) 3-ph 75-375 kW	16	45	66	73	79	84	87	89	91	94	96
<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>2,281</b>	<b>3,362</b>	<b>3,686</b>	<b>3,936</b>	<b>4,100</b>	<b>4,210</b>	<b>4,317</b>	<b>4,426</b>	<b>4,538</b>	<b>4,652</b>
Brake motors (S) 3-ph 0.75-7.5 kW	9	2,253	3,320	3,638	3,879	4,036	4,141	4,246	4,353	4,463	4,576
Brake motors (M) 3-ph 7.5-75 kW	11	543	799	879	943	985	1,013	1,039	1,065	1,092	1,120
Brake motors (L) 3-ph 75-375 kW	16	56	83	91	99	104	108	111	114	117	120
<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>2,851</b>	<b>4,202</b>	<b>4,608</b>	<b>4,920</b>	<b>5,125</b>	<b>5,263</b>	<b>5,396</b>	<b>5,532</b>	<b>5,672</b>	<b>5,815</b>
8-pole motors (S) 3-ph 0.75-7.5 kW	9	90	133	146	155	161	166	170	174	179	183
8-pole motors (M) 3-ph 7.5-75 kW	11	22	32	35	38	39	41	42	43	44	45
8-pole motors (L) 3-ph 75-375 kW	16	2	3	4	4	4	4	4	5	5	5
<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>114</b>	<b>168</b>	<b>184</b>	<b>197</b>	<b>205</b>	<b>211</b>	<b>216</b>	<b>221</b>	<b>227</b>	<b>233</b>
<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>12</b>	<b>71,202</b>	<b>104,945</b>	<b>115,533</b>	<b>124,226</b>	<b>130,090</b>	<b>134,089</b>	<b>137,475</b>	<b>140,947</b>	<b>144,506</b>	<b>148,155</b>
<b>MT Elec. Motors LV 0.12-1000 kW</b>		<b>246,331</b>	<b>363,124</b>	<b>397,096</b>	<b>419,773</b>	<b>433,609</b>	<b>443,551</b>	<b>452,843</b>	<b>462,341</b>	<b>472,053</b>	<b>481,987</b>
<b>WP Water pumps</b>	<b>11</b>	<b>12,589</b>	<b>17,135</b>	<b>18,447</b>	<b>19,830</b>	<b>21,317</b>	<b>22,884</b>	<b>24,480</b>	<b>26,077</b>	<b>27,673</b>	<b>29,270</b>
CP Fixed Speed 5-1280 l/s	12	285	616	554	502	503	519	537	554	571	588
CP Variable speed 5-1280 l/s	12	-	46	98	145	171	179	185	191	197	203
CP Pistons 2-64 l/s	9	400	505	492	494	512	531	549	566	583	600
<b>CP Standard Air Compressors</b>		<b>685</b>	<b>1,167</b>	<b>1,145</b>	<b>1,141</b>	<b>1,186</b>	<b>1,229</b>	<b>1,271</b>	<b>1,311</b>	<b>1,351</b>	<b>1,392</b>
TRAFO Distribution	40	1,530	2,553	2,855	3,167	3,488	3,817	4,152	4,487	4,817	5,150
TRAFO Industry oil	25	331	575	642	709	773	833	895	959	1,027	1,095
TRAFO Industry dry	30	72	123	137	152	166	180	194	208	222	237
TRAFO Power	30	48	74	82	91	100	109	117	126	135	144
TRAFO DER oil	25	-	8	15	25	42	69	111	168	237	317
TRAFO DER dry	25	-	32	58	101	167	276	445	671	949	1,267
TRAFO Small	20	754	754	754	754	754	754	754	754	754	754
<b>TRAFO Utility Transformers</b>		<b>2,734</b>	<b>4,118</b>	<b>4,543</b>	<b>4,998</b>	<b>5,490</b>	<b>6,039</b>	<b>6,668</b>	<b>7,373</b>	<b>8,141</b>	<b>8,965</b>
<b>Tyres in m units</b>											
Tyres C1, replacement for cars	4.7	967	1,095	1,113	1,217	1,350	1,498	1,557	1,557	1,557	1,557
Tyres C1, OEM for cars	4.7	291	320	346	373	407	451	469	469	469	469
<b>Tyres C1, total</b>		<b>1,259</b>	<b>1,415</b>	<b>1,460</b>	<b>1,590</b>	<b>1,757</b>	<b>1,949</b>	<b>2,025</b>	<b>2,025</b>	<b>2,025</b>	<b>2,025</b>
Tyres C2, replacement for vans	3.9	89	101	101	113	125	139	143	143	143	143
Tyres C2, OEM for vans	3.9	19	21	21	25	26	29	30	30	30	30
<b>Tyres C2, total</b>		<b>108</b>	<b>122</b>	<b>122</b>	<b>138</b>	<b>152</b>	<b>169</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>
Tyres C3, replacement for trucks/busses	4.0	47	47	45	57	62	68	71	71	71	71
Tyres C3, OEM for trucks/busses	4.0	13	13	14	16	17	19	20	20	20	20
<b>Tyres C3, total</b>		<b>60</b>	<b>60</b>	<b>59</b>	<b>72</b>	<b>79</b>	<b>87</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>
<b>Tyres, total C1+C2+C3</b>		<b>1,426</b>	<b>1,597</b>	<b>1,640</b>	<b>1,800</b>	<b>1,987</b>	<b>2,205</b>	<b>2,289</b>	<b>2,289</b>	<b>2,289</b>	<b>2,289</b>
<b>Non-standard LIFE values</b>											
TVLIFE		10.0	7.3	7.8	10.0	10.0	10.0	10.0	10.0	10.0	10.0
VCLIFE		9.4	6.8	6.0	4.9	5.0	5.1	5.0	5.0	5.0	5.0

STOCKECO

STOCKECO (000 units, LS&tyre m units)	Life	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Note for printed version: for products not listed below, ECO-stock is identical to BAU-stock											
<i>LS: ECO, million units</i>											
LFL (T12,T8h,T8t,T5,other)		1232	2008	2210	2222	1668	1002	527	279	168	109
HID (HPM, HPS, MH)		40	95	91	79	57	29	11	4	1	0
CFLni (all shapes)		128	575	630	549	389	223	112	44	18	9
CFLi (retrofit for GLS, HL)		197	3109	3946	3020	1060	285	0	0	0	0
GLS (DLS & NDLS) incl. from storage		3694	2110	664	7	0	0	0	0	0	0
HL (DLS & NDLS, LV & MV) incl. storage		284	2133	3074	1316	58	0	0	0	0	0
LED replacing LFL (retrofit & luminaire)		0	0	24	257	1104	2103	2953	3624	4211	4807
LED replacing HID (retrofit & luminaire)		0	0	15	41	79	125	163	193	222	252
LED replacing CFLni (retrofit & luminaire)		0	0	19	145	369	605	796	952	1075	1194
LED replacing DLS (retrofit & luminaire)		0	10	239	988	1596	1770	1911	2066	2237	2425
LED replacing NDLS (retrofit & luminaire)		0	4	448	3834	7112	8493	9427	10137	10916	11772
SUBTOTAL non-LED (excl. SPL, ctrl, sb)		5576	10031	10615	7193	3232	1539	649	326	187	119
SUBTOTAL LED		0	14	745	5265	10259	13096	15250	16972	18660	20449
<b>LS Lighting (excl. SPL, ctrl) mln units</b>		<b>5,576</b>	<b>10,045</b>	<b>11,360</b>	<b>12,459</b>	<b>13,492</b>	<b>14,635</b>	<b>15,899</b>	<b>17,298</b>	<b>18,848</b>	<b>20,568</b>
Medium (S) 3-ph 0.75-7.5 kW no VSD	9	43,397	59,547	62,631	58,269	52,436	51,701	51,520	51,236	50,838	50,316
Medium (M) 3-ph 7.5-75 kW no VSD	11	6,990	9,382	9,670	8,723	7,551	7,239	7,111	6,961	6,785	6,647
Medium (L) 3-ph 75-375 kW no VSD	16	766	993	1,004	928	819	710	669	633	605	592
<b>Total 3-ph 0.75-375 kW no VSD</b>		<b>51,154</b>	<b>69,922</b>	<b>73,305</b>	<b>67,919</b>	<b>60,806</b>	<b>59,650</b>	<b>59,301</b>	<b>58,830</b>	<b>58,227</b>	<b>57,555</b>
Medium (S) 3-ph 0.75-7.5 kW with VSD	9	4,134	10,499	14,115	23,561	32,708	35,667	38,054	40,601	43,318	46,217
Medium (M) 3-ph 7.5-75 kW with VSD	11	857	2,175	3,044	4,912	6,695	7,417	7,915	8,445	9,010	9,546
Medium (L) 3-ph 75-375 kW with VSD	16	134	343	464	666	867	1,041	1,130	1,211	1,286	1,347
<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>5,125</b>	<b>13,018</b>	<b>17,623</b>	<b>29,138</b>	<b>40,270</b>	<b>44,126</b>	<b>47,099</b>	<b>50,257</b>	<b>53,614</b>	<b>57,110</b>
<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>56,279</b>	<b>82,940</b>	<b>90,928</b>	<b>97,057</b>	<b>101,076</b>	<b>103,775</b>	<b>106,400</b>	<b>109,087</b>	<b>111,841</b>	<b>114,665</b>
Small 1 ph 0.12-0.75 kW no VSD	8	87,882	119,313	126,855	129,167	129,898	130,547	131,140	131,674	132,143	132,542
Small 1 ph 0.12-0.75 kW with VSD	8	694	11,289	15,016	17,649	19,037	20,260	21,561	22,945	24,419	25,987
<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>88,576</b>	<b>130,602</b>	<b>141,871</b>	<b>146,816</b>	<b>148,935</b>	<b>150,806</b>	<b>152,701</b>	<b>154,619</b>	<b>156,562</b>	<b>158,529</b>
Small 3 ph 0.12-0.75 kW no VSD	8	24,701	33,051	35,166	36,466	37,195	37,606	37,969	38,281	38,532	38,716
Small 3 ph 0.12-0.75 kW with VSD	8	228	3,707	4,957	5,979	6,696	7,396	8,169	9,023	9,966	11,007
<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>24,929</b>	<b>36,757</b>	<b>40,123</b>	<b>42,446</b>	<b>43,891</b>	<b>45,002</b>	<b>46,138</b>	<b>47,303</b>	<b>48,498</b>	<b>49,722</b>
Large 3-ph LV 375-1000 kW no VSD	18	93	114	111	105	98	94	92	92	91	90
Large 3-ph LV 375-1000kW with VSD	18	6	34	52	71	88	101	108	113	119	125
<b>Total Large 3-ph LV 375-1000 kW</b>		<b>99</b>	<b>148</b>	<b>163</b>	<b>176</b>	<b>187</b>	<b>194</b>	<b>200</b>	<b>205</b>	<b>210</b>	<b>215</b>
Explosion motors (S) 3-ph 0.75-7.5 kW	9	1,802	2,656	2,910	3,103	3,229	3,313	3,397	3,482	3,570	3,660
Explosion motors (M) 3-ph 7.5-75 kW	11	434	639	703	754	788	811	831	852	874	896
Explosion motors (L) 3-ph 75-375 kW	16	45	66	73	79	84	87	89	91	94	96
<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>2,281</b>	<b>3,362</b>	<b>3,686</b>	<b>3,936</b>	<b>4,100</b>	<b>4,210</b>	<b>4,317</b>	<b>4,426</b>	<b>4,538</b>	<b>4,652</b>
Brake motors (S) 3-ph 0.75-7.5 kW	9	2,253	3,320	3,638	3,879	4,036	4,141	4,246	4,353	4,463	4,576
Brake motors (M) 3-ph 7.5-75 kW	11	543	799	879	943	985	1,013	1,039	1,065	1,092	1,120
Brake motors (L) 3-ph 75-375 kW	16	56	83	91	99	104	108	111	114	117	120
<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>2,851</b>	<b>4,202</b>	<b>4,608</b>	<b>4,920</b>	<b>5,125</b>	<b>5,263</b>	<b>5,396</b>	<b>5,532</b>	<b>5,672</b>	<b>5,815</b>
8-pole motors (S) 3-ph 0.75-7.5 kW	9	90	133	146	155	161	166	170	174	179	183
8-pole motors (M) 3-ph 7.5-75 kW	11	22	32	35	38	39	41	42	43	44	45
8-pole motors (L) 3-ph 75-375 kW	16	2	3	4	4	4	4	4	5	5	5
<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>114</b>	<b>168</b>	<b>184</b>	<b>197</b>	<b>205</b>	<b>211</b>	<b>216</b>	<b>221</b>	<b>227</b>	<b>233</b>
<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>12</b>	<b>71,202</b>	<b>104,945</b>	<b>115,533</b>	<b>124,226</b>	<b>130,090</b>	<b>134,089</b>	<b>137,475</b>	<b>140,947</b>	<b>144,506</b>	<b>148,155</b>
<b>MT Elec. Motors LV 0.12-1000 kW</b>		<b>246,331</b>	<b>363,124</b>	<b>397,096</b>	<b>419,773</b>	<b>433,609</b>	<b>443,551</b>	<b>452,843</b>	<b>462,341</b>	<b>472,053</b>	<b>481,987</b>



# LOADnotes

LOAD & TEST	unit	EXPLANATORY NOTES
<b>Introduction</b>		<p>Explanations of the main test- and calculation methods are given below. The explanation is incomplete and aims only to give the reader an idea of the main principles involved. For a full overview it is indispensable to consult the original documents.</p> <p>The description below also provides some specific guidance as to how and where the values used in the model are different from what is mentioned in the regulations</p>
<b>WH dedicated Water Heater</b>	kWh heat/a	<p>Measurement unit for performance is the energy content of the useful hot water delivered, expressed in kWh heat.</p> <p>Energy efficiency of WHs is tested with a designated 24h tapping pattern, following manufacturer's instructions for intended use, and expressed as the ratio of the energy content of the useful hot water delivered and the measured energy input of the WH. The energy content of a draw-off relates to the volume of useful water ('useful' meaning that the water is above a minimum temperature threshold, depending on the type of draw-off), the average temperature difference with cold water (10 °C) over the draw-off period and the specific heat capacity of the water. Depending on the type of draw-off, minimum average or peak temperatures that need to be reached are defined. The measured energy input relates to primary energy, e.g. for electric WHs using conversion factor CC of 2.5.</p> <p>There are additional test- and calculation methods for solar-assisted WHs as well as for the assessment of whether or not a 'smart control' bonus applies for an electric WH. Additional guidelines from the Commission are expected in the spring of 2014.</p> <p>In the regulation, energy input of fossil-fuel fired WHs is expressed in GCV (Gross Calorific Value). To be compatible with Potencia/ Eurostat, the model recalculates to NCV (Net Calorific Value). For natural gas GCV=1.11 NCV; LPG factor 1.081; oil 1.065; solids ≈1. Note that in NCV the efficiency values are higher than in GCV. In the model, an aggregate GCV to NCV conversion factor of 1.02 between published values in IA study and the model is used, based on a fuel mix of 22 % fossil fuels and 78% electricity.</p> <p>Values used in the model are based on weighted average efficiency of tapping patterns for dedicated WHs (source: IA and preparatory studies). Note that, following the EL metric, the annual energy consumption of the WH is calculated at 60% of the 24h daily tapping pattern for 365 days (the tapping pattern represents peak performance, e.g. at certain times in the weekends)</p>
<b>CHC Central Heating combi, water heat</b>	kWh heat/a	<p>As above (dedicated WHs). Extra: for the interaction between the space heating and water heating functions special test- and calculation methods apply. Additional guidelines from the Commission are expected in the spring of 2014.</p> <p>In the model, an aggregate GCV to NCV conversion factor of 1.081 is used between published values in IA study and the model, based on a fuel mix of 91.5 % fossil fuels (80% gas, 20% oil) and 8.5% electricity (for heat pumps, electric resistance boilers and auxiliary electricity; reference 2010).</p>
<b>CH Central Heating boiler, space heat</b>	kWh heat/a	<p>Measurement unit for performance is the annual space heating demand in a designated heating season, calculated in the regulation as the multiplication of the rated boiler heat output (in kW) and a fixed number of full load equivalent operating hours (h).</p> <p>The seasonal space heating efficiency, i.e. the main regulated parameter, is the ratio of the above space heating demand and the actual energy consumption of the boiler.</p> <p>The actual energy consumption of the boiler is determined through testing and calculation. The testing entails measurements at the following test points:</p> <ul style="list-style-type: none"> <li>(a) 100% and 30% load heating efficiency (<math>\eta_{100}</math> and <math>\eta_{30}</math> conventional fossil fuel fired boiler and heat production of micro-CHP) or</li> <li>(b) 100% load efficiency (electric resistance boiler) or</li> <li>(c) the efficiency at 4 or 5 sink/source temperature pairs (heat pump boiler) and/or</li> <li>(d) electricity production at 100% heat load/30% heat load (micro-cogeneration)</li> </ul> <p>Also minimum and maximum auxiliary electricity is measured. The solar collector efficiency, which is an input the calculation of a possible solar contribution, is derived from testing (4 different water inlet temperatures over the operating range, 4 test samples).</p> <p>The basic seasonal efficiency (<math>\eta_s</math>) equation for conventional gas- and oil-boilers as well as micro-cogeneration boilers is <math>\eta_s = 0.85 * \eta_{30} + 0.15 * \eta_{100} - \sum F</math></p> <p><math>\sum F</math> is the sum of:</p> <ul style="list-style-type: none"> <li>F1 temperature control correction -3%,</li> <li>F2 auxiliary electricity from combustion fan and CPU (conv.boiler) or source fan/pump (heat pump boiler) or solar loop circulator (solar assisted boiler) but without CH circulators (is in separate regulation Lot 11),</li> <li>F3 standby heat loss,</li> <li>F4 possible pilot flame loss,</li> <li>F5 for CHP: positive contribution of electricity production to seasonal efficiency.</li> </ul> <p>For heat pump boilers the seasonal coefficient of performance SCOP is calculated with a climate-specific 'bin-method' (comparable to the 'heating degree hours' concept) for Average, Warm and Cold climate. These 3 climate zones are also used in calculating the solar contribution to space heating. The climate zones are defined using meteorological data from Strasbourg (FR), Athens (GR) and Helsinki (FIN) respectively.</p>

## LOADnotes

The seasonal efficiency in the regulation mainly takes into account product-related losses and assumes optimal sizing of the boiler capacity. Only through the temperature control term (F1) also some part of the comfort losses (temperature fluctuation, stratification) are taken into account. In the preparatory and IA studies, and in the model, the space heating demand is assessed on the basis of the estimated real average heat demand of the buildings in which the boilers are used. This means that all system-losses, i.e. the full fluctuation, stratification losses, distribution, buffer and timer losses at real-life boiler sizing are taken into account. For the strict boiler efficiency a more realistic, but more complex, assessment method was used to also calculate the effect of cycling below 30% of rated output.

The model uses only aggregated space heating demand data in the model, but the underlying more detailed scenario uses a 1% autonomous annual decrease (hereafter 'HeatDec') of the heating load after the year 2010 and a 1% increase before the year 2010. Note that the IA study scenarios, which are used in the model, assumed an exemption for B1.1 boilers up to 10 kW; not the (unconditional) exemption for B1 (combi) boilers up to 30 kW rated output which is in the current legislation.

In the model, an aggregate GCV to NCV conversion factor of 1.081 is used between published values in IA study and the model, based on a fuel mix of 91.5% fossil fuels (80% gas, 20% oil) and 8.5% electricity (for heat pumps, electric resistance boilers and auxiliary electricity; reference 2010).

### SFB Solid Fuel Boilers

The performance in kWh annual heat output is a multiplication of operating hours (h) and the seasonal average heat output (P, in kW) as given in the table below.

The model assumes an autonomous annual decrease (HeatDec) of the heating load after the year 2010.

Testpoints are at full ( $\eta_n$ , 100%) and partial ( $\eta_p$ , 50%) load heating efficiency. If it is a cogeneration device the electricity production at full and part load is established (factor F3). Auxiliary electricity (elmax and elmin, pef 2.5) is taken into account in factor F2. Generic temperature control loss F1 is 3%.

For biomass boilers, to take into account the renewable character, a biomass label factor (BLF=1.15; for fossil fuel BLF=1) is taken into account to determine the EEI.

Basic seasonal efficiency equation conventional boilers and micro-CHP-boiler :

$$\eta_s = \text{BLF} \cdot (0.85 \cdot \eta_p + 0.15 \cdot \eta_n) - F1 - F2 + F3$$

In the first version of EIA the nominal (rated) heat output and the nominal efficiencies were used. This has been changed in the second version that uses average seasonal heat output and seasonal space heating efficiencies. The use of the latter improves the link with the regulation, that expresses minimum requirements as seasonal efficiencies. Seasonal efficiencies have been taken 15 percentage points lower than the nominal efficiencies. The seasonal average loads have been taken 81% of the nominal (rated) loads. This means that BAU energy remains approximately the same as in the first EIA version.

		P (nominal, rated)	P (seasonal)	h	Load up to year 2010	HeatDec after 2010
SFB Wood Manual	kWh heat/a	18	14.6	1000	14580	1%
SFB Wood Direct Draft	kWh heat/a	20	16.2	1000	16200	1%
SFB Coal	kWh heat/a	25	20.3	1000	20250	1%
SFB Pellets	kWh heat/a	25	20.3	1000	20250	1%
SFB Wood chips	kWh heat/a	160	129.6	1000	129600	1%

### Air Heating and Cooling

The data in EIA are based on a draft Impact Assessment of June 2014 and a draft Working Document of September 2015 containing a proposal for regulation. The WD is accompanied by Transitional methods for test and calculation.

The requirements in the proposed regulation are expressed in terms of minimum seasonal space heating energy efficiency and useful efficiencies for air heating and air cooling products (refer to primary energy), and in terms of seasonal energy performance ratio (SEPR) for high temperature process chillers (refers to electricity). The same efficiencies are now applied in EIA (SEER and SCOP of previous release no longer used). The detailed definition of these efficiencies is rather complex and cannot be reported here: see the draft regulation and the transitional methods.

From draft document on transitional methods:

The seasonal efficiency for cooling or heating of all comfort chillers and electric heat pumps and air conditioners is based on the approach by EN 14511 and EN 14825:2012, which requires (as for hydronic heat pumps) measurement of capacity and efficiency at 4 to 5 anchor points. Using a bin-method, describing the cooling or heating seasons, the seasonal efficiency is then calculated through inter- and extrapolation. Two corrections factors apply: 3% for control losses and 5% for pump losses (brine/water equipment only). The seasonal efficiency thus does not include distribution losses or emitter losses.

For gas-engine driven heat pumps and/or air conditioners the standards are still being developed. It is expected that the EN14825 part load approach is integrated in standards such as prEN 12309. There are no specific requirements for sorption heat pumps or air conditioners.

For high-temperature process chillers a similar approach as for the electric comfort chillers and air conditioners/heat pumps is developed, but with the following differences: 1) the cooling season is extended as process chillers operate all year long. 2) the standard rating conditions are at slightly different operating temperatures, to better reflect the performance at lower outdoor temperatures. 3) this is also reflected in the bins that describe the cooling season. The methodology for doing measurements is intended to be the same as applied in EN 14825 and related standards.

The seasonal efficiency of fuel-fired warm air heaters is based on establishing the useful (thermal) efficiency at nominal load and part load, on the basis of the GCV of the fuel, and includes the following corrections: envelope losses (as in some parts of Europe some equipment is not allowed to be installed inside the heated space), emission efficiency (which deals with the temperature and the volume flow of the heated air), type of control over heat output (modulation etc.), losses due to auxiliary electricity consumption, draught losses of gravity vented systems and a pilot flame. For electric warm air heaters the useful thermal efficiency is by default 40% on primary energy basis.

## LOADnotes

Most aspects for establishing the seasonal efficiency of warm air heaters are covered by prEN1020:2007, EN 1319:2009, EN 1196:2011, EN 621:2009 and EN 778:2009. Establishment of envelope losses requires testing according EN 1886:2007 and measurement of auxiliary power requires testing according EN 15456.

The seasonal efficiencies do not include distribution losses.

In the model, an aggregate GCV to NCV conversion factor of 1.09 for AHF is used between published values in IA study and the model. This conversion factor is NOT present in the reported efficiencies for AHF but applied directly in the NRG calculations.

		<u>P</u>	<u>h</u>	<u>HeatDec</u>	
CHAE-S (≤ 400 kW)	kWh cool/a	44	600	1%	Output Load = P * Hours * ((1+HeatDec)^(2010-yr)) Annual dec/increase of HeatDec% with respect to 2010
CHAE-L (> 400 kW)	kWh cool/a	714	600	1%	
CHWE-S (≤ 400 kW)	kWh cool/a	61	600	1%	HeatDec represents decreased output demand due to improved building isolation and reduced ventilation loss NOT applied to High-temperature Process Chillers
CHWE-M (< 400 ≤ 1500 kW)	kWh cool/a	834	600	1%	
CHWE-L (≥ 1500 kW)	kWh cool/a	1600	600	1%	
CHF	kWh cool/a	20	600	1%	
HT PCH-AE-S	kWh cool/a	145	5964	0%	
HT PCH-AE-L	kWh cool/a	1000	2825	0%	
HT PCH-WE-S	kWh cool/a	250	4418	0%	
HT PCH-WE-M	kWh cool/a	750	4375	0%	
HT PCH-WE-L	kWh cool/a	1600	3984	0%	
AC rooftop	kWh cool/a	70	600	1%	
AC splits	kWh cool/a	17	600	1%	
AC VRF	kWh cool/a	28	600	1%	
ACF	kWh cool/a	20	600	1%	
		<u>P</u>	<u>h</u>	<u>HeatDec</u>	
AC rooftop (rev)	kWh heat/a	70	1400	1%	
AC splits (rev)	kWh heat/a	17	1400	1%	
AC VRF (rev)	kWh heat/a	28	1400	1%	
ACF (rev)	kWh heat/a	40	1400	1%	
AHF	kWh heat/a	59	1200	1%	
AHE	kWh heat/a	20	1200	1%	

### LH Local Space Heaters

Applicable regulations are CR (EU) 2015/1185 (ecodesign solid fuel LSH), CR (EU) 2015/1188 (ecodesign electric, gas, and liquid fuel LSH) and CDR (EU) 2015/1186 (energy labelling for LSH).

Ecodesign minimum efficiency requirements are expressed in terms of seasonal space heating efficiency, that is defined in the regulations as the ratio between the space heating demand and the annual energy consumption required to meet this demand, expressed in %. This efficiency is derived from the efficiency at nominal heat output, applying correction factors for e.g. suboptimal operation in real life (-10%), controls, auxiliary electricity consumption, permanent pilot flames, heat storage. See also Annex E 'Key facts' and details in the regulation.

The applicable standard for solid fuel fired local space heaters (open and closed fireplaces, wood stoves, coal stoves and pellet stoves) is EN 14785:2006 for pellet heaters, EN 15250:2007 for slow heat release stoves and EN 16510-1:2013 for the other solid fuel heaters. For gas-fired heaters there are several standards such as prEN 613:2000, EN 1266:2002 and EN 13278:2013. For oil-fired heaters there is EN 1:1998 and EN 13842. For electric heaters the thermal efficiency doesn't need to be established as it is default 40% on primary energy basis.

This efficiency is reduced by 10% to account for suboptimal operation in real life, which can be recuperated (in part or full) depending on the options the product incorporates regarding: type of heat storage options (electric storage heaters only), type of control over heat output (thermostats etc., timers, detection devices), auxiliary electricity consumption and losses from a pilot flame.

For luminous and tube heaters the approach is more elaborate. The useful efficiency is established on basis of the GCV of the fuel, for both nominal and part load operation and is then weighted according 0.85/0.15. For luminous heaters a default efficiency is assumed. Then follows a correction for envelope losses as some products may have the burners (heat generators) installed outside the heated space due to local building regulations. A correction for the emission efficiency is applied, based on the radiant factor of the products. The conversion factor applied for GCV to NCV is 1.1.

The efficiency is then further reduced by a loss factor related to the possibility of modulation of the heat output and the modulation range, the auxiliary electricity consumption and pilot flame losses.

Relevant standards for luminous and tube heaters are EN 416-1/-2 EN 419-1/-2. As these (currently) do not contain a method for establishing the useful efficiency, the chimney loss method as described in EN 1319 is suggested. Establishment of envelope losses requires testing according EN 1886:2007 and measurement of auxiliary power requires testing according to EN 15456.

In the regulations, minimum efficiency requirements for luminous and tube LSH are expressed in GCV. For application in EIA these efficiencies have been multiplied by 1.1 to convert to NCV.

In the regulations, minimum efficiency requirements for electric LSH are expressed in primary energy. For applications in EIA these efficiencies have been multiplied by CC=2.5 to obtain the electric efficiency. For other types of LSH the requirements are expressed in NCV and used in EIA as such.

The EIA Load for each type of LSH is expressed in kWh heat per year and obtained as the product of average power and average annual operating hours. This basic value is assumed for year 2010. For earlier years an increase is applied and for later years a decrease, applying an annual HeatDec rate as specified below. These HeatDec values have been taken identical to those used in the Impact Assessment for LSH.

## LOADnotes

		P	h	HeatDec
LH open fireplace	kWh heat/a	8	42	0%
LH closed fireplace/inset	kWh heat/a	8	266	0.5%
LH wood stove	kWh heat/a	8	337	0.5%
LH coal stove	kWh heat/a	8	337	0.5%
LH cooker	kWh heat/a	10	112	0.5%
LH SHR stove	kWh heat/a	8	337	0.5%
LH pellet stove	kWh heat/a	8	403	0.5%
LH open fire gas	kWh heat/a	4.2	50	0%
LH closed fire gas	kWh heat/a	4.2	269	0.5%
LH flueless fuel heater	kWh heat/a	1.5	50	0%
LH elec.portable	kWh heat/a	1	324	0.5%
LH elec.convactor	kWh heat/a	1	850	0.5%
LH elec.storage	kWh heat/a	2.75	480	0.5%
LH elec.underfloor	kWh heat/a	0.62	532	0.5%
LH luminous heaters	kWh heat/a	20	610	0.5%
LH tube heaters	kWh heat/a	30	610	0.5%

### Room Air Conditioners

Room air conditioners, i.e. small air-to-air heat pumps with rated output up to 12 kW, follow the same testing and calculation principles as the air/water/ground-to-water heat pumps (see CH boilers) and as the air/water/ground-to-air heat pumps (see central air heating and cooling products): Test at 4 or 5 source/sink temperature pairs, calculation on the basis of the 'bin method' for average, warmer and colder climate zones. The performance, i.e. the annual heat/cooling output, is calculated on the basis of the rated output and a fixed number of full load equivalent operating hours.

RAC (cooling demand), all types <12 kW kWh cool/a  
 RAC (heating demand), reversible <12kW kWh heat/a

### CIRC Circulator pumps <2.5 kW, net load

kWh flow/a Test=weighted avg. of 4 part load tests= 40%\*¼+30%\*¼+20%\*¼ +10%\*full load.  
 Net load (eff=100%) in 2005 is 90W x 3144h =283 kWh in year 2005

### NRVU, Non-Residential Ventilation Units

Modelling (IA report) of Annual Electricity Consumption AEC of non-residential VUs in kWh/a:  
 $AEC = 8.76 * NrFans * (\Delta P_{int} + \Delta P_{ext}) * (q_{nom} / 3600) * \eta_{fan} * MISC * (0.05 + 0.95 * (CTRL_{on} + CTRL_{var}^3))$   
 where 8.76=8760 operating hours x 0.001 kWh/Wh, NrFans =1 fan for UVU/2 for BVU,  $\Delta P_{int} + \Delta P_{ext}$  = internal and external pressure difference per fan,  $q_{nom}$  =nominal flow rate in m³/h, 3600= s per h (for conversion m³/h to m³/s),  $\eta_{fan}$  = fan efficiency at design point (usually best efficiency point bep), MISC =factor for ventilation effectiveness, duct leakage etc.,  $CTRL_{on}$  = factor for on-off control,  $CTRL_{var}$  = factor for (variable) demand-control of flow rate.

For Annual Heating Saving AHS (with respect of qref=natural ventilation) of non-residential VUs per m³ ventilation:

$$q_{refcorr} = 1.36 * q_{effective} \text{ (includes } CTRL_{on} = 0.8), q_{net} = 1.3 \text{ m}^3/\text{h}$$

$$q_{effective} = q_{nom} / MISC,$$

specific heating energy SHE in kWh per m³/a = 5112 heat h/a\*9.5 K difference indoor/outdoor for average climate \* 0.000344 kWh/m³.K \* 1/75%  $\eta_h$  boiler efficiency = 22.21 kWh/m³.a . For Warm climate 10.05; for Cold 43.47.

$$AHS = SHE * (q_{nom} / MISC) * [1.36 - MISC * CTRL_{on} * CTRL_{var} * (1 - \eta_t)] - Q_{defrost}$$

with  $Q_{defrost} = HR_{pen} * 0.35 * q_{nom} * CTRL_{on} * CTRL_{var}$ , where  $HR_{pen}$  is the market penetration of heat recovery (for an individual model 0 or 1, in a larger population can be any value between 0 and 1)

No credit is given in the model for savings on space cooling (although a non-insignificant credit in a Warm climate is plausible)

The tables below show the NRVU basecases with relevant parameters used in the model

Stock 2010 weighted: CEXH 63%, CHRV 13%, AHU-S 3%, AHU-M 10%, AHU-L 11% of units installed

The index (ndx) given in the Load sheet relates to fan efficiency (year 2010=100%=values faneff in table). For heating saving efficiency index=1 throughout the model (changes follow from sales).

NRVU Types >125W/fan	qnom (m³/h)	total M m³/a	int dP (Pa)	ext dP (Pa)	specific energy		kWh elec/a	NRVU stock 2010
					fan eff. (W/W)	(kWh elec/M m³)		
NRVU Central Unidir. CEXH (1 fan)	1500	5.4	37	154	23%	247	1331	63.3%
NRVU Balanced CHRV (2 fans)	2250	6.1	140	160	35%	530	1604	13.2%
NRVU Balanced AHU-S (2 fans)	4000	10.8	292	244	51%	650	3497	3.2%
NRVU Balanced AHU-M (2 fans)	10000	26.9	334	450	58%	836	11244	9.6%
NRVU Balanced AHU-L (2 fans)	35000	94.2	391	575	61%	979	46104	10.8%
NRVU avg (stock weighted 2010)	6100	17.3	125	231	38%	452	7206	

	heat saved vs.		heat loss vs.		heated M $\eta_t$ m³/a	reference heat loss (natural ventilation) kWh prim/ a/ unit **		
	CTRLon	CTRLvar	MISC	MISC		/a /unit) **	/a /unit) **	
NRVU Central Unidir. CEXH	0.8	0.8	1.3	0%	4.91	13537	21331	34868
NRVU Balanced CHRV	0.6	0.8	1.1	80%	5.52	48241	4061	52302
NRVU Balanced AHU-S	0.6	0.8	1.1	44%	9.82	72767	20215	92982
NRVU Balanced AHU-M	0.6	0.8	1.15	44%	24.54	179620	52836	232455
NRVU Balanced AHU-L	0.6	0.8	1.18	44%	85.88	623845	189749	813594
NRVU avg (stock weighted 2010)*	0.73	0.80	1.24	21%	15.74	101619	40168	141787

\*=HRpen 29.7% is stock weighted average \*\* presented values are equivalent energy savings on space heating at 75% SH efficiency, not amounts of heat.

# LOADnotes

## RVU Residential Ventilation Units

For residential VU's (RVU) the regulated parameter is the SEC

$$SEC = t_a \cdot p_{ef} \cdot q_{net} \cdot MISC \cdot CTRL^x \cdot SPI - t_h \cdot \Delta T_h \cdot \eta_h^{-1} \cdot c_{air} \cdot (q_{ref} - q_{net} \cdot CTRL \cdot MISC \cdot (1 - \eta_t)) + Q_{defr}$$

where SEC = Specific Energy Consumption per unit floor area (kWh primary/a)/m<sup>2</sup>;

$t_a$  = 8760 operating h/a;  $p_{ef}$  = primary energy factor 2.5;  $q_{net}$  = minimum ventilation demand per floor area 1.3 (m<sup>3</sup>/h)/m<sup>2</sup>;  $MISC$  is correction factor ventilation effectiveness, duct leakage, etc.;  $CTRL$  = control factor;  $x$  = exponent motor & drive;

$SPI$  = Specific Power Input in W/(m<sup>3</sup>/h) of the VU at ca. 70% rated flow and 50 Pa;

$t_h$  = 5112 h/a heating season;  $\Delta T_h$  = 9.5 K;  $\eta_h$  = boiler efficiency 75%;  $c_{air}$  = 0.000344 kWh/m<sup>3</sup>.K;

$q_{ref}$  = natural ventilation per floor area 2.2 (m<sup>3</sup>/h)/m<sup>2</sup>;  $\eta_t$  = efficiency heat recovery;

$Q_{defr}$  = defrost energy 0.45 kWh prim/a in Average climate.

The Average climate is used for the energy label (figures above apply to BAU):

Modelling in IA report preceded proposed measures and does not match exactly the values in the regulation:

Used for BAU modelling (IA report) of UVU/central BVU/2 x local BVU:

MISC 1.33/1.1/1.2, CTRL 1/1/0.9,  $x=1$ , SPI 0.3/0.4/0.35,  $\eta_t=0\%/80\%/64\%$ .

Dwelling surface assumed: 100 m<sup>2</sup>.

Note that IA and prep. study used climate data for the average EU dwelling = 66% average (5112h @ 9.5K), 28% warm (4392h @ 5K), 6% cold climate (6552h @ 14.5K) → heating season average EU dwelling is 5000 h @ 8.8 K (= 4625h @ 9.5K)

	nr. units/ 100m <sup>2</sup> dwelling	ext dP (Pa)	q <sub>real</sub> (m <sup>3</sup> /h)/ 100m <sup>2</sup>	SPI (W/(m <sup>3</sup> /h))	kWh elec/ a.100m <sup>2</sup>	kWh elec/ a.unit	SEC (kWh/m <sup>2</sup> )*
RVU Central Unidir. VU ≤125W/fan (1 fan)	1	50	173	0.30	454	454	-7
RVU Central Balanced VU ≤125W/fan (2 fans)	1	50	143	0.40	501	501	-30
RVU Local Balanced VU (<125 W, also NR) (2 fans)	2	50	140	0.35	434	217	-28

\*calculated as in draft regulation with, MISC=1.1 (ducted), Avg Climate data (heating season 5112h at average 9.5K), Qdefrost (0.45 kWh prim)

	CTRL	x (motor)	MISC	heat saved vs.ref η <sub>t</sub>	heat saved vs.ref kWh prim/ a.100m <sup>2</sup> **	heat loss vs.ref kWh prim /a /unit) **	reference heat loss (natural ventilation) kWh prim/ a/ unit **
RVU Central Unidir. VU ≤125W/fan (1 fan)	1	1	1.33	0	951	951	4440
RVU Central Balanced VU ≤125W/fan (2 fans)	1	1	1.1	0.8	3863	3863	577
RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.9	1	1.21	0.64	3411	1706	514

VU reference: natural ventilation 220 m<sup>3</sup>/h

\*\* presented values are equivalent energy savings on space heating at 75% SH efficiency, not amounts of heat.

## LS Light Sources

EIA data for light sources are based on the Model for European Light Sources Analysis (MELISA) that was developed during the Lot 8/9/19 preparatory study (2014-2016) and last updated for the Impact Assessment in April 2018. This model is rather complex, involving variable lifetimes, lifetime distributions, detailed base cases and a split between residential and non-residential data. This makes it difficult to reproduce MELISA results accurately in EIA using the standard EIA formulas applied to the aggregated EIA base cases. It has therefore been preferred to insert MELISA data directly in EIA as fixed values, i.e. data are not computed from basic input data as is done for other products. The basic input data for the aggregated base cases are reported in EIA anyway, but they are averages over the detailed base cases and over the residential and non-residential sector. These input data averages (in particular for loads, efficiencies and prices) are indicative only, not used for computations in EIA, and sometimes difficult to interpret. For a better understanding of the underlying input data and assumptions, see the MELISA model.

The BAU-scenario in EIA represents the situation if no Ecodesign and Energy Labelling measures would have been taken in 2009-2012. This scenario is different from the BAU-scenario that was presented in EIA versions of December 2016 and earlier, due to using new information that was collected during the 2014-2016 preparatory / review study on light sources.

The ECO scenario in EIA represents the combined effects of existing regulations (244/2009, 245/2009, 1194/2012, 874/2012) and the proposed new regulations (status of July 2018, version for ISC, preferred option: ECO+LBLE 2021 scenario in MELISA).

The quantity of light emitted by a lamp is measured in lumen (lm). A lamp emits a spectrum of electro-magnetic radiation, consisting of different wavelengths (colours), of which a large part cannot be perceived by the human eye. The other part (called light) still consists of different colours, and the sensitivity of the human eye depends on the colour.

The lumen-measure takes these different sensitivities into account and consequently can be conceived as the useful amount of emitted light, as perceived by humans (although lately there have been discussions on this). The instantaneous amount of electrical input to a lamp is called the input power, expressed in Watt (W). The efficacy (efficiency) of a lamp is the ratio of the light output (in lumen) and the power input (in Watt) and consequently expressed in lm/W.

As regards the average annual hours (h/a) a lamp is operated by the user (burning hours), the MELISA model uses full-power equivalent (fpe) hours, and EIA copies this approach. If e.g. a lamp burns 2000 h/a at full power and 1000 h/a dimmed at half power, the fpe-hours are 2000 + 1000/2 = 2500 h/a.

The unit lamp load, i.e. the annual demand for light output, is the product of the (full, non-dimmed) light output in lumens and the fpe-hours, expressed in lm.h/a. The LOAD sheet reports the capacity (lm) and the fpe-hours (h/a) separately.

LOAD: Average unit capacity (lm): computed as EU total installed lumen from MELISA divided by EU total installed stock from MELISA. Consequently, for light sources these are stock-weighted averages. For directional lamps, reported lumens are those in a 90 or 120 degree cone as defined in CR 1194/2012 (they are not total lumens). DLS efficacy also refers to lumens in a cone.

LOAD: Average unit annual fpe operating hours (h/a): computed from MELISA data as EU electricity/EU stock/unit lumen \* EFS, i.e. reported unit hours have been determined in such a way that when applying standard EIA formulas the EIA electricity matches exactly the MELISA electricity (but anyway EIA electricity data are not calculated but fixed values from MELISA).

EFN: Average efficiency of light sources sold in a given year (EFN, in lm/W) for the aggregated EIA base case: computed as sales-weighted average over the detailed MELISA base cases, and over residential and non-residential. This is a sales-weighted average efficiency (not energy-weighted) that includes both light source efficiency and control gear efficiency. For indicative reference only: the EFN data are NOT used to compute EFS data, and EFN-data (sales-weighted) and EFS-data (energy-weighted) should not be compared.

EFS: Average efficiency of light sources installed in a given year (EFS, in lm/W) for the aggregated EIA base case: computed as EU total load from MELISA in Tlm.h/a divided by EU total electricity consumption incl. control gear from MELISA in TWh/a. This is an energy-weighted average efficiency that includes both light source efficiency and control gear efficiency. Note that these are fixed values in EIA, NOT computed from EFN as done for other products.

In some cases the averaging procedures for lumens, hours and efficiencies lead to 'strange' values for the aggregated base cases in EIA. This is due to the shares of the detailed MELISA base cases inside an aggregated EIA base case changing over the years. E.g. inside the aggregated EIA LFL base case the ratio between T8 and T5 changes because the rate at which they are replaced by LED is not the same for the two types and also different for residential and non-residential sector. E.g. the EIA aggregated HL base case (halogen lamps) contains a mix of directional (DLS) and non-directional light sources (NDLS), a mix of low-voltage (LV) and mains-voltage (MV), and also includes the linear (R7s) halogen lamps; these different types are substituted by LEDs at different speeds, causing variations in capacity, fpe-hours and efficiencies that are not always easy to understand. See MELISA for more detailed information.

The MELISA curves used for LED efficiency development with time are reported below. High-End LEDs include LEDs replacing LFL, HID and CFLni in the non-residential sector.

Low-End LEDs include LEDs replacing DLS or NDLS in all sectors and LEDs replacing LFL, HID and CFLni in the residential sector. For corresponding price curves, see sheets PRICEBAU and PRICEECO. For the ECO-scenario the original MELISA curves are used, including the effects of energy labelling improvements (ECO+LBL scenario). For the BAU2008 scenario the curves have been shifted forward by 2 years (delay in LED development) and are without the effects of label improvement.

	2010	2015	2020	2025	2030	2040	2050	
<b>BAU SCENARIO, LED development curves (from MELISA BAU2008 scenario of November 2017)</b>								
High-End, light source efficiency (lm/W)	21	68	115	139	164	174	174	incl. CG efficiency
High-End, control gear efficiency (%)	85.0%	85.0%	89.0%	91.6%	92.6%	93.0%	93.0%	
Low-End, NDLS efficiency (lm/W)	21	68	99	109	118	122	122	incl. CG efficiency
Low-End, DLS efficiency (lm/W)	17	54	76	88	97	101	101	incl. CG eff.; for flux in cone
Low-End, control gear efficiency (%)	85.0%	85.0%	86.5%	89.0%	90.0%	90.0%	90.0%	
	2010	2015	2020	2025	2030	2040	2050	
<b>ECO SCENARIO, LED development curves (from MELISA ECO+LBL 2021 scenario of April/May 2018)</b>								
High-End, light source efficiency (lm/W)	26	90	125	166	190	190	190	incl. CG efficiency
High-End, control gear efficiency (%)	85.0%	87.0%	92.0%	93.0%	94.0%	94.0%	94.0%	
Low-End, NDLS efficiency (lm/W)	26	85	103	142	160	160	160	incl. CG efficiency
Low-End, DLS efficiency (lm/W)	20	67	81	114	130	130	130	incl. CG eff.; for flux in cone
Low-End, control gear efficiency (%)	85.0%	86.0%	90.0%	91.0%	92.0%	92.0%	92.0%	

MELISA distinguishes 'normal' sales for GLS and HL and additional **GLS and HL 'from storage'**. The latter are non-directional light sources that are installed by residential users from the spares they had in house. These are not real sales in the considered year (they have been bought in preceding years) but they are relevant for the stock of installed light sources. In EIA, GLS and HL 'from storage' are reported separately only on the sheet SALES (but not counted in total sales). On other EIA sheets the data for 'normal' and 'from storage' light sources are summed and reported on a single line.

**Special purpose lamps** (SPL, exempted from existing regulations), **lighting controls** (ctrl) and **standby** (sb) are included in EIA only as regards their energy consumption and related emissions and energy costs. They are not included in sales, stock, load, efficiencies, prices, acquisition and revenues. Where relevant, totals for Light Sources are reported both including and excluding SPL, ctrl and sb. Data for SPL, ctrl and sb are not included in MELISA and have been maintained from earlier EIA versions. Underlying data for SPL can be found in [http://ecodesign-lightsources.eu/sites/ecodesign-lightsources.eu/files/attachments/LightSources%20Task1\\_Annexes%20Final%2020151031.pdf](http://ecodesign-lightsources.eu/sites/ecodesign-lightsources.eu/files/attachments/LightSources%20Task1_Annexes%20Final%2020151031.pdf) in Annex D (from 2014-2016 Lot 8/9/19 preparatory / review study).

## DP Electronic Displays

Commission Regulation (EC) No 642/2009, OJ L 191/42, 23.7.2009, sets Ecodesign requirements for televisions (TV sets and TV monitors). Starting from 2010/2012, requirements regard the on-mode power, off-mode power and standby power. The limits for the on-mode power are defined as the sum of a fixed basic power (16 W for sets; 12 W for monitors, in tier 2 from 2012) and a variable power depending on the viewable area (Area in dm<sup>2</sup> \* 3.4579 W/dm<sup>2</sup>). From 2012, the power limit for off-mode is 0.3 W (in some conditions 0.5 W) and for standby mode 0.5 W (in some conditions 1 W). From August 2012, after 4 hours inactivity TVs have to switch to off-mode / standby-mode or similar (auto power down)

Commission Delegated Regulation (EU) No 1062/2010, OJ L 314/64, 30.11.2010, defines energy classes and energy labels for televisions. Classes are defined on a G to A+++ scale using an Energy Efficiency Index (EEI), being the ratio between the measured power and a reference power (fixed part depending on the type of product and variable part depending on viewable area).

The new proposed regulation (Ref. Ares(2018)5173952 - 09/10/2018) extends the scope of Ecodesign to all Electronic Displays (DP), including also computer monitors and signage displays. Exempted are: DP with area ≤ 100 cm<sup>2</sup>; digital photo frames; projectors; all-in-one video conference systems; medical displays; DP where main function is status display or control or function activation; DP integrated or to be integrated exclusively into products whose main function is not displaying images. In addition energy efficiency and some functional requirements do not apply to: broadcast displays; professional displays; security displays; digital interactive whiteboards; digital signage displays (so only off-mode, standby and information requirements for these DP).

The new proposed regulation sets energy efficiency requirements in terms of EEI, defined as:

$$EEI = \frac{(P_{measured} + 1)}{(3 \times [90 \times \tanh(0,02 + 0,004 \times (A - 11)) + 4] + 3) + corr_{lum}}$$

(where A is the viewable area). Maximum allowed EEI=0.90 from 2021, 0.75 from 2023 and 0.60 from 2025, for HD resolution (1980x1080 pixels). For higher resolution, the allowed power is around 20-25% higher. For UHD-4k and higher resolution, requirements start from 2023.

For off-mode the maximum allowed power is 0.3 W. For standby 0.5 W is allowed, but depending on the product this can increase to 2.2 W. For networked standby 2 W is allowed, but depending on the product this can increase to 7.7 W (for High Network Availability, HiNA).

The new proposed label regulation (Ref. Ares(2018)5173937 - 09/10/2018) defines new energy efficiency classes for DPs based on EEI (same as above), on a G-A scale, conform to framework Regulation (EU).2017/1369.

For on-mode, the reference for modelling of W/dm<sup>2</sup> efficiency is 2D HD picture quality. The additional power for UHD, 3D or HDR is assumed as follows:

Additional on-mode power for UHD / 3D / HDR	BAU	50%
Additional on-mode power for UHD / 3D / HDR	ECO	20% (applied from 2023; transition 2020-2023)

The load parameters for on-mode are the viewable area in dm<sup>2</sup> (for TV, Monitor, Signage), the share of products with UHD/3D/HDR (TV, Monitor) and the viewing or display time (on-mode-time) in hours per day. These parameters are presented on the LOAD sheet. They are combined with the on-mode efficiency in W/dm<sup>2</sup> (see EF-sheets) for energy calculations.

The load parameters for standby are the standby times (for TV, Monitor, Signage). They are combined with the standby power in W (see EF-sheets) for energy calculations. Standby hours include both simple standby hours for remote control (esp. before 2010) and networked standby (for LoNA and Smart TVs)

## LOADnotes

Viewing and standby hours are constant over the years. The viewable area and the share UHD/3D/HDR increase with the years. The load parameters are the same for all scenarios. The on-mode efficiency shows a strong power decrease with the years, in all scenarios, but faster in the ECO scenario due to the measures taken.

For TVs, test with dynamic video content according to EN IEC 62087:2012 (estimate from available data) at 65% of peak luminance. Older test standards use static test image. For monitors, according to Energy Star before July 2013, test luminance is at a fixed 200 cd/m<sup>2</sup>. After July 2013 the US Energy Star (not yet updated in EU) tests with dynamic video content according to EN IEC 62087:2012 (estimate from available data) at 65% of peak luminance.

The BAU scenario in the Ecodesign Impact Accounting (EIA) represents the situation without any regulation (so without CR 642/2009, CDR 1062/2010, CR 1275/2008). This is different from the BAU scenario in the 2018 Impact Assessment (IA) that considers the situation with the existing regulations in force. Consequently, BAU data and BAU-ECO savings data cannot be directly compared for EIA and IA.

The ECO scenario in EIA is the preferred Option 3 (Ambitious) of the 2018 IA document.

### STB Set-Top Boxes

SSTB	TEC	Operating hours (24h) as CSTB, i.e. 4.5h on, 4.5h sb from APD and 15h sb
CSTB	TEC	VA Base Duty Cycle (2012) Total Energy Consumption TEC=CSTB without Auto Power Down (APD): 9h 'on' and 15h 'sb'. CSTB with APB: 4.5h on, 15h sb, 4.5 sb from APD. kWhBase is 0.001 x 365 d x hours x Power (W) for various modes. (Note that other sources e.g. Intertek and US DoE suggest on-modes up to 10h)

For limits: The TEC should meet the Total Energy Allowance TEA. TEAs differ per source (cable, satellite, IP or terrestrial). Additional allowances (for meeting limits) are for multi-decode or multi-display or both, advanced video processing, return path functionality, etc.

### VIDEO

VIDEO players/recorders	TEC	DVD players and recorders (with or without HDD) and Blu-ray players and recorders (with or without HDD). 24h duty cycle depends on type, but typical: 0.25h/d record, 0.75h/d play, 9h live-pause (only types with HDD), fast start / on-idle / standby / off hours depend on type. Standby power 0.5 W, on-power varying from 10-30 W, idle power varying from 5-20 W. Average for all types leads to 16 kWh/a, 44 Wh/d or 1.8 W (weighted average of all modes, incl. standby). EU-Load is based on a use of 1 h per day.
VIDEO projectors	TEC	School projectors: on-play 3 h @ 275W, standby 6 h @ 1W, off-mode 15 h @ 0.5W, total 318 kWh/a, 871 Wh/d, 36 W. Office projectors: on-play 1.5h @250W, standby 8h @1W, off-mode 14.5h @0.5W, total 158 kWh/a, 433 Wh/d, 18 W. Home projectors: on-play 0.5h @200W, standby 20h @1W, off-mode 3.5h @0.5W, total 49 kWh/a, 134 Wh/d, 5.6 W. Overall weighted average 200 kWh/a. EU-Load is based on a weighted average use of 2.1 h per day.
VIDEO game consoles	TEC	24h duty cycle: standby hours 22 h/d @ 2W up to 2012 ('normal' standby) and in later years 15 h/d networked-standby @ 4W plus 5 h/d in 'normal standby' @ 1W. Rest is on- or idle-mode. Powers are variable with the years. The general assumption is that new models will have additional features that lead to higher power. After first issue the models will be optimized in following years and power will go down, until the next new model with more features and higher power is released. This leads to an up-and-down behavior for the annual energy consumption of new sold products (EFN) and to a continuous increase in the annual energy consumption per unit of the stock (EFS). EU-Load is based on a weighted average use of 2 h per day.

### ES & DS: Enterprise Servers and Data Storage products

EIA data for ES&DS are based on a Commission Working Document (WD) containing the draft 'COMMISSION REGULATION (EU) .../... of XXX implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for servers and data storage products and amending Commission Regulation (EU) No 617/2013', Ref. Ares(2018)3524555 - 03/07/2018, on the associated Impact Assessment report (IA) of October 2017, and on the Excel files underlying that IA.

The regulation proposed in the WD applies to servers and online data storage products, where:

'server' means a computing product that provides services and manages networked resources for client devices, such as desktop computers, notebook computers, desktop thin clients, internet protocol telephones, smartphones, tablets, telecommunication, automated systems or other servers, primarily accessed via network connections, and not through direct user input devices, such as a keyboard or a mouse and with the following characteristics:

- (a) it is designed to support server operating systems (OS) and/or hypervisors, and targeted to run user-installed enterprise applications;
- (b) it supports error-correcting code and/or buffered memory (including both buffered dual in-line memory modules and buffered on board configurations);
- (c) all processors have access to shared system memory and are independently visible to a single OS or hypervisor;

'data storage product' means a fully-functional storage system that supplies data storage services to clients and devices attached directly or through a network. Components and subsystems that are an integral part of the data storage product architecture (e.g., to provide internal communications between controllers and disks) are considered to be part of the data storage product. In contrast, components that are normally associated with a storage environment at the data centre level (e.g. devices required for operation of an external storage area network) are not considered to be part of the data storage product. A data storage product may be composed of integrated storage controllers, data storage devices, embedded network elements, software, and other devices;

The proposed regulation does not apply to: (a) servers intended for embedded applications; (b) servers classified as small scale servers in terms of Regulation (EU) No 617/2013; (c) servers with more than four processor sockets; (d) server appliances; (e) large servers (> 32 dedicated input/output slots); (f) fully fault tolerant servers; (g) network servers; (h) small data storage products (≤ 4 data storage devices) ; (i) large data storage products (> 400 data storage devices).

See detailed definitions in the WD.

The proposed regulation sets minimum requirements for the efficiency and power factor of (internal) Power Supply Units (PSUs) for ES and DS, in 3 tiers (2020, 2023, 2026). The proposal also limits the power consumption in idle state for ES with 1 or 2 processor sockets. In addition, material efficiency requirements (disassembly) and information requirements are proposed.

## LOADnotes

The EIA ECO scenario represents the situation where the proposals in the WD are accepted. This corresponds to policy option PO 3.2 of the IA.

The EIA BAU scenario represents the situation without new regulation (proposals of WD not accepted). This is the same BAU scenario considered in the IA.

Servers (ES) were previously regulated in CR 617/2013 on computers and computer servers, but that regulation has been ineffective in practice (no energy savings; see also remarks elsewhere for computers). In addition, there is an Energy Star specification for ES, but only 28% of servers on the EU market is labelled Energy Star. ES and DS are also involved in the 'EU Code of Conduct (CoC) on Data Centre Energy Efficiency' (CoC), but effects of that code are beyond the scope of EIA. Moreover, the available studies do not provide data for a BAU scenario without the effects of CR 617/2013, Energy Star and CoC. Hence, the BAU scenario in EIA already includes the effects of CR 617/2013, Energy Star and CoC, and the difference BAU - ECO thus provides only the effects of the new proposed regulation.

To avoid regulation conflicts, the WD proposal amends CR 617/2013 such that ES in the scope of the new proposed regulation are removed from CR 617/2013. Small-scale servers, that are excluded from the new regulation, remain in the scope of CR 617/2013.

A higher energy efficiency of ES and DS implies that these devices generate less heat, meaning that less cooling is required for the spaces in data centers where the equipment is installed. In addition the proposed regulation sets an information requirement on the operating conditions for ES and DS, in an attempt to stimulate manufacturers to increase the maximum operating temperature for the equipment (which would allow additional energy savings on space cooling).

In the IA, the energy savings are therefore reported for the equipment itself, and for the entire data center infrastructure (incl. e.g. space cooling). **EIA considers only the energy consumption and related emissions due to ES and DS, NOT those of the entire data centers.** This avoids double-counting issues: most cooling and air conditioning equipment is already taken into account in ENER Lot 21/ GROW Lot 6 (airco and HT chillers), UPS are already in ENER Lot 27 (no measures yet, but preliminary data already in EIA) and distribution transformers are already in GROW Lot 2 (regulation in place). Possibly there would also be an overlap with specific cooling solutions (e.g. water-cooled CPUs) in GROW Lot 1 on professional refrigeration.

This could possibly be improved in future revision of EIA, modelling the effect of ES and DS improvements as a reduction of the load for space cooling products, similar to the already implemented effect of ventilation units on the load for space heating products.

Base Cases (BCs):

For ES, EIA maintains the 15 base cases distinguished in the Excel files underlying the IA. These BCs differ on construction (tower, rack or blade), on number of sockets/CPUs (1, 2 or 4), on reliability (resilient or not), and on the type of use (traditional or cloud).

For DS, there are 3 BCs: Online 2, Online 3 and Online 4, according to a taxonomy of the Storage Networking Industry Association (SNIA).

The LOAD sheets provide the stock-average annual electric energy **output** in kWh/a per PSU for all ES and DS base cases. The values are calculated as the stock-average output power (in kW) multiplied by 8760 h/a. For ES, the average power is a time-weighted average of idle power and maximum output power, but these details are not reported in EIA. For ES ECO scenario, the average power also includes a reduction for the expected effect of the information requirement on the SERT metrics (increasing power per server; decreasing amount of servers; overall decrease in power consumption). Consequently, for ES, LOADBAU and LOADECO are slightly different from 2019 onwards.

The EFN sheets provide the PSU efficiencies (output / input in %) for products sold in the year. These efficiencies are a weighted average considering the market share distributions over the PSU 80PLUS efficiency classes (non certified, 80 plus, bronze, silver, gold, platinum, titanium), but these details are not reported in EIA. Starting from 2019, the EFNCO take into account the expected effect of the information requirement on PSU efficiency, both for ES and for DS.

The EFS sheets provide the stock-average efficiency, applying the standard EIA calculation, and considering the lifetimes reported on sheet STOCK. As the underlying study uses complex lifetime distributions that cannot be applied in EIA, EIA lifetimes are 'artificial' and set such to approximately match the stock from the underlying study.

The ELEC sheets provide the EU total electricity input to the PSUs, calculated as LOAD \* STOCK / EFS.

### PC Personal Computers

PC Desktop	TEC	Desktop and integrated desktop PC (Categories A, B, C, D) $E_{tec} = 8.76 \times (0.55P_{off} + 0.05P_{sleep} + 0.4P_{idle})$ If no sleep-mode and $P_{idle} < 10$ W then $P_{sleep} = P_{idle}$ (P in W). extra $E_{tec}$ allowances for legal limits (in kWh/a): 1 for every Gb RAM over base (=2 Gb cat. A/B/C or 4 Gb cat. D), for extra internal storage 25, for discrete TV tuner 15, for discrete audio card 15, in 2014: for 1st discrete graphics card (dGfx) between 34 (G1) and 225 (G7), for additional dGfx between 20 (G1) and 133 (G7), in 2016: dGfx card allowances are 45-47% lower.
PC Notebook	TEC	Notebook PC (Categories A, B, C) Ecodesign: $E_{tec} = 8.76 \times (0.60P_{off} + 0.10P_{sleep} + 0.30P_{idle})$ extra $E_{tec}$ allowances for legal limits (in kWh/a): 0.4 for every Gb RAM over base (=4 Gb ), for extra internal storage 3, for discrete TV tuner 2.1, for discrete audio card 15, from 1.7.2014: for 1st discrete graphics card (dGfx) between 12 (G1) and 113 (G7), for additional dGfx between 7 (G1) and 66 (G7), from 1.7.2016: dGfx card allowances are 45-47% lower. Category C notebook computers are exempt, if they have a quadcore CPU, dGfx with total buffer frame width >225 Gb/s and >16 GB RAM. ('Mobile Workstations') EU Energy Star has similar requirements.
PC Tablet/slate	TEC	Tablet/slate/ blade PCs are exempted (provisional estimates VHK used in the model)
PC Thin client	TEC	Only regulation of internal power supply efficiency till now. Other aspects to do (provisional estimates VHK used in the model)
PC Workstation	TEC	Only regulation of internal power supply efficiency till now. Other aspects to do (provisional estimates VHK used in the model)

### Imaging Equipment

EP-Copier mono	TEC	EP (TEC) products are Standard-size copiers, Multifunction Devices (MFDs), and printers that use Electrophotography (EP), Solid Ink (SI), and High Performance Ink Jet (IJ) marking technologies. IJ (OM) products cover the remainder of mainly non high-performance inkjet (IJ) products.
EP-Copier colour	TEC	
EP-printer mono	TEC	
EP-printer colour	TEC	Voluntary Agreement ( <a href="http://www.eurovaprint.eu">www.eurovaprint.eu</a> ) currently says that on 1.1.2012 90% of models will comply with Energy Star v.1.1.
IJ SFD printer	OM	Revision is intended to result in a target that 80-90% of models sold by signatories comply with Energy Star (ES) requirements, 3 years after new (US) ES requirements' publication. (ES v. 2.0 was published June 2013).
IJ MFD printer	OM	
Duplexing		



## LOADnotes

Energy Star measures the TEC (Total Energy Consumption, in kWh/a) from a daily test duty cycle --extrapolated to 1 office year (50weeks x 5 days)-- that emulates a normal ('on', 'standby', etc.) usage pattern with various operating modes ('on', 'ready', 'standby', 'off', etc.) and printing activity. The number of prints depends on the rated print speed in ipm (images per minute).

In the IA study the modelling is based on Energy Star numbers, i.e. for average EP (B&W and colour) copiers 87880 images per year (ipy), printers 133120 ipy, IJ SFD 1040 ipy, IJ MFD 3900 ipy. Stock average of all EP is 123000 ipy IJ equipment is 3130 ipy. Overall 24400 ipy. Paper use is based on 65% duplexing and 15% N print and results in overall 15000 paper sheets or 75 kg/unit (80g/m<sup>2</sup>) per year. Indirect energy use for paper (from MEErP 2011) is 40 MJ/kg. Average unit ink/toner consumption is 662 g/a.(EU28 in 2010: 78 m kg at 50 MJ/kg --> 3.5 PJ/a = low impact). The preparatory study follows data from InfoTrend for EU15+NO, CH, TK and assumes them for the EU because the population is similar to the EU25. InfoTrend gives 733 bn images in 2010 (637 non-residential, 96 residential; inkjet 14% of overall total) and 685 bn images in 2005 (556 non-residential, 119 residential). On average this is 4850 ipy per unit in 2010 (28000 ipy for EP and 1000 ipy for IJ) and 5500 ipy per unit in 2005 (decrease 11.8% is ca. 2.2% per year). In aggregate there is a growth of 6.5% over 5 years (disaggregate YoY growth of 1.2%).

Reliable sources are scarce (very non-transparent market), but suggest something in between but closer to the preparatory study data. Therefore the preparatory study was taken as a basis here, i.e. 6000 ipy per average product. This is 25% of the Energy Star ipy output in the standard TEC, but --given that the printing-mode is only 20-25% of the total energy. The corrected real-life TEC value is still 0.85 times the standard TEC for EP equipment. For IJ equipment there is no difference.

### SB Standby equipment (not covered elsewhere)

The 24h duty cycle is given in the preparatory study (see table)

		on	standby	idle
SB Home Gateway, idle hours	h idle/d	7	8.5	8.5
SB Home NAS, idle hours	h idle/d	3	19	2
SB Home Phones (fixed), idle hours	h idle/d	2	0	22
SB Office Phones (fixed), idle hours	h idle/d	4	0	20

### EPS External Power Supplies

External Power Supplies (EPS) are covered by Commission Regulation (EC) No 278/2009 (OJ L 93/3, 7.4.2009). From April 2011, this CR sets minimum ecodesign requirements for power consumption in no-load condition and for the active efficiency of EPSs. Requirements depend on the type of EPS (AC-AC, AC-DC, low-voltage) and on the declared output power. The CR does not apply to: voltage converters; uninterruptible power supplies; battery chargers; halogen lighting converters; EPS for medical devices; EPS used as spare parts (under certain conditions).

In CR 278/2009, 'external power supply' means a device which meets all of the following criteria:

- it is designed to convert alternating current (AC) power input from the mains power source input into lower voltage direct current (DC) or AC output;
- it is able to convert to only one DC or AC output voltage at a time;
- it is intended to be used with a separate device that constitutes the primary load;
- it is contained in a physical enclosure separate from the device that constitutes the primary load;
- it is connected to the device that constitutes the primary load via a removable or hard-wired male/female electrical connection, cable, cord or other wiring;
- it has nameplate output power not exceeding 250 Watts;
- it is intended for use with electrical and electronic household and office equipment as referred to in Article 2(1) of Regulation (EC) No 1275/2008;

The new proposed regulation (based on 2018 Impact Assessment and October 2018 Commission Working Documents) essentially has the same scope, except that active power over ethernet injectors is excluded, while multi-voltage EPSs (able to convert to more than one DC or AC output at a time) are now included.

Starting from April 2020, in a single tier, the new regulation sets lower limits for the no-load power and higher limits for the minimum average active efficiency. These limits align the EU requirements with the latest USA requirements. The active efficiency remains based on the arithmetic average of the efficiencies at 25, 50, 75 and 100% of rated output current, but the proposed regulation adds an information requirement for the active efficiency at 10% of rated output current.

Harmonised standard EN 50563:2011/A1:2013 describes the determination of no-load power and average active efficiency of AC-DC and AC-AC EPSs within the scope of CR 278/2009. Additions to this standard would be necessary for the new regulation, to address multi-voltage EPSs and to address the information requirement at 10% of load. An update is also recommended for testing of 'agile' chargers (i.e. the ones that are able to scale their output voltage depending on the needs of the primary load product).

The 2018 IA study distinguishes 10 EPS base cases (BCs) that are listed below. Load parameters and efficiency parameters differ per BC.

Load parameters represent the user-demand for output of the EPSs: the average annual active power and active hours, and the no-load hours, as listed below.

These load parameters are assumed to remain constant over the years and are the same for all scenarios (BAU and ECO).

Efficiency parameters are the average active efficiency and the average no-load power. These vary with the years, are different for BAU and ECO, and reported on the EFN (average of sales) and EFS (average of stock) sheets.

The ECO scenario in EIA is the (preferred) PO2 policy option of IA 2018. The BAU scenario in EIA represents the situation without any regulation, which is different from the BAU in IA 2018 which includes the effects of current regulations.

Load parameters per EPS base case (for all years, all scenarios)	Name plate power (W)	Active power (output) (W)	Active hours (hours /day)	No-load (hours /day)	Unplugged (hours /day)	Lifetime (years)
a. EPS ≤ 6W, low-V (e.g. mobile phone; grooming products)	3.50	1.10	5.20	9.80	9.00	3.0
b. EPS 6–10 W (e.g. tablets, smart phones etc.)	10.00	2.00	5.20	9.80	9.00	3.0
c. EPS 10–12 W (e.g. small network equipment, set-top boxes)	12.00	7.70	21.40	2.60	0.00	4.0
d. EPS 15–20 W (e.g. portable devices, portable game consoles)	18.00	3.10	7.00	10.00	7.00	3.0
e. EPS 20–30 W (e.g. notebook computer)	30.00	7.60	20.72	0.00	3.28	5.0
f. EPS 30–65 W, multiple-V (e.g. multi-device univ. chargers)	36.00	9.70	20.72	0.00	3.28	5.0
g. EPS 30–65 W (e.g. high-end notebooks computers)	65.00	7.80	20.72	0.00	3.28	5.0
h. EPS 65–120 W (e.g. high-end notebook computers)	120.00	7.60	20.72	0.00	3.28	5.0
i. EPS 65–120 W, multiple-V (e.g. stationary game consoles)	120.00	9.70	24.00	0.00	0.00	5.0
j. EPS 12–15 W (e.g. loudspeakers, sound systems)	9.50	2.30	24.00	0.00	0.00	5.0

## LOADnotes

'no-load condition' means the condition in which the input of an EPS is connected to the mains power source, but the output is not connected to any primary load. This means that all power input to the EPS in 'no-load' is actually 'consumed' by the EPS itself.

No-load energy = No-load power \* No-load hours

During 'active-use', the EPS passes on a large part of its input power to the primary load. Only the difference between input and output (the EPS losses) are actually being consumed by the EPS itself.

Therefore, for the 'active' part, the energy consumption for EPSs reported in EIA refers only to the losses (input minus output). This is the same approach as used in EIA for UPS, but differs from the approach in IA 2018, where the entire input energy is considered as EPS energy consumption.

Active energy = Input - Output = active power \* active hours / active efficiency - active power \* active hours

The assumed lifetimes are reported in the table above. For the computations of Stock and Stock-efficiency, EIA uses slightly higher lifetimes (see sheet Stock), to closely match the stock values used in IA 2018 (where a more complex lifetime distribution was used for stock computations)

Many of the primary loads for which the EPS are being used, are also themselves accounted in EIA because they are subject to other ecodesign regulations. This includes e.g. notebook computers, tablets, game consoles, set-top boxes, gateways and NAS. For these products, the EPS losses (active and/or no-load) may already have been taken into account in the energy consumption of the primary product. Hence, there is a possible double counting issue. Following the general EIA philosophy, EPS losses are first reported entirely on BC- and product-level (for transparency) and then double counting factors (db) are considered when computing functional group totals (when combining EPS data with those for other products). The db-factors can be found on e.g. sheet ELEC in the first column. At the moment these factors are rough preliminary estimates. The main products not involved in this double counting are mobile phones, smart phones, rechargeable grooming products such as razors, lady-shaves, electric toothbrushes, etc., and loudspeakers / sound systems. Double counting mainly regards the active mode of EPS, not the no-load mode.

**UPS\_Uninterrupted Power Supplies**      kW output      In the preparatory study the nominal active power for each base case is defined as an INPUT load. It would be misleading to use this as the LOAD in EIA, because that would mean that a higher efficiency leads to an increased OUTPUT (suggesting an increase in demand) instead of a reduced INPUT. In the EIA philosophy the LOAD sheet shows the power demand by consumers, and this should be an OUTPUT load, that is identical for the BAU and ECO scenarios. There is no indication in the prep. study that this load changes with time, so it is assumed constant throughout the years. The OUTPUT load is derived from information in the preparatory study as explained below.

UPS Output LOAD calculation scheme      The nominal active power is the reference INPUT load (1), taken from prep.study final consolidated report table 56. UPS normally operate at partial loads as indicated in prep. study table 110. The sum-product of load levels (25, 50, 75, 100% of nominal) and shares of times spent at these load levels gives an average load level (2). Table 102 in the prep.study provides the efficiencies for each load level. The sum-product of these efficiencies, the load levels and the times spent at these load levels provides a load-and-time-weighted average efficiency (3). The OUTPUT load for use in EIA (4) is computed as nominal input power \* average load level \* average efficiency. This value is then used as a LOAD constant for all years, identical in BAU and in ECO.

	(1) kW input	(2) Avg. Level	(3) Avg. Eff.	(4) kW output
UPS below 1.5 kVA (BC1)	0.54	67.5%	88.1%	0.32
UPS 1.5 to 5 kVA (BC2)	2.87	75.0%	89.8%	1.93
UPS 5 to 10 kVA (BC3)	6.25	75.0%	92.3%	4.33
UPS 10 to 200 kVA (BC4)	94.5	50.0%	92.7%	43.80

UPS Energy considered      The energy consumption considered for UPS is the difference between the input energy and the output energy, i.e. only UPS losses are taken into account. Unit energy is computed as (Input Energy - Output Energy) = (LOAD/efficiency - LOAD)\*8760, where 8760 are the hours in a year.

### RF Household Refrigerators

Energy labels for Household Refrigerators were first introduced in 1994 by COMMISSION DIRECTIVE 94/2/EC of 21 January 1994 implementing Council Directive 92/75/EEC with regard to energy labelling of household electric refrigerators, freezers and their combinations, OJ L45/1, 17.2.94.

The first limits on allowable electricity consumption in kWh/24h were set in 1996 by DIRECTIVE 96/57/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 3 September 1996 on energy efficiency requirements for household electric refrigerators, freezers, and combinations thereof, OJ L236/36, 18.9.96.

The 1994/1996 Directives were replaced in 2009/2010 by COMMISSION REGULATION (EC) No 643/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for household refrigerating appliances, OJ L 191/53, 23.7.2009, and COMMISSION DELEGATED REGULATION (EU) No 1060/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household refrigerating appliances, OJ L 314/17, 30.11.2010

These Regulations apply to electric mains-operated household refrigerating appliances (RF), including those sold for non-household use or for the refrigeration of items other than foodstuffs. They also apply to electric mains-operated household RF that can be battery-operated. The regulations do not apply to: (a) RF primarily powered by energy sources other than electricity, (b) battery-operated RF that can be connected to the mains through an AC/DC converter, purchased separately, (c) custom-made RF, (d) RF for tertiary sector application where the removal of refrigerated foodstuffs is electronically sensed and that information can be automatically transmitted through a network connection to a remote control system for accounting, (e) RF where the primary function is not the storage of foodstuffs through refrigeration, such as stand-alone ice-makers or chilled drinks dispensers. Several requirements do not apply to RF with storage volume < 10 litres or > 1500 litres, to wine-storage appliances and to absorption-type RF.

In October 2018 the Commission proposed a review of the two regulations (vote by Member States in December 2018). Scope: electric mains-operated RF with volume > 10 litres and ≤ 1500 litres. Not applicable to: (a) products covered by CR (EU) 2015/1095 with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers; (b) refrigerating appliances with a direct sales function (proposed to be regulated separately, with vote in January 2019); (c) mobile refrigerating appliances. More ambitious ecodesign requirements are set, and more extensive requirements are set for wine storage appliances, absorption type RF, RF with transparent doors, low-noise RF. The definition of the Standard Annual Energy consumption (SAEc) is changed w.r.t. CR 643/2009, changing also the values for the Energy Efficiency Index (EEI). The scale for the energy efficiency / label classes is revised.

Explanations of the main test- and calculation methods are given below. The explanation is incomplete and aims only to give the reader an idea of the main principles involved. For a full overview it is indispensable to consult the original documents.

The description below also provides some specific guidance as to how and where the values used in the model are different from what is mentioned in the regulations. Note in particular that in EIA, the SAEc and the EEI are as defined in CR 643/2009, and not as defined in the 2018 proposal.

RF Net volume Vnet (CECED 2013)      ltr      from CECED database  
 RF Estimated equivalent volume Veq      ltr       $V_{eq} = \sum V_c \times (25 - T_c) / 20 \times F_{Fc} \times CC \times BI \approx (V_{freeze\_net} * 2.15 + V_{fridge\_net}) \times 1.1$ , with  
 $V_{freeze\_net} (-18\text{ }^\circ\text{C}) = 22\% \times V_{net}$ , rest is  $V_{fridge\_net} (T_c = +5\text{ }^\circ\text{C})$ . So  $V_{eq} = 1.353 * V_{net}$

## LOADnotes

Note that 1.1 is the estimated average effect of correction factors FF (Frost Free=1.2), CC (Climate Correction for Tropical=1.2 and SubTropical=1.1) and Built-In (<58 cm width--> 1.2) for average product sold

RF SAEC (EEI=100)                      kWh/a       $EEI = AEC / SAEC$ , with  $AEC = E24h \times 365$ , where E24h is 24h energy consumption tested according to EN 62552: 2013.

$SAEC = V_{eq} \times M + N + CH$ , with  $M=0.63$ ,  $N=290$ ,  $CH=5-25$  (according to CR 643/2009).

CH=presence of chiller compartment (max=100%=50 kWh), runs from 5 to 25 kWh over period 1990-2030. Calculation of M and N based on 2005 CECEC database.

Note that --although test ambient temperature of 25 °C (to compensate for missing door openings) is high-- it is assumed that the Standard (test) and Real-life (used here) consumption data are identical.

The ECO scenario in EIA is the preferred policy option of IA 2018, i.e. the LLCC scenario, as proposed in the Commission Working Documents for the December 2018 meetings. The BAU scenario in EIA represents the situation without any regulation (not even the 1994/1996 Directives), which is different from the BAU in IA 2018 which includes the effects of current regulations.

### CF Commercial Refrigeration

No final regulation yet (March 2016). EIA data based on 2014 Commission Working Document (WD) and 2015 Impact Assessment (IA). WD expresses efficiency requirements in terms of Energy Efficiency Index,  $EEI = (AEC/SAEC) \times 100$ .  $AEC = E24h \times 365$ , Annual Energy Consumption of the cabinet in kWh/year. E24h in kWh/24h (according to EN ISO 23953 or other standard under development, see Transitional Methods). AEC includes remote energy.  $SAEC = (M + N \times Y) \times 365$ , Standard Annual Energy Consumption of the cabinet in kWh/year. The proposed regulation specifies M and N. For beverage coolers, small ice-cream freezers and vending machines Y is the net volume of the appliance in litres. For all other refrigerated cabinets Y is the total display area (TDA) in m<sup>2</sup>. EIA uses the EEI on all efficiency sheets. The LOAD sheet is used to present the SAEC values, computed as shown below (although SAEC is not really an output load). The EU-LOAD shows the total EU-28 refrigerated Volume or Display Area, depending on the base case.

Earlier studies only considered the supermarket remote base cases RVC2 and RHF4. However the proposed regulation applies to many other supermarket models as well. The IA presents tables for 'base cases only' and tables 'including non-base cases', showing a significant impact for the non-base cases. Consequently, it was agreed to include the non-base cases in the accounting, but this required estimating some of the missing basic input data: the TDA of 2.5 m<sup>2</sup> and the SAEC=8500 kWh/year. The non-base cases are a mix of integrated and remote models, a mix of chillers and freezers, vertical and horizontal, without precise M and N values. Also for the base cases some discrepancies between various data sets were found and in some occasions the choice of the average Volume or Display Area was changed with respect to the IA to (partially) resolve them.

	M	N	Volume (litres)	TDA (m <sup>2</sup> )	SAEC (kWh/year)	average depth assumed (m)	temperature range
CF open vertical chilled multi deck (RVC2)	9.1	9.1		4.6	18600	0.5	m <sup>2</sup> @ -1 /+7°C
CF open horizontal frozen island (RHF4)	4.2	9.8		4.0	15841	0.5	m <sup>2</sup> @ -18 /-15°C
CF other supermarket display (non-base cases)	-	-		2.5	8500	0.5	m <sup>2</sup> @ -18 /+7 °C
CF Plug in one door beverage cooler	1	0.013	500		2738		litres @ 1 /10°C
CF Plug in horizontal ice cream freezer	1	0.009	340		1482		litres @ -18 /-15°C
CF Spiral vending machine	4.1	0.004	750		2592		litres @ 1 /7°C

### PF Professional Refrigeration

CR 2015/1095 (ecodesign) applies to professional refrigerated storage cabinets, blast cabinets, low- and medium temperature process chillers and low- and medium temperature condensing units. CR 2015/1094 (energy labelling) applies only to professional refrigerated storage cabinets. **Walk-in cold rooms** are not covered by the regulations and consequently have been removed from EIA. For **blast cabinets** the regulation only specifies information requirements that are assumed not to lead to quantifiable changes in energy efficiency and consequently blast cabinets have also been removed from EIA. Storage cabinets, process chillers and condensing units each have specific load- and efficiency definitions and are therefore described separately below.

#### PF (1): professional refrigerated storage cabinets

CR 2015/1095 expresses efficiency requirements in terms of Energy Efficiency Index,  $EEI = (AEC/SAEC) \times 100$ .  $AEC = E24h \times af \times 365$ , Annual Energy Consumption of the cabinet in kWh/year (correction factor 'af' for light-duty cabinets). E24h in kWh/24h (Test standard to be developed with ECFEM).  $SAEC = (N + M \times V_n) \times 365$ , Standard Annual Energy Consumption of the cabinet in kWh/year. The proposed regulation specifies M and N for four cabinet types, see table below. EIA uses the EEI on all efficiency sheets. The LOAD sheet is used to present the SAEC values, computed as shown below (although SAEC is not really an output load). The EU-LOAD shows the total EU-28 refrigerated Volume.

	N	M	Net Volume V <sub>n</sub> (litres)	SAEC (kWh/year)
Chilled, Vertical storage cabinet	609	1.643	600	1595
Chilled, Horizontal (counter) storage cabinet	1790	2.555	300	2557
Frozen, Vertical storage cabinet	1472	4.928	600	4429
Frozen, Horizontal (counter) storage cabinet	2380	5.84	200	3548

#### PF (2): low- and medium-temperature process chillers

CR 2015/1095 expresses efficiency requirements in terms of 'seasonal energy performance ratio' (SEPR), which is the efficiency ratio of a process chiller for providing cooling at standard rating conditions, representative of variations in load and ambient temperature throughout the year, and calculated as the ratio between annual cooling demand and annual electricity consumption. SEPR values depend on the type of cooling (air-cooled, AC or water-cooled, WC), on the operating temperature (low, LT or medium, MT) and on the cooling capacity (small, S or large, L). For reasons of transparency, EIA also uses SEPR on the efficiency sheets. The LOAD sheet shows the annual unit cooling demand (MWhcool/a), and the EU-LOAD sheet shows corresponding EU-28 total cooling demand (TWhcool/a). The calculation of the unit cooling load is based on data from the preparatory study, that have been aggregated to the base cases used in EIA, see table below.

## LOADnotes

	average cooling capacity (kWcool)	Annual energy consumpt., AEC in MWh/a	SEPR 2011 market average	Annual cooling demand = SEPR*AEC (MWh/a)
Process Chiller AC MT S ≤ 300 kW	167	275	2.70	743
Process Chiller AC MT L > 300 kW	589	896	3.00	2688
Process Chiller AC LT S ≤ 200 kW	164	377	1.59	599
Process Chiller AC LT L > 200 kW	588	1254	1.70	2132
Process Chiller WC MT S ≤ 300 kW	180	257	3.60	925
Process Chiller WC MT L > 300 kW	622	818	3.90	3190
Process Chiller WC LT S ≤ 200 kW	189	376	2.00	752
Process Chiller WC LT L > 200 kW	629	1156	2.25	2601

### PF (3):low- and medium-temperature condensing units

CR 2015/1095 expresses efficiency requirements in terms of COP for lower capacity models and in terms of SEPR for higher capacity models. 'rated coefficient of performance' (COP) means the rated cooling capacity, expressed in kW, divided by the rated power input, expressed in kW. 'seasonal energy performance ratio' (SEPR) is the efficiency ratio of a condensing unit for providing cooling at standard rating conditions, representative of variations in load and ambient temperature throughout the year, and calculated as the ratio between annual cooling demand and annual electricity consumption. For reasons of transparency, EIA also uses COP or SEPR on the efficiency sheets. The LOAD sheet shows the annual unit cooling demand (MWhcool/a), and the EU-LOAD sheet shows the corresponding EU-28 total cooling demand (TWhcool/a). The calculation of the unit cooling load is based on data from the preparatory study and from Excel files underlying the impact assessment, see table below.

	efficiency parameter	COP/SEPR Market average in 2011	Average cooling capacity of the range (kW)	Assumed operating hours per year (h/a)	Annual cooling demand in MWhcool/a (per unit)	Base case AEC in MWh/a per unit, before Tier 1
Condensing Unit MT S 0.2-1 kW	COP	1.42	0.56	5840	3.27	2.30
Condensing Unit MT M 1-5 kW	COP	1.64	2.73	5840	16.0	9.73
Condensing Unit MT L 5-20 kW	SEPR	2.64	10.8	5840	63.2	23.9
Condensing Unit MT XL 20-50 kW	SEPR	2.71	33.1	5840	193.4	71.4
Condensing Unit LT S 0.1-0.4 kW	COP	0.8	0.28	5840	1.65	2.06
Condensing Unit LT M 0.4-2 kW	COP	0.95	0.93	5840	5.43	5.72
Condensing Unit LT L 2-8 kW	SEPR	1.46	4.64	5840	27.1	18.6
Condensing Unit LT XL 8-20 kW	SEPR	1.61	31.9	5840	186.3	115.7

### COOK Cooking Appliances

COOK El. Hobs	ltr/a	New test standard prEN 60350-2:2012 measures energy per cooking zone to heat water by 75 K (pot size and water volume depending on cooking zone size) and also the energy required to keep the heated water at the final temperature for 20 minutes after heating up. The average energy consumption of the hob, in Wh/kg water heated, is the straight average of all cooking zones of the hob. Annual energy consumption in the model is based on 1229 ltr/a. Regulation is in GCV.
COOK El. Ovens	TEC	Energy Efficiency Index ovens EEI= EC (test)/SEC (average model 2012), with EC, SEC in kWh elec/cycle for electric and MJ/cycle (primary) for gas, determined per oven cavity. For electric ovens SEC= 0.0042*V+0.55. For gas ovens SEC=0.044*V+3.53. EC is based on EN 60350:2009 (electric oven) or EN 15181:2008 (gas oven). Annual energy consumption based on 110 cycles/a.
COOK Gas Hobs	kWh/a	Energy efficiency (EE) of the burner (in %) is calculated by dividing the theoretical energy needed for heating a pot with an amount of water (in MJ) by the measured energy consumption on the gas burner when heating water by 75 K in a standardised pot (pot size and water volume depending on burner) and standard conditions, expressed in MJ Net Calorific Value (NCV) of the amount of gas used. Current standard EN 30-2-1, new standard similar to the one for electric hobs is being developed (status 2013).  EEburner=EEtheoretical/EEtest. In the modelling, in order to be compatible with electric hobs, it is assumed that the load=the minimum theoretical annual energy consumption to heat 1229 ltr/a by 75 K and keep it warm during 20 minutes is 181 kWh/a =651.6 MJ/a (based on 438 cooking periods/a). Regulation is in GCV. Conversion factor GCV to NCV is 1.1 .
COOK Gas Ovens	TEC	Energy Efficiency Index ovens EEI= EC (test)/SEC (average model 2012), with EC, SEC in kWh elec/cycle for electric and MJ/cycle (primary) for gas, determined per oven cavity. For electric ovens SEC= 0.0042*V+0.55. For gas ovens SEC=0.044*V+3.53. EC is based on EN 60350:2009 (electric oven) or EN 15181:2008 (gas oven). Annual energy consumption based on 110 cycles/a. Conversion factor GCV to NCV is 1.1 .

## LOADnotes

COOK Range Hoods	TEC	The annual energy consumption AEC (in kWh) is calculated on the basis of 1 h extraction operation daily at best efficiency point $P_{bep}$ , and 2 h lighting operation daily, during 365 days per year. The electric power consumption (in W) of the extraction fan $P_{bep}$ and the lighting system PL are measured according to test standard EN 61591:1997. The power consumption of the extraction fan is corrected with a so-called 'time increase factor' $f$ , which relates to the fluid dynamic efficiency FDE of the fan. Where appropriate, i.e. in the case of a fully automatic hood, the power consumption in off-mode $P_o$ and standby mode $P_{sb}$ is taken into account. The standard energy annual energy consumption SAEC (in kWh) is derived from the average of the 2011 CECED database through a regression analysis. $EEl = AEC / SAEC$ , with $SAEC = 0.55 * (WBEP + WL) + 15.3$ (in kWh/a, with $W_{bep}$ and $WL$ is electric power input in W for fans and light respectively).
<b>CM Coffee Makers</b>		
COFFEE Dripfilter (glass)	TEC	According to Commission Working Document to CF(18.11.2011): Testing: 1) kWh over a 100 minute 'coffee period' at rated (max.) water/coffee capacity, including brewing+50% draw-off, followed by keep-hot till the end of test [test: ca. draft IEC 60661]. 2) standby mode power $P_{stby}$ , measured after the coffee period [test: EN 62301]. 3) if product has auto power down, then $P_{off}$ [test: EN 62301] Temperature corrections may apply if machine does not meet minimum brewing or keep-hot temperatures  Real consumption drip-filter (glass) machine is based on 730 cycles (coffee periods) per year, 540 g water/cycle (24 g coffee, 1 paper filter), 45 minutes 'keep-hot' period per cycle, standby period 23.8h/24h (11.9h/12h per cycle).
COFFEE Dripfilter (thermos)	TEC	Real consumption drip-filter (glass) machine is based on 730 cycles (coffee periods) per year, 472 g water/cycle (less coffee thrown away, 21 g coffee, 1 paper filter), standby period 23.8h/24h (11.9h/12h per cycle).
COFFEE Dripfilter (full automatic) COFFEE Pad filter	TEC TEC	Coffee period is 3 cups x 135 g. 730 periods per year (2190 cups/a). Standby and ready mode are included
COFFEE Hard cap espresso	TEC	For all espresso machines a coffee period is 3 cups x 48 g. 730 periods per year (2190 cups/a). Standby and ready mode (=period where heating element keeps water warm) are included
COFFEE Semi-auto espresso COFFEE Fully-auto espresso	TEC TEC	
<b>WM Household Washing Machines</b>		
WM Programme temperature, in °C WM Rated capacity $c$ , in kg WM Real (rated) load, in kg WM Cycles/yr per unit (est.) WM programme time WM SAEC (EEI=100)	°C kg/cycle kg/cycle cyc/a cyc/a kWh/a	$SAEC = 47c + 51.7$ ( $SAEC$ = Standard Annual Energy Consumption, calculated from $c$ =capacity, in kg) $EEl = AEC / SAEC$ ( $EEl$ =Energy Efficiency Index) $AEC = 220 * [(3E60 + 2E60\% + 2E40\%)/7] + E_{sb}$ $AEC$ is Annual Energy Consumption (measured); $E_{sb}$ is standby energy (small, see regulation) $E60$ , $E60\%$ and $E40\%$ are full resp. half- rated load test cycles at 60 resp. 40°C, according to EN 60456:2011. Note that there is, for various possibly valid reasons (e.g. repeatability and accuracy of tests), a significant difference between the Standard (as in regulations) and Real-life (used here) conditions.
<b>DW Household Dishwashers</b>		
DW Real average programme temperature, in °C DW Rated capacity, ps, in place settings DW Real load, in place settings DW Cycles/yr per unit (est.) DW programme time DW SAEC (EEI=100)	°C ps/cycl ps/cycl cyc/a cyc/a kWh/a	$SAEC = 7ps + 378$ (normal size) or $25.2ps + 126$ (compact) $EEl = AEC / SAEC$ $AEC = 280 * E_{cyc} + E_{sb}$ $E_{sb}$ is standby energy (small, see regulation) $E_{cyc}$ is test cycle according to EN 50242:2008, normal/compact = ca. 15% at 9 ps/85% at 12.5 ps (in 2005 ca. 12 ps) --> $SAEC = 22.5 ps + 164$
<b>LD Laundry Driers</b>		
LD Spin speeds of stock WM LD Real initial moisture of drying load LD Standard moisture LD correction factor for initial moisture LD Rated Capacity LD Real Capacity (71% of rated, IA report) LD Cycles real per year (as in IA report)	rpm % % - kg/cycle kg/cycle cyc/a	
LD SAEC vented el. (EEI=100) LD SAEC condens el. (EEI=100)	kWh elec/a kWh elec/a	$SAEC = 140 * capacity^{0.8}$ $SAEC = 140 * capacity^{0.8} * 30 * (programme\ time / 60)$ with programme-time is estimated 130 minutes (100 minutes for venting drier)
LD SAEC vented gas (EEI=100)	kWh prim./a	$SAEC = 140 * capacity^{0.8}$
<b>VC Vacuum Cleaners</b>		
VC dom (87 m <sup>2</sup> /h)	h/a	The annual electricity consumption (AE) is calculated with 2 double strokes per surface area -->factor 4. Surface area is

## LOADnotes

VC non-dom h/a 87 m<sup>2</sup> (average m<sup>2</sup>/dwelling), cleaned in 50 one-hour tasks per year. The average specific energy (ASE) in Wh/m<sup>2</sup> is determined for hard floor (hf), carpet (c) and general purpose (50% hf and 50% c) vacuum cleaners. The actual test is done with 5 double strokes according to test standard IEC 60312-1 ed.1: 2010, to establish average power P (W), including possible battery power for active nozzles NP, from the energy consumption during the test (set against the cleaned surface A and the cleaning time t, at 0.5 m/s). The same tests establishes dust pick-up (dpu) for carpets and hard floors of the model.

In formula:  $AE = 4 \times 87 \times 50 \times ASE \times (1 - 0.2/dpu - 0.2)$ , established specifically for carpets and/or hard floors (suffixes 'c' or 'hf' for AE, ASE, dpu).

**FAN Industrial (>125W)**  
 FMEG (Fan Motor Efficiency Grade) is the fan efficiency at best efficiency point (bep), following draft ISO 12759 standard (status 2009). Depending on type, total or static pressure is used in the equation to determine fluid power output (in Pa \* m<sup>3</sup>/s = W).

The draft standard (by TC 117) gives generic equations per fan-type and per rated power category (0.125-10 kW and 10-500 kW):  
 For axial and centrifugal forward curved (FC) fans:  $2.74 \cdot \ln(Pe) - 6.33 + N$  (Pe:0.125-10kW);  $0.78 \cdot \ln(Pe) - 1.88 + N$  (Pe:10-500kW).  
 Centrifugal backwards curved (BC):  $4.56 \ln(Pe) - 10.5 + N$  (Pe:0.125-10kW);  $1.1 \cdot \ln(Pe) - 2.6 + N$  (Pe:10-500kW).  
 Cross-flow:  $1.14 \cdot \ln(Pe) - 2.6 + N$  (Pe:0.125-10kW).  
 Where N is the FMEG-value.  
 The table below gives the output power and annual operating hours per basecase.

		P flow(kW)	h/a	
FAN Axial<300Pa (all FAN types >125W)	kWh flow/ a	0.123	2000	
FAN Axial>300Pa	kWh flow/ a	0.245	2000	
FAN Centr.FC	kWh flow/ a	0.071	3000	
FAN Centr.BC-free	kWh flow/ a	1.060	3000	
FAN Centr.BC	kWh flow/ a	1.026	3000	17.4
FAN Cross-flow	kWh flow/ a	0.015	1865	6%

Note that P flow is Pnominal \* load factor, where load factor is 50%

MT Industrial motors, net unit load	net annual load (=demand for output) kWh output/a	average nominal output power kW	average annual operating hours h/a	average load factor	net load = nominal power * annual hours * load factor
					load factor indicates the part of the nominal power at which motor operates on average during hours
					unit load is assumed constant: same value for all years it is also the same in BAU and in ECO (but in ECO share using VSD may be higher than in BAU)
Medium (S) 3-ph 0.75-7.5 kW no VSD	1756	1.1	2800	0.57	
Medium (M) 3-ph 7.5-75 kW no VSD	20020	11	3500	0.52	
Medium (L) 3-ph 75-375 kW no VSD	400400	110	7000	0.52	
Medium (S) 3-ph 0.75-7.5 kW with VSD	1053	1.1	2800	0.34	in general, use of VSD is assumed to reduce load by 40%
Medium (M) 3-ph 7.5-75 kW with VSD	12012	11	3500	0.31	
Medium (L) 3-ph 75-375 kW with VSD	240240	110	7000	0.31	Source for data: IA Motors of October 2017
Small 1 ph 0.12-0.75 kW no VSD	59	0.37	400	0.40	Motor efficiency is measured according to IEC60032-30. Efficiencies on EFNBAU/ECO are copied from IA motors.
Small 1 ph 0.12-0.75 kW with VSD	36	0.37	400	0.24	Motor efficiencies for different IE-classes are based on minimum values for 4-pole motors 50 Hz from EN 60034-30-1 for the reference nominal output power of each base case (except for 8-pole motors where 8-pole data are used)
Small 3 ph 0.12-0.75 kW no VSD	296	0.37	2000	0.40	For each scenario and year a distribution of sales over the IE-classes is assumed and motor efficiency is calculated as weighted average over the IE-class efficiencies.
Small 3 ph 0.12-0.75 kW with VSD	178	0.37	2000	0.24	
Large 3-ph LV 375-1000 kW no VSD	1716000	550	6000	0.52	
Large 3-ph LV 375-1000kW with VSD	1188000	550	6000	0.36	
Explosion motors (S) 3-ph 0.75-7.5 kW	1411	1.1	2250	0.57	VSD losses (at 90% of max speed; 100% of torque) for IE1-class are based on max loss values from WD for CF 20140929.
Explosion motors (M) 3-ph 7.5-75 kW	17160	11	3000	0.52	For IE0, losses are 25% higher; IE2 25% lower; IE3 50% lower.
Explosion motors (L) 3-ph 75-375 kW	343200	110	6000	0.52	For each scenario and year a distribution of sales over the IE-classes is assumed and VSD losses are calculated as weighted average over the IE-class losses.
Brake motors (S) 3-ph 0.75-7.5 kW	784	1.1	1250	0.57	
Brake motors (M) 3-ph 7.5-75 kW	9152	11	1600	0.52	
Brake motors (L) 3-ph 75-375 kW	137280	110	2400	0.52	
8-pole motors (S) 3-ph 0.75-7.5 kW	1411	1.1	2250	0.57	Efficiency of motor+VSD takes into account motor losses, VSD losses, and losses induced by VSD in motor (=15% of motor loss for < 100 kW; 25% for > 100 kW).
8-pole motors (M) 3-ph 7.5-75 kW	17160	11	3000	0.52	
8-pole motors (L) 3-ph 75-375 kW	343200	110	6000	0.52	
1-phase motors >0.75 kW (no VSD)	440	1.1	800	0.50	

**CP Standard Air Compressors** kWh flow/a The output (load) has been determined as energy input \* efficiency based on data from the prep.study Task 8, tables 3.5 and 3.6. The reference data regard weighted averages for the three selected base cases (rotary fixed speed, rotary variable speed, pistons) over different volume flow classes in each base case. The data are available in 5 year intervals; for intermediate years values were interpolated. The LOAD can also be conceived as product of output volume flow, output pressure, and annual operating hours, i.e. the demand for compressor output in kWh flow/a.

Rotary fixed speed The LOAD results more or less constant over the years, varying from 53392 kWh/a in 2000 to 44255 kWh/a in 2030. Indicatively this average load corresponds to a compressor with a volume flow of 70 l/s and an efficiency of 63%.

## LOADnotes

Rotary variable speed	The LOAD is decreasing in time, varying from 155526 kWh/a in 2000 to 83763 kWh/a in 2030. The reason for this decrease is that variable speeds are increasingly applied to lower capacity models. For example in 2000 the average variable speed compressor sold has 180 l/s while in 2030 this has decreased to 86 l/s. Both with an average efficiency around 65-66%.
Pistons	The LOAD results more or less constant over the years, varying from 1377 to 1391 kWh/a. Indicatively this average load corresponds to a compressor with a volume flow of 7 l/s and an efficiency of 47%.
Efficiencies	The efficiencies in EIA (both EFNBAU and EFNECO) are the sales-weighted isentropic efficiencies over the various volume flow classes in each base case. The efficiencies per volume flow class have been taken from the Excel sheets underlying the Impact Assessment, using Ecodesign Option A with Averaged replacement. See Annex E for further information on efficiencies.

<b>TRAF0 Distribution</b>	TEC	only annual losses are counted. On average 3.3% of final demand electricity (2.6% of produced electricity)
TRAF0 Industry oil	TEC	
TRAF0 Industry dry	TEC	
TRAF0 Power	TEC	
TRAF0 DER oil	TEC	
TRAF0 DER dry	TEC	
TRAF0 Small	TEC	

### TYRES

The EU adopted in 2009 two sets of rules relating to tyres:

1. The Tyre Labelling Regulation (TLR, Regulation (EC) No 1222/2009, OJ L 342 of 22.12.2009, p.46) harmonising the information on tyre parameters to be provided to end-users allowing them to make informed purchasing choices.

2. The Regulation on type-approval requirements for the general safety of motor vehicles ("General Safety Regulation" or GSR, Regulation (EC) No 661/2009, OJ L 200 of 31.7.2009, p.1) putting in place harmonised technical requirements that tyres must satisfy before they can be placed on the Union market.

The GSR puts in place minimum requirements for, amongst others, (i) the rolling resistance, (ii) external rolling noise and (iii) wet grip performance of tyres. These minimum requirements became applicable for all three parameters from 1 November 2012, with a second tier of more stringent requirements for the rolling resistance starting to apply on 1 November 2016 (with further requirements coming into application in 2018 and 2020).

International UNECE test methods form the basis of the tests in both TLR and the GSR

The TLR relates to C1, C2 and C3 tyre types, as defined in article 8 of the GSR. The definition of tyre types is based on the vehicles they are primarily designed for, including the weight and passenger capacity, and on the tyre load and speed indexes. C1 tyres are used typically for passenger cars, C2 tyres for light commercial vehicles (LCVs, vans) and C3 tyres for heavy commercial vehicles (HCVs, trucks, busses).

In addition to the division between C1, C2 and C3 type tyres, the 2018 Impact Assessment (IA) makes a distinction between OEM tyres (mounted on new vehicles sold; often not selected by the vehicle buyer) and replacement tyres (selected by the vehicle user/owner). The reason for this additional distinction is that the existing TLR seems to have been less effective for OEM tyres, leading to a difference in average RRC values for OEM and replacement tyres. For ease of traceability, EIA has maintained this distinction made in the IA.

The fuel efficiency of tyres is regulated using the Rolling Resistance Coefficient (RRC) expressed in kg/ton. Values for RRC are reported further below. A lower RRC value indicates higher efficiency. In the official "fuel savings calculator" model (<https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficient-products/tyres>), the relation between changes in RRC and changes in vehicle fuel consumption is given by the formula:

$$\text{Fuel consumption change (\%)} = K * \frac{RRC_{old} - RRC_{new}}{RRC_{old}} * 100\%$$

K is a factor calculated by IDIADA (see background document for fuel savings calculator) based on actual measurements of cars driven on a test lane with different tyres. It depends on the type of tyre (and thus vehicle), the share of urban and non-urban driving and whether the rolling resistance is increasing or decreasing. K-factors used in the IA and EIA analyses are shown below, assuming a 50/50 share of urban and non-urban driving.

K-factors	C1	C2	C3
Increasing rolling resistance	0.131	0.108	0.1035
Decreasing rolling resistance	0.164	0.117	0.112

Total EU fuel consumption by vehicles due to RRC (in TWh) is calculated in EIA using:

$$(\text{Litres}/100\text{km}/\text{vehicle due to RRC}) * (\text{annual km driven} / 100) * (\text{EU vehicle stock in mln}) * (\text{kWh}/\text{litre}) * 1\text{E-}3$$

(Litres/100km/vehicle due to RRC) is the efficiency parameter, reported on sheets EFNBAU and EFNECO. In the 2018 IA, the total (Litres/100km/vehicle) values (complete fuel consumption, not only due to RRC) have been fixed for the current situation (BAU1 scenario; including the existing TLR), while values for BAU0 (excluding existing TLR) and ECO (including new proposed TLR) are derived based on the variation in fuel consumption due to the variation in RRC as explained above. This derivation is not shown in EIA (L/100km are fixed input values) because EIA does not report the BAU1 scenario. The BAU scenario in EIA is without the existing TLR (but with the GSR). The ECO scenario in EIA is the PO4 policy option from the Impact Assessment SWD(2018)189 final of 17.5.2018.

Considering that the TLR only regards the part of the fuel consumption that is caused by the rolling resistance, EIA does not use the complete fuel consumption (L/100km/vehicle), but only the part that is due to rolling resistance (L/100km/vehicle due to RRC). The shares of total fuel consumption that are caused by rolling resistance are reported below. These shares are rough estimates based on data from the 2018 IA, data from the previous EIA version, and additional data from literature. These shares have influence on the BAU and ECO totals for FUEL, FNRG and NRG for tyres, but the difference between BAU and ECO (the energy saving) is independent from these shares.

C1:	16%	C2:	16%	C3:	20%
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(Annual km driven / 100) is the load parameter, reported on sheets LOADBAU and LOADECO. It represent the expected 'output' from the tyres / vehicles. The load is assumed to be constant over the years and independent from the scenario:

vehicles with C1 tyres	13500	km /a
vehicles with C2 tyres	21000	km /a
vehicles with C3 tyres	57500	km /a

## LOADnotes

In the 2018 IA, the Tyre stock is computed using a lifetime distribution model using lifetimes of 4.2 years for C1, 3.4 yrs for C2 and 3.5 yrs for C3, with standard deviation 1. In EIA, to obtain approximately the same Tyre stock with the standard EIA stock calculation (see sheets STOCKBAU and STOCKECO), slightly longer 'artificial' lifetimes have been applied: 4.69 yrs for C1, 3.89 yrs for C2, 3.97 yrs for C3.

(Vehicle stock) is derived from the Tyre stock, dividing by the average number of tyres per vehicle:

Average number of (non-retreaded) tyres per vehicle:

vehicles with C1 replacement	5.9	
vehicles with C1 OEM	5.9	
vehicles with C2 replacement	4.1	
vehicles with C2 OEM	4.1	
vehicles with C3 replacement	10.5	The value for C3 replacement is lower than for C3 OEM because retreaded tyres (not considered here)
vehicles with C3 OEM	13.1	have been excluded.

(kWh/litre) converts the litres of fuel to kWh NCV, which is the main energy measure used in EIA. It is different for diesel and petrol. As the assumed share for diesel and petrol is different for C1, C2, C3, the conversion factor differs per tyre type. The conversion factors have been taken from the 2018 IA:

Diesel	38.7 MJ/litre	10.8 kWh/litre
Petrol	35.0 MJ/litre	9.7 kWh/litre

	share diesel	share petrol	average
vehicles using C1 tyres	41%	59%	10.1 kWh/litre
vehicles using C2 tyres	88%	12%	10.6 kWh/litre
vehicles using C3 tyres	96%	4%	10.7 kWh/litre

Rolling Resistance Coefficient (RRC) values in kg/t (source: Impact Assessment SWD(2018)189 final of 17.5.2018 and underlying Excel files)

BAU0 is without any tyre labelling regulation (but includes the General Safety Regulation, Regulation (EC) No 661/2009, OJ L 200, 31.7.2009, p.1)

BAU1 is with existing tyre labelling regulation (Regulation (EC) No 1222/2009, OJ L 342, 22.12.2009, p.46)

ECO is with PO4 policy option from 2018 Impact Assessment SWD(2018)189 final of 17.5.2018.

	BAU0		BAU1		ECO	
RRC in kg/t for C1 tyres	replacement	OEM	replacement	OEM	replacement	OEM
	tyres	tyres	tyres	tyres	tyres	tyres
1990	13.2	13.2	13.2	13.2	13.2	13.2
2000	12.6	12.6	12.6	12.6	12.6	12.6
2005	12.2	12.2	12.2	12.2	12.2	12.2
2010	11.9	11.9	11.4	11.9	11.4	11.9
2015	10.8	10.8	9.9	10.8	9.9	10.8
2020	9.9	9.9	9.7	9.9	9.2	9.6
2025	9.7	9.7	9.4	9.7	8.8	8.8
2030	9.4	9.4	9.3	9.4	8.7	8.7
2040	8.9	8.9	8.9	8.9	8.4	8.4
2050	8.5	8.5	8.5	8.5	8.0	8.0

	BAU0		BAU1		ECO	
RRC in kg/t for C2 tyres	replacement	OEM	replacement	OEM	replacement	OEM
	tyres	tyres	tyres	tyres	tyres	tyres
1990	11.3	11.3	11.3	11.3	11.3	11.3
2000	10.8	10.8	10.8	10.8	10.8	10.8
2005	10.6	10.6	10.6	10.6	10.6	10.6
2010	10.4	10.4	10.0	10.4	10.0	10.4
2015	9.6	9.6	9.1	9.6	9.1	9.6
2020	8.8	8.8	8.8	8.8	8.5	8.6
2025	8.7	8.7	8.7	8.7	8.1	8.2
2030	8.7	8.7	8.6	8.7	8.1	8.1
2040	8.5	8.5	8.5	8.5	8.1	8.1
2050	8.3	8.3	8.3	8.3	8.0	8.0

	BAU0		BAU1		ECO	
RRC in kg/t for C3 tyres	replacement	OEM	replacement	OEM	replacement	OEM
	tyres	tyres	tyres	tyres	tyres	tyres
1990	7.8	7.8	7.8	7.8	7.8	7.8
2000	7.6	7.6	7.6	7.6	7.6	7.6
2005	7.6	7.6	7.6	7.6	7.6	7.6
2010	7.5	7.5	7.2	7.5	7.2	7.5
2015	7.2	7.2	6.6	7.2	6.6	7.2
2020	6.6	6.6	6.6	6.6	6.3	6.4
2025	6.5	6.5	6.5	6.5	6.1	6.1
2030	6.5	6.5	6.5	6.5	6.1	6.1
2040	6.4	6.4	6.4	6.4	6.0	6.0
2050	6.3	6.3	6.3	6.3	5.8	5.8



## LOADBAU

LOAD, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WH dedicated Water Heater	kWh heat/a	1392	1524	1576	1629	1682	1735	1788	1841	1894	1947
CHC Central Heating combi, water heat	kWh heat/a	2492	2293	2314	2340	2370	2400	2430	2460	2490	2520
CH Central Heating boiler, space heat	kWh heat/a	16830	11760	10401	9188	8108	7301	6534	5767	5000	4233
SFB Wood Manual	kWh heat/a	14580	14580	13872	13199	12558	11949	11369	10817	10292	9793
SFB Wood Direct Draft	kWh heat/a	16200	16200	15414	14666	13954	13277	12632	12019	11436	10881
SFB Coal	kWh heat/a	20250	20250	19267	18332	17442	16596	15790	15024	14295	13601
SFB Pellets	kWh heat/a	20250	20250	19267	18332	17442	16596	15790	15024	14295	13601
SFB Wood chips	kWh heat/a	129600	129600	123310	117325	111631	106213	101058	96153	91486	87046
CHAE-S (<= 400 kW)	kWh cool/a	32213	26400	25119	23900	22740	21636	20586	19587	18636	17732
CHAE-L (> 400 kW)	kWh cool/a	522729	428400	407608	387825	369002	351093	334053	317840	302414	287736
CHWE-S (<= 400 kW)	kWh cool/a	44659	36600	34824	33134	31525	29995	28540	27154	25836	24583
CHWE-M (> 400 kW; <= 1500 kW)	kWh cool/a	610583	500400	476113	453006	431019	410100	390196	371258	353239	336095
CHWE-L (> 1500 kW)	kWh cool/a	1171382	960000	913407	869075	826895	786763	748578	712246	677678	644787
CHF	kWh cool/a	29285	24000	22835	21727	20672	19669	18714	17806	16942	16120
HT PCH-AE-S	kWh cool/a	864800	864800	864800	864800	864800	864800	864800	864800	864800	864800
HT PCH-AE-L	kWh cool/a	2825400	2825400	2825400	2825400	2825400	2825400	2825400	2825400	2825400	2825400
HT PCH-WE-S	kWh cool/a	1104556	1104556	1104556	1104556	1104556	1104556	1104556	1104556	1104556	1104556
HT PCH-WE-M	kWh cool/a	3281289	3281289	3281289	3281289	3281289	3281289	3281289	3281289	3281289	3281289
HT PCH-WE-L	kWh cool/a	6375000	6375000	6375000	6375000	6375000	6375000	6375000	6375000	6375000	6375000
AC rooftop	kWh cool/a	51248	42000	39962	38022	36177	34421	32750	31161	29648	28209
AC splits	kWh cool/a	12226	10020	9534	9071	8631	8212	7813	7434	7073	6730
AC VRF	kWh cool/a	20499	16800	15985	15209	14471	13768	13100	12464	11859	11284
ACF	kWh cool/a	29285	24000	22835	21727	20672	19669	18714	17806	16942	16120
AC rooftop (rev)	kWh heat/a	119579	98000	93244	88718	84412	80315	76417	72708	69180	65822
AC splits (rev)	kWh heat/a	28528	23380	22245	21166	20138	19161	18231	17346	16504	15703
AC VRF (rev)	kWh heat/a	47831	39200	37297	35487	33765	32126	30567	29083	27672	26329
ACF (rev)	kWh heat/a	68331	56000	53282	50696	48236	45894	43667	41548	39531	37613
AHF	kWh heat/a	86730	71079	67629	64347	61224	58252	55425	52735	50176	47740
AHE	kWh heat/a	29285	24000	22835	21727	20672	19669	18714	17806	16942	16120
LH open fireplace	kWh heat/a	336	336	336	336	336	336	336	336	336	336
LH closed fireplace/inset	kWh heat/a	2351	2128	2076	2024	1975	1926	1879	1832	1787	1743
LH wood stove	kWh heat/a	2979	2696	2630	2565	2502	2440	2380	2321	2264	2208
LH coal stove	kWh heat/a	2979	2696	2630	2565	2502	2440	2380	2321	2264	2208
LH cooker	kWh heat/a	1237	1120	1092	1066	1039	1014	989	964	941	917
LH SHR stove	kWh heat/a	2979	2696	2630	2565	2502	2440	2380	2321	2264	2208
LH pellet stove	kWh heat/a	3562	3224	3145	3067	2992	2918	2846	2776	2708	2641
LH open fire gas	kWh heat/a	210	210	210	210	210	210	210	210	210	210
LH closed fire gas	kWh heat/a	1248	1130	1102	1075	1048	1023	997	973	949	925
LH flueless fuel heater	kWh heat/a	75	75	75	75	75	75	75	75	75	75
LH elec.portable	kWh heat/a	358	324	316	308	301	293	286	279	272	265
LH elec.convectector	kWh heat/a	939	850	829	809	789	769	750	732	714	696
LH elec.storage	kWh heat/a	1458	1320	1287	1256	1225	1195	1165	1137	1109	1081
LH elec.underfloor	kWh heat/a	364	330	322	314	306	299	291	284	277	270
LH luminous heaters	kWh heat/a	13480	12200	11900	11606	11321	11042	10770	10505	10246	9993
LH tube heaters	kWh heat/a	20220	18300	17849	17410	16981	16563	16155	15757	15369	14990
RAC (cooling demand), all RAC types <12 kW	kWh cool/a	1086	1133	1152	1172	1183	1207	1228	1249	1270	1291
RAC (heating demand), reversible <12kW	kWh heat/a	2683	2065	1952	1858	1780	1701	1619	1537	1455	1373
CIRC Circulator pumps <2.5 kW, net load	kWh flow/a	300	277	272	266	260	261	267	273	278	284
NRVU avg (stock weighted 2010)	TEC elec	1	1	1	1	1	1	1	1	1	1
NRVU avg (stock weighted 2010)	TEC heat	1	1	1	1	1	1	1	1	1	1
RVU Central Unidir <=125W/fan (1 fan)	TEC elec	1	1	1	1	1	1	1	1	1	1
RVU Central Balanced <=125W/fan (2 fans)	TEC elec	1	1	1	1	1	1	1	1	1	1
RVU Local Balanced <125 W (also NR, 2 fans)	TEC elec	1	1	1	1	1	1	1	1	1	1
RVU Central Unidir <=125W/fan (1 fan)	TEC heat	1	1	1	1	1	1	1	1	1	1
RVU Central Balanced <=125W/fan (2 fans)	TEC heat	1	1	1	1	1	1	1	1	1	1
RVU Local Balanced <125 W (also NR, 2 fans)	TEC heat	1	1	1	1	1	1	1	1	1	1
RVU reference: natural ventilation 220 m³/h											

LOADBAU

LOAD, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<i>LS, stock average unit capacities in lm</i>											
LFL (T12,T8h,T8t,T5,other)	lm	2281	2295	2557	2787	2869	2885	2889	2891	2889	2878
HID (HPM, HPS, MH)	lm	12044	13032	13343	14121	14475	14975	15701	16395	17034	17603
CFLni (all shapes)	lm	690	690	690	690	690	690	690	690	690	690
CFLi (retrofit for GLS, HL)	lm	523	561	582	599	605	605	605	605	605	605
GLS (DLS & NDLS)	lm	494	496	482	482	483	483	483	483	483	483
HL (DLS & NDLS, LV & MV)	lm	746	593	561	597	580	564	555	550	548	546
LED replacing LFL (retrofit & luminaire)	lm			3103	3172	3124	3096	3090	3089	3093	3100
LED replacing HID (retrofit & luminaire)	lm			12672	13826	13863	14038	14285	14484	14618	14699
LED replacing CFLni (retrofit & luminaire)	lm			731	731	731	731	731	730	730	730
LED replacing DLS (retrofit & luminaire)	lm			472	511	516	523	528	532	535	537
LED replacing NDLS (retrofit & luminaire)	lm		550	584	679	670	664	660	658	657	657
<i>LS, unit fpe-hours in h/a (see LoadNotes)</i>											
LFL (T12,T8h,T8t,T5,other)	h/a	1949	1975	2004	2028	2033	2020	1999	1985	1972	1949
HID (HPM, HPS, MH)	h/a	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
CFLni (all shapes)	h/a	1251	1213	1190	1184	1174	1114	1003	929	856	797
CFLi (retrofit for GLS, HL)	h/a	500	500	500	500	500	500	500	500	500	500
GLS (DLS & NDLS)	h/a	450	450	450	450	450	450	450	450	450	450
HL (DLS & NDLS, LV & MV)	h/a	450	450	450	450	450	450	450	450	450	450
LED replacing LFL (retrofit & luminaire)	h/a			1696	2044	2102	2119	2122	2118	2118	2121
LED replacing HID (retrofit & luminaire)	h/a			4000	4000	4000	4000	4000	4000	4000	4000
LED replacing CFLni (retrofit & luminaire)	h/a			1374	1377	1353	1359	1347	1323	1320	1324
LED replacing DLS (retrofit & luminaire)	h/a			461	461	461	461	461	461	461	461
LED replacing NDLS (retrofit & luminaire)	h/a		461	462	484	477	486	493	495	497	497
DP TV viewable area (avg. all types)	dm <sup>2</sup>	10	28	43	51	59	68	79	92	106	123
DP TV share of UHD / 3D / HDR	%	0%	2%	10%	25%	38%	50%	50%	50%	50%	50%
DP TV viewing time (on-mode)	h on / d	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
DP TV standby time	h sb / d	6.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DP Monitor viewable area	dm <sup>2</sup>	5.0	11.4	13.5	15.9	17.9	20.1	22.3	24.5	26.8	29.0
DP Monitor share of UHD / 3D / HDR	%	0%	2%	10%	25%	38%	50%	50%	50%	50%	50%
DP Monitor viewing time (on-mode)	h on / d	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
DP Monitor standby time	h sb / d	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
DP Signage viewable area	dm <sup>2</sup>	16	46	71	84	97	113	130	151	175	202
DP Signage display time (on-mode)	h on / d	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
DP Signage standby time	h sb / d	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
SSTB	TEC	1	1	1	1	1	1	1	1	1	1
CSTB	TEC	1	1	1	1	1	1	1	1	1	1
VIDEO players/recorders	TEC	1	1	1	1	1	1	1	1	1	1
VIDEO projectors	TEC	1	1	1	1	1	1	1	1	1	1
VIDEO game consoles	TEC	1	1	1	1	1	1	1	1	1	1
<i>Stock average PSU output for ES&amp;DS (8760 h/a)</i>											
ES tower 1-socket traditional	kWh/a	723	674	498	408	376	375	375	375	375	375
ES rack 1-socket traditional	kWh/a	920	838	591	531	524	554	554	554	554	554
ES rack 2-socket traditional	kWh/a	1905	1835	1565	1309	1277	1276	1276	1276	1276	1276
ES rack 2-socket cloud	kWh/a		2123	1893	1661	1642	1642	1642	1642	1642	1642
ES rack 4-socket traditional	kWh/a	3854	3397	3047	3491	3482	3482	3482	3482	3482	3482
ES rack 4-socket cloud	kWh/a		4211	4425	4841	4862	4862	4862	4862	4862	4862
ES rack 2-socket resilient trad.	kWh/a	5694	5562	4981	3860	3331	3323	3323	3323	3323	3323
ES rack 2-socket resilient cloud	kWh/a		5514	4878	3852	3331	3323	3323	3323	3323	3323
ES rack 4-socket resilient trad.	kWh/a	5606	5485	5123	4762	4607	4605	4605	4605	4605	4605
ES rack 4-socket resilient cloud	kWh/a		6150	6027	5812	5708	5706	5706	5706	5706	5706
ES blade 1-socket traditional	kWh/a	753	733	662	593	576	602	602	602	602	602
ES blade 2-socket traditional	kWh/a	2488	2426	2156	1940	1915	1914	1914	1914	1914	1914
ES blade 2-socket cloud	kWh/a		2820	2670	2576	2567	2567	2567	2567	2567	2567
ES blade 4-socket traditional	kWh/a	5606	5504	5241	4955	4810	4808	4808	4808	4808	4808
ES blade 4-socket cloud	kWh/a		6197	6264	6137	6043	6042	6042	6042	6042	6042
DS Online 2	kWh/a	3504	3504	3677	4737	5595	6184	6184	6184	6184	6184
DS Online 3	kWh/a	845	815	932	1381	1642	1815	1815	1815	1815	1815
DS Online 4	kWh/a	15330	15330	16068	20688	24477	27054	27054	27054	27054	27054
PC Desktop	TEC	1	1	1	1	1	1	1	1	1	1
PC Notebook	TEC	1	1	1	1	1	1	1	1	1	1
PC Tablet/slate	TEC	1	1	1	1	1	1	1	1	1	1
PC Thin client	TEC	1	1	1	1	1	1	1	1	1	1
PC Workstation	TEC	1	1	1	1	1	1	1	1	1	1
EP-Copier mono	TEC	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
EP-Copier colour	TEC	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
EP-printer mono	TEC	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
EP-printer colour	TEC	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
IJ SFD printer	OM	1	1	1	1	1	1	1	1	1	1
IJ MFD printer	OM	1	1	1	1	1	1	1	1	1	1

LOADBAU

LOAD, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
SB Home Gateway, on-mode hours	h on/d	7	7	7	7	7	7	7	7	7	7
SB Home NAS, on-mode hours	h on/d	3	3	3	3	3	3	3	3	3	3
SB Home Phones (fixed), on-mode hours	h on/d	2	2	2	2	2	2	2	2	2	2
SB Office Phones (fixed), on-mode hours	h on/d	4	4	4	4	4	4	4	4	4	4
SB Home Gateway, standby hours	h sb/d	8.5	8.5	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SB Home NAS, standby hours	h sb/d	19	19	19	19	19	19	19	19	19	19
SB Home Phones (fixed), standby hours	h sb/d	0	0	0	0	0	0	0	0	0	0
SB Office Phones (fixed), standby hours	h sb/d	0	0	0	0	0	0	0	0	0	0
SB Home Gateway, idle hours	h idle/d	8.50	8.50	12.75	17.00	17.00	17.00	17.00	17.00	17.00	17.00
SB Home NAS, idle hours	h idle/d	2	2	2	2	2	2	2	2	2	2
SB Home Phones (fixed), idle hours	h idle/d	22	22	22	22	22	22	22	22	22	22
SB Office Phones (fixed), idle hours	h idle/d	20	20	20	20	20	20	20	20	20	20
<i>EPS Active output energy per unit per year</i>											
EPS ≤ 6W, low-V	W.h / a	2088	2088	2088	2088	2088	2088	2088	2088	2088	2088
EPS 6–10 W	W.h / a	3796	3796	3796	3796	3796	3796	3796	3796	3796	3796
EPS 10–12 W	W.h / a	60145	60145	60145	60145	60145	60145	60145	60145	60145	60145
EPS 15–20 W	W.h / a	7921	7921	7921	7921	7921	7921	7921	7921	7921	7921
EPS 20–30 W	W.h / a	57477	57477	57477	57477	57477	57477	57477	57477	57477	57477
EPS 30–65 W, multiple-V	W.h / a	73359	73359	73359	73359	73359	73359	73359	73359	73359	73359
EPS 30-65 W	W.h / a	58990	58990	58990	58990	58990	58990	58990	58990	58990	58990
EPS 65–120 W	W.h / a	57477	57477	57477	57477	57477	57477	57477	57477	57477	57477
EPS 65–120 W, multiple-V	W.h / a	84972	84972	84972	84972	84972	84972	84972	84972	84972	84972
EPS 12–15 W	W.h / a	20148	20148	20148	20148	20148	20148	20148	20148	20148	20148
<i>EPS No-load hours per unit per year</i>											
EPS ≤ 6W, low-V	h / a	3577	3577	3577	3577	3577	3577	3577	3577	3577	3577
EPS 6–10 W	h / a	3577	3577	3577	3577	3577	3577	3577	3577	3577	3577
EPS 10–12 W	h / a	949	949	949	949	949	949	949	949	949	949
EPS 15–20 W	h / a	3650	3650	3650	3650	3650	3650	3650	3650	3650	3650
EPS 20–30 W	h / a	0	0	0	0	0	0	0	0	0	0
EPS 30–65 W, multiple-V	h / a	0	0	0	0	0	0	0	0	0	0
EPS 30-65 W	h / a	0	0	0	0	0	0	0	0	0	0
EPS 65–120 W	h / a	0	0	0	0	0	0	0	0	0	0
EPS 65–120 W, multiple-V	h / a	0	0	0	0	0	0	0	0	0	0
EPS 12–15 W	h / a	0	0	0	0	0	0	0	0	0	0
UPS below 1.5 kVA	kW output	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
UPS 1.5 to 5 kVA	kW output	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
UPS 5 to 10 kVA	kW output	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33
UPS 10 to 200 kVA	kW output	43.79	43.79	43.79	43.79	43.79	43.79	43.79	43.79	43.79	43.79
RF Net volume Vnet (CECED 2013)	ltr	203	259	278	297	316	337	358	380	401	422
RF Estimated equivalent volume Veq	ltr	274	350	377	401	428	456	485	514	542	571
RF SAEC (EEI=100)	kWh/a	468	526	545	563	582	602	623	644	664	685
CF open vertical chilled multi deck (RVC2)	SAEC,kWh/a	18600	18600	18600	18600	18600	18600	18600	18600	18600	18600
CF open horizontal frozen island (RHF4)	SAEC,kWh/a	15841	15841	15841	15841	15841	15841	15841	15841	15841	15841
CF other supermarket display (non-BCs)	SAEC,kWh/a	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500
CF Plug in one door beverage cooler	SAEC,kWh/a	2738	2738	2738	2738	2738	2738	2738	2738	2738	2738
CF Plug in horizontal ice cream freezer	SAEC,kWh/a	1482	1482	1482	1482	1482	1482	1482	1482	1482	1482
CF Spiral vending machine	SAEC,kWh/a	2592	2592	2592	2592	2592	2592	2592	2592	2592	2592
PF Storage cabinet Chilled Vertical (CV)	SAEC,kWh/a	1595	1595	1595	1595	1595	1595	1595	1595	1595	1595
PF Storage cabinet Frozen Vertical (FV)	SAEC,kWh/a	4429	4429	4429	4429	4429	4429	4429	4429	4429	4429
PF Storage cabinet Chilled Horizontal (CH)	SAEC,kWh/a	2557	2557	2557	2557	2557	2557	2557	2557	2557	2557
PF Storage cabinet Frozen Horizontal (FH)	SAEC,kWh/a	3548	3548	3548	3548	3548	3548	3548	3548	3548	3548
<b>PF Storage cabinets All types</b>	<b>SAEC,kWh/a</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>	<b>2584</b>
PF Process Chiller AC MT S ≤ 300 kW	Mwhcool/a	741	741	741	741	741	741	741	741	741	741
PF Process Chiller AC MT L > 300 kW	Mwhcool/a	2689	2689	2689	2689	2689	2689	2689	2689	2689	2689
PF Process Chiller AC LT S ≤ 200 kW	Mwhcool/a	599	599	599	599	599	599	599	599	599	599
PF Process Chiller AC LT L > 200 kW	Mwhcool/a	2131	2131	2131	2131	2131	2131	2131	2131	2131	2131
PF Process Chiller WC MT S ≤ 300 kW	Mwhcool/a	923	923	923	923	923	923	923	923	923	923
PF Process Chiller WC MT L > 300 kW	Mwhcool/a	3192	3192	3192	3192	3192	3192	3192	3192	3192	3192
PF Process Chiller WC LT S ≤ 200 kW	Mwhcool/a	752	752	752	752	752	752	752	752	752	752
PF Process Chiller WC LT L > 200 kW	Mwhcool/a	2601	2601	2601	2601	2601	2601	2601	2601	2601	2601
<b>PF Process Chiller All MT&amp;LT</b>	<b>Mwhcool/a</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>	<b>1194</b>
PF Condensing Unit MT S 0.2-1 kW	Mwhcool/a	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
PF Condensing Unit MT M 1-5 kW	Mwhcool/a	17	17	17	17	17	17	17	17	17	17
PF Condensing Unit MT L 5-20 kW	Mwhcool/a	66	66	66	66	66	66	66	66	66	66
PF Condensing Unit MT XL 20-50 kW	Mwhcool/a	203	203	203	203	203	203	203	203	203	203
PF Condensing Unit LT S 0.1-0.4 kW	Mwhcool/a	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PF Condensing Unit LT M 0.4-2 kW	Mwhcool/a	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
PF Condensing Unit LT L 2-8 kW	Mwhcool/a	28	28	28	28	28	28	28	28	28	28
PF Condensing Unit LT XL 8-20 kW	Mwhcool/a	196	196	196	196	196	196	196	196	196	196
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>Mwhcool/a</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>
COOK EI. Hobs	ltr/a	1229	1229	1229	1229	1229	1229	1229	1229	1229	1229
COOK EI. Ovens	TEC	1	1	1	1	1	1	1	1	1	1
COOK Gas Hobs	kWh/a	181	181	181	181	181	181	181	181	181	181
COOK Gas Ovens	TEC	1	1	1	1	1	1	1	1	1	1
COOK Range Hoods	TEC	1	1	1	1	1	1	1	1	1	1

## LOADBAU

LOAD, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
COFFEE Dripfilter (glass)	TEC	1	1	1	1	1	1	1	1	1	1
COFFEE Dripfilter (thermos)	TEC	1	1	1	1	1	1	1	1	1	1
COFFEE Dripfilter (full automatic)	TEC	1	1	1	1	1	1	1	1	1	1
COFFEE Pad filter	TEC	1	1	1	1	1	1	1	1	1	1
COFFEE Hard cap espresso	TEC	1	1	1	1	1	1	1	1	1	1
COFFEE Semi-auto espresso	TEC	1	1	1	1	1	1	1	1	1	1
COFFEE Fully-auto espresso	TEC	1	1	1	1	1	1	1	1	1	1
WM Programme temperature, in °C	°C	56.0	43.0	39.7	36.4	33.2	29.9	26.7	23.4	20.2	16.9
WM Rated capacity c, in kg	kg/cycle	4.1	6.8	7.1	7.6	7.6	7.6	7.6	7.6	7.6	7.6
WM Real (rated) load, in kg	kg/cycle	2.9	3.7	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0
WM Cycles/yr per unit (est.)	cyc/a	237	189	182	174	174	174	174	174	174	174
WM programme time											
WM SAec (EEI=100)	kWh/a	246	371	387	410	410	410	410	410	410	410
DW Real average programme temperature, in °C	°C	61.6	57.6	56.6	55.6	54.6	53.6	52.6	51.6	50.6	49.6
DW Rated capacity, ps, in place settings	ps/cycl	11.9	12.6	12.7	12.8	12.8	12.8	12.8	12.8	12.8	12.8
DW Real load, in place settings	ps/cycl	6.7	8.8	9.1	9.3	9.3	9.3	9.3	9.3	9.3	9.3
DW Cycles/yr per unit (est.)	cyc/a	210	210	210	210	210	210	210	210	210	210
DW programme time											
DW SAec (EEI=100)	kWh/a	438	455	457	458	458	458	458	458	458	458
LD Spin speeds of stock WM	rpm	800	950	1000	1050	1100	1200	1300	1400	1500	1600
LD Real initial moisture of drying load	%	70%	60%	58%	56%	55%	55%	56%	56%	57%	57%
LD Standard moisture	%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
LD correction factor for initial moisture	-	1.14	1.00	0.97	0.95	0.94	0.93	0.94	0.94	0.95	0.96
LD Rated Capacity	kg/cycle	4.81	6.6	7.1	7.3	7.3	7.3	7.3	7.3	7.3	7.3
LD Real Capacity (71% of rated, IA report)	kg/cycle	3.41	4.67	5.03	5.16	5.20	5.20	5.21	5.21	5.21	5.21
LD Cycles real per year (as in IA report)	cyc/a	160	160	160	160	160	160	160	160	160	160
LD SAec vented el. (EEI=100)	kWh elec/a	492	631	670	684	688	689	689	689	689	689
LD SAec condens el. (EEI=100)	kWh elec/a	427	566	605	619	623	624	624	624	624	624
LD SAec vented gas (EEI=100)	kWh prim./a	492	631	670	684	688	689	689	689	689	689
							0	0	0	0	0
VC dom (87 m²/h)	h/a	57	33	31	31	28	25	23	20	18	16
VC nondom	h/a	500	500	500	500	500	500	500	500	500	500
FAN Axial<300Pa (all FAN types >125W)	kWh flow/a	247	247	247	247	247	247	247	247	247	247
FAN Axial>300Pa	kWh flow/a	489	489	489	489	489	489	489	489	489	489
FAN Centr.FC	kWh flow/a	212	212	212	212	212	212	212	212	212	212
FAN Centr.BC-free	kWh flow/a	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180
FAN Centr.BC	kWh flow/a	3078	3078	3078	3078	3078	3078	3078	3078	3078	3078
FAN Cross-flow	kWh flow/a	28	28	28	28	28	28	28	28	28	28
<i>MT motors</i>											
Medium (S) 3-ph 0.75-7.5 kW no VSD	kWh output/a	1756	1756	1756	1756	1756	1756	1756	1756	1756	1756
Medium (M) 3-ph 7.5-75 kW no VSD	kWh output/a	20020	20020	20020	20020	20020	20020	20020	20020	20020	20020
Medium (L) 3-ph 75-375 kW no VSD	kWh output/a	400400	400400	400400	400400	400400	400400	400400	400400	400400	400400
Medium (S) 3-ph 0.75-7.5 kW with VSD	kWh output/a	1053	1053	1053	1053	1053	1053	1053	1053	1053	1053
Medium (M) 3-ph 7.5-75 kW with VSD	kWh output/a	12012	12012	12012	12012	12012	12012	12012	12012	12012	12012
Medium (L) 3-ph 75-375 kW with VSD	kWh output/a	240240	240240	240240	240240	240240	240240	240240	240240	240240	240240
Small 1 ph 0.12-0.75 kW no VSD	kWh output/a	59	59	59	59	59	59	59	59	59	59
Small 1 ph 0.12-0.75 kW with VSD	kWh output/a	36	36	36	36	36	36	36	36	36	36
Small 3 ph 0.12-0.75 kW no VSD	kWh output/a	296	296	296	296	296	296	296	296	296	296
Small 3 ph 0.12-0.75 kW with VSD	kWh output/a	178	178	178	178	178	178	178	178	178	178
Large 3-ph LV 375-1000 kW no VSD	kWh output/a	1716000	1716000	1716000	1716000	1716000	1716000	1716000	1716000	1716000	1716000
Large 3-ph LV 375-1000kW with VSD	kWh output/a	1188000	1188000	1188000	1188000	1188000	1188000	1188000	1188000	1188000	1188000
Explosion motors (S) 3-ph 0.75-7.5 kW	kWh output/a	1411	1411	1411	1411	1411	1411	1411	1411	1411	1411
Explosion motors (M) 3-ph 7.5-75 kW	kWh output/a	17160	17160	17160	17160	17160	17160	17160	17160	17160	17160
Explosion motors (L) 3-ph 75-375 kW	kWh output/a	343200	343200	343200	343200	343200	343200	343200	343200	343200	343200
Brake motors (S) 3-ph 0.75-7.5 kW	kWh output/a	784	784	784	784	784	784	784	784	784	784
Brake motors (M) 3-ph 7.5-75 kW	kWh output/a	9152	9152	9152	9152	9152	9152	9152	9152	9152	9152
Brake motors (L) 3-ph 75-375 kW	kWh output/a	137280	137280	137280	137280	137280	137280	137280	137280	137280	137280
8-pole motors (S) 3-ph 0.75-7.5 kW	kWh output/a	1411	1411	1411	1411	1411	1411	1411	1411	1411	1411
8-pole motors (M) 3-ph 7.5-75 kW	kWh output/a	17160	17160	17160	17160	17160	17160	17160	17160	17160	17160
8-pole motors (L) 3-ph 75-375 kW	kWh output/a	343200	343200	343200	343200	343200	343200	343200	343200	343200	343200
1-phase motors >0.75 kW (no VSD)	kWh output/a	440	440	440	440	440	440	440	440	440	440
WP Water pumps (load)	kWh flow/a	4593	4,593	4,593	4,593	4,593	4,593	4593	4593	4593	4593
CP Fixed Speed 5-1280 l/s	kWh flow/a	47845	49377	46677	45050	44284	44255	44226	44197	44168	44139
CP Variable speed 5-1280 l/s	kWh flow/a	183425	129646	104486	90069	84355	83763	83172	82581	81990	81399
CP Pistons 2-64 l/s	kWh flow/a	1379	1391	1384	1382	1380	1377	1373	1369	1366	1362

## LOADBAU

<b>LOAD, BAU</b>	<b>unit</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
TRAFO Distribution	TEC	1	1	1	1	1	1	1	1	1	1
TRAFO Industry oil	TEC	1	1	1	1	1	1	1	1	1	1
TRAFO Industry dry	TEC	1	1	1	1	1	1	1	1	1	1
TRAFO Power	TEC	1	1	1	1	1	1	1	1	1	1
TRAFO DER oil	TEC	1	1	1	1	1	1	1	1	1	1
TRAFO DER dry	TEC	1	1	1	1	1	1	1	1	1	1
TRAFO Small	TEC	1	1	1	1	1	1	1	1	1	1
<i>(annual km driven per vehicle / 100)</i>											
Tyres C1, replacement for cars	100 km/a	135	135	135	135	135	135	135	135	135	135
Tyres C1, OEM for cars	100 km/a	135	135	135	135	135	135	135	135	135	135
Tyres C2, replacement for vans	100 km/a	210	210	210	210	210	210	210	210	210	210
Tyres C2, OEM for vans	100 km/a	210	210	210	210	210	210	210	210	210	210
Tyres C3, replacement for trucks/busses	100 km/a	575	575	575	575	575	575	575	575	575	575
Tyres C3, OEM for trucks/busses	100 km/a	575	575	575	575	575	575	575	575	575	575

## LOADECO

LOAD, ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Note for printed version: for products not listed below, ECO-load is identical to BAU-load											
CH Central Heating boiler, space heat	kWh heat/a	16830	11760	10282	8870	7633	6725	5985	5263	4541	3821
SFB Wood Manual	kWh heat/a	14580	14580	13751	12885	12059	11311	10711	10136	9582	9044
SFB Wood Direct Draft	kWh heat/a	16200	16200	15279	14317	13399	12567	11901	11262	10647	10049
SFB Coal	kWh heat/a	20250	20250	19099	17896	16748	15709	14876	14078	13308	12561
SFB Pellets	kWh heat/a	20250	20250	19064	17764	16529	15428	14602	13832	13091	12373
SFB Wood chips	kWh heat/a	129600	129600	121223	110727	100877	92445	87300	83026	78912	74953
AC rooftop (rev)	kWh heat/a	119579	98000	91666	83729	76280	69904	66014	62782	59671	56677
AC splits (rev)	kWh heat/a	28528	23380	21879	20013	18262	16758	15828	15049	14299	13576
AC VRF (rev)	kWh heat/a	47831	39200	36670	33504	30533	27989	26432	25137	23890	22689
ACF (rev)	kWh heat/a	68331	56000	52395	47900	43680	40062	37836	35977	34188	32465
AHF	kWh heat/a	86730	71079	66497	60774	55403	50800	47976	45622	43356	41174
AHE	kWh heat/a	29285	24000	22453	20521	18707	17153	16199	15404	14639	13903
LH open fireplace	kWh heat/a	336	336	333	328	323	318	317	315	313	310
LH closed fireplace/inset	kWh heat/a	2351	2128	2057	1976	1896	1823	1770	1717	1664	1610
LH wood stove	kWh heat/a	2979	2696	2607	2504	2402	2310	2242	2175	2108	2040
LH coal stove	kWh heat/a	2979	2696	2607	2504	2402	2310	2242	2175	2108	2040
LH cooker	kWh heat/a	1237	1120	1083	1040	998	960	931	904	876	847
LH SHR stove	kWh heat/a	2979	2696	2607	2504	2402	2310	2242	2175	2108	2040
LH pellet stove	kWh heat/a	3562	3224	3117	2994	2873	2762	2681	2601	2521	2439
LH open fire gas	kWh heat/a	210	210	208	205	202	199	198	197	196	194
LH closed fire gas	kWh heat/a	1248	1130	1092	1049	1007	968	940	912	883	855
LH fuelless fuel heater	kWh heat/a	75	75	74	73	72	71	71	70	70	69
LH elec.portable	kWh heat/a	358	324	313	298	284	272	263	256	248	241
LH elec.convectector	kWh heat/a	939	850	820	782	745	713	691	671	652	631
LH elec.storage	kWh heat/a	1458	1320	1273	1215	1158	1107	1073	1043	1012	981
LH elec.underfloor	kWh heat/a	364	330	318	304	289	277	268	261	253	245
LH luminous heaters	kWh heat/a	13480	12200	11698	10954	10230	9610	9304	9070	8838	8605
LH tube heaters	kWh heat/a	20220	18300	17547	16431	15345	14416	13955	13606	13256	12908
RAC (heating demand), reversible <12kW	kWh heat/a	2683	2065	1927	1784	1659	1545	1462	1384	1305	1226
<i>LS, stock average unit capacities in lm</i>											
LFL (T12,T8h,T8t,T5,other)	lm	2281	2303	2611	2800	2777	2660	2541	2502	2482	2458
HID (HPM, HPS, MH)	lm	12044	13032	13490	14730	15280	16042	17041	17955	18641	19121
CFLni (all shapes)	lm	690	690	690	690	690	690	690	690	690	690
CFLi (retrofit for GLS, HL)	lm	523	564	581	595	605	605	605	605	605	605
GLS (DLS & NDLS)	lm	494	495	485	495	495	495	495	495	495	495
HL (DLS & NDLS, LV & MV)	lm	746	568	561	619	708	3800	3800	3800	3800	3776
LED replacing LFL (retrofit & luminaire)	lm			3221	3337	3312	3245	3182	3139	3118	3108
LED replacing HID (retrofit & luminaire)	lm			12115	12605	13569	14216	14605	14815	14903	14934
LED replacing CFLni (retrofit & luminaire)	lm			731	731	731	731	731	731	731	731
LED replacing DLS (retrofit & luminaire)	lm		432	447	470	529	534	536	537	539	541
LED replacing NDLS (retrofit & luminaire)	lm		639	647	647	659	661	661	662	662	662
<i>LS, unit fpe-hours in h/a (see LoadNotes)</i>											
LFL (T12,T8h,T8t,T5,other)	h/a	1949	1975	2007	2025	1993	1923	1876	1934	1924	1867
HID (HPM, HPS, MH)	h/a	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
CFLni (all shapes)	h/a	1251	1213	1185	1146	1092	985	840	761	726	709
CFLi (retrofit for GLS, HL)	h/a	500	500	500	500	500	500	500	500	500	500
GLS (DLS & NDLS)	h/a	450	450	450	450	450	450	450	450	450	450
HL (DLS & NDLS, LV & MV)	h/a	450	450	450	450	450	450	450	450	450	450
LED replacing LFL (retrofit & luminaire)	h/a			1921	2078	2118	2114	2097	2086	2091	2098
LED replacing HID (retrofit & luminaire)	h/a			4000	4000	4000	4000	4000	4000	4000	4000
LED replacing CFLni (retrofit & luminaire)	h/a			1370	1375	1337	1319	1304	1287	1291	1302
LED replacing DLS (retrofit & luminaire)	h/a		461	461	461	461	461	461	461	461	461
LED replacing NDLS (retrofit & luminaire)	h/a		475	472	485	508	512	512	512	512	512
<i>Stock average PSU output for ES&amp;DS (8760 h/a)</i>											
ES tower 1-socket traditional	kWh/a	723	674	498	376	364	368	368	368	368	368
ES rack 1-socket traditional	kWh/a	920	838	591	508	533	569	569	569	569	569
ES rack 2-socket traditional	kWh/a	1905	1835	1565	1234	1236	1246	1246	1246	1246	1246
ES rack 2-socket cloud	kWh/a		2123	1893	1591	1620	1632	1632	1632	1632	1632
ES rack 4-socket traditional	kWh/a	3854	3397	3047	3306	3322	3343	3343	3343	3343	3343
ES rack 4-socket cloud	kWh/a		4211	4425	4606	4694	4725	4725	4725	4725	4725
ES rack 2-socket resilient trad.	kWh/a	5694	5562	4981	3743	3288	3295	3295	3295	3295	3295
ES rack 2-socket resilient cloud	kWh/a		5514	4878	3735	3288	3295	3295	3295	3295	3295
ES rack 4-socket resilient trad.	kWh/a	5606	5485	5123	4574	4427	4444	4444	4444	4444	4444
ES rack 4-socket resilient cloud	kWh/a		6150	6027	5627	5604	5627	5627	5627	5627	5627
ES blade 1-socket traditional	kWh/a	753	733	662	573	563	592	592	592	592	592
ES blade 2-socket traditional	kWh/a	2488	2426	2156	1888	1900	1908	1908	1908	1908	1908
ES blade 2-socket cloud	kWh/a		2820	2670	2505	2548	2559	2559	2559	2559	2559
ES blade 4-socket traditional	kWh/a	5606	5504	5241	4662	4367	4383	4383	4383	4383	4383
ES blade 4-socket cloud	kWh/a		6197	6264	5777	5505	5526	5526	5526	5526	5526
DS Online 2	kWh/a	3504	3504	3677	4737	5595	6184	6184	6184	6184	6184
DS Online 3	kWh/a	845	815	932	1381	1642	1815	1815	1815	1815	1815
DS Online 4	kWh/a	15330	15330	16068	20688	24477	27054	27054	27054	27054	27054

## EULOADBAU

LOAD EU-28 Total, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>Total WH dedicated Water Heater</b>	<b>TWh heat/a</b>	<b>190</b>	<b>241</b>	<b>256</b>	<b>270</b>	<b>285</b>	<b>300</b>	<b>316</b>	<b>332</b>	<b>348</b>	<b>365</b>
<b>Total CH Central Heating combi, water heat</b>	<b>TWh heat/a</b>	<b>107</b>	<b>189</b>	<b>208</b>	<b>223</b>	<b>241</b>	<b>260</b>	<b>279</b>	<b>299</b>	<b>319</b>	<b>339</b>
<b>Total CH Central Heating boiler, space heat</b>	<b>TWh heat/a</b>	<b>1170</b>	<b>1312</b>	<b>1252</b>	<b>1185</b>	<b>1119</b>	<b>1088</b>	<b>1055</b>	<b>1011</b>	<b>947</b>	<b>861</b>
SFB Wood Manual	TWh heat/a	97	43	35	27	18	11	7	5	4	4
SFB Wood Direct Draft	TWh heat/a	1	17	32	46	55	54	55	59	68	79
SFB Coal	TWh heat/a	44	18	13	8	5	2	1	1	1	1
SFB Pellets	TWh heat/a	0	7	12	17	21	23	24	24	25	27
SFB Wood chips	TWh heat/a	0	10	13	14	14	13	14	15	16	17
<b>SFB total net heat demand</b>	<b>TWh heat/a</b>	<b>142</b>	<b>95</b>	<b>105</b>	<b>112</b>	<b>112</b>	<b>103</b>	<b>101</b>	<b>104</b>	<b>114</b>	<b>126</b>
CHAE-S (≤ 400 kW)	TWh cool/a	9	32	38	43	45	47	49	51	53	54
CHAE-L (> 400 kW)	TWh cool/a	15	44	52	57	59	58	57	56	56	55
CHWE-S (≤ 400 kW)	TWh cool/a	1	4	5	6	6	7	7	7	7	8
CHWE-M (> 400 kW; ≤ 1500 kW)	TWh cool/a	5	15	17	19	20	20	20	19	19	19
CHWE-L (> 1500 kW)	TWh cool/a	3	9	11	12	13	13	13	12	12	12
CHF	TWh cool/a	0	0	0	0	0	0	0	0	0	0
HT PCH-AE-S	TWh cool/a	93	165	186	204	218	229	239	249	259	268
HT PCH-AE-L	TWh cool/a	96	171	192	211	226	237	247	257	267	277
HT PCH-WE-S	TWh cool/a	31	54	61	67	72	76	79	82	85	88
HT PCH-WE-M	TWh cool/a	70	123	139	153	163	171	179	186	193	200
HT PCH-WE-L	TWh cool/a	13	25	28	30	33	35	37	38	40	41
AC rooftop	TWh cool/a	6	21	22	20	16	11	5	3	2	2
AC splits	TWh cool/a	13	45	47	46	44	41	37	34	31	29
AC VRF	TWh cool/a	0	12	18	26	33	41	48	54	59	62
ACF	TWh cool/a	0	0	0	0	0	0	0	0	0	0
<b>AHC central Air Cooling</b>	<b>TWh cool/a</b>	<b>356</b>	<b>721</b>	<b>816</b>	<b>896</b>	<b>949</b>	<b>986</b>	<b>1018</b>	<b>1050</b>	<b>1083</b>	<b>1115</b>
AC rooftop (rev)	TWh heat/a	9	30	31	29	23	15	7	2	0	0
AC splits (rev)	TWh heat/a	22	73	76	74	71	66	60	55	50	46
AC VRF (rev)	TWh heat/a	0	24	37	52	65	80	92	98	101	101
ACF (rev)	TWh heat/a	0	0	1	1	1	1	1	1	1	1
AHF	TWh heat/a	138	112	97	87	77	69	62	56	50	44
AHE	TWh heat/a	1	2	2	1	1	1	1	1	1	1
<b>AHC central Air Heating</b>	<b>TWh heat/a</b>	<b>170</b>	<b>242</b>	<b>244</b>	<b>243</b>	<b>238</b>	<b>232</b>	<b>223</b>	<b>213</b>	<b>204</b>	<b>194</b>
<b>AHC total Heating &amp; Cooling</b>	<b>TWh heat/a</b>	<b>526</b>	<b>963</b>	<b>1060</b>	<b>1139</b>	<b>1187</b>	<b>1217</b>	<b>1241</b>	<b>1263</b>	<b>1287</b>	<b>1309</b>
LH open fireplace	TWh heat/a	3	5	6	6	6	6	6	6	6	6
LH closed fireplace/inset	TWh heat/a	11	27	33	39	43	47	48	49	48	47
LH wood stove	TWh heat/a	23	25	25	26	27	28	29	29	28	28
LH coal stove	TWh heat/a	16	9	9	8	7	6	5	4	3	3
LH cooker	TWh heat/a	4	7	8	9	10	11	11	11	11	10
LH SHR stove	TWh heat/a	13	17	18	20	23	25	28	30	31	31
LH pellet stove	TWh heat/a	0	6	9	12	14	16	17	17	17	16
LH open fire gas <sup>3</sup>	TWh heat/a	0	0	0	0	0	0	0	0	0	0
LH closed fire gas	TWh heat/a	8	8	8	8	8	8	8	8	8	8
LH flueless fuel heater	TWh heat/a	0	0	0	0	0	0	0	0	0	0
LH elec.portable	TWh heat/a	18	20	21	21	21	21	22	21	21	20
LH elec.convectector	TWh heat/a	76	84	86	86	87	89	89	88	86	84
LH elec.storage	TWh heat/a	6	6	6	6	6	7	7	7	6	6
LH elec.underfloor	TWh heat/a	10	11	11	12	12	12	12	12	12	12
LH luminous heaters	TWh heat/a	4	4	4	4	4	4	4	4	4	4
LH tube heaters	TWh heat/a	7	8	8	8	8	8	8	8	7	7
<b>LH total</b>		<b>199</b>	<b>238</b>	<b>252</b>	<b>266</b>	<b>278</b>	<b>288</b>	<b>293</b>	<b>293</b>	<b>288</b>	<b>282</b>
<b>RAC (cooling demand), &lt;12 kW</b>	<b>TWh cool/a</b>	<b>5</b>	<b>56</b>	<b>75</b>	<b>97</b>	<b>124</b>	<b>142</b>	<b>152</b>	<b>158</b>	<b>163</b>	<b>169</b>
<b>RAC (heating demand), reversible &lt;12kW</b>	<b>TWh heat/a</b>	<b>4</b>	<b>59</b>	<b>91</b>	<b>128</b>	<b>163</b>	<b>177</b>	<b>177</b>	<b>172</b>	<b>166</b>	<b>159</b>
<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>TWh flow/a</b>	<b>44</b>	<b>18</b>	<b>13</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>TOTAL SPACE HEATING load</b>	<b>TWh heat/a</b>	<b>1685</b>	<b>1946</b>	<b>1943</b>	<b>1933</b>	<b>1911</b>	<b>1888</b>	<b>1850</b>	<b>1793</b>	<b>1719</b>	<b>1623</b>
<b>TOTAL SPACE COOLING load</b>	<b>TWh cool/a</b>	<b>361</b>	<b>777</b>	<b>892</b>	<b>992</b>	<b>1073</b>	<b>1128</b>	<b>1170</b>	<b>1208</b>	<b>1246</b>	<b>1284</b>
NRVU total ventilated (17.3 Mm <sup>3</sup> /a)	T m <sup>3</sup> /a	4.04	48.89	62.52	74.88	84.81	92.00	99.33	106.80	114.29	121.77
NRVU ventilated during heating season (10.08 Mm <sup>3</sup> /a)	T m <sup>3</sup> /a	2.35	28.48	36.43	43.63	49.41	53.60	57.88	62.23	66.59	70.95
NRVU total heat saved (8606 kWh/Mm <sup>3</sup> = GWh/Tm <sup>3</sup> )	TWh prim/a *	20	245	314	375	425	461	498	536	573	611
RVU Central Unidir. VU ≤125W/fan (173 m <sup>3</sup> /h)	T m <sup>3</sup> /a	25.99	51.34	57.87	56.74	54.24	53.70	56.06	60.09	64.22	68.34
RVU Central Balanced VU ≤125W/fan (143 m <sup>3</sup> /h)	T m <sup>3</sup> /a	0.20	2.68	5.32	9.38	13.80	17.78	20.38	22.55	24.70	26.85
RVU Local Balanced VU (<125 W, also NR) (70 m <sup>3</sup> /h per unit)	T m <sup>3</sup> /a	0.020	0.388	0.794	1.495	2.478	3.673	4.929	6.201	7.475	8.748
RVU total ventilated	T m <sup>3</sup> /a	26.2	54.4	64.0	67.6	70.5	75.2	81.4	88.8	96.4	103.9
RVU Central Unidir. , heat saved (951 kWh/a)	TWh prim/a *	16.31	32.22	36.31	35.60	34.04	33.70	35.18	37.71	40.30	42.88
RVU Central Balanced ≤125W/fan (3863 kWh/a)	TWh prim/a *	0.63	8.27	16.40	28.94	42.57	54.82	62.83	69.53	76.16	82.80
RVU Local Balanced VU (1706 kWh/a)	TWh prim/a *	0.06	1.08	2.21	4.16	6.90	10.22	13.71	17.25	20.80	24.34
* presented values are energy savings on space heating assuming 75% SH efficiency; they are not amounts of heat processed by VUs											
<b>VU Ventilation Units, total ventilated</b>	<b>T m<sup>3</sup>/a</b>	<b>30</b>	<b>103</b>	<b>127</b>	<b>143</b>	<b>155</b>	<b>167</b>	<b>181</b>	<b>196</b>	<b>211</b>	<b>226</b>

EULOADBAU

LOAD EU-28 Total, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<i>LS, total EU capacity in TIm</i>											
LFL (T12,T8h,T8t,T5,other)	TIm	2.8	4.6	5.7	6.6	6.6	5.7	4.5	3.5	2.8	2.2
HID (HPM, HPS, MH)	TIm	0.5	1.2	1.4	1.5	1.3	0.9	0.5	0.3	0.1	0.1
CFLni (all shapes)	TIm	0.1	0.4	0.4	0.5	0.4	0.3	0.2	0.1	0.1	0.0
CFLi (retrofit for GLS, HL)	TIm	0.1	1.4	1.9	2.0	1.7	1.3	0.9	0.6	0.4	0.2
GLS (DLS & NDLS)	TIm	1.8	1.5	1.3	0.9	0.5	0.3	0.2	0.1	0.1	0.0
HL (DLS & NDLS, LV & MV)	TIm	0.2	1.1	1.4	1.7	1.2	0.6	0.3	0.2	0.1	0.1
LED replacing LFL (retrofit & luminaire)	TIm			0.0	0.4	1.6	3.6	6.0	8.3	10.6	12.9
LED replacing HID (retrofit & luminaire)	TIm			0.0	0.2	0.6	1.3	2.0	2.6	3.1	3.6
LED replacing CFLni (retrofit & luminaire)	TIm			0.0	0.0	0.1	0.3	0.5	0.6	0.7	0.8
LED replacing DLS (retrofit & luminaire)	TIm			0.0	0.1	0.4	0.6	0.8	1.0	1.1	1.3
LED replacing NDLS (retrofit & luminaire)	TIm		0.0	0.0	0.6	2.1	3.5	4.8	5.8	6.6	7.4
<b>LS Lighting (excl. SPL, ctrl, sb)</b>	<b>TIm</b>	<b>5.5</b>	<b>10.3</b>	<b>12.2</b>	<b>14.5</b>	<b>16.4</b>	<b>18.5</b>	<b>20.7</b>	<b>23.1</b>	<b>25.7</b>	<b>28.7</b>
<i>LS, total EU fpe-hours in Th/a</i>											
LFL (T12,T8h,T8t,T5,other)	Th/a	2.4	4.0	4.5	4.8	4.6	4.0	3.1	2.4	1.9	1.5
HID (HPM, HPS, MH)	Th/a	0.2	0.4	0.4	0.4	0.4	0.2	0.1	0.1	0.0	0.0
CFLni (all shapes)	Th/a	0.2	0.7	0.8	0.8	0.7	0.5	0.3	0.1	0.1	0.0
CFLi (retrofit for GLS, HL)	Th/a	0.1	1.3	1.6	1.6	1.4	1.1	0.7	0.5	0.3	0.2
GLS (DLS & NDLS)	Th/a	1.7	1.4	1.2	0.8	0.5	0.3	0.2	0.1	0.1	0.0
HL (DLS & NDLS, LV & MV)	Th/a	0.1	0.8	1.1	1.3	0.9	0.5	0.3	0.1	0.1	0.0
LED replacing LFL (retrofit & luminaire)	Th/a			0.0	0.3	1.1	2.5	4.1	5.7	7.3	8.9
LED replacing HID (retrofit & luminaire)	Th/a			0.0	0.1	0.2	0.4	0.6	0.7	0.9	1.0
LED replacing CFLni (retrofit & luminaire)	Th/a			0.0	0.1	0.2	0.5	0.9	1.1	1.3	1.5
LED replacing DLS (retrofit & luminaire)	Th/a		0.0	0.0	0.1	0.3	0.6	0.7	0.9	1.0	1.1
LED replacing NDLS (retrofit & luminaire)	Th/a		0.0	0.0	0.5	1.5	2.6	3.6	4.3	5.0	5.6
<b>LS Lighting (excl. SPL, ctrl, sb)</b>	<b>Th/a</b>	<b>4.6</b>	<b>8.5</b>	<b>9.6</b>	<b>10.7</b>	<b>11.8</b>	<b>13.1</b>	<b>14.5</b>	<b>16.1</b>	<b>17.9</b>	<b>19.9</b>
DP TV viewable area (avg. all types)	km²	21	102	185	253	306	415	536	642	744	858
DP TV viewing time (on-mode)	M years / a	36	61	71	83	87	101	113	117	117	117
DP TV standby time	M years / a	54	152	178	207	217	253	283	292	292	292
DP Monitor viewable area	km²	1	20	18	16	18	20	22	24	26	28
DP Monitor viewing time (on-mode)	M years / a	2	29	22	16	16	16	16	16	16	16
DP Monitor standby time	M years / a	2	29	22	16	16	16	16	16	16	16
DP Signage viewable area	km²	0	0	5	18	30	34	39	45	53	61
DP Signage display time (on-mode)	M years / a	0	0	3	11	15	15	15	15	15	15
DP Signage standby time	M years / a	0	0	1	2	2	2	2	2	2	2
<b>DP Elec.Displays, total viewable area</b>	<b>km²</b>	<b>22</b>	<b>122</b>	<b>207</b>	<b>287</b>	<b>353</b>	<b>469</b>	<b>597</b>	<b>711</b>	<b>822</b>	<b>947</b>
<b>DP Elec.Displays, total on-mode time</b>	<b>M years / a</b>	<b>38</b>	<b>90</b>	<b>96</b>	<b>110</b>	<b>118</b>	<b>133</b>	<b>144</b>	<b>148</b>	<b>148</b>	<b>148</b>
<b>DP Elec.Displays, total standby time</b>	<b>M years / a</b>	<b>56</b>	<b>181</b>	<b>200</b>	<b>225</b>	<b>235</b>	<b>272</b>	<b>301</b>	<b>310</b>	<b>310</b>	<b>310</b>
SSTB (4.5h on/d)	Th on/a	0.00	0.16	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CSTB (4.5 h on/d)	Th on/a	0.00	0.13	0.32	0.36	0.37	0.36	0.38	0.41	0.44	0.47
VIDEO players/recorders (1 h/d play or record)	Th on/a	0.000	0.049	0.061	0.015	0.001	0.000	0.000	0.000	0.000	0.000
VIDEO projectors (2.1 h/d on)	Th on/a	0.000	0.008	0.007	0.004	0.002	0.000	0.000	0.000	0.000	0.000
VIDEO game consoles (0.5 h/d active play)	Th on/a	0.000	0.052	0.065	0.058	0.051	0.060	0.060	0.060	0.060	0.060
ES tower 1-socket traditional	GWh	25	762	649	478	378	324	302	302	302	302
ES rack 1-socket traditional	GWh	80	2385	1813	1630	1690	1877	1920	1920	1920	1920
ES rack 2-socket traditional	GWh	546	11554	6293	3908	4637	5640	6154	6154	6154	6154
ES rack 2-socket cloud	GWh	0	6475	10223	11678	14045	17085	18640	18640	18640	18640
ES rack 4-socket traditional	GWh	62	1201	662	547	664	808	882	882	882	882
ES rack 4-socket cloud	GWh	0	721	1280	1787	2184	2657	2899	2899	2899	2899
ES rack 2-socket resilient trad.	GWh	27	581	336	194	204	247	270	270	270	270
ES rack 2-socket resilient cloud	GWh	0	279	442	456	480	583	636	636	636	636
ES rack 4-socket resilient trad.	GWh	1	31	19	13	15	19	21	21	21	21
ES rack 4-socket resilient cloud	GWh	0	17	30	38	45	55	60	60	60	60
ES blade 1-socket traditional	GWh	41	712	639	569	581	638	652	652	652	652
ES blade 2-socket traditional	GWh	453	5273	2741	1815	2179	2651	2892	2892	2892	2892
ES blade 2-socket cloud	GWh	0	2946	4543	5674	6881	8371	9133	9133	9133	9133
ES blade 4-socket traditional	GWh	57	664	363	248	293	357	389	389	389	389
ES blade 4-socket cloud	GWh	0	359	577	724	868	1055	1152	1152	1152	1152
<b>ES total traditional</b>	<b>GWh</b>	<b>1294</b>	<b>23164</b>	<b>13515</b>	<b>9402</b>	<b>10642</b>	<b>12561</b>	<b>13481</b>	<b>13481</b>	<b>13481</b>	<b>13481</b>
<b>ES total cloud</b>	<b>GWh</b>	<b>0</b>	<b>10797</b>	<b>17097</b>	<b>20358</b>	<b>24502</b>	<b>29805</b>	<b>32520</b>	<b>32520</b>	<b>32520</b>	<b>32520</b>
<b>ES Enterprise Servers total</b>	<b>GWh</b>	<b>1294</b>	<b>33961</b>	<b>30612</b>	<b>29760</b>	<b>35144</b>	<b>42366</b>	<b>46001</b>	<b>46001</b>	<b>46001</b>	<b>46001</b>
DS Online 2	GWh	295	5431	7436	10328	13363	16307	17286	17373	17373	17373
DS Online 3	GWh	50	799	1075	1455	1884	2299	2437	2450	2450	2450
DS Online 4	GWh	194	3108	4180	5686	7327	8941	9479	9526	9526	9526
<b>DS Data Storage products total</b>	<b>GWh</b>	<b>539</b>	<b>9339</b>	<b>12691</b>	<b>17469</b>	<b>22574</b>	<b>27547</b>	<b>29202</b>	<b>29349</b>	<b>29349</b>	<b>29349</b>
<b>ES + DS total</b>	<b>GWh</b>	<b>1833</b>	<b>43300</b>	<b>43303</b>	<b>47229</b>	<b>57718</b>	<b>69913</b>	<b>75203</b>	<b>75350</b>	<b>75350</b>	<b>75350</b>
PC Desktop	m units	29	111	98	76	75	75	75	75	75	75
PC Notebook	m units	1	121	95	62	62	62	62	62	62	62
PC Tablet/slate	m units	0	4	158	339	473	589	624	654	684	715
PC Thin client	m units	0	5	5	5	5	5	5	5	5	5
PC Workstation	m units	0	3	3	3	3	3	3	3	3	3



## EULOADBAU

LOAD EU-28 Total, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
EP-BW images per yr(28k ipy/unit, colour=35% BW)	bn ipy	671	560	517	462	436	424	413	402	398	394
EP-Colour images per yr (28k ipy/unit, col.=35% BW)	bn ipy	0	95	172	260	315	361	407	453	498	544
IJ-BW images (1k ipy/unit, colour=35% BW)	bn ipy	29	62	59	55	54	55	56	57	58	59
IJ-Colour images (1k ipy/unit, colour=35% BW)	bn ipy	12	37	53	65	71	78	84	91	97	104
Total images per year	bn ipy	711	755	801	843	875	918	960	1003	1051	1101
Total sheets per year at 65% duplex, 15% N print	bn A4-sheets	444	471	500	526	547	573	599	626	656	687
EP&IJ Paper for sheets (200 sheets/ kg)	Mt/a	2.2	2.4	2.5	2.6	2.7	2.9	3.0	3.1	3.3	3.4
EP&IJ Toner use (27 mg/image at 15% N print)	kt/a	19	20	22	23	24	25	26	27	28	30
SB Home Gateway, on-mode hours	Th on/a	0.00	0.35	0.46	0.58	0.69	0.81	0.92	1.03	1.15	1.26
SB Home NAS, on-mode hours	Th on/a	0.00	0.01	0.02	0.03	0.04	0.06	0.07	0.08	0.09	0.10
SB Home Phones (fixed), on-mode hours	Th on/a	0.01	0.10	0.13	0.15	0.15	0.15	0.15	0.15	0.15	0.15
SB Office Phones (fixed), on-mode hours	Th on/a	0.02	0.11	0.12	0.12	0.13	0.14	0.15	0.15	0.16	0.17
<i>EU Active output energy per year</i>											
EPS ≤ 6W, low-V	TW.h / a	0.0	0.6	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0
EPS 6–10 W	TW.h / a	0.2	2.9	3.1	3.3	3.4	3.6	3.7	3.8	3.9	4.0
EPS 10–12 W	TW.h / a	0.0	22.4	36.9	41.6	42.1	42.4	42.7	43.0	43.2	43.5
EPS 15–20 W	TW.h / a	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.4
EPS 20–30 W	TW.h / a	0.0	3.9	4.7	4.6	4.3	4.1	3.8	3.5	3.2	2.9
EPS 30–65 W, multiple-V	TW.h / a	0.0	0.0	0.0	0.4	0.8	1.1	1.5	1.9	2.3	2.7
EPS 30-65 W	TW.h / a	0.0	0.0	0.0	0.2	0.7	1.3	1.7	1.7	1.7	1.7
EPS 65–120 W	TW.h / a	0.0	1.5	1.7	1.5	1.0	0.4	0.0	0.0	0.0	0.0
EPS 65–120 W, multiple-V	TW.h / a	0.0	9.2	7.3	1.7	1.2	1.2	1.2	1.2	1.2	1.2
EPS 12–15 W	TW.h / a	0.0	0.8	2.0	3.0	3.1	3.1	3.2	3.2	3.2	3.2
<b>EPS, total for active mode</b>	<b>TW.h / a</b>	<b>0</b>	<b>41</b>	<b>56</b>	<b>57</b>	<b>57</b>	<b>58</b>	<b>58</b>	<b>59</b>	<b>59</b>	<b>60</b>
<i>EU No-load hours per year</i>											
EPS ≤ 6W, low-V	Th / a	0.1	1.0	0.8	0.5	0.4	0.2	0.1	0.0	0.0	0.0
EPS 6–10 W	Th / a	0.2	2.7	2.9	3.1	3.2	3.4	3.5	3.6	3.7	3.8
EPS 10–12 W	Th / a	0.0	0.4	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7
EPS 15–20 W	Th / a	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
EPS 20–30 W	Th / a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPS 30–65 W, multiple-V	Th / a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPS 30-65 W	Th / a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPS 65–120 W	Th / a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPS 65–120 W, multiple-V	Th / a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPS 12–15 W	Th / a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>EPS, total for no-load mode</b>	<b>Th / a</b>	<b>0.2</b>	<b>4.1</b>	<b>4.3</b>	<b>4.3</b>	<b>4.4</b>	<b>4.4</b>	<b>4.4</b>	<b>4.5</b>	<b>4.5</b>	<b>4.6</b>
UPS below 1.5 kVA	GW output	0.6	1.3	1.3	1.5	1.8	2.1	2.4	2.6	2.8	3.0
UPS 1.5 to 5 kVA	GW output	2.7	5.8	6.3	7.0	8.3	9.7	11.0	12.2	13.3	14.1
UPS 5 to 10 kVA	GW output	0.5	1.0	1.1	1.2	1.4	1.7	1.9	2.1	2.3	2.5
UPS 10 to 200 kVA	GW output	2.7	6.1	6.8	7.5	8.7	10.2	11.7	13.2	14.4	15.4
Total UPS	GW output	6	14	15	17	20	24	27	30	33	35
RF freezer net volume	M m <sup>3</sup> @ -18C°	12.0	17.1	18.7	20.2	21.9	23.7	25.5	27.5	29.4	31.4
RF refrigerator net volume	M m <sup>3</sup> @ 5C°	42.6	60.5	66.2	71.6	77.5	83.9	90.5	97.3	104.3	111.4
CF open vertical chilled multi deck (RVC2)	M m <sup>2</sup> @ -1/+7°C	3.3	4.0	4.1	4.1	4.1	4.2	4.3	4.3	4.4	4.5
CF open horizontal frozen island (RHF4)	M m <sup>2</sup> @ -18/-15°C	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
CF other supermarket display (non-base cases)	M m <sup>2</sup> @ -18/+7°C	7.1	8.7	9.5	10.0	10.4	10.8	11.2	11.5	11.9	12.4
CF Plug in one door beverage cooler	M m <sup>3</sup> @ 1/10C°	2.9	3.5	3.7	3.7	3.8	4.0	4.1	4.2	4.4	4.5
CF Plug in horizontal ice cream freezer	M m <sup>3</sup> @ -18/-15C°	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3
CF Spiral vending machine	M m <sup>3</sup> @ 1/7C°	0.7	0.9	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.7
PF Storage cabinet Chilled Vertical (CV, 600 l)	M m <sup>3</sup> @ 5C°	0.7	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4
PF Storage cabinet Frozen Vertical (FV, 600 l)	M m <sup>3</sup> @ -18C°	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
PF Storage cabinet Chilled Horizontal (CH, 300 l)	M m <sup>3</sup> @ 5C°	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
PF Storage cabinet Frozen Horizontal (FH, 200 l)	M m <sup>3</sup> @ -18C°	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>PF Storage cabinets All types</b>	<b>M m<sup>3</sup></b>	<b>1.2</b>	<b>1.7</b>	<b>1.8</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>	<b>2.4</b>
PF Process Chiller AC MT S ≤ 300 kW	TWhcool/a	9	19	22	25	28	31	34	37	40	43
PF Process Chiller AC MT L > 300 kW	TWhcool/a	9	20	24	27	30	33	37	40	43	46
PF Process Chiller AC LT S ≤ 200 kW	TWhcool/a	5	11	13	15	17	18	20	22	24	26
PF Process Chiller AC LT L > 200 kW	TWhcool/a	6	12	14	17	19	20	22	24	26	28
PF Process Chiller WC MT S ≤ 300 kW	TWhcool/a	3	7	8	9	11	12	13	14	15	16
PF Process Chiller WC MT L > 300 kW	TWhcool/a	5	11	13	15	17	19	20	22	24	26
PF Process Chiller WC LT S ≤ 200 kW	TWhcool/a	2	5	6	7	8	8	9	10	11	12
PF Process Chiller WC LT L > 200 kW	TWhcool/a	3	7	8	10	11	12	13	14	15	16
<b>PF Process Chiller All MT&amp;LT</b>	<b>TWhcool/a</b>	<b>42</b>	<b>93</b>	<b>109</b>	<b>125</b>	<b>140</b>	<b>154</b>	<b>169</b>	<b>184</b>	<b>199</b>	<b>214</b>
PF Condensing Unit MT S 0.2-1 kW	TWhcool/a	9	7	7	7	8	9	9	10	11	12
PF Condensing Unit MT M 1-5 kW	TWhcool/a	27	22	21	22	23	25	27	29	32	34
PF Condensing Unit MT L 5-20 kW	TWhcool/a	54	43	41	43	46	50	54	58	63	67
PF Condensing Unit MT XL 20-50 kW	TWhcool/a	55	44	42	44	47	51	55	59	64	69
PF Condensing Unit LT S 0.1-0.4 kW	TWhcool/a	1	1	1	1	1	1	1	1	1	1
PF Condensing Unit LT M 0.4-2 kW	TWhcool/a	3	2	2	2	3	3	3	3	3	4
PF Condensing Unit LT L 2-8 kW	TWhcool/a	7	6	6	6	6	7	7	8	9	9
PF Condensing Unit LT XL 8-20 kW	TWhcool/a	25	20	20	20	22	24	25	27	30	32
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>TWhcool/a</b>	<b>182</b>	<b>145</b>	<b>140</b>	<b>146</b>	<b>157</b>	<b>169</b>	<b>182</b>	<b>196</b>	<b>211</b>	<b>228</b>

EULOADBAU

LOAD EU-28 Total, BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
COOK El. Hobs (heating + keep 20 min. warm 1229 ltr v	kt/a	103	1229	1229	1229	1229	1229	1229	1229	1229	1229
COOK El. Ovens (110 cycles/a)	bn cyc/a	19	21	22	23	24	26	26	27	27	27
COOK Gas Hobs (heating 1229 ltr water b y 75 K)	kt/a	144	120	116	111	106	101	96	91	86	82
COOK Gas Ovens (110 cycles/a)	bn cyc/a	6.3	4.9	4.7	4.5	4.3	4.2	4.1	4.0	4.0	3.9
COOK Range Hoods (365 h/a extraction)	Th/a	27.5	33.9	35.6	37.4	39.3	41.4	43.4	45.6	47.7	49.9
								0			
COFFEE Dripfilter (glass), 3 cups (135 g), 2 times/d	bn filter cups/a	250	175	155	129	115	114	114	114	114	114
COFFEE Dripfilter (thermos)	bn filter cups/a	16	48	49	50	50	51	52	52	53	53
COFFEE Dripfilter (full automatic)	bn filter cups/a	0	22	26	29	32	35	39	42	45	48
COFFEE Pad filter	bn filter cups/a	0	64	72	79	85	92	98	105	111	118
COFFEE Hard cap espresso 3 cups (48g), 2 times/d	bn espr.cups/a	1	17	29	51	62	63	63	63	63	63
COFFEE Semi-auto espresso	bn espr.cups/a	6	9	8	8	7	7	6	6	5	5
COFFEE Fully-auto espresso	bn espr.cups/a	6	9	9	11	12	13	15	16	18	19
<b>COFFEE total cups/a (all types, in households)</b>	<b>bn cups/a</b>	<b>279</b>	<b>343</b>	<b>349</b>	<b>356</b>	<b>365</b>	<b>376</b>	<b>387</b>	<b>398</b>	<b>409</b>	<b>420</b>
<i>EU-28 no.of households</i>	<i>m</i>	<i>172</i>	<i>211</i>	<i>218</i>	<i>223</i>	<i>224</i>	<i>225</i>	<i>227</i>	<i>228</i>	<i>228</i>	<i>228</i>
<i>COFFEE per household/ day</i>	<i>cups/d.household</i>	<i>4.46</i>	<i>4.46</i>	<i>4.38</i>	<i>4.37</i>	<i>4.46</i>	<i>4.57</i>	<i>4.68</i>	<i>4.79</i>	<i>4.91</i>	<i>5.04</i>
<i>EU-28 population</i>	<i>m</i>	<i>475</i>	<i>503</i>	<i>508</i>	<i>512</i>	<i>515</i>	<i>518</i>	<i>521</i>	<i>524</i>	<i>525</i>	<i>526</i>
<i>COFFEE per capita/day, in households</i>	<i>cups/d.capita</i>	<i>1.61</i>	<i>1.87</i>	<i>1.88</i>	<i>1.90</i>	<i>1.94</i>	<i>1.99</i>	<i>2.04</i>	<i>2.08</i>	<i>2.14</i>	<i>2.19</i>
<b>WM laundry washed</b>	Mt laundry/a	83	132	139	140	142	143	142	142	142	142
<b>DW place settings washed</b>	<b>bn ps/a</b>	52	154	189	225	258	291	324	357	389	422
LD vented el.	Mt laundry/a	10.9	21.5	22.3	21.1	20.0	19.4	19.5	19.6	19.7	19.8
LD condens el.	Mt laundry/a	1.9	25.4	32.5	38.2	43.0	45.4	46.1	46.5	46.7	47.0
LD vented gas	Mt laundry/a	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
<b>LD total weight of laundry dried</b>	Mt laundry/a	<b>13</b>	<b>47</b>	<b>55</b>	<b>60</b>	<b>63</b>	<b>65</b>	<b>66</b>	<b>66</b>	<b>67</b>	<b>67</b>
VC dom (87m² x 50 times/a=4350 m²-->/57h=76.3m³/h	1000 km²/a	662	894	911	963	1012	1030	1000	973	929	869
VC nondom (76.3 m²/h)	1000 km²/a	251	288	303	318	334	351	367	384	401	417
<b>VC Vacuum Cleaners</b>	1000 km²/a	<b>913</b>	<b>1,182</b>	<b>1,214</b>	<b>1,281</b>	<b>1,346</b>	<b>1,381</b>	<b>1,368</b>	<b>1,357</b>	<b>1,330</b>	<b>1,286</b>
FAN Axial<300Pa (all FAN types >125W)	TWh flow/ a	6	16	19	21	24	25	25	25	25	25
FAN Axial>300Pa	TWh flow/ a	12	36	41	44	45	46	47	47	47	47
FAN Centr.FC	TWh flow/ a	3	6	7	7	8	9	9	9	9	9
FAN Centr.BC-free	TWh flow/ a	12	25	30	33	36	39	41	43	43	44
FAN Centr.BC	TWh flow/ a	12	27	32	35	39	43	46	49	54	58
FAN Cross-flow	TWh flow/ a	0	0	0	0	0	0	0	0	0	0
<b>FAN Industrial Fans &gt;125W</b>	TWh flow/ a	<b>45</b>	<b>110</b>	<b>129</b>	<b>141</b>	<b>152</b>	<b>162</b>	<b>169</b>	<b>173</b>	<b>178</b>	<b>184</b>
Medium (S) 3-ph 0.75-7.5 kW no VSD	TWh output/a	76	105	112	116	116	114	111	107	102	95
Medium (M) 3-ph 7.5-75 kW no VSD	TWh output/a	140	188	200	206	205	199	190	178	163	146
Medium (L) 3-ph 75-375 kW no VSD	TWh output/a	307	398	416	425	417	395	360	315	274	247
<b>Total 3ph 0.75-375 kW no VSD</b>	<b>TWh output/a</b>	<b>523</b>	<b>690</b>	<b>727</b>	<b>746</b>	<b>738</b>	<b>708</b>	<b>661</b>	<b>601</b>	<b>539</b>	<b>488</b>
Medium (S) 3-ph 0.75-7.5 kW with VSD	TWh output/a	4	11	14	17	20	24	28	33	38	45
Medium (M) 3-ph 7.5-75 kW with VSD	TWh output/a	10	26	33	40	48	57	67	78	92	107
Medium (L) 3-ph 75-375 kW with VSD	TWh output/a	32	82	103	128	155	184	216	254	290	318
<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>TWh output/a</b>	<b>47</b>	<b>119</b>	<b>150</b>	<b>185</b>	<b>223</b>	<b>264</b>	<b>310</b>	<b>365</b>	<b>420</b>	<b>469</b>
<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>TWh output/a</b>	<b>570</b>	<b>810</b>	<b>877</b>	<b>931</b>	<b>961</b>	<b>972</b>	<b>971</b>	<b>965</b>	<b>959</b>	<b>957</b>
Small 1 ph 0.12-0.75 kW no VSD	TWh output/a	5	7	8	8	8	8	8	8	8	8
Small 1 ph 0.12-0.75 kW with VSD	TWh output/a	0	0	1	1	1	1	1	1	1	1
<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>TWh output/a</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>
Small 3 ph 0.12-0.75 kW no VSD	TWh output/a	7	10	10	11	11	11	11	11	11	11
Small 3 ph 0.12-0.75 kW with VSD	TWh output/a	0	1	1	1	1	1	1	2	2	2
<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>TWh output/a</b>	<b>7</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>
Large 3-ph LV 375-1000 kW no VSD	TWh output/a	160	195	190	180	169	160	158	157	156	155
Large 3-ph LV 375-1000kW with VSD	TWh output/a	8	41	62	85	105	120	128	135	141	149
<b>Total Large 3-ph LV 375-1000 kW</b>	<b>TWh output/a</b>	<b>167</b>	<b>236</b>	<b>252</b>	<b>265</b>	<b>274</b>	<b>280</b>	<b>286</b>	<b>292</b>	<b>298</b>	<b>304</b>
Explosion motors (S) 3-ph 0.75-7.5 kW	TWh output/a	3	4	4	4	5	5	5	5	5	5
Explosion motors (M) 3-ph 7.5-75 kW	TWh output/a	7	11	12	13	14	14	14	15	15	15
Explosion motors (L) 3-ph 75-375 kW	TWh output/a	15	23	25	27	29	30	31	31	32	33
<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>25</b>	<b>37</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>52</b>	<b>53</b>
Brake motors (S) 3-ph 0.75-7.5 kW	TWh output/a	2	3	3	3	3	3	3	3	3	4
Brake motors (M) 3-ph 7.5-75 kW	TWh output/a	5	7	8	9	9	9	10	10	10	10
Brake motors (L) 3-ph 75-375 kW	TWh output/a	8	11	12	14	14	15	15	16	16	16
<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>14</b>	<b>21</b>	<b>23</b>	<b>25</b>	<b>27</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>30</b>
8-pole motors (S) 3-ph 0.75-7.5 kW	TWh output/a	0	0	0	0	0	0	0	0	0	0
8-pole motors (M) 3-ph 7.5-75 kW	TWh output/a	0	1	1	1	1	1	1	1	1	1
8-pole motors (L) 3-ph 75-375 kW	TWh output/a	1	1	1	1	1	1	2	2	2	2
<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>TWh output/a</b>	<b>31</b>	<b>46</b>	<b>51</b>	<b>55</b>	<b>57</b>	<b>59</b>	<b>60</b>	<b>62</b>	<b>64</b>	<b>65</b>
<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>TWh output/a</b>	<b>822</b>	<b>1170</b>	<b>1265</b>	<b>1343</b>	<b>1388</b>	<b>1410</b>	<b>1420</b>	<b>1423</b>	<b>1426</b>	<b>1435</b>

## EULOADBAU

<b>LOAD EU-28 Total, BAU</b>	<b>unit</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WP Water pumps</b>	<b>TWh flow/a</b>	<b>58</b>	<b>79</b>	<b>85</b>	<b>91</b>	<b>98</b>	<b>105</b>	<b>112</b>	<b>120</b>	<b>127</b>	<b>134</b>
CP Fixed Speed 5-1280 l/s	TWh flow/a	13.6	30.4	25.9	22.6	22.3	23.0	23.7	24.5	25.2	26.0
CP Variable speed 5-1280 l/s	TWh flow/a	0.0	5.9	10.2	13.1	14.4	15.0	15.4	15.8	16.2	16.5
CP Pistons 2-64 l/s	TWh flow/a	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
<b>CP Standard Air Compressors</b>	<b>TWh flow/a</b>	<b>14.2</b>	<b>37.1</b>	<b>36.8</b>	<b>36.4</b>	<b>37.4</b>	<b>38.7</b>	<b>39.9</b>	<b>41.1</b>	<b>42.2</b>	<b>43.3</b>
TRAF0 Distribution	m units/a	1.53	2.55	2.85	3.17	3.49	3.82	4.15	4.49	4.82	5.15
TRAF0 Industry oil	m units/a	0.33	0.57	0.64	0.71	0.77	0.83	0.89	0.96	1.03	1.10
TRAF0 Industry dry	m units/a	0.07	0.12	0.14	0.15	0.17	0.18	0.19	0.21	0.22	0.24
TRAF0 Power	m units/a	0.05	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.14
TRAF0 DER oil	m units/a	0.00	0.01	0.01	0.03	0.04	0.07	0.11	0.17	0.24	0.32
TRAF0 DER dry	m units/a	0.00	0.03	0.06	0.10	0.17	0.28	0.44	0.67	0.95	1.27
TRAF0 Small	m units/a	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
<b>TRAF0 Utility Transformers</b>	<b>m units/a</b>	<b>2.73</b>	<b>4.12</b>	<b>4.54</b>	<b>5.00</b>	<b>5.49</b>	<b>6.04</b>	<b>6.67</b>	<b>7.37</b>	<b>8.14</b>	<b>8.96</b>
<i>(annual km driven by all vehicles with tyre type)</i>											
Tyres C1, replacement for cars	bn km/a	2217	2509	2552	2789	3094	3433	3568	3568	3568	3568
Tyres C1, OEM for cars	bn km/a	668	734	794	856	932	1034	1074	1074	1074	1074
<b>Tyres C1, total</b>	<b>bn km/a</b>	<b>2885</b>	<b>3243</b>	<b>3346</b>	<b>3645</b>	<b>4026</b>	<b>4467</b>	<b>4642</b>	<b>4642</b>	<b>4642</b>	<b>4642</b>
Tyres C2, replacement for vans	bn km/a	455	515	515	577	640	710	732	732	732	732
Tyres C2, OEM for vans	bn km/a	96	107	106	125	135	150	154	154	154	154
<b>Tyres C2, total</b>	<b>bn km/a</b>	<b>551</b>	<b>623</b>	<b>621</b>	<b>702</b>	<b>775</b>	<b>860</b>	<b>886</b>	<b>886</b>	<b>886</b>	<b>886</b>
Tyres C3, replacement for trucks/busses	bn km/a	256	256	247	311	338	375	386	386	386	386
Tyres C3, OEM for trucks/busses	bn km/a	57	56	59	68	75	83	86	86	86	86
<b>Tyres C3, total</b>	<b>bn km/a</b>	<b>312</b>	<b>312</b>	<b>306</b>	<b>380</b>	<b>413</b>	<b>458</b>	<b>472</b>	<b>472</b>	<b>472</b>	<b>472</b>
<b>Tyres, total C1+C2+C3</b>	<b>bn km/a</b>	<b>3748</b>	<b>4178</b>	<b>4273</b>	<b>4727</b>	<b>5214</b>	<b>5785</b>	<b>6001</b>	<b>6001</b>	<b>6001</b>	<b>6001</b>

## EULOADVAR

LOAD EU-28, Variation (BAU-ECO)	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
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Note for printed version: for products not listed below, the load variation is zero (BAU-load and ECO-load identical)

The space heating load reduction is computed as  $S_{res(i)} * Q_{restot} + S_{nrres(i)} * Q_{nrrestot}$ , where:

$S_{res(i)}$  is the share of appliance 'i' in the total EU residential heat load, computed as  $\%res(i) * Load(i) / L_{restot}$

$S_{nrres(i)}$  is the share of appliance 'i' in the total EU non-residential heat load, computed as  $(1 - \%res(i)) * Load(i) / L_{nrrestot}$

$Q_{restot}$  is the total heat saving due to residential ventilation units (RVU), reported further below

$Q_{nrrestot}$  is the total heat saving due to non-residential ventilation units (NRVU), reported further below

$\%res$  is the residential share for appliance 'i' as defined on sheet Classes

$Load(i)$  is the EULOADBAU for appliance 'i'

$L_{restot}$  is the total residential EULOADBAU over all space heating appliances, reported further below

$L_{nrrestot}$  is the total non-residential EULOADBAU over all space heating appliances, reported further below

Total CH Central Heating boiler, space heat	TWh prim heat/a	0	0	14	41	66	86	89	88	87	84
SFB Wood Manual	TWh heat/a	0.0	0.0	0.3	0.6	0.7	0.6	0.4	0.3	0.3	0.3
SFB Wood Direct Draft	TWh heat/a	0.0	0.0	0.3	1.1	2.2	2.9	3.2	3.7	4.7	6.0
SFB Coal	TWh heat/a	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0
SFB Pellets	TWh heat/a	0.0	0.0	0.1	0.5	1.1	1.6	1.8	1.9	2.1	2.4
SFB Wood chips	TWh heat/a	0.0	0.0	0.2	0.8	1.3	1.7	1.9	2.1	2.2	2.3
<b>SFB total net heat demand</b>	<b>TWh heat/a</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>11</b>
AC rooftop (rev)	TWh heat/a	0.0	0.0	0.5	1.6	2.2	1.9	0.9	0.3	0.0	0.0
AC splits (rev)	TWh heat/a	0.0	0.0	1.2	4.0	6.6	8.2	7.9	7.3	6.7	6.2
AC VRF (rev)	TWh heat/a	0.0	0.0	0.6	2.9	6.3	10.3	12.5	13.3	13.8	14.0
ACF (rev)	TWh heat/a	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
AHF	TWh heat/a	0.0	0.0	1.6	4.8	7.3	8.9	8.4	7.5	6.8	6.1
AHE	TWh heat/a	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>AHC central Air Heating</b>	<b>TWh heat/a</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>13</b>	<b>23</b>	<b>30</b>	<b>30</b>	<b>29</b>	<b>28</b>	<b>27</b>
LH open fireplace	TWh heat/a	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.5
LH closed fireplace/inset	TWh heat/a	0.0	0.0	0.3	0.9	1.7	2.5	2.8	3.1	3.3	3.6
LH wood stove	TWh heat/a	0.0	0.0	0.2	0.6	1.1	1.5	1.7	1.8	2.0	2.1
LH coal stove	TWh heat/a	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.2
LH cooker	TWh heat/a	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.7	0.7	0.8
LH SHR stove	TWh heat/a	0.0	0.0	0.2	0.5	0.9	1.3	1.6	1.9	2.1	2.4
LH pellet stove	TWh heat/a	0.0	0.0	0.1	0.3	0.6	0.8	1.0	1.1	1.1	1.2
LH open fire gas <sup>3</sup>	TWh heat/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LH closed fire gas	TWh heat/a	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.6
LH flueless fuel heater	TWh heat/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LH elec.portable	TWh heat/a	0.0	0.0	0.2	0.7	1.2	1.6	1.7	1.8	1.8	1.9
LH elec.convectoc	TWh heat/a	0.0	0.0	0.9	2.8	4.8	6.5	7.0	7.3	7.5	7.8
LH elec.storage	TWh heat/a	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.5	0.6	0.6
LH elec.underfloor	TWh heat/a	0.0	0.0	0.1	0.4	0.7	0.9	1.0	1.0	1.1	1.1
LH luminous heaters	TWh heat/a	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.5	0.5	0.5
LH tube heaters	TWh heat/a	0.0	0.0	0.1	0.5	0.8	1.0	1.1	1.0	1.0	1.0
<b>LH total</b>	<b>TWh heat/a</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>14</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>
<b>RAC (heating demand), reversible &lt;12kW</b>	<b>TWh heat/a</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>11</b>	<b>16</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>
<b>Space Heating Load Total, Variation</b>	<b>TWh heat/a</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>71</b>	<b>118</b>	<b>157</b>	<b>164</b>	<b>164</b>	<b>164</b>	<b>163</b>
<i>LS, total EU capacity variation (BAU-ECO) in TIm</i>											
LFL (T12,T8h,T8t,T5,other)	TIm	0.0	0.0	-0.1	0.4	1.9	3.0	3.1	2.8	2.4	2.0
HID (HPM, HPS, MH)	TIm	0.0	0.0	0.2	0.3	0.4	0.4	0.3	0.2	0.1	0.1
CFLni (all shapes)	TIm	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0
CFLi (retrofit for GLS, HL)	TIm	0.0	-0.3	-0.4	0.2	1.0	1.2	0.9	0.6	0.4	0.2
GLS (DLS & NDLS)	TIm	0.0	0.5	0.9	0.9	0.5	0.3	0.2	0.1	0.1	0.0
HL (DLS & NDLS, LV & MV)	TIm	0.0	-0.1	-0.3	0.9	1.2	0.6	0.3	0.2	0.1	0.1
LED replacing LFL (retrofit & luminaire)	TIm	0.0	0.0	0.0	-0.4	-2.1	-3.2	-3.4	-3.0	-2.5	-2.0
LED replacing HID (retrofit & luminaire)	TIm	0.0	0.0	-0.2	-0.3	-0.4	-0.4	-0.3	-0.3	-0.2	-0.1
LED replacing CFLni (retrofit & luminaire)	TIm	0.0	0.0	0.0	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	0.0
LED replacing DLS (retrofit & luminaire)	TIm	0.0	0.0	-0.1	-0.4	-0.5	-0.3	-0.2	-0.1	-0.1	0.0
LED replacing NDLS (retrofit & luminaire)	TIm	0.0	0.0	-0.3	-1.8	-2.6	-2.1	-1.4	-0.9	-0.6	-0.4
<b>LS Lighting (excl. SPL, ctrl, sb)</b>	<b>TIm</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.3</b>	<b>-0.3</b>	<b>-0.5</b>	<b>-0.6</b>	<b>-0.5</b>	<b>-0.4</b>	<b>-0.3</b>	<b>-0.3</b>
<i>LS, total EU fpe-hours variation (BAU - ECO) in Th/a</i>											
LFL (T12,T8h,T8t,T5,other)	Th/a	0.0	0.0	0.0	0.3	1.3	2.0	2.1	1.9	1.6	1.3
HID (HPM, HPS, MH)	Th/a	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
CFLni (all shapes)	Th/a	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.1	0.1	0.0
CFLi (retrofit for GLS, HL)	Th/a	0.0	-0.3	-0.3	0.1	0.8	1.0	0.7	0.5	0.3	0.2
GLS (DLS & NDLS)	Th/a	0.0	0.4	0.9	0.8	0.5	0.3	0.2	0.1	0.1	0.0
HL (DLS & NDLS, LV & MV)	Th/a	0.0	-0.1	-0.3	0.7	0.9	0.5	0.3	0.1	0.1	0.0
LED replacing LFL (retrofit & luminaire)	Th/a	0.0	0.0	0.0	-0.3	-1.3	-2.0	-2.1	-1.8	-1.5	-1.2
LED replacing HID (retrofit & luminaire)	Th/a	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0
LED replacing CFLni (retrofit & luminaire)	Th/a	0.0	0.0	0.0	-0.1	-0.3	-0.3	-0.2	-0.1	-0.1	0.0
LED replacing DLS (retrofit & luminaire)	Th/a	0.0	0.0	-0.1	-0.4	-0.4	-0.3	-0.1	-0.1	0.0	0.0
LED replacing NDLS (retrofit & luminaire)	Th/a	0.0	0.0	-0.2	-1.4	-2.1	-1.8	-1.2	-0.8	-0.6	-0.5
<b>LS Lighting (excl. SPL, ctrl, sb)</b>	<b>Th/a</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.1</b>	<b>-0.2</b>	<b>-0.2</b>	<b>-0.2</b>	<b>-0.2</b>	<b>-0.2</b>	<b>-0.1</b>

## EULOADVAR

LOAD EU-28, Variation (BAU-ECO)	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
ES tower 1-socket traditional	GWh	0	0	0	38	12	6	6	6	6	6
ES rack 1-socket traditional	GWh	0	0	0	70	-31	-51	-52	-52	-52	-52
ES rack 2-socket traditional	GWh	0	0	0	222	149	135	148	148	148	148
ES rack 2-socket cloud	GWh	0	0	0	494	185	104	114	114	114	114
ES rack 4-socket traditional	GWh	0	0	0	29	31	32	35	35	35	35
ES rack 4-socket cloud	GWh	0	0	0	87	75	75	82	82	82	82
ES rack 2-socket resilient trad.	GWh	0	0	0	6	3	2	2	2	2	2
ES rack 2-socket resilient cloud	GWh	0	0	0	14	6	5	5	5	5	5
ES rack 4-socket resilient trad.	GWh	0	0	0	1	1	1	1	1	1	1
ES rack 4-socket resilient cloud	GWh	0	0	0	1	1	1	1	1	1	1
ES blade 1-socket traditional	GWh	0	0	0	19	14	11	11	11	11	11
ES blade 2-socket traditional	GWh	0	0	0	49	16	9	9	9	9	9
ES blade 2-socket cloud	GWh	0	0	0	155	51	25	27	27	27	27
ES blade 4-socket traditional	GWh	0	0	0	15	27	32	34	34	34	34
ES blade 4-socket cloud	GWh	0	0	0	43	77	90	98	98	98	98
<b>ES total traditional</b>	<b>GWh</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>448</b>	<b>222</b>	<b>177</b>	<b>195</b>	<b>195</b>	<b>195</b>	<b>195</b>
<b>ES total cloud</b>	<b>GWh</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>794</b>	<b>395</b>	<b>300</b>	<b>327</b>	<b>327</b>	<b>327</b>	<b>327</b>
<b>ES Enterprise Servers total</b>	<b>GWh</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1242</b>	<b>617</b>	<b>478</b>	<b>523</b>	<b>523</b>	<b>523</b>	<b>523</b>
DS Online 2	GWh	0	0	0	0	0	0	0	0	0	0
DS Online 3	GWh	0	0	0	0	0	0	0	0	0	0
DS Online 4	GWh	0	0	0	0	0	0	0	0	0	0
<b>DS Data Storage products total</b>	<b>GWh</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES + DS total</b>	<b>GWh</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1242</b>	<b>617</b>	<b>478</b>	<b>523</b>	<b>523</b>	<b>523</b>	<b>523</b>

### MT motors load variation (BAU-ECO) due to increased use of VSDs

Medium (S) 3-ph 0.75-7.5 kW no VSD	TWh output/a	0.0	0.0	1.7	13.2	23.9	23.2	20.6	17.0	12.3	6.3
Medium (M) 3-ph 7.5-75 kW no VSD	TWh output/a	0.0	0.1	6.3	31.3	53.9	54.1	47.6	38.9	27.5	13.0
Medium (L) 3-ph 75-375 kW no VSD	TWh output/a	0.0	0.2	13.5	53.0	89.1	110.6	92.3	61.9	31.4	9.9
<b>Total 3ph 0.75-375 kW no VSD</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>98</b>	<b>167</b>	<b>188</b>	<b>160</b>	<b>118</b>	<b>71</b>	<b>29</b>
Medium (S) 3-ph 0.75-7.5 kW with VSD	TWh output/a	0.0	0.0	-1.0	-7.9	-14.3	-13.9	-12.3	-10.2	-7.4	-3.8
Medium (M) 3-ph 7.5-75 kW with VSD	TWh output/a	0.0	-0.1	-3.8	-18.8	-32.3	-32.4	-28.6	-23.3	-16.5	-7.8
Medium (L) 3-ph 75-375 kW with VSD	TWh output/a	0.0	-0.1	-8.1	-31.8	-53.5	-66.4	-55.4	-37.1	-18.8	-6.0
<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>-13</b>	<b>-59</b>	<b>-100</b>	<b>-113</b>	<b>-96</b>	<b>-71</b>	<b>-43</b>	<b>-18</b>
<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>39</b>	<b>67</b>	<b>75</b>	<b>64</b>	<b>47</b>	<b>28</b>	<b>12</b>
Small 1 ph 0.12-0.75 kW no VSD	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Small 1 ph 0.12-0.75 kW with VSD	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Small 3 ph 0.12-0.75 kW no VSD	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Small 3 ph 0.12-0.75 kW with VSD	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Large 3-ph LV 375-1000 kW no VSD	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Large 3-ph LV 375-1000kW with VSD	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total Large 3-ph LV 375-1000 kW</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Explosion motors (S) 3-ph 0.75-7.5 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Explosion motors (M) 3-ph 7.5-75 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Explosion motors (L) 3-ph 75-375 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Brake motors (S) 3-ph 0.75-7.5 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brake motors (M) 3-ph 7.5-75 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brake motors (L) 3-ph 75-375 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
8-pole motors (S) 3-ph 0.75-7.5 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8-pole motors (M) 3-ph 7.5-75 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8-pole motors (L) 3-ph 75-375 kW	TWh output/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>TWh output/a</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>MT Elec. Motors Total (BAU-ECO)</b>	<b>TWh output/a</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>39</b>	<b>67</b>	<b>75</b>	<b>64</b>	<b>47</b>	<b>28</b>	<b>12</b>

## EULOADVAR

LOAD EU-28, Variation (BAU-ECO)	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
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**Data for determination of Heat Load reduction for Space Heating due to Ventilation Units**

The NRGBAU and NRGECO values for VUs report the savings on primary energy input of Space Heating appliances due to heat savings by Ventilation Units, computed using the conventional 75% average efficiency for space heating (from CR 1253/2014 table 1). The VU heat savings reported below are the NRG-values multiplied by 75% and thus represent the reduction in output heat load for all space heating appliances together. The BAU-values have already been considered in the BAU-load for space heating appliances, so only the difference in VU heat savings between BAU and ECO is considered as a variation in load for space heating.

<i>NRVU Natural ventilation Heat Loss (ref. only)</i>	<i>TWh heat/a</i>	142	1066	1335	1576	1768	1908	2050	2195	2340	2486
NRVU BAU Heat savings vs. Natural ventilation	TWh heat/a	102	477	568	645	707	757	807	858	910	962
NRVU ECO Heat savings vs. Natural ventilation	TWh heat/a	102	477	583	694	790	868	921	968	1015	1062
<b>NRVU ECO Heat savings vs. BAU</b>	<b>TWh heat/a</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>49</b>	<b>84</b>	<b>111</b>	<b>114</b>	<b>110</b>	<b>106</b>	<b>100</b>
<i>RVU Natural ventilation Heat Loss (ref. only)</i>	<i>TWh heat/a</i>	77	161	191	205	217	234	254	278	303	327
RVU BAU Heat savings vs. Natural ventilation	TWh heat/a	13	31	41	52	63	74	84	93	103	112
RVU ECO Heat savings vs. Natural ventilation	TWh heat/a	13	31	49	73	98	120	134	147	161	175
<b>RVU ECO Heat savings vs. BAU</b>	<b>TWh heat/a</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>21</b>	<b>35</b>	<b>46</b>	<b>50</b>	<b>54</b>	<b>58</b>	<b>63</b>

The Space Heating Load totals reported below are the sum of loads from EULOADBAU over all space heating products, taking into account the residential and non-residential shares from sheet CLASSES.

Total Space Heating Load, BAU, Non-Residential	TWh heat/a	706	877	878	877	867	856	836	806	769	722
Total Space Heating Load, BAU, Residential	TWh heat/a	979	1069	1065	1057	1044	1032	1014	987	950	901
Total Space Heating Load, BAU, All sectors	TWh heat/a	1685	1946	1943	1933	1911	1888	1850	1793	1719	1623

This is the load-reduction weighted average efficiency of the stock of space heating appliances. Dividing the overall heat savings due to VU (residential + non-residential) by this efficiency, the primary energy savings on space heating appliances due to VU are obtained (as reported on NRGECO under VU's).

Space heating avg. EFSECO, over load-reduction	% primary	#N/A	#N/A	66%	77%	87%	95%	99%	101%	103%	104%
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# EULOADECO

LOAD EU-28 Total, ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Note for printed version: for products not listed below, ECO-load is identical to BAU-load											
<b>Total CH Central Heating boiler, space heat</b>	<b>TWh prim heat/a</b>	<b>1170</b>	<b>1312</b>	<b>1237</b>	<b>1144</b>	<b>1053</b>	<b>1002</b>	<b>967</b>	<b>923</b>	<b>860</b>	<b>777</b>
SFB Wood Manual	TWh heat/a	97	43	34	26	18	11	7	5	4	3
SFB Wood Direct Draft	TWh heat/a	1	17	32	45	52	51	52	55	63	73
SFB Coal	TWh heat/a	44	18	13	8	4	2	1	1	1	1
SFB Pellets	TWh heat/a	0	7	12	16	20	22	22	22	23	24
SFB Wood chips	TWh heat/a	0	10	12	14	12	11	12	13	14	14
<b>SFB total net heat demand</b>	<b>TWh heat/a</b>	<b>142</b>	<b>95</b>	<b>104</b>	<b>109</b>	<b>106</b>	<b>96</b>	<b>93</b>	<b>96</b>	<b>105</b>	<b>115</b>
AC rooftop (rev)	TWh heat/a	9	30	31	27	21	13	6	2	0	0
AC splits (rev)	TWh heat/a	22	73	74	70	64	57	52	48	44	40
AC VRF (rev)	TWh heat/a	0	24	36	49	59	70	80	85	87	87
ACF (rev)	TWh heat/a	0	0	0	1	1	1	1	1	1	1
AHF	TWh heat/a	138	112	96	82	70	60	54	48	43	38
AHE	TWh heat/a	1	2	2	1	1	1	1	1	1	1
<b>AHC central Air Heating</b>	<b>TWh heat/a</b>	<b>170</b>	<b>242</b>	<b>240</b>	<b>230</b>	<b>216</b>	<b>202</b>	<b>193</b>	<b>184</b>	<b>176</b>	<b>167</b>
LH open fireplace	TWh heat/a	3	5	5	6	6	6	6	6	6	6
LH closed fireplace/inset	TWh heat/a	11	27	33	38	42	44	46	46	45	43
LH wood stove	TWh heat/a	23	25	25	26	26	26	27	27	26	26
LH coal stove	TWh heat/a	16	9	8	8	7	6	5	4	3	2
LH cooker	TWh heat/a	4	7	8	9	10	10	10	10	10	10
LH SHR stove	TWh heat/a	13	17	18	20	22	24	26	28	28	28
LH pellet stove	TWh heat/a	0	6	9	12	14	15	16	16	15	15
LH open fire gas <sup>3</sup>	TWh heat/a	0	0	0	0	0	0	0	0	0	0
LH closed fire gas	TWh heat/a	8	8	8	8	8	8	7	7	7	7
LH flueless fuel heater	TWh heat/a	0	0	0	0	0	0	0	0	0	0
LH elec.portable	TWh heat/a	18	20	20	20	20	20	20	19	19	18
LH elec.convectector	TWh heat/a	76	84	85	83	82	82	82	81	78	76
LH elec.storage	TWh heat/a	6	6	6	6	6	6	6	6	6	6
LH elec.underfloor	TWh heat/a	10	11	11	11	11	11	11	11	11	11
LH luminous heaters	TWh heat/a	4	4	4	4	4	3	3	3	3	3
LH tube heaters	TWh heat/a	7	8	8	8	7	7	7	7	6	6
<b>LH total</b>		<b>199</b>	<b>238</b>	<b>250</b>	<b>258</b>	<b>264</b>	<b>269</b>	<b>273</b>	<b>271</b>	<b>265</b>	<b>258</b>
<b>RAC (heating demand), reversible &lt;12kW</b>	<b>TWh heat/a</b>	<b>4</b>	<b>59</b>	<b>90</b>	<b>122</b>	<b>152</b>	<b>161</b>	<b>160</b>	<b>155</b>	<b>149</b>	<b>142</b>
<b>TOTAL SPACE HEATING load</b>	<b>TWh heat/a</b>	<b>1685</b>	<b>1946</b>	<b>1920</b>	<b>1863</b>	<b>1792</b>	<b>1731</b>	<b>1686</b>	<b>1629</b>	<b>1555</b>	<b>1460</b>
<i>LS, total EU capacity in Tlm</i>											
LFL (T12,T8h,T8t,T5,other)	Tlm	2.8	4.6	5.8	6.2	4.6	2.7	1.3	0.7	0.4	0.3
HID (HPM, HPS, MH)	Tlm	0.5	1.2	1.2	1.2	0.9	0.5	0.2	0.1	0.0	0.0
CFLni (all shapes)	Tlm	0.1	0.4	0.4	0.4	0.3	0.2	0.1	0.0	0.0	0.0
CFLi (retrofit for GLS, HL)	Tlm	0.1	1.8	2.3	1.8	0.6	0.2	0.0	0.0	0.0	0.0
GLS (DLS & NDLS)	Tlm	1.8	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HL (DLS & NDLS, LV & MV)	Tlm	0.2	1.2	1.7	0.8	0.0	0.0	0.0	0.0	0.0	0.0
LED replacing LFL (retrofit & luminaire)	Tlm			0.1	0.9	3.7	6.8	9.4	11.4	13.1	14.9
LED replacing HID (retrofit & luminaire)	Tlm			0.2	0.5	1.1	1.8	2.4	2.9	3.3	3.8
LED replacing CFLni (retrofit & luminaire)	Tlm			0.0	0.1	0.3	0.4	0.6	0.7	0.8	0.9
LED replacing DLS (retrofit & luminaire)	Tlm			0.1	0.5	0.8	0.9	1.0	1.1	1.2	1.3
LED replacing NDLS (retrofit & luminaire)	Tlm		0.0	0.3	2.5	4.7	5.6	6.2	6.7	7.2	7.8
<b>LS Lighting (excl. SPL, ctrl, sb)</b>	<b>Tlm</b>	<b>6</b>	<b>10</b>	<b>12</b>	<b>15</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>29</b>
<i>LS, total EU fpe-hours in Th/a</i>											
LFL (T12,T8h,T8t,T5,other)	Th/a	2.4	4.0	4.4	4.5	3.3	1.9	1.0	0.5	0.3	0.2
HID (HPM, HPS, MH)	Th/a	0.2	0.4	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
CFLni (all shapes)	Th/a	0.2	0.7	0.7	0.6	0.4	0.2	0.1	0.0	0.0	0.0
CFLi (retrofit for GLS, HL)	Th/a	0.1	1.6	2.0	1.5	0.5	0.1	0.0	0.0	0.0	0.0
GLS (DLS & NDLS)	Th/a	1.7	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HL (DLS & NDLS, LV & MV)	Th/a	0.1	1.0	1.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0
LED replacing LFL (retrofit & luminaire)	Th/a			0.0	0.5	2.3	4.4	6.2	7.6	8.8	10.1
LED replacing HID (retrofit & luminaire)	Th/a			0.1	0.2	0.3	0.5	0.7	0.8	0.9	1.0
LED replacing CFLni (retrofit & luminaire)	Th/a			0.0	0.2	0.5	0.8	1.0	1.2	1.4	1.6
LED replacing DLS (retrofit & luminaire)	Th/a		0.0	0.1	0.5	0.7	0.8	0.9	1.0	1.0	1.1
LED replacing NDLS (retrofit & luminaire)	Th/a		0.0	0.2	1.9	3.6	4.4	4.8	5.2	5.6	6.0
<b>LS Lighting (excl. SPL, ctrl, sb)</b>	<b>Th/a</b>	<b>5</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>15</b>	<b>16</b>	<b>18</b>	<b>20</b>

EULOADECO

LOAD EU-28 Total, ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
ES tower 1-socket traditional	GWh	25	762	649	440	366	318	296	296	296	296
ES rack 1-socket traditional	GWh	80	2385	1813	1560	1721	1928	1971	1971	1971	1971
ES rack 2-socket traditional	GWh	546	11554	6293	3685	4488	5505	6006	6006	6006	6006
ES rack 2-socket cloud	GWh	0	6475	10223	11185	13859	16980	18527	18527	18527	18527
ES rack 4-socket traditional	GWh	62	1201	662	518	634	776	846	846	846	846
ES rack 4-socket cloud	GWh	0	721	1280	1700	2109	2582	2817	2817	2817	2817
ES rack 2-socket resilient trad.	GWh	27	581	336	188	201	245	268	268	268	268
ES rack 2-socket resilient cloud	GWh	0	279	442	442	474	578	630	630	630	630
ES rack 4-socket resilient trad.	GWh	1	31	19	13	15	18	20	20	20	20
ES rack 4-socket resilient cloud	GWh	0	17	30	37	44	54	59	59	59	59
ES blade 1-socket traditional	GWh	41	712	639	550	567	627	641	641	641	641
ES blade 2-socket traditional	GWh	453	5273	2741	1766	2163	2642	2883	2883	2883	2883
ES blade 2-socket cloud	GWh	0	2946	4543	5519	6830	8346	9106	9106	9106	9106
ES blade 4-socket traditional	GWh	57	664	363	234	266	325	355	355	355	355
ES blade 4-socket cloud	GWh	0	359	577	682	790	965	1053	1053	1053	1053
<b>ES total traditional</b>	<b>GWh</b>	<b>1294</b>	<b>23164</b>	<b>13515</b>	<b>8954</b>	<b>10421</b>	<b>12383</b>	<b>13286</b>	<b>13286</b>	<b>13286</b>	<b>13286</b>
<b>ES total cloud</b>	<b>GWh</b>	<b>0</b>	<b>10797</b>	<b>17097</b>	<b>19565</b>	<b>24107</b>	<b>29505</b>	<b>32192</b>	<b>32192</b>	<b>32192</b>	<b>32192</b>
<b>ES Enterprise Servers total</b>	<b>GWh</b>	<b>1294</b>	<b>33961</b>	<b>30612</b>	<b>28518</b>	<b>34527</b>	<b>41889</b>	<b>45478</b>	<b>45478</b>	<b>45478</b>	<b>45478</b>
DS Online 2	GWh	295	5431	7436	10328	13363	16307	17286	17373	17373	17373
DS Online 3	GWh	50	799	1075	1455	1884	2299	2437	2450	2450	2450
DS Online 4	GWh	194	3108	4180	5686	7327	8941	9479	9526	9526	9526
<b>DS Data Storage products total</b>	<b>GWh</b>	<b>539</b>	<b>9339</b>	<b>12691</b>	<b>17469</b>	<b>22574</b>	<b>27547</b>	<b>29202</b>	<b>29349</b>	<b>29349</b>	<b>29349</b>
<b>ES + DS total</b>	<b>GWh</b>	<b>1833</b>	<b>43300</b>	<b>43303</b>	<b>45987</b>	<b>57101</b>	<b>69436</b>	<b>74680</b>	<b>74828</b>	<b>74828</b>	<b>74828</b>
Medium (S) 3-ph 0.75-7.5 kW no VSD	TWh output/a	76	105	110	102	92	91	90	90	89	88
Medium (M) 3-ph 7.5-75 kW no VSD	TWh output/a	140	188	194	175	151	145	142	139	136	133
Medium (L) 3-ph 75-375 kW no VSD	TWh output/a	307	398	402	371	328	284	268	254	242	237
<b>Total 3ph 0.75-375 kW no VSD</b>	<b>TWh output/a</b>	<b>523</b>	<b>690</b>	<b>706</b>	<b>648</b>	<b>571</b>	<b>520</b>	<b>501</b>	<b>483</b>	<b>467</b>	<b>459</b>
Medium (S) 3-ph 0.75-7.5 kW with VSD	TWh output/a	4	11	15	25	34	38	40	43	46	49
Medium (M) 3-ph 7.5-75 kW with VSD	TWh output/a	10	26	37	59	80	89	95	101	108	115
Medium (L) 3-ph 75-375 kW with VSD	TWh output/a	32	82	111	160	208	250	272	291	309	323
<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>TWh output/a</b>	<b>47</b>	<b>120</b>	<b>163</b>	<b>244</b>	<b>323</b>	<b>377</b>	<b>407</b>	<b>435</b>	<b>463</b>	<b>487</b>
<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>TWh output/a</b>	<b>570</b>	<b>810</b>	<b>869</b>	<b>892</b>	<b>894</b>	<b>897</b>	<b>907</b>	<b>918</b>	<b>930</b>	<b>945</b>
Small 1 ph 0.12-0.75 kW no VSD	TWh output/a	5	7	8	8	8	8	8	8	8	8
Small 1 ph 0.12-0.75 kW with VSD	TWh output/a	0	0	1	1	1	1	1	1	1	1
<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>TWh output/a</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>
Small 3 ph 0.12-0.75 kW no VSD	TWh output/a	7	10	10	11	11	11	11	11	11	11
Small 3 ph 0.12-0.75 kW with VSD	TWh output/a	0	1	1	1	1	1	1	2	2	2
<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>TWh output/a</b>	<b>7</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>
Large 3-ph LV 375-1000 kW no VSD	TWh output/a	160	195	190	180	169	160	158	157	156	155
Large 3-ph LV 375-1000kW with VSD	TWh output/a	8	41	62	85	105	120	128	135	141	149
<b>Total Large 3-ph LV 375-1000 kW</b>	<b>TWh output/a</b>	<b>167</b>	<b>236</b>	<b>252</b>	<b>265</b>	<b>274</b>	<b>280</b>	<b>286</b>	<b>292</b>	<b>298</b>	<b>304</b>
Explosion motors (S) 3-ph 0.75-7.5 kW	TWh output/a	3	4	4	4	5	5	5	5	5	5
Explosion motors (M) 3-ph 7.5-75 kW	TWh output/a	7	11	12	13	14	14	14	15	15	15
Explosion motors (L) 3-ph 75-375 kW	TWh output/a	15	23	25	27	29	30	31	31	32	33
<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>25</b>	<b>37</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>52</b>	<b>53</b>
Brake motors (S) 3-ph 0.75-7.5 kW	TWh output/a	2	3	3	3	3	3	3	3	3	4
Brake motors (M) 3-ph 7.5-75 kW	TWh output/a	5	7	8	9	9	9	10	10	10	10
Brake motors (L) 3-ph 75-375 kW	TWh output/a	8	11	12	14	14	15	15	16	16	16
<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>14</b>	<b>21</b>	<b>23</b>	<b>25</b>	<b>27</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>30</b>
8-pole motors (S) 3-ph 0.75-7.5 kW	TWh output/a	0	0	0	0	0	0	0	0	0	0
8-pole motors (M) 3-ph 7.5-75 kW	TWh output/a	0	1	1	1	1	1	1	1	1	1
8-pole motors (L) 3-ph 75-375 kW	TWh output/a	1	1	1	1	1	1	2	2	2	2
<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>TWh output/a</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>TWh output/a</b>	<b>31</b>	<b>46</b>	<b>51</b>	<b>55</b>	<b>57</b>	<b>59</b>	<b>60</b>	<b>62</b>	<b>64</b>	<b>65</b>
<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>TWh output/a</b>	<b>822</b>	<b>1170</b>	<b>1257</b>	<b>1304</b>	<b>1322</b>	<b>1335</b>	<b>1355</b>	<b>1376</b>	<b>1398</b>	<b>1423</b>



EFNBAU

EFFICIENCY SALES BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total WH dedicated Water Heater	%	28%	33%	33%	35%	38%	38%	38%	38%	38%	38%
Total CH Central Heating combi, water heat	%	42%	48%	49%	51%	51%	51%	51%	51%	51%	51%
Total CH Central Heating boiler, space heat	%	50.4%	62.4%	61.6%	60.7%	59.8%	60.5%	61.6%	62.7%	63.8%	64.9%
SFB Wood Manual	%	39%	51%	52%	54%	55%	56%	58%	59%	61%	62%
SFB Wood Direct Draft	%	57%	73%	74%	75%	76%	77%	77%	77%	77%	77%
SFB Coal	%	53%	67%	68%	69%	70%	71%	71%	71%	71%	71%
SFB Pellets	%	57%	73%	74%	75%	76%	77%	77%	77%	77%	77%
SFB Wood chips	%	57%	73%	74%	74%	75%	76%	76%	76%	76%	76%
CHAE-S (≤ 400 kW)	%	104%	136%	143%	150%	156%	163%	167%	171%	176%	180%
CHAE-L (> 400 kW)	%	108%	140%	149%	159%	168%	177%	182%	186%	191%	196%
CHWE-S (≤ 400 kW)	%	134%	186%	196%	206%	216%	226%	232%	238%	244%	250%
CHWE-M (> 400 kW; ≤ 1500 kW)	%	158%	217%	235%	253%	271%	289%	296%	304%	311%	319%
CHWE-L (> 1500 kW)	%	158%	217%	235%	253%	271%	289%	296%	304%	311%	319%
CHF	%	60%	103%	106%	108%	111%	113%	116%	119%	122%	125%
HT PCH-AE-S	SEPR	4.2	4.7	4.9	5.0	5.2	5.3	5.5	5.6	5.7	5.9
HT PCH-AE-L	SEPR	4.5	5.1	5.3	5.5	5.7	5.9	6.0	6.2	6.3	6.5
HT PCH-WE-S	SEPR	6.7	7.3	7.6	7.8	8.1	8.4	8.6	8.8	9.0	9.2
HT PCH-WE-M	SEPR	7.7	8.5	8.8	9.0	9.3	9.6	9.8	10.0	10.3	10.6
HT PCH-WE-L	SEPR	7.6	8.5	8.8	9.1	9.4	9.7	9.9	10.1	10.4	10.7
AC rooftop	%	88%	120%	128%	136%	144%	153%	156%	160%	164%	168%
AC splits	%	121%	156%	160%	164%	169%	173%	177%	182%	186%	191%
AC VRF	%	113%	165%	169%	173%	177%	181%	186%	190%	195%	200%
ACF	%	60%	103%	106%	108%	111%	113%	116%	119%	122%	125%
AC rooftop (rev)	%	86%	99%	101%	102%	104%	106%	109%	112%	114%	117%
AC splits (rev)	%	112%	117%	121%	124%	128%	132%	135%	138%	142%	146%
AC VRF (rev)	%	108%	130%	131%	133%	134%	135%	139%	142%	146%	150%
ACF (rev)	%	101%	129%	135%	142%	148%	155%	159%	163%	167%	171%
AHF	%	57%	63%	65%	66%	67%	68%	69%	69%	70%	71%
AHE	%	26%	30%	30%	30%	30%	30%	31%	32%	32%	33%
LH open fireplace	%	27%	30%	30%	30%	31%	31%	31%	31%	31%	31%
LH closed fireplace/inset	%	62%	69%	71%	72%	73%	75%	75%	75%	75%	75%
LH wood stove	%	62%	69%	71%	72%	73%	75%	75%	75%	75%	75%
LH coal stove	%	62%	69%	71%	72%	73%	75%	75%	75%	75%	75%
LH cooker	%	58%	64%	66%	67%	68%	69%	69%	69%	69%	69%
LH SHR stove	%	80%	80%	81%	83%	84%	86%	86%	86%	86%	86%
LH pellet stove	%	77%	85%	87%	89%	91%	93%	93%	93%	93%	93%
LH open fire gas	%	37%	42%	42%	43%	43%	44%	44%	44%	44%	44%
LH closed fire gas	%	58%	64%	66%	67%	68%	69%	69%	69%	69%	69%
LH flueless fuel heater	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LH elec.portable	%	67%	74%	76%	77%	79%	80%	80%	80%	80%	80%
LH elec.convactor	%	67%	74%	76%	77%	79%	80%	80%	80%	80%	80%
LH elec.storage	%	67%	74%	76%	77%	79%	80%	80%	80%	80%	80%
LH elec.underfloor	%	67%	74%	76%	77%	79%	80%	80%	80%	80%	80%
LH luminous heaters	%	72%	81%	82%	84%	86%	88%	88%	88%	88%	88%
LH tube heaters	%	64%	71%	72%	74%	75%	76%	76%	76%	76%	76%
RAC (cooling demand), all types <12 kW	SEER	2.04	3.47	3.83	4.07	4.21	4.25	4.25	4.26	4.26	4.26
RAC (heating demand), reversible <12kW	SCOP	1.98	2.91	3.12	3.28	3.37	3.39	3.39	3.39	3.39	3.39
CIRC Circulator pumps <2.5 kW (incl. ctrl)	%	94%	102%	104%	106%	104%	104%	106%	108%	110%	112%
NRVU avg. electricity	kWh elec/a	8800	8400	7960	7653	7383	7135	6981	6946	6913	6883
NRVU avg. heat saved vs. ref	kWh prim/a	79479	94169	95720	97284	98568	99661	100754	101847	102941	104034
RVU Central Unidirectional, electricity	kWh elec/a	454	454	454	454	454	454	454	454	454	454
RVU Central Balanced, electricity	kWh elec/a	501	501	501	501	501	501	501	501	501	501
RVU Local Balanced, electricity	kWh elec/a	217	217	217	217	217	217	217	217	217	217
RVU Central Unidirect., heat saved vs. ref	kWh prim/a	951	951	951	951	951	951	951	951	951	951
RVU Central Balanced, heat saved vs. ref	kWh prim/a	3863	3863	3863	3863	3863	3863	3863	3863	3863	3863
RVU Local Balanced, heat saved vs. ref	kWh prim/a	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706
VU reference: natural ventilation 220 m3/t											
<i>LS, sales average efficiency incl. control gear</i>											
LFL (T12,T8h,T8t,T5,other)	lm/W	61	67	70	73	73	73	73	73	73	73
HID (HPM, HPS, MH)	lm/W	58	71	76	78	79	79	80	81	82	82
CFLni (all shapes)	lm/W	48	50	50	50	50	50	50	50	50	50
CFLi (retrofit for GLS, HL)	lm/W	55	55	55	55	55	55	55	55	55	55
GLS (DLS & NDLS)	lm/W	9	10	11	11	11	11	11	11	11	11
HL (DLS & NDLS, LV & MV)	lm/W	13	11	11	11	11	12	12	12	12	12
LED replacing LFL (retrofit & luminaire)	lm/W			68	114	137	161	171	171	171	172
LED replacing HID (retrofit & luminaire)	lm/W			68	115	139	164	174	174	174	174
LED replacing CFLni (retrofit & luminaire)	lm/W			68	111	130	153	160	163	167	166
LED replacing DLS (retrofit & luminaire)	lm/W			46	64	74	82	85	85	85	85
LED replacing NDLS (retrofit & luminaire)	lm/W		21	68	99	109	118	122	122	122	122
DP TV on-mode power (avg. all types)	W/dm2	8.8	3.7	1.9	1.6	1.2	0.9	0.7	0.6	0.5	0.5
DP TV standard (NoNA) standby power	W	8.0	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DP TV LoNA standby power	W	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
DP TV HiNA ('Smart') standby power	W	0.0	0.0	6.4	5.0	4.5	4.0	3.5	3.0	2.5	2.0
DP Monitor on-mode power	W/dm2	8.8	3.7	2.6	2.2	1.7	1.2	0.9	0.8	0.7	0.6
DP Monitor standby power	W	9.0	1.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
DP Signage on-mode power	W/dm2	17.7	7.4	2.5	1.9	1.6	1.3	1.1	0.9	0.7	0.7
DP Signage standby power	W/dm2	17.7	7.4	2.5	1.9	1.6	1.3	1.1	0.9	0.7	0.7
SSTB	kWh/a	43	25	19.2	19.2	19	19	19	19	19	19
CSTB	kWh/a	88	88	88	88	88	88	88	88	88	88
VIDEO players/recorders	kWh/a	16	16	16	16	16	16	16	16	16	16
VIDEO projectors	kWh/a	200	200	200	200	200	200	200	200	200	200
VIDEO game consoles	kWh/a	43	64	145	190	172	172	172	172	172	172





EFNBAU

<b>EFFICIENCY SALES BAU</b>	<b>unit</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<i>(Fuel losses due to RRC in L/100km/vehicle)</i>											
Tyres C1, replacement for cars	L/100km	1.89	1.23	1.11	1.00	0.89	0.78	0.74	0.70	0.67	0.63
Tyres C1, OEM for cars	L/100km	1.89	1.23	1.11	1.00	0.89	0.78	0.74	0.70	0.67	0.63
Tyres C2, replacement for vans	L/100km	2.62	1.99	1.89	1.78	1.70	1.61	1.53	1.45	1.38	1.31
Tyres C2, OEM for vans	L/100km	2.62	1.99	1.89	1.78	1.70	1.61	1.53	1.45	1.38	1.31
Tyres C3, replacement for trucks/busses	L/100km	7.34	5.35	5.16	5.06	5.00	4.94	4.88	4.82	4.75	4.69
Tyres C3, OEM for trucks/busses	L/100km	7.34	5.35	5.16	5.06	5.00	4.94	4.88	4.82	4.75	4.69

*VSD losses information for determination of VSD prices on PRICEBAU*

VSD - Very Small 0.12 - 0.75 kW 1-phase	W loss	148	128	123	119	115	110	106	102	97	95
VSD - Very Small 0.12 - 0.75 kW 3-phase	W loss	148	128	123	119	115	110	106	102	97	95
VSD - Small 0.75 - 7.5 kW 3-phase	W loss	204	150	141	136	132	127	122	118	113	109
VSD - Medium 7.5 - 75kW 3-phase	W loss	980	724	677	655	633	611	589	567	545	523
VSD - Large 75 - 375kW 3-phase	W loss	6978	5153	4818	4662	4506	4350	4194	4038	3881	3726
VSD - Very Large 375 - 1,000kW 3-phase	W loss	34714	30992	30062	29735	29408	29080	28753	28426	28098	27771

*Average Wet Grip coefficients for Tyres (BAU)*

Tyres C1, replacement for cars		1.12	1.14	1.16	1.19	1.22					
Tyres C1, OEM for cars		1.12	1.14	1.16	1.19	1.22					
Tyres C2, replacement for vans		0.99	1.01	1.03	1.05	1.07					
Tyres C2, OEM for vans		0.99	1.01	1.03	1.05	1.07					
Tyres C3, replacement for trucks/busses		0.75	0.77	0.80	0.84	0.88					
Tyres C3, OEM for trucks/busses		0.75	0.77	0.80	0.84	0.88					

EFNECO

EFFICIENCY SALES ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total WH dedicated Water Heater	%	28%	33%	47%	53%	60%	60%	60%	60%	60%	60%
Total CH Central Heating combi, water heat	%	42%	48%	61%	76%	79%	82%	85%	89%	92%	95%
Total CH Central Heating boiler, space heat	%	50.4%	69.6%	93.0%	103.4%	113.0%	118.2%	124.2%	130.5%	137.2%	144.2%
SFB Wood Manual	%	39%	51%	58%	75%	78%	78%	78%	78%	78%	78%
SFB Wood Direct Draft	%	57%	73%	74%	75%	78%	78%	78%	78%	78%	78%
SFB Coal	%	53%	67%	70%	75%	78%	78%	78%	78%	78%	78%
SFB Pellets	%	57%	73%	74%	75%	78%	78%	78%	78%	78%	78%
SFB Wood chips	%	57%	73%	74%	77%	77%	77%	77%	77%	77%	77%
CHAE-S (≤ 400 kW)	%	104%	136%	143%	157%	169%	179%	181%	183%	185%	187%
CHAE-L (> 400 kW)	%	108%	140%	151%	177%	189%	194%	196%	199%	201%	203%
CHWE-S (≤ 400 kW)	%	134%	186%	197%	208%	218%	229%	232%	238%	244%	250%
CHWE-M (> 400 kW; ≤ 1500 kW)	%	158%	217%	236%	255%	275%	295%	299%	304%	311%	319%
CHWE-L (> 1500 kW)	%	158%	217%	236%	265%	282%	295%	299%	304%	311%	319%
CHF	%	60%	103%	118%	164%	169%	172%	173%	174%	176%	177%
HT PCH-AE-S	SEPR	4.2	4.7	4.9	5.5	5.7	5.9	5.9	6.0	6.1	6.1
HT PCH-AE-L	SEPR	4.5	5.1	5.4	6.1	6.6	6.9	7.0	7.1	7.2	7.2
HT PCH-WE-S	SEPR	6.7	7.3	7.6	8.2	8.5	8.7	8.8	8.9	9.0	9.2
HT PCH-WE-M	SEPR	7.7	8.5	8.8	9.4	9.6	9.7	9.8	10.0	10.3	10.6
HT PCH-WE-L	SEPR	7.6	8.5	8.9	9.7	10.1	10.3	10.4	10.6	10.7	10.8
AC rooftop	%	88%	120%	129%	139%	149%	159%	161%	163%	165%	168%
AC splits	%	121%	156%	165%	186%	192%	195%	197%	199%	202%	204%
AC VRF	%	113%	165%	171%	186%	196%	204%	206%	209%	211%	213%
ACF	%	60%	103%	118%	164%	171%	177%	178%	179%	181%	182%
AC rooftop (rev)	%	86%	99%	104%	122%	127%	130%	131%	132%	134%	135%
AC splits (rev)	%	112%	117%	123%	136%	139%	142%	144%	146%	147%	149%
AC VRF (rev)	%	108%	130%	131%	136%	140%	144%	146%	148%	149%	151%
ACF (rev)	%	101%	129%	136%	144%	153%	161%	163%	165%	167%	171%
AHF	%	57%	63%	66%	76%	80%	82%	82%	83%	83%	83%
AHE	%	26%	30%	30%	31%	32%	33%	33%	33%	34%	34%
LH open fireplace	%	27%	30%	30%	41%	47%	47%	47%	47%	47%	47%
LH closed fireplace/inset	%	62%	69%	71%	81%	86%	86%	86%	86%	86%	86%
LH wood stove	%	62%	69%	71%	81%	86%	86%	86%	86%	86%	86%
LH coal stove	%	62%	69%	71%	81%	86%	86%	86%	86%	86%	86%
LH cooker	%	58%	64%	66%	72%	75%	75%	75%	75%	75%	75%
LH SHR stove	%	80%	80%	81%	84%	86%	86%	86%	86%	86%	86%
LH pellet stove	%	77%	85%	87%	92%	94%	94%	94%	94%	94%	94%
LH open fire gas	%	37%	42%	42%	57%	65%	65%	65%	65%	65%	65%
LH closed fire gas	%	58%	64%	66%	81%	88%	88%	88%	88%	88%	88%
LH flueless fuel heater	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LH elec.portable	%	67%	74%	83%	90%	90%	90%	90%	90%	90%	90%
LH elec.convector	%	67%	74%	80%	85%	85%	85%	85%	85%	85%	85%
LH elec.storage	%	67%	74%	86%	96%	96%	96%	96%	96%	96%	96%
LH elec.underfloor	%	67%	74%	85%	95%	95%	95%	95%	95%	95%	95%
LH luminous heaters	%	72%	81%	84%	94%	94%	94%	94%	94%	94%	94%
LH tube heaters	%	64%	71%	74%	81%	81%	81%	81%	81%	81%	81%
RAC (cooling demand), all types <12 kW	SEER	2.04	3.47	4.74	5.06	5.26	5.31	5.31	5.31	5.31	5.31
RAC (heating demand), reversible <12kW	SCOP	1.98	2.91	3.65	3.86	3.96	3.99	3.99	3.99	3.99	3.99
CIRC Circulator pumps <2.5 kW, net load	%	94%	130%	228%	230%	233%	232%	232%	232%	232%	232%
NRVU avg (stock weighted 2010)	kWh elec/a	8800	8400	7093	6162	5967	5784	5763	5741	5720	5698
NRVU avg (stock weighted 2010)	kWh prim/a	79479	94169	107620	113000	113000	113000	113000	113000	113000	113000
RVU Central Unidir. VU ≤125W/fan (1 fan)	kWh elec/a	454	454	244	244	244	244	244	244	244	244
RVU Central Balanced VU ≤125W/fan (2 fans)	kWh elec/a	501	501	246	246	246	246	246	246	246	246
RVU Local Balanced VU (<125 W, also NR) (2 fans)	kWh elec/a	217	217	134	134	134	134	134	134	134	134
RVU Central Unidir. VU ≤125W/fan (1 fan)	kWh prim/a	951	951	2505	2505	2505	2505	2505	2505	2505	2505
RVU Central Balanced VU ≤125W/fan (2 fans)	kWh prim/a	3863	3863	4218	4218	4218	4218	4218	4218	4218	4218
RVU Local Balanced VU (<125 W, also NR) (2 fans)	kWh prim/a	1706	1706	2109	2109	2109	2109	2109	2109	2109	2109
VU reference: natural ventilation 220 m3/h											
<i>LS, sales average efficiency incl. control gear</i>											
LFL (T12,T8h,T8t,T5,other)	lm/W	61	70	76	80	82	83	83	84	84	84
HID (HPM, HPS, MH)	lm/W	58	73	84	89	90	91	93	94	96	97
CFLni (all shapes)	lm/W	48	55	55	55	55	55	55	55	55	55
CFLi (retrofit for GLS, HL)	lm/W	55	55	55	55	55	55	55	55	55	55
GLS (DLS & NDLS)	lm/W	9	10	11	11	11	11	11	11	11	11
HL (DLS & NDLS, LV & MV)	lm/W	13	11	13	16	19	19	19	19	19	19
LED replacing LFL (retrofit & luminaire)	lm/W			89	128	174	187	187	189	189	188
LED replacing HID (retrofit & luminaire)	lm/W			90	130	175	190	190	190	190	190
LED replacing CFLni (retrofit & luminaire)	lm/W			89	125	166	183	183	185	186	184
LED replacing DLS (retrofit & luminaire)	lm/W		17	57	75	102	111	111	111	111	111
LED replacing NDLS (retrofit & luminaire)	lm/W		26	85	110	150	160	160	160	160	160
DP TV on-mode power (avg. all types)	W/dm2	8.8	3.7	1.3	1.0	0.6	0.4	0.4	0.4	0.4	0.4
DP TV standard (NoNA) standby power	W	8.0	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DP TV LoNA standby power	W	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
DP TV HiNA ('Smart') standby power	W	0.0	0.0	6.4	5.0	4.5	4.0	3.5	3.0	2.5	2.0
DP Monitor on-mode power	W/dm2	8.8	3.7	1.3	1.2	0.7	0.4	0.4	0.3	0.3	0.3
DP Monitor standby power	W	9.0	1.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
DP Signage on-mode power	W/dm2	17.7	7.4	2.5	1.9	1.3	0.8	0.7	0.7	0.7	0.7
DP Signage standby power	W/dm2	17.7	7.4	2.5	1.9	1.3	0.8	0.7	0.7	0.7	0.7
SSTB	kWh/a	19.2	19.2	16.3	15.3	15.3	15.3	15	15	15	15
CSTB	kWh/a	88	88	68	68	68	68	68	68	68	68
VIDEO players/recorders	kWh/a	16	16	16	16	16	16	16	16	16	16
VIDEO projectors (schools, offices)	kWh/a	200	200	200	200	200	200	200	200	200	200
VIDEO game consoles	kWh/a	43	64	125	170	159	159	159	159	159	159



EFNECO

EFFICIENCY SALES ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
PF Condensing Unit MT S 0.2-1 kW	COP	1.4	1.4	1.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6
PF Condensing Unit MT M 1-5 kW	COP	1.6	1.6	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
PF Condensing Unit MT L 5-20 kW	SEPR	2.6	2.6	2.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9
PF Condensing Unit MT XL 20-50 kW	SEPR	2.7	2.7	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9
PF Condensing Unit LT S 0.1-0.4 kW	COP	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
PF Condensing Unit LT M 0.4-2 kW	COP	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1
PF Condensing Unit LT L 2-8 kW	SEPR	1.5	1.5	1.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PF Condensing Unit LT XL 8-20 kW	SEPR	1.6	1.6	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>COP/SEPR</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>
COOK El. Hobs	Wh/ltr	194	187	186	185	184	183	182	181	180	179
COOK El. Ovens	kWh/a	133	97	88	80	79	79	78	78	77	77
COOK Gas Hobs, on NCV	%	60.2%	61%	61%	62%	63%	63%	63%	63%	63%	63%
COOK Gas Ovens, on NCV	kWh prim/a	237	202	187	147	143	139	136	132	128	124
COOK Range Hoods	kWh/a	133	133	128	110	96	95	94	94	93	92
COFFEE Dripfilter (glass), brewing *	kWh/a	55	55	55	55	55	55	55	55	55	55
COFFEE Dripfilter (thermos), brewing	kWh/a	48	48	48	48	48	48	48	48	48	48
COFFEE Dripfilter (full automatic), brewing	kWh/a	49	49	49	49	49	49	49	49	49	49
COFFEE Pad filter, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Hard cap espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Semi-auto espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Fully-auto espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Dripfilter (glass), standby/keep warm	kWh/a	38	38	24	19	19	19	19	19	19	19
COFFEE Dripfilter (thermos), standby/keep warm	kWh/a	0	0	0	0	0	0	0	0	0	0
COFFEE Dripfilter (full automatic), standby/keep warm	kWh/a	0	0	0	0	0	0	0	0	0	0
COFFEE Pad filter, standby/keep warm	kWh/a	19	19	12	9	9	9	9	9	9	9
COFFEE Hard cap espresso, standby/keep warm	kWh/a	19	19	12	9	9	9	9	9	9	9
COFFEE Semi-auto espresso, standby/keep warm	kWh/a	19	19	12	9	9	9	9	9	9	9
COFFEE Fully-auto espresso, standby/keep warm	kWh/a	19	19	12	9	9	9	9	9	9	9
WM energy/cycle	kWh/cycle	1.48	0.69	0.59	0.49	0.43	0.43	0.43	0.43	0.43	0.43
WM energy/a	kWh/a	350	130	108	85	75	75	75	75	75	75
DW energy/cycle	kWh/cycle	1.48	0.94	0.87	0.83	0.79	0.76	0.72	0.69	0.65	0.62
DW AEC (annual energy consumption)	kWh/a	310	198	183	174	167	159	152	145	137	130
LD AEC vented el.	kWh elec/a	402	432	437	434	431	429	432	436	439	443
LD AEC condens el.	kWh elec/a	441	447	378	314	285	271	259	248	237	225
LD AEC vented gas	kWh prim/a	376	452	472	473	470	468	471	475	479	483
VC dom	W	1275	1739	1192	948	925	902	879	856	834	811
VC nondom	W	929	1293	1071	905	883	861	839	817	796	774
FAN Axial<300Pa (all FAN types >125W)	%	31%	30.9%	35.6%	39.0%	39.0%	39.0%	39.0%	39.0%	39.0%	39.0%
FAN Axial>300Pa	%	37%	37.1%	39.2%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
FAN Centr.FC	%	32%	32.1%	38.5%	45.4%	45.4%	45.4%	45.4%	45.4%	45.4%	45.4%
FAN Centr.BC-free	%	56%	56.4%	65.1%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%
FAN Centr.BC	%	54%	53.7%	62.9%	64.8%	64.8%	64.8%	64.8%	64.8%	64.8%	64.8%
FAN Cross-flow	%	7%	7.3%	17.4%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%
<i>MT motors</i>											
Medium (S) 3-ph 0.75-7.5 kW no VSD	%	70.1%	76.3%	80.6%	83.4%	84.4%	84.7%	84.8%	85.0%	85.1%	85.3%
Medium (M) 3-ph 7.5-75 kW no VSD	%	85.2%	88.0%	89.6%	91.0%	91.6%	91.8%	91.8%	91.9%	92.0%	92.1%
Medium (L) 3-ph 75-375 kW no VSD	%	92.0%	93.5%	94.4%	95.2%	95.5%	95.6%	95.6%	95.7%	95.7%	95.7%
Medium (S) 3-ph 0.75-7.5 kW with VSD	%	59.7%	66.9%	71.2%	74.1%	75.9%	76.2%	76.5%	76.8%	77.1%	77.4%
Medium (M) 3-ph 7.5-75 kW with VSD	%	77.6%	81.8%	83.7%	85.3%	86.5%	86.7%	86.9%	87.1%	87.3%	87.5%
Medium (L) 3-ph 75-375 kW with VSD	%	85.3%	88.2%	89.5%	90.5%	91.3%	91.4%	91.6%	91.7%	91.8%	92.0%
Small 1 ph 0.12-0.75 kW no VSD	%	62.4%	65.3%	66.0%	67.5%	72.8%	73.2%	73.6%	74.0%	74.4%	74.8%
Small 1 ph 0.12-0.75 kW with VSD	%	47.8%	51.1%	51.9%	53.8%	60.1%	60.5%	60.9%	61.4%	61.8%	62.3%
Small 3 ph 0.12-0.75 kW no VSD	%	62.4%	65.3%	66.0%	67.5%	72.8%	73.2%	73.6%	74.0%	74.4%	74.8%
Small 3 ph 0.12-0.75 kW with VSD	%	47.8%	51.1%	51.9%	53.8%	60.1%	60.5%	60.9%	61.4%	61.8%	62.3%
Large 3-ph LV 375-1000 kW no VSD	%	93.5%	94.4%	94.7%	95.3%	96.0%	96.1%	96.1%	96.2%	96.2%	96.3%
Large 3-ph LV 375-1000kW with VSD	%	86.9%	88.4%	88.9%	89.8%	90.8%	90.9%	91.1%	91.2%	91.4%	91.6%
Explosion motors (S) 3-ph 0.75-7.5 kW	%	70.1%	75.9%	76.5%	78.0%	84.2%	84.6%	84.8%	84.9%	85.1%	85.2%
Explosion motors (M) 3-ph 7.5-75 kW	%	85.2%	87.9%	88.1%	88.8%	91.5%	91.7%	91.8%	91.9%	92.0%	92.1%
Explosion motors (L) 3-ph 75-375 kW	%	92.0%	93.5%	93.6%	94.0%	95.4%	95.5%	95.6%	95.6%	95.7%	95.7%
Brake motors (S) 3-ph 0.75-7.5 kW	%	70.1%	75.9%	76.5%	78.0%	84.2%	84.6%	84.8%	84.9%	85.1%	85.2%
Brake motors (M) 3-ph 7.5-75 kW	%	85.2%	87.9%	88.1%	88.8%	91.5%	91.7%	91.8%	91.9%	92.0%	92.1%
Brake motors (L) 3-ph 75-375 kW	%	92.0%	93.5%	93.6%	94.0%	95.4%	95.5%	95.6%	95.6%	95.7%	95.7%
8-pole motors (S) 3-ph 0.75-7.5 kW	%	62.1%	67.9%	68.5%	70.0%	77.8%	78.2%	78.6%	79.0%	79.3%	79.7%
8-pole motors (M) 3-ph 7.5-75 kW	%	82.2%	84.9%	85.1%	85.6%	88.6%	88.8%	88.9%	89.0%	89.2%	89.3%
8-pole motors (L) 3-ph 75-375 kW	%	90.0%	91.5%	91.6%	91.8%	93.7%	93.8%	93.9%	94.0%	94.1%	94.2%
1-phase motors >0.75 kW (no VSD)	%	70.1%	75.9%	76.5%	77.5%	81.5%	81.9%	82.3%	82.7%	83.1%	83.5%
WP Water pumps (load)	%	66.5%	67.1%	68.5%	68.5%	68.5%	68.5%	68.5%	68.5%	68.5%	68.5%
CP Fixed Speed 5-1280 l/s	%	58.8%	63.1%	64.7%	66.2%	66.5%	66.6%	66.7%	66.7%	66.8%	66.9%
CP Variable speed 5-1280 l/s	%	58.9%	64.8%	64.8%	66.6%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%
CP Pistons 2-64 l/s	%	43.8%	47.0%	48.4%	49.8%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
TRAFO Distribution	kWh/a	7859	7859	5056	5056	5056	5056	5056	5056	5056	5056
TRAFO Industry oil	kWh/a	27168	27168	15631	15631	15631	15631	15631	15631	15631	15631
TRAFO Industry dry	kWh/a	39727	39727	28629	28629	28629	28629	28629	28629	28629	28629
TRAFO Power	kWh/a	724886	724886	724886	724886	724886	724886	724886	724886	724886	724886
TRAFO DER oil	kWh/a	59094	59094	35515	35515	35515	35515	35515	35515	35515	35515
TRAFO DER dry	kWh/a	62415	62415	47109	47109	47109	47109	47109	47109	47109	47109
TRAFO Small	kWh/a	2523	2523	2523	2523	2523	2523	2523	2523	2523	2523

## EFNECO

<b>EFFICIENCY SALES ECO</b>	<b>unit</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<i>(Fuel losses due to RRC in L/100km/vehicle)</i>											
Tyres C1, replacement for cars	L/100km	1.89	1.19	0.99	0.90	0.78	0.68	0.65	0.63	0.61	0.59
Tyres C1, OEM for cars	L/100km	1.89	1.23	1.11	0.97	0.81	0.72	0.69	0.66	0.63	0.60
Tyres C2, replacement for vans	L/100km	2.62	1.93	1.77	1.70	1.55	1.48	1.42	1.35	1.30	1.25
Tyres C2, OEM for vans	L/100km	2.62	1.99	1.89	1.75	1.61	1.53	1.46	1.40	1.34	1.28
Tyres C3, replacement for trucks/busses	L/100km	7.34	5.21	4.78	4.85	4.71	4.63	4.57	4.52	4.46	4.41
Tyres C3, OEM for trucks/busses	L/100km	7.34	5.35	5.16	4.96	4.83	4.77	4.70	4.63	4.56	4.50

### *VSD losses information for determination of VSD prices on PRICEECO*

VSD - Very Small 0.12 - 0.75 kW 1-phase	W loss	148	128	123	112	87	85	84	83	82	81
VSD - Very Small 0.12 - 0.75 kW 3-phase	W loss	148	128	123	112	87	85	84	83	82	81
VSD - Small 0.75 - 7.5 kW 3-phase	W loss	204	150	141	134	117	114	111	109	106	103
VSD - Medium 7.5 - 75kW 3-phase	W loss	980	724	677	644	563	549	536	522	508	495
VSD - Large 75 - 375kW 3-phase	W loss	6978	5153	4818	4588	4009	3912	3814	3716	3619	3521
VSD - Very Large 375 - 1,000kW 3-phase	W loss	34714	30992	30062	28465	27367	26694	26020	25347	24673	24000

### *Average Wet Grip coefficients for Tyres (ECO)*

Tyres C1, replacement for cars	1.18	1.36	1.42	1.45	1.48
Tyres C1, OEM for cars	1.12	1.14	1.39	1.45	1.48
Tyres C2, replacement for vans	1.05	1.16	1.25	1.28	1.29
Tyres C2, OEM for vans	0.99	1.01	1.19	1.28	1.29
Tyres C3, replacement for trucks/busses	0.86	1.04	1.10	1.11	1.12
Tyres C3, OEM for trucks/busses	0.75	0.77	1.00	1.11	1.12

\*=There are no measures regarding on-mode (brewing), only for standby/keepwarm. So for brewing ECO=BAU



EFSBAU

EFFICIENCY STOCK BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total WH dedicated Water Heater	%	26%	30%	31%	33%	34%	36%	38%	38%	38%	38%
Total CH Central Heating combi, water heat	%	41%	45%	47%	49%	50%	51%	51%	51%	51%	51%
Total CH Central Heating boiler, space heat	%	47.4%	56.6%	58.9%	60.5%	61.0%	60.6%	60.6%	61.1%	62.0%	63.1%
SFB Wood Manual	kWh/a	28%	47%	50%	51%	52%	53%	55%	57%	58%	60%
SFB Wood Direct Draft	kWh/a	49%	71%	73%	74%	74%	75%	76%	76%	77%	77%
SFB Coal	kWh/a	41%	62%	64%	66%	67%	68%	70%	70%	71%	71%
SFB Pellets	kWh/a		70%	72%	74%	75%	75%	76%	77%	77%	77%
SFB Wood chips	kWh/a		71%	72%	73%	74%	75%	75%	76%	76%	76%
CHAE-S (≤ 400 kW)	%	97%	121%	129%	136%	144%	151%	157%	163%	168%	172%
CHAE-L (> 400 kW)	%	99%	123%	130%	137%	146%	155%	164%	172%	179%	185%
CHWE-S (≤ 400 kW)	%	124%	159%	171%	184%	197%	208%	218%	226%	233%	239%
CHWE-M (> 400 kW; ≤ 1500 kW)	%	144%	185%	198%	212%	228%	247%	264%	278%	290%	301%
CHWE-L (> 1500 kW)	%	144%	185%	198%	212%	228%	247%	264%	278%	290%	301%
CHF	%	46%	96%	100%	104%	107%	110%	112%	115%	118%	121%
HT PCH-AE-S	SEPR	4.0	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.5	5.7
HT PCH-AE-L	SEPR	4.3	4.9	5.1	5.2	5.4	5.6	5.8	6.0	6.1	6.3
HT PCH-WE-S	SEPR	6.5	7.1	7.3	7.5	7.7	8.0	8.2	8.5	8.7	8.9
HT PCH-WE-M	SEPR	7.5	8.2	8.5	8.7	8.9	9.2	9.4	9.7	9.9	10.2
HT PCH-WE-L	SEPR	7.3	8.1	8.3	8.6	8.8	9.1	9.4	9.7	9.9	10.2
AC rooftop	%	77%	109%	117%	124%	131%	138%	145%	152%	159%	163%
AC splits	%	116%	140%	149%	157%	163%	167%	171%	176%	180%	184%
AC VRF	%	111%	146%	158%	166%	172%	176%	180%	184%	189%	193%
ACF	%	46%	96%	100%	104%	107%	110%	112%	115%	118%	121%
AC rooftop (rev)	%	84%	92%	96%	99%	101%	103%	104%	105%	107%	109%
AC splits (rev)	%	109%	118%	120%	121%	123%	126%	130%	134%	137%	140%
AC VRF (rev)	%	108%	122%	127%	130%	132%	134%	135%	138%	141%	145%
ACF (rev)	%	93%	124%	128%	134%	140%	147%	152%	157%	162%	166%
AHF	%	56%	61%	62%	64%	65%	66%	67%	68%	69%	70%
AHE	%	25%	29%	30%	30%	30%	30%	30%	31%	32%	32%
LH open fireplace	%	26%	28%	29%	29%	30%	30%	30%	31%	31%	31%
LH closed fireplace/inset	%	60%	66%	68%	69%	70%	72%	73%	73%	74%	74%
LH wood stove	%	60%	65%	67%	69%	70%	72%	73%	73%	74%	74%
LH coal stove	%	59%	65%	67%	68%	70%	71%	72%	73%	74%	74%
LH cooker	%	56%	62%	64%	65%	66%	67%	68%	69%	69%	69%
LH SHR stove	%	80%	80%	80%	81%	81%	83%	84%	85%	85%	86%
LH pellet stove	%		83%	85%	87%	88%	90%	92%	93%	93%	93%
LH open fire gas	%	36%	40%	41%	42%	42%	43%	43%	43%	44%	44%
LH closed fire gas	%	56%	61%	63%	64%	66%	67%	68%	68%	69%	69%
LH flueless fuel heater	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LH elec.portable	%	65%	73%	75%	76%	78%	79%	80%	80%	80%	80%
LH elec.convectector	%	65%	73%	75%	76%	78%	79%	80%	80%	80%	80%
LH elec.storage	%	64%	72%	74%	75%	77%	78%	79%	80%	80%	80%
LH elec.underfloor	%	64%	69%	71%	73%	74%	76%	77%	78%	79%	80%
LH luminous heaters	%	70%	78%	80%	82%	83%	85%	87%	87%	88%	88%
LH tube heaters	%	61%	68%	69%	71%	72%	74%	75%	76%	76%	76%
RAC (cooling demand), all types <12 kW	SEER	2.04	3.04	3.44	3.82	4.05	4.18	4.24	4.25	4.26	4.26
RAC (heating demand), reversible <12kW	SCOP	1.98	2.67	2.91	3.13	3.26	3.35	3.38	3.39	3.39	3.39
CIRC Circulator pumps <2.5 kW (efficiency, incl. ctrl)	%	93%	100%	102%	104%	105%	105%	105%	107%	109%	111%
NRVU avg. electricity	kWh elec/a	8959	8747	8516	8214	7851	7541	7286	7103	6988	6932
NRVU avg. heat saved vs. ref	kWh prim/a	64584	91097	93333	94924	96394	97778	99028	100149	101240	102331
RVU Central Unidirectional, electricity	kWh elec/a	454	454	454	454	454	454	454	454	454	454
RVU Central Balanced, electricity	kWh elec/a	501	501	501	501	501	501	501	501	501	501
RVU Local Balanced, electricity	kWh elec/a	217	217	217	217	217	217	217	217	217	217
RVU Central Unidirectional, heat saved vs. ref	kWh prim/a	951	951	951	951	951	951	951	951	951	951
RVU Central Balanced, heat saved vs. ref	kWh prim/a	3863	3863	3863	3863	3863	3863	3863	3863	3863	3863
RVU Local Balanced, heat saved vs. ref	kWh prim/a	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706
ref: natural ventilation											
<i>LS, stock average efficiency incl. control gear</i>											
LFL (T12,T8h,T8T,T5,other)	lm/W	60	66	70	72	73	73	73	73	73	73
HID (HPM, HPS, MH)	lm/W	58	71	77	81	81	82	82	83	84	84
CFLni (all shapes)	lm/W	48	50	50	50	50	50	50	50	50	50
CFLi (retrofit for GLS, HL)	lm/W	55	55	55	55	55	55	55	55	55	55
GLS (DLS & NDLS)	lm/W	9	9	11	11	11	11	11	11	11	11
HL (DLS & NDLS, LV & MV)	lm/W	13	11	11	12	12	12	12	12	12	12
LED replacing LFL (retrofit & luminaire)	lm/W			57	98	120	139	154	162	168	171
LED replacing HID (retrofit & luminaire)	lm/W			62	102	124	145	163	171	173	173
LED replacing CFLni (retrofit & luminaire)	lm/W			64	98	119	137	151	159	161	162
LED replacing DLS (retrofit & luminaire)	lm/W			43	59	67	72	75	76	77	78
LED replacing NDLS (retrofit & luminaire)	lm/W			21	39	88	99	105	109	111	113
DP TV on-mode power (avg. all types)	W/dm2	9.2	5.0	3.0	2.1	1.5	1.2	0.9	0.7	0.6	0.5
DP TV standard (NoNA) standby power	W	8.0	2.0	0.8	0.5						
DP TV LoNA standby power	W		2.0	2.0	2.0	2.0	2.0				
DP TV HiNA ("Smart") standby power	W		0.0	5.1	5.6	5.0	4.4	3.9	3.4	2.9	2.4
DP Monitor on-mode power	W/dm2	9.2	5.1	3.3	2.4	2.0	1.5	1.1	0.8	0.7	0.7
DP Monitor standby power	W	9.0	2.4	0.9	0.3	0.2	0.2	0.2	0.2	0.2	0.2
DP Signage on-mode power	W/dm2		8.0	4.2	2.6	1.9	1.6	1.3	1.0	0.9	0.7
DP Signage standby power	W/dm2		8.0	4.2	2.6	1.9	1.6	1.3	1.0	0.9	0.7
SSTB	kWh/a		33	19	19						
CSTB	kWh/a		88	88	88	88	88	88	88	88	88
VIDEO DVD players/recorders	kWh/a	16	16	16	16	16					
VIDEO projectors	kWh/a	200	200	200	200	200	200				
VIDEO game consoles	kWh/a		63	91	138	191	172	172	172	172	172

EFSBAU

EFFICIENCY STOCK BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<i>PSU efficiency for ES&amp;DS</i>											
ES tower 1-socket traditional	%	67.4%	74.4%	76.2%	78.4%	81.3%	84.2%	85.4%	85.4%	85.4%	85.4%
ES rack 1-socket traditional	%	67.4%	74.4%	76.2%	78.4%	81.3%	84.3%	85.4%	85.4%	85.4%	85.4%
ES rack 2-socket traditional	%	71.6%	78.4%	80.2%	82.5%	85.0%	87.5%	88.4%	88.4%	88.4%	88.4%
ES rack 2-socket cloud	%		78.6%	80.4%	82.5%	85.0%	87.5%	88.4%	88.4%	88.4%	88.4%
ES rack 4-socket traditional	%	70.7%	77.4%	79.2%	82.2%	85.2%	87.4%	88.1%	88.1%	88.1%	88.1%
ES rack 4-socket cloud	%		77.6%	79.4%	82.2%	85.2%	87.4%	88.1%	88.1%	88.1%	88.1%
ES rack 2-socket resilient trad.	%	70.7%	77.4%	79.2%	81.5%	84.1%	86.7%	87.7%	87.7%	87.7%	87.7%
ES rack 2-socket resilient cloud	%		77.6%	79.4%	81.5%	84.1%	86.7%	87.7%	87.7%	87.7%	87.7%
ES rack 4-socket resilient trad.	%	70.7%	77.4%	79.2%	82.2%	85.2%	87.4%	88.1%	88.1%	88.1%	88.1%
ES rack 4-socket resilient cloud	%		77.6%	79.4%	82.2%	85.2%	87.4%	88.1%	88.1%	88.1%	88.1%
ES blade 1-socket traditional	%	71.6%	78.4%	80.3%	83.1%	86.0%	88.1%	88.8%	88.8%	88.8%	88.8%
ES blade 2-socket traditional	%	71.6%	78.4%	80.2%	83.1%	86.0%	88.1%	88.8%	88.8%	88.8%	88.8%
ES blade 2-socket cloud	%		78.5%	80.4%	83.1%	86.0%	88.1%	88.8%	88.8%	88.8%	88.8%
ES blade 4-socket traditional	%	71.6%	78.4%	80.2%	83.1%	86.0%	88.1%	88.8%	88.8%	88.8%	88.8%
ES blade 4-socket cloud	%		78.5%	80.4%	83.1%	86.0%	88.1%	88.8%	88.8%	88.8%	88.8%
DS Online 2	%	77.4%	83.7%	85.3%	87.3%	89.4%	91.2%	92.2%	92.3%	92.3%	92.3%
DS Online 3	%	77.4%	83.7%	85.3%	87.3%	89.4%	91.2%	92.2%	92.3%	92.3%	92.3%
DS Online 4	%	77.4%	83.6%	85.3%	87.3%	89.4%	91.2%	92.2%	92.3%	92.3%	92.3%
PC Desktop	kWh/a	498	193	130	64	38	38	38	38	38	38
PC Notebook	kWh/a	148	62	40	17	10	10	10	10	10	10
PC Tablet/slate	kWh/a		17	11	5	3	3	3	3	3	3
PC Thin client	kWh/a	148	62	39	17	10	10	10	10	10	10
PC Workstation	kWh/a	942	373	244	115	76	76	76	76	76	76
EP-Copier mono	kWh/a	1257	359	329	314	314	314	314	314		
EP-Copier colour	kWh/a		424	384	371	371	371	371	371	371	371
EP-printer mono	kWh/a	784	224	205	196	196	196	196	196	196	196
EP-printer colour	kWh/a		350	318	306	306	306	306	306	306	306
IJ SFD printer	kWh/a	51	15	13	12	12	12	12	12	12	12
IJ MFD printer	kWh/a	77	22	19	18	18	18	18	18	18	18
duplexing ( N-print 15%)	%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
SB Home Gateway, on-mode power	W		12	11	9	8	7	6	5	3	2
SB Home NAS, on-mode power	W		19	18	16	14	12	10	8	6	4
SB Home Phones (fixed), on-mode power	W	6	4	4	4	3	3	2	2	1	1
SB Office Phones (fixed), on-mode power	W	8	6	5	5	4	3	3	2	2	1
SB Home Gateway, standby power	W		5	2	0	0	0	0	0	0	0
SB Home NAS, standby power	W		5	4	4	3	3	2	2	1	1
SB Home Phones (fixed), standby power	W	0	0	0	0	0	0	0	0	0	0
SB Office Phones (fixed), standby power	W	0	0	0	0	0	0	0	0	0	0
SB Home Gateway, idle power	W		10	9	8	7	6	5	4	3	2
SB Home NAS, idle power	W		15	13	12	10	9	7	6	4	3
SB Home Phones (fixed), idle power	W	5	3	3	3	2	2	2	1	1	1
SB Office Phones (fixed), idle power	W	7	5	4	4	3	3	2	2	1	1
<i>EPS Average Active Efficiency (of stock)</i>											
EPS ≤ 6W, low-V	%	64.2%	66.2%	66.7%	67.2%	67.7%	68.2%	68.8%	69.3%	69.8%	70.3%
EPS 6–10 W	%	68.4%	71.9%	72.8%	73.7%	74.6%	75.5%	76.4%	77.3%	78.2%	78.5%
EPS 10–12 W	%		73.4%	74.2%	75.0%	75.9%	76.7%	77.6%	78.4%	79.3%	79.7%
EPS 15–20 W	%		76.9%	77.5%	78.1%	78.9%	79.6%	80.3%	81.0%	81.5%	81.6%
EPS 20–30 W	%	78.8%	80.8%	81.3%	81.8%	82.3%	82.9%	83.4%	83.9%	84.5%	85.0%
EPS 30–65 W, multiple-V	%				83.0%	83.0%	83.0%	83.0%	83.0%	83.0%	83.0%
EPS 30-65 W	%				85.6%	85.9%	86.2%	86.5%	86.9%	87.2%	87.6%
EPS 65–120 W	%	83.6%	84.9%	85.2%	85.5%	85.8%	86.1%				
EPS 65–120 W, multiple-V	%		86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%
EPS 12–15 W	%	72.2%	75.2%	75.9%	76.6%	77.4%	78.2%	79.0%	79.7%	80.5%	80.9%
<i>EPS Average No-load power (of stock)</i>											
EPS ≤ 6W, low-V	W	0.56	0.44	0.41	0.38	0.35	0.33	0.30	0.27	0.25	0.23
EPS 6–10 W	W	0.56	0.44	0.41	0.38	0.35	0.33	0.30	0.27	0.25	0.23
EPS 10–12 W	W		0.61	0.56	0.51	0.46	0.41	0.36	0.32	0.28	0.25
EPS 15–20 W	W		0.60	0.56	0.51	0.46	0.41	0.36	0.31	0.28	0.25
EPS 20–30 W	W	0.83	0.62	0.57	0.52	0.47	0.42	0.37	0.32	0.28	0.25
EPS 30–65 W, multiple-V	W				0.92	0.90	0.87	0.84	0.81	0.78	0.76
EPS 30-65 W	W				0.60	0.57	0.53	0.50	0.46	0.43	0.40
EPS 65–120 W	W	0.82	0.67	0.64	0.60	0.57	0.54				
EPS 65–120 W, multiple-V	W		0.99	0.96	0.93	0.90	0.87	0.84	0.81	0.78	0.76
EPS 12–15 W	W	0.83	0.62	0.57	0.52	0.47	0.42	0.37	0.32	0.28	0.25
UPS below 1.5 kVA	%	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%	88.1%
UPS 1.5 to 5 kVA	%	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%	89.8%
UPS 5 to 10 kVA	%	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%	92.3%
UPS 10 to 200 kVA	%	92.7%	92.7%	92.9%	93.4%	93.9%	93.9%	93.9%	93.9%	93.9%	93.9%
RF AEC	kWh/a	490	446	438	429	421	413	406	400	393	387
RF EEI	EEI	109	88	84	80	76	72	69	65	62	59
CF open vertical chilled multi deck (RVC2)	EEI	110	90	82	75	72	70	69	68	68	68
CF open horizontal frozen island (RHF4)	EEI	109	89	81	75	71	69	68	68	68	68
CF other supermarket display (non-BCs)	EEI	110	90	82	75	73	73	73	73	73	73
CF Plug in one door beverage cooler	EEI	113	92	84	77	74	71	70	70	70	70
CF Plug in horizontal ice cream freezer	EEI	112	91	83	76	73	71	70	70	70	70
CF Spiral vending machine	EEI	138	104	90	81	81	81	81	81	81	81
PF Storage cabinet Chilled Vertical (CV)	EEI	96	96	96	96	96	96	96	96	96	96
PF Storage cabinet Frozen Vertical (FV)	EEI	91	91	91	91	91	91	91	91	91	91
PF Storage cabinet Chilled Horizontal (CH)	EEI	109	109	109	109	109	109	109	109	109	109
PF Storage cabinet Frozen Horizontal (FH)	EEI	106	106	106	106	106	106	106	106	106	106
<b>PF Storage cabinets All types</b>	<b>EEI</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>98</b>
PF Process Chiller AC MT S ≤ 300 kW	SEPR	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PF Process Chiller AC MT L > 300 kW	SEPR	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
PF Process Chiller AC LT S ≤ 200 kW	SEPR	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
PF Process Chiller AC LT L > 200 kW	SEPR	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
PF Process Chiller WC MT S ≤ 300 kW	SEPR	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
PF Process Chiller WC MT L > 300 kW	SEPR	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
PF Process Chiller WC LT S ≤ 200 kW	SEPR	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PF Process Chiller WC LT L > 200 kW	SEPR	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
<b>PF Process Chiller All MT&amp;LT</b>	<b>SEPR</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>

EFFICIENCY STOCK BAU	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
PF Condensing Unit MT S 0.2-1 kW	COP	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
PF Condensing Unit MT M 1-5 kW	COP	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
PF Condensing Unit MT L 5-20 kW	SEPR	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
PF Condensing Unit MT XL 20-50 kW	SEPR	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
PF Condensing Unit LT S 0.1-0.4 kW	COP	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
PF Condensing Unit LT M 0.4-2 kW	COP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PF Condensing Unit LT L 2-8 kW	SEPR	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
PF Condensing Unit LT XL 8-20 kW	SEPR	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>COP/SEPR</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>
COOK El. Hobs	Wh/ltr	196	190	188	187	186	185	184	183	182	181
COOK El. Ovens	kWh/a	134	122	110	99	92	89	89	88	88	87
COOK Gas Hobs	%	60.0%	60.6%	60.7%	60.9%	61.0%	61.2%	61.3%	61.5%	61.6%	61.8%
COOK Gas Ovens	kWh prim/a	244	224	214	204	195	190	186	182	178	175
COOK Range Hoods	kWh/a	133	133	133	133	133	133	133	133	133	133
COFFEE Dripfilter (glass), brewing	kWh/a	55	55	55	55	55	55	55	55	55	55
COFFEE Dripfilter (thermos), brewing	kWh/a	48	48	48	48	48	48	48	48	48	48
COFFEE Dripfilter (full automatic), brewing	kWh/a	49	49	49	49	49	49	49	49	49	49
COFFEE Pad filter, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Hard cap espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Semi-auto espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Fully-auto espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
COFFEE Dripfilter (glass), standby/keep warm	kWh/a	38	38	38	38	38	38	38	38	38	38
COFFEE Dripfilter (thermos), standby/keep warm	kWh/a	0	0	0	0	0	0	0	0	0	0
COFFEE Dripfilter (full automatic), sb/keep warm	kWh/a	0	0	0	0	0	0	0	0	0	0
COFFEE Pad filter, standby/keep warm	kWh/a	19	19	19	19	19	19	19	19	19	19
COFFEE Hard cap espresso, standby/keep warm	kWh/a	19	19	19	19	19	19	19	19	19	19
COFFEE Semi-auto espresso, standby/keep warm	kWh/a	19	19	19	19	19	19	19	19	19	19
COFFEE Fully-auto espresso, standby/keep warm	kWh/a	19	19	19	19	19	19	19	19	19	19
WM energy/cycle	kWh/cycle	1.72	1.18	1.12	1.06	1.00	0.94	0.88	0.82	0.75	0.69
WM energy/a	kWh/a	434	237	215	196	179	164	152	142	131	120
DW energy/cycle	kWh/cycle	1.63	1.33	1.29	1.26	1.22	1.19	1.15	1.12	1.08	1.05
DW AEC (annual energy consumption)	kWh/a	343	278	271	264	256	249	242	234	227	220
LD AEC vented el.	kWh elec/a	427	388	418	446	456	456	455	457	460	464
LD AEC condens el.	kWh elec/a	455	415	438	453	453	445	436	428	423	417
LD AEC vented gas	kWh prim/a	387	399	438	465	472	470	469	471	474	478
VC dom	W	1176	1440	1888	1864	2564	2883	3312	3685	4059	4433
VC nondom	W	929	1247	1343	1447	1500	1500	1500	1500	1500	1500
FAN Axial<300Pa (all FAN types >125W)	%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
FAN Axial>300Pa	%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
FAN Centr.FC	%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
FAN Centr.BC-free	%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%
FAN Centr.BC	%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
FAN Cross-flow	%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
<i>MT motors</i>											
Medium (S) 3-ph 0.75-7.5 kW no VSD	%	69.7%	75.4%	76.1%	76.7%	77.3%	78.0%	78.7%	79.4%	80.1%	80.8%
Medium (M) 3-ph 7.5-75 kW no VSD	%	85.0%	87.6%	87.9%	88.2%	88.4%	88.7%	89.0%	89.2%	89.5%	89.8%
Medium (L) 3-ph 75-375 kW no VSD	%	91.8%	93.0%	93.4%	93.5%	93.7%	93.8%	94.0%	94.1%	94.2%	94.4%
Medium (S) 3-ph 0.75-7.5 kW with VSD	%	59.1%	65.7%	66.9%	67.7%	68.5%	69.4%	70.2%	71.1%	71.9%	72.8%
Medium (M) 3-ph 7.5-75 kW with VSD	%	77.2%	81.0%	81.7%	82.2%	82.7%	83.1%	83.5%	83.9%	84.3%	84.7%
Medium (L) 3-ph 75-375 kW with VSD	%	84.8%	87.2%	87.9%	88.4%	88.7%	89.0%	89.3%	89.6%	89.8%	90.1%
Small 1 ph 0.12-0.75 kW no VSD	%	62.4%	64.8%	65.5%	66.2%	67.0%	67.7%	68.4%	69.2%	70.0%	70.7%
Small 1 ph 0.12-0.75 kW with VSD	%	47.7%	50.5%	51.4%	52.2%	53.1%	53.9%	54.8%	55.7%	56.7%	57.6%
Small 3 ph 0.12-0.75 kW no VSD	%	62.4%	64.8%	65.5%	66.2%	67.0%	67.7%	68.4%	69.2%	70.0%	70.7%
Small 3 ph 0.12-0.75 kW with VSD	%	47.7%	50.5%	51.4%	52.2%	53.1%	53.9%	54.8%	55.7%	56.7%	57.6%
Large 3-ph LV 375-1000 kW no VSD	%	93.5%	93.9%	94.2%	94.4%	94.7%	95.0%	95.3%	95.5%	95.7%	95.8%
Large 3-ph LV 375-1000kW with VSD	%	86.6%	87.9%	88.3%	88.7%	89.0%	89.4%	89.7%	90.0%	90.2%	90.4%
Explosion motors (S) 3-ph 0.75-7.5 kW	%	69.7%	75.4%	76.1%	76.7%	77.4%	78.1%	78.8%	79.5%	80.2%	80.9%
Explosion motors (M) 3-ph 7.5-75 kW	%	85.0%	87.6%	87.9%	88.2%	88.4%	88.7%	89.0%	89.2%	89.5%	89.8%
Explosion motors (L) 3-ph 75-375 kW	%	91.8%	93.0%	93.4%	93.5%	93.7%	93.8%	94.0%	94.1%	94.3%	94.4%
Brake motors (S) 3-ph 0.75-7.5 kW	%	69.7%	75.4%	76.1%	76.7%	77.4%	78.1%	78.8%	79.5%	80.2%	80.9%
Brake motors (M) 3-ph 7.5-75 kW	%	85.0%	87.6%	87.9%	88.2%	88.4%	88.7%	89.0%	89.2%	89.5%	89.8%
Brake motors (L) 3-ph 75-375 kW	%	91.8%	93.0%	93.4%	93.5%	93.7%	93.8%	94.0%	94.1%	94.3%	94.4%
8-pole motors (S) 3-ph 0.75-7.5 kW	%	61.7%	67.4%	68.1%	68.7%	69.4%	70.1%	70.8%	71.5%	72.2%	72.9%
8-pole motors (M) 3-ph 7.5-75 kW	%	82.0%	84.6%	84.9%	85.2%	85.4%	85.7%	86.0%	86.2%	86.5%	86.8%
8-pole motors (L) 3-ph 75-375 kW	%	89.8%	91.0%	91.4%	91.5%	91.7%	91.8%	92.0%	92.1%	92.3%	92.4%
1-phase motors >0.75 kW (no VSD)	%	69.5%	75.0%	75.9%	76.5%	77.2%	77.8%	78.5%	79.2%	79.9%	80.6%
WP Water pumps (load)	%	65.6%	66.5%	66.5%	66.5%	66.5%	66.5%	66.5%	66.5%	66.5%	66.5%
CP Fixed Speed 5-1280 l/s	%	57.5%	62.7%	63.1%	63.5%	64.0%	64.4%	64.7%	65.0%	65.3%	65.6%
CP Variable speed 5-1280 l/s	%	58.9%	66.3%	65.0%	64.6%	64.9%	65.3%	65.7%	66.0%	66.3%	66.6%
CP Pistons 2-64 l/s	%	42.8%	46.6%	47.1%	47.5%	47.9%	48.1%	48.4%	48.6%	48.8%	49.1%
TRAF0 Distribution	kWh/a	7859	7859	7859	7859	7859	7859	7859	7859	7859	7859
TRAF0 Industry oil	kWh/a	27168	27168	27168	27168	27168	27168	27168	27168	27168	27168
TRAF0 Industry dry	kWh/a	39727	39727	39727	39727	39727	39727	39727	39727	39727	39727
TRAF0 Power	kWh/a	724886	724886	724886	724886	724886	724886	724886	724886	724886	724886
TRAF0 DER oil	kWh/a	59094	59094	59094	59094	59094	59094	59094	59094	59094	59094
TRAF0 DER dry	kWh/a	62415	62415	62415	62415	62415	62415	62415	62415	62415	62415
TRAF0 Small	kWh/a	2523	2523	2523	2523	2523	2523	2523	2523	2523	2523
<i>(Fuel losses due to RRC in L/100km/vehicle)</i>											
Tyres C1, replacement for cars	L/100km	1.95	1.27	1.16	1.03	0.92	0.81	0.75	0.71	0.68	0.64
Tyres C1, OEM for cars	L/100km	1.95	1.27	1.16	1.03	0.92	0.81	0.75	0.71	0.68	0.64
Tyres C2, replacement for vans	L/100km	2.65	2.01	1.91	1.80	1.71	1.62	1.54	1.47	1.39	1.33
Tyres C2, OEM for vans	L/100km	2.65	2.02	1.91	1.80	1.71	1.62	1.54	1.47	1.39	1.33
Tyres C3, replacement for trucks/busses	L/100km	7.46	5.43	5.19	5.08	5.01	4.95	4.89	4.83	4.77	4.71
Tyres C3, OEM for trucks/busses	L/100km	7.46	5.44	5.19	5.08	5.01	4.95	4.89	4.83	4.77	4.71

EFSECO

EFFICIENCY STOCK ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total WH dedicated Water Heater	%	26%	30%	35%	42%	50%	56%	59%	60%	60%	60%
Total CH Central Heating combi, water heat	%	41%	45%	49%	58%	68%	76%	81%	84%	87%	91%
Total CH Central Heating boiler, space heat	%	47%	58%	67%	79%	93%	106%	114%	121%	127%	133%
SFB Wood Manual	%	28%	47%	50%	54%	59%	67%	76%	78%	78%	78%
SFB Wood Direct Draft	%	49%	71%	73%	74%	75%	76%	77%	78%	78%	78%
SFB Coal	%	41%	62%	64%	66%	68%	71%	76%	78%	78%	78%
SFB Pellets	%		70%	72%	74%	75%	76%	77%	78%	78%	78%
SFB Wood chips	%		71%	72%	73%	75%	76%	77%	77%	77%	77%
CHAE-S (≤ 400 kW)	%	97%	121%	129%	137%	148%	159%	169%	176%	181%	184%
CHAE-L (> 400 kW)	%	99%	123%	130%	139%	153%	166%	178%	188%	195%	198%
CHWE-S (≤ 400 kW)	%	124%	159%	171%	185%	199%	210%	220%	227%	234%	239%
CHWE-M (> 400 kW; ≤ 1500 kW)	%	144%	185%	198%	212%	229%	249%	267%	281%	293%	303%
CHWE-L (> 1500 kW)	%	144%	185%	198%	213%	232%	253%	270%	285%	296%	303%
CHF	%	46%	96%	101%	123%	147%	165%	171%	172%	174%	175%
HT PCH-AE-S	SEPR	4.0	4.5	4.7	4.9	5.3	5.6	5.8	5.9	6.0	6.0
HT PCH-AE-L	SEPR	4.3	4.9	5.1	5.4	5.9	6.4	6.7	6.9	7.1	7.1
HT PCH-WE-S	SEPR	6.5	7.1	7.3	7.6	8.0	8.3	8.6	8.7	8.8	9.0
HT PCH-WE-M	SEPR	7.5	8.2	8.5	8.8	9.2	9.5	9.7	9.8	10.0	10.2
HT PCH-WE-L	SEPR	7.3	8.1	8.4	8.7	9.2	9.6	10.0	10.3	10.5	10.6
AC rooftop	%	77%	109%	117%	125%	133%	140%	149%	157%	162%	164%
AC splits	%	116%	140%	150%	163%	176%	188%	193%	196%	198%	201%
AC VRF	%	111%	146%	159%	171%	183%	193%	200%	205%	208%	210%
ACF	%	46%	96%	101%	123%	147%	167%	174%	177%	179%	180%
AC rooftop (rev)	%	84%	92%	96%	103%	111%	120%	127%	128%	130%	131%
AC splits (rev)	%	109%	118%	120%	124%	130%	137%	141%	143%	145%	147%
AC VRF (rev)	%	108%	122%	127%	131%	135%	139%	142%	145%	147%	149%
ACF (rev)	%	93%	124%	128%	135%	142%	150%	157%	162%	164%	167%
AHF	%	56%	61%	62%	66%	71%	77%	81%	82%	83%	83%
AHE	%	25%	29%	30%	30%	31%	32%	33%	33%	33%	34%
LH open fireplace	%	26%	28%	29%	31%	34%	38%	41%	45%	47%	47%
LH closed fireplace/inset	%	60%	66%	68%	70%	75%	78%	81%	84%	86%	86%
LH wood stove	%	60%	65%	67%	70%	74%	78%	81%	84%	86%	86%
LH coal stove	%	59%	65%	67%	69%	72%	76%	79%	83%	86%	86%
LH cooker	%	56%	62%	64%	66%	70%	73%	75%	75%	75%	75%
LH SHR stove	%	80%	80%	80%	81%	82%	84%	85%	85%	86%	86%
LH pellet stove	%		83%	85%	87%	90%	93%	94%	94%	94%	94%
LH open fire gas	%	36%	40%	41%	44%	50%	56%	61%	65%	65%	65%
LH closed fire gas	%	56%	61%	63%	66%	73%	79%	84%	88%	88%	88%
LH fuelless fuel heater	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LH elec.portable	%	65%	73%	76%	84%	90%	90%	90%	90%	90%	90%
LH elec.convector	%	65%	73%	76%	81%	85%	85%	85%	85%	85%	85%
LH elec.storage	%	64%	72%	75%	83%	90%	96%	96%	96%	96%	96%
LH elec.underfloor	%	64%	69%	72%	76%	81%	85%	89%	92%	95%	95%
LH luminous heaters	%	70%	78%	80%	84%	89%	93%	94%	94%	94%	94%
LH tube heaters	%	61%	68%	69%	72%	76%	79%	81%	81%	81%	81%
RAC (cooling demand), all types <12 kW	SEER	2.04	3.04	3.71	4.52	5.03	5.22	5.30	5.31	5.31	5.31
RAC (heating demand), reversible <12kW	SCOP	1.98	2.67	3.10	3.56	3.83	3.94	3.98	3.99	3.99	3.99
CIRC Circulator pumps <2.5 kW, net load	%	93%	103%	154%	214%	231%	232%	232%	232%	232%	232%
NRVU avg. electricity	kWh elec/a	8959	8747	8313	7564	6797	6182	5918	5812	5755	5732
NRVU avg. heat saved vs. ref	kWh prim/a	64584	91097	95776	102184	107783	112123	113000	113000	113000	113000
RVU Central Unidirectional, electricity	kWh elec/a	454	454	419	362	298	247	244	244	244	244
RVU Central Balanced, electricity	kWh elec/a	501	501	405	320	276	248	246	246	246	246
RVU Local Balanced, electricity	kWh elec/a	217	217	186	157	142	134	134	134	134	134
RVU Central Unidirectional, heat saved vs. ref	kWh prim/a	951	951	1212	1632	2107	2486	2505	2505	2505	2505
RVU Central Balanced, heat saved vs. ref	kWh prim/a	3863	3863	4058	4150	4199	4218	4218	4218	4218	4218
RVU Local Balanced, heat saved vs. ref	kWh prim/a	1706	1706	1905	2023	2084	2109	2109	2109	2109	2109
ref: natural ventilation											
<i>LS, stock average efficiency incl. control gear</i>											
LFL (T12,T8h,T8t,T5,other)	lm/W	60	67	73	76	78	80	82	84	84	84
HID (HPM, HPS, MH)	lm/W	58	72	83	92	93	94	96	97	98	98
CFLni (all shapes)	lm/W	48	51	54	55	55	55	55	55	55	55
CFLi (retrofit for GLS, HL)	lm/W	55	55	55	55	55	55	55	55	55	55
GLS (DLS & NDLS)	lm/W	9	9	11	11	11	11	11	11	11	11
HL (DLS & NDLS, LV & MV)	lm/W	13	12	13	15	17	19	19	19	19	19
LED replacing LFL (retrofit & luminaire)	lm/W			80	113	139	159	170	178	184	188
LED replacing HID (retrofit & luminaire)	lm/W			72	100	133	166	184	189	190	190
LED replacing CFLni (retrofit & luminaire)	lm/W			85	109	128	153	172	178	180	182
LED replacing DLS (retrofit & luminaire)	lm/W		16	45	58	68	70	72	74	76	78
LED replacing NDLS (retrofit & luminaire)	lm/W		24	76	96	107	112	116	118	120	123
DP TV on-mode power (avg. all types)	W/dm2	9.2	5.0	2.8	1.6	0.9	0.6	0.4	0.4	0.4	0.4
DP TV standard (NoNA) standby power	W	8.0	2.0	0.8	0.5						
DP TV LoNA standby power	W		2.0	2.0	2.0	2.0	2.0				
DP TV HINA ('Smart') standby power	W		0.0	5.1	5.6	5.0	4.4	3.9	3.4	2.9	2.4
DP Monitor on-mode power	W/dm2	9.2	5.1	2.9	1.2	1.0	0.6	0.4	0.4	0.3	0.3
DP Monitor standby power	W	9.0	2.4	0.9	0.3	0.2	0.2	0.2	0.2	0.2	0.2
DP Signage on-mode power	W/dm2		8.0	4.2	2.6	1.8	1.3	0.9	0.7	0.7	0.7
DP Signage standby power	W/dm2		8.0	4.2	2.6	1.8	1.3	0.9	0.7	0.7	0.7
SSTB	kWh/a		19.2	18.5	15.3						
CSTB	kWh/a		88	77	68	68	68	68	68	68	68
VIDEO players/recorders	kWh/a		16	16	16	16					
VIDEO projectors	kWh/a	200	200	200	200	200	200				
VIDEO game consoles	kWh/a		63	84	124	175	159	159	159	159	159

EFSECO

EFFICIENCY STOCK ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<i>PSU efficiency for ES&amp;DS</i>											
ES tower 1-socket traditional	%	67.4%	74.4%	76.2%	79.7%	85.9%	89.1%	89.8%	89.8%	89.8%	89.8%
ES rack 1-socket traditional	%	67.4%	74.4%	76.2%	79.8%	86.0%	89.1%	89.8%	89.8%	89.8%	89.8%
ES rack 2-socket traditional	%	71.6%	78.4%	80.2%	83.7%	88.9%	91.5%	92.1%	92.1%	92.1%	92.1%
ES rack 2-socket cloud	%		78.6%	80.4%	83.7%	88.9%	91.5%	92.1%	92.1%	92.1%	92.1%
ES rack 4-socket traditional	%	70.7%	77.4%	79.2%	83.4%	88.6%	90.9%	91.5%	91.5%	91.5%	91.5%
ES rack 4-socket cloud	%		77.6%	79.4%	83.4%	88.6%	90.9%	91.5%	91.5%	91.5%	91.5%
ES rack 2-socket resilient trad.	%	70.7%	77.4%	79.2%	82.8%	88.3%	90.9%	91.5%	91.5%	91.5%	91.5%
ES rack 2-socket resilient cloud	%		77.6%	79.4%	82.8%	88.3%	90.9%	91.5%	91.5%	91.5%	91.5%
ES rack 4-socket resilient trad.	%	70.7%	77.4%	79.2%	83.4%	88.6%	90.9%	91.5%	91.5%	91.5%	91.5%
ES rack 4-socket resilient cloud	%		77.6%	79.4%	83.4%	88.6%	90.9%	91.5%	91.5%	91.5%	91.5%
ES blade 1-socket traditional	%	71.6%	78.4%	80.3%	84.2%	89.3%	91.5%	92.1%	92.1%	92.1%	92.1%
ES blade 2-socket traditional	%	71.6%	78.4%	80.2%	84.3%	89.3%	91.5%	92.1%	92.1%	92.1%	92.1%
ES blade 2-socket cloud	%		78.5%	80.4%	84.3%	89.3%	91.5%	92.1%	92.1%	92.1%	92.1%
ES blade 4-socket traditional	%	71.6%	78.4%	80.2%	84.3%	89.3%	91.5%	92.1%	92.1%	92.1%	92.1%
ES blade 4-socket cloud	%		78.5%	80.4%	84.3%	89.3%	91.5%	92.1%	92.1%	92.1%	92.1%
DS Online 2	%	77.4%	83.7%	85.3%	88.1%	91.4%	93.5%	94.7%	94.8%	94.8%	94.8%
DS Online 3	%	77.4%	83.7%	85.3%	88.1%	91.5%	93.6%	94.8%	94.9%	94.9%	94.9%
DS Online 4	%	77.4%	83.6%	85.3%	88.2%	91.6%	93.6%	94.8%	94.9%	94.9%	94.9%
PC Desktop	kWh/a	498	193	130	64	38	38	38	38	38	38
PC Notebook	kWh/a	148	62	40	17	10	10	10	10	10	10
PC Tablet/slate	kWh/a		17	11	5	3	3	3	3	3	3
PC Thin client	kWh/a	148	62	39	17	10	10	10	10	10	10
PC Workstation	kWh/a	942	373	244	115	76	76	76	76	76	76
EP-Copier mono	kWh/a	1257	209	117	114	114	114	114	114		
EP-Copier colour	kWh/a		333	125	114	114	114	114	114	114	114
EP-printer mono	kWh/a	784	174	97	92	92	92	92	92	92	92
EP-printer colour	kWh/a		327	111	94	94	94	94	94	94	94
IJ SFD printer	kWh/a	51	8	3	3	3	3	3	3	3	3
IJ MFD printer	kWh/a	77	12	5	4	4	4	4	4	4	4
duplexing ( N-print 15%)	%	65%	69%	81%	85%	85%	85%	85%	85%	85%	85%
SB Home Gateway, on-mode hours	W		12	11	9	8	7	6	5	3	2
SB Home NAS, on-mode hours	W		19	18	16	14	12	10	8	6	4
SB Home Phones (fixed), on-mode hours	W	6	4	4	4	3	3	2	2	1	1
SB Office Phones (fixed), on-mode hours	W	8	6	5	5	4	3	3	2	2	1
SB Home Gateway, standby hours	W		5	2	0	0	0	0	0	0	0
SB Home NAS, standby hours	W		5	4	4	3	3	2	2	1	1
SB Home Phones (fixed), standby hours	W	0	0	0	0	0	0	0	0	0	0
SB Office Phones (fixed), standby hours	W	0	0	0	0	0	0	0	0	0	0
SB Home Gateway, idle hours	W		10	9	8	7	6	5	4	3	2
SB Home NAS, idle hours	W		15	9	3	2	2	2	2	2	2
SB Home Phones (fixed), idle hours	W	5	3	3	3	2	2	2	1	1	1
SB Office Phones (fixed), idle hours	W	7	5	4	4	3	3	2	2	1	1
<i>EPS Average Active Efficiency (of stock)</i>											
EPS ≤ 6W, low-V	%	64.2%	66.3%	69.5%	72.4%	73.6%	73.7%	73.7%	73.7%	73.7%	73.7%
EPS 6–10 W	%	68.4%	72.2%	76.4%	80.1%	81.9%	82.0%	82.0%	82.0%	82.0%	82.0%
EPS 10–12 W	%		73.6%	77.1%	80.7%	83.0%	83.1%	83.1%	83.1%	83.1%	83.1%
EPS 15–20 W	%		77.3%	79.6%	83.3%	85.0%	85.1%	85.1%	85.1%	85.1%	85.1%
EPS 20–30 W	%	78.8%	80.9%	83.8%	86.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%
EPS 30–65 W, multiple-V	%				83.3%	83.3%	83.3%	83.3%	83.3%	83.3%	83.3%
EPS 30-65 W	%				88.5%	88.5%	88.5%	88.5%	88.6%	88.6%	88.6%
EPS 65–120 W	%	83.6%	84.9%	86.6%	88.3%	88.5%	88.5%	88.5%	88.5%	88.5%	88.5%
EPS 65–120 W, multiple-V	%		86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%
EPS 12–15 W	%	72.2%	75.3%	78.3%	81.5%	84.1%	84.1%	84.2%	84.2%	84.2%	84.2%
<i>EPS Average No-load power (of stock)</i>											
EPS ≤ 6W, low-V	W	0.56	0.43	0.24	0.14	0.09	0.09	0.09	0.09	0.09	0.09
EPS 6–10 W	W	0.56	0.43	0.30	0.17	0.10	0.09	0.09	0.09	0.09	0.09
EPS 10–12 W	W		0.60	0.38	0.19	0.10	0.10	0.09	0.09	0.09	0.09
EPS 15–20 W	W		0.56	0.34	0.17	0.10	0.10	0.10	0.10	0.10	0.10
EPS 20–30 W	W	0.83	0.61	0.34	0.15	0.09	0.09	0.09	0.09	0.09	0.09
EPS 30–65 W, multiple-V	W				0.43	0.31	0.30	0.30	0.30	0.30	0.30
EPS 30-65 W	W				0.20	0.18	0.18	0.18	0.18	0.18	0.18
EPS 65–120 W	W	0.82	0.66	0.43	0.23	0.18	0.18	0.18	0.18	0.18	0.18
EPS 65–120 W, multiple-V	W		0.99	0.96	0.79	0.32	0.31	0.30	0.30	0.30	0.30
EPS 12–15 W	W	0.83	0.60	0.39	0.21	0.10	0.10	0.09	0.09	0.09	0.09
UPS below 1.5 kVA	%	88.1%	88.1%	88.1%	96.3%	98.9%	98.9%	98.9%	98.9%	98.9%	98.9%
UPS 1.5 to 5 kVA	%	89.8%	89.8%	89.8%	93.4%	98.2%	98.7%	98.7%	98.7%	98.7%	98.7%
UPS 5 to 10 kVA	%	92.3%	92.3%	92.3%	93.2%	94.4%	94.9%	94.9%	94.9%	94.9%	94.9%
UPS 10 to 200 kVA	%	92.7%	92.7%	92.9%	93.9%	95.3%	96.1%	96.1%	96.1%	96.1%	96.1%
RF household Refrigerators & Freezers AEC	kWh/a	490	333	272	227	183	148	121	106	98	89
RF household Refrigerators & Freezers EEI	EEL	109	66	52	42	33	26	20	17	15	14
CF open vertical chilled multi deck (RVC2)	EEL	110	90	81	65	47	39	39	39	39	39
CF open horizontal frozen island (RHF4)	EEL	109	89	81	66	49	44	44	44	44	44
CF other supermarket display (non-BCs)	EEL	110	90	81	69	58	55	54	53	53	53
CF Plug in one door beverage cooler	EEL	113	92	83	66	49	44	44	44	44	44
CF Plug in horizontal ice cream freezer	EEL	112	91	83	76	70	68	68	68	68	68
CF Spiral vending machine	EEL	138	104	88	69	54	45	45	45	45	45
PF Storage cabinet Chilled Vertical (CV)	EEL	96	96	96	83	62	57	57	57	57	57
PF Storage cabinet Frozen Vertical (FV)	EEL	91	91	91	79	58	53	53	53	53	53
PF Storage cabinet Chilled Horizontal (CH)	EEL	109	109	109	94	71	65	65	65	65	65
PF Storage cabinet Frozen Horizontal (FH)	EEL	106	106	106	91	67	61	61	61	61	61
<b>PF Storage cabinets All types</b>	<b>EEL</b>	<b>98</b>	<b>98</b>	<b>98</b>	<b>85</b>	<b>63</b>	<b>58</b>	<b>58</b>	<b>58</b>	<b>58</b>	<b>58</b>
PF Process Chiller AC MT S ≤ 300 kW	SEPR	2.7	2.7	2.7	2.8	2.8	2.9	2.9	2.9	2.9	2.9
PF Process Chiller AC MT L > 300 kW	SEPR	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.2	3.2	3.2
PF Process Chiller AC LT S ≤ 200 kW	SEPR	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7
PF Process Chiller AC LT L > 200 kW	SEPR	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8
PF Process Chiller WC MT S ≤ 300 kW	SEPR	3.6	3.6	3.6	3.7	3.8	3.9	3.9	3.9	3.9	3.9
PF Process Chiller WC MT L > 300 kW	SEPR	3.9	3.9	3.9	4.0	4.1	4.2	4.2	4.2	4.2	4.2
PF Process Chiller WC LT S ≤ 200 kW	SEPR	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2
PF Process Chiller WC LT L > 200 kW	SEPR	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4
<b>PF Process Chiller All MT&amp;LT</b>	<b>SEPR</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.5</b>	<b>2.5</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>

EFSECO

EFFICIENCY STOCK ECO	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
PF Condensing Unit MT S 0.2-1 kW	COP	1.4	1.4	1.4	1.5	1.6	1.6	1.6	1.6	1.6	1.6
PF Condensing Unit MT M 1-5 kW	COP	1.6	1.6	1.6	1.7	1.8	1.8	1.8	1.8	1.8	1.8
PF Condensing Unit MT L 5-20 kW	SEPR	2.6	2.6	2.6	2.8	2.9	2.9	2.9	2.9	2.9	2.9
PF Condensing Unit MT XL 20-50 kW	SEPR	2.7	2.7	2.7	2.8	2.9	2.9	2.9	2.9	2.9	2.9
PF Condensing Unit LT S 0.1-0.4 kW	COP	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
PF Condensing Unit LT M 0.4-2 kW	COP	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1
PF Condensing Unit LT L 2-8 kW	SEPR	1.5	1.5	1.5	1.6	1.7	1.7	1.7	1.7	1.7	1.7
PF Condensing Unit LT XL 8-20 kW	SEPR	1.6	1.6	1.6	1.7	1.8	1.8	1.8	1.8	1.8	1.8
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>COP/SEPR</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>
CA El. Hobs	Wh/ltr	196	190	188	187	185	184	183	182	181	180
CA El. Ovens	kWh/cyc	134	122	110	97	87	82	79	79	78	78
CA Gas Hobs	%	60%	61%	61%	61%	62%	62%	63%	63%	63%	63%
CA Gas Ovens	kWh prim/a	244	224	214	195	176	159	144	139	135	131
CA Range Hoods	kWh/a	133	133	132	126	115	103	97	95	94	93
CM Dripfilter (glass), brewing	kWh/a	55	55	55	55	55	55	55	55	55	55
CM Dripfilter (thermos), brewing	kWh/a	48	48	48	48	48	48	48	48	48	48
CM Dripfilter (full automatic), brewing	kWh/a	49	49	49	49	49	49	49	49	49	49
CM Pad filter, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
CM Hard cap espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
CM Semi-auto espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
CM Fully-auto espresso, brewing	kWh/a	18	18	18	18	18	18	18	18	18	18
CM Dripfilter (glass), standby/keep warm	kWh/a	38	38	34	20	19	19	19	19	19	19
CM Dripfilter (thermos), standby/keep warm	kWh/a	0	0	0	0	0	0	0	0	0	0
CM Dripfilter (full automatic), sb/keep warm	kWh/a	0	0	0	0	0	0	0	0	0	0
CM Pad filter, standby/keep warm	kWh/a	19	19	17	10	9	9	9	9	9	9
CM Hard cap espresso, standby/keep warm	kWh/a	19	19	16	10	9	9	9	9	9	9
CM Semi-auto espresso, standby/keep warm	kWh/a	19	19	17	10	9	9	9	9	9	9
CM Fully-auto espresso, standby/keep warm	kWh/a	19	19	16	10	9	9	9	9	9	9
WM household Washing Machine	kWh/cyc	1.72	0.92	0.75	0.63	0.53	0.47	0.43	0.43	0.43	0.43
WM household Washing Machine	kWh/a	434	186	144	117	95	82	75	75	75	75
DW household Dish Washer energy/cycle	kWh/cycle	1.63	1.06	0.96	0.90	0.85	0.81	0.77	0.74	0.70	0.67
DW AEC (annual energy consumption)	kWh/a	343	223	202	189	178	169	162	154	147	140
LD vented el.	kWh elec/a	427	388	413	433	434	431	430	432	435	439
LD condens el.	kWh elec/a	455	415	419	385	332	295	275	261	250	239
LD vented gas	kWh prim /a	387	399	438	465	472	470	469	471	474	478
VC dom	W	1176	1440	1525	793	934	894	888	865	843	820
VC nondom	W	929	1247	1208	951	894	871	850	828	807	785
FAN Axial<300Pa (all FAN types >125W)	%	31%	30.9%	32.1%	34.4%	37.0%	38.4%	39.0%	39.0%	39.0%	39.0%
FAN Axial>300Pa	%	37%	37.1%	37.8%	39.5%	41.8%	43.4%	44.0%	44.0%	44.0%	44.0%
FAN Centr.FC	%	32%	32.1%	33.3%	37.1%	41.5%	44.5%	45.4%	45.4%	45.4%	45.4%
FAN Centr.BC-free	%	56%	56.4%	58.5%	62.0%	65.4%	66.8%	67.0%	67.0%	67.0%	67.0%
FAN Centr.BC	%	54%	53.7%	56.1%	59.7%	63.3%	64.6%	64.8%	64.8%	64.8%	64.8%
FAN Cross-flow	%	7%	7.3%	9.0%	13.5%	17.8%	20.6%	21.0%	21.0%	21.0%	21.0%
<i>MT motors</i>											
Medium (S) 3-ph 0.75-7.5 kW no VSD	%	69.7%	75.5%	78.0%	81.2%	83.4%	84.4%	84.7%	84.9%	85.0%	85.2%
Medium (M) 3-ph 7.5-75 kW no VSD	%	85.0%	87.6%	88.5%	89.6%	90.8%	91.5%	91.7%	91.8%	91.9%	92.0%
Medium (L) 3-ph 75-375 kW no VSD	%	91.8%	93.0%	93.6%	94.0%	94.6%	95.2%	95.5%	95.6%	95.6%	95.7%
Medium (S) 3-ph 0.75-7.5 kW with VSD	%	59.1%	65.8%	68.8%	72.2%	74.4%	75.9%	76.3%	76.6%	76.9%	77.2%
Medium (M) 3-ph 7.5-75 kW with VSD	%	77.2%	81.0%	82.5%	84.0%	85.3%	86.3%	86.7%	86.9%	87.1%	87.3%
Medium (L) 3-ph 75-375 kW with VSD	%	84.8%	87.2%	88.3%	89.3%	90.2%	90.8%	91.3%	91.5%	91.6%	91.8%
Small 1 ph 0.12-0.75 kW no VSD	%	62.4%	64.8%	65.5%	66.3%	69.6%	72.8%	73.3%	73.7%	74.1%	74.5%
Small 1 ph 0.12-0.75 kW with VSD	%	47.7%	50.5%	51.4%	52.4%	56.5%	60.1%	60.6%	61.1%	61.5%	61.9%
Small 3 ph 0.12-0.75 kW no VSD	%	62.4%	64.8%	65.5%	66.3%	69.6%	72.8%	73.3%	73.7%	74.1%	74.5%
Small 3 ph 0.12-0.75 kW with VSD	%	47.7%	50.5%	51.4%	52.4%	56.5%	60.1%	60.7%	61.1%	61.5%	62.0%
Large 3-ph LV 375-1000 kW no VSD	%	93.5%	93.9%	94.2%	94.4%	94.9%	95.4%	95.8%	96.1%	96.1%	96.2%
Large 3-ph LV 375-1000kW with VSD	%	86.6%	87.9%	88.3%	88.7%	89.4%	90.1%	90.6%	91.0%	91.1%	91.3%
Explosion motors (S) 3-ph 0.75-7.5 kW	%	69.7%	75.4%	76.1%	76.8%	80.5%	84.2%	84.6%	84.8%	85.0%	85.1%
Explosion motors (M) 3-ph 7.5-75 kW	%	85.0%	87.6%	87.9%	88.2%	89.5%	91.1%	91.7%	91.8%	91.9%	92.0%
Explosion motors (L) 3-ph 75-375 kW	%	91.8%	93.0%	93.4%	93.6%	94.1%	94.7%	95.3%	95.6%	95.6%	95.7%
Brake motors (S) 3-ph 0.75-7.5 kW	%	69.7%	75.4%	76.1%	76.8%	80.5%	84.2%	84.6%	84.8%	85.0%	85.1%
Brake motors (M) 3-ph 7.5-75 kW	%	85.0%	87.6%	87.9%	88.2%	89.5%	91.1%	91.7%	91.8%	91.9%	92.0%
Brake motors (L) 3-ph 75-375 kW	%	91.8%	93.0%	93.4%	93.6%	94.1%	94.7%	95.3%	95.6%	95.6%	95.7%
8-pole motors (S) 3-ph 0.75-7.5 kW	%	61.7%	67.4%	68.1%	68.8%	73.1%	77.6%	78.2%	78.6%	79.0%	79.4%
8-pole motors (M) 3-ph 7.5-75 kW	%	82.0%	84.6%	84.9%	85.2%	86.5%	88.0%	88.8%	88.9%	89.0%	89.2%
8-pole motors (L) 3-ph 75-375 kW	%	89.8%	91.0%	91.4%	91.6%	92.1%	92.8%	93.5%	93.9%	94.0%	94.0%
1-phase motors >0.75 kW (no VSD)	%	69.5%	75.0%	75.9%	76.5%	78.4%	80.5%	81.9%	82.3%	82.7%	83.1%
Total WP Water Pumps	%	65.6%	66.6%	67.3%	68.2%	68.5%	68.5%	68.5%	68.5%	68.5%	68.5%
CP Fixed Speed 5-1280 l/s	%	57.5%	62.7%	63.3%	64.7%	66.0%	66.4%	66.6%	66.7%	66.7%	66.8%
CP Variable speed 5-1280 l/s	%	58.9%	66.3%	65.2%	65.3%	66.2%	66.9%	67.0%	67.0%	67.0%	67.0%
CP Pistons 2-64 l/s	%	42.8%	46.6%	47.4%	48.7%	49.7%	50.0%	50.0%	50.0%	50.0%	50.0%
TRAF0 Distribution	kWh/a	7859	7859	7659	7204	6802	6439	6106	5795	5498	5216
TRAF0 Industry oil	kWh/a	27168	27168	26035	23441	21091	18886	16809	15631	15631	15631
TRAF0 Industry dry	kWh/a	39727	39727	38772	36596	34648	32853	31152	29544	28629	28629
TRAF0 Power	kWh/a	724886	724886	724886	724886	724886	724886	724886	724886	724886	724886
TRAF0 DER oil	kWh/a		59094	54190	46149	41129	38090	36268	35515	35515	35515
TRAF0 DER dry	kWh/a		62415	59232	53963	50751	48781	47598	47109	47109	47109
TRAF0 Small	kWh/a	2523	2523	2523	2523	2523	2523	2523	2523	2523	2523
<i>(Fuel losses due to RRC in L/100km/vehicle)</i>											
Tyres C1, replacement for cars	L/100km	1.95	1.26	1.00	0.94	0.82	0.71	0.66	0.64	0.62	0.60
Tyres C1, OEM for cars	L/100km	1.95	1.27	1.16	1.02	0.86	0.74	0.69	0.66	0.64	0.61
Tyres C2, replacement for vans	L/100km	2.65	1.99	1.75	1.73	1.57	1.49	1.43	1.37	1.31	1.26
Tyres C2, OEM for vans	L/100km	2.65	2.02	1.91	1.79	1.64	1.54	1.47	1.41	1.35	1.29
Tyres C3, replacement for trucks/busses	L/100km	7.46	5.38	4.75	4.88	4.74	4.65	4.59	4.53	4.47	4.42
Tyres C3, OEM for trucks/busses	L/100km	7.46	5.44	5.19	5.04	4.86	4.78	4.71	4.64	4.58	4.51

ELECBAU

db	BAU Electricity (in TWh elec)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	225	250	254	257	259	258	261	270	283	297
	<b>Total CH Central Heating combi, water heat</b>	0.02	2	3	4	4	4	4	4	5	5	5
	<b>TOTAL WATER HEATING</b>		<b>227</b>	<b>253</b>	<b>258</b>	<b>261</b>	<b>263</b>	<b>262</b>	<b>266</b>	<b>275</b>	<b>288</b>	<b>302</b>
	CH non-electric	0	0	0	0	0	0	0	0	0	0	0
	CH electric resistance boiler, 1st estimate	1	50	40	35	30	25	20	15	10	5	0
	CH heat pump, 1st estimate	1	24	56	60	63	66	69	72	75	78	81
	CH auxiliary electricity (incl. circulator), 1st estimate	1	28	30	30	28	29	31	31	30	28	27
	<b>Total CH Central Heating boiler, space heat</b>		<b>102</b>	<b>126</b>	<b>126</b>	<b>121</b>	<b>120</b>	<b>120</b>	<b>118</b>	<b>115</b>	<b>112</b>	<b>108</b>
	SFB Wood Manual	0	0	0	0	0	0	0	0	0	0	0
	SFB Wood Direct Draft	0	0	0	0	0	0	0	0	0	0	0
	SFB Coal	0	0	0	0	0	0	0	0	0	0	0
	SFB Pellets	0	0	0	0	0	0	0	0	0	0	0
	SFB Wood chips	0	0	0	0	0	0	0	0	0	0	0
	<b>Total Solid Fuel Boiler</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	CHAE-S (<= 400 kW)	1	4	11	12	13	13	12	13	13	13	13
	CHAE-L (> 400 kW)	1	6	14	16	17	16	15	14	13	12	12
	CHWE-S (<= 400 kW)	1	0	1	1	1	1	1	1	1	1	1
	CHWE-M (> 400 kW; <= 1500 kW)	1	1	3	4	4	3	3	3	3	3	3
	CHWE-L (> 1500 kW)	1	1	2	2	2	2	2	2	2	2	2
	CHF	0.05	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-S	1	23	36	40	43	44	45	45	46	47	47
	HT PCH-AE-L	1	22	35	38	40	42	42	43	43	44	44
	HT PCH-WE-S	1	5	8	8	9	9	9	10	10	10	10
	HT PCH-WE-M	1	9	15	16	18	18	19	19	19	19	20
	HT PCH-WE-L	1	2	3	3	4	4	4	4	4	4	4
	AC rooftop	1	3	8	8	7	5	3	2	1	0	0
	AC splits	1	4	13	13	12	11	10	9	8	7	6
	AC VRF	1	0	3	5	6	8	9	11	12	12	13
	ACF	0.05	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Cooling</b>		<b>82</b>	<b>152</b>	<b>165</b>	<b>174</b>	<b>176</b>	<b>175</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>
	AC rooftop (rev)	1	4	13	13	12	9	6	3	1	0	0
	AC splits (rev)	1	8	25	25	25	23	21	19	17	15	13
	AC VRF (rev)	1	0	8	12	16	20	24	27	28	29	28
	ACF (rev)	0.05	0	0	0	0	0	0	0	0	0	0
	AHF	0.05	5	3	3	2	2	2	2	1	1	1
	AHE	1	1	3	2	1	1	1	1	1	1	1
	<b>SubTotal AHC central Air Heating</b>		<b>18</b>	<b>52</b>	<b>55</b>	<b>56</b>	<b>55</b>	<b>54</b>	<b>51</b>	<b>48</b>	<b>46</b>	<b>43</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>		<b>100</b>	<b>204</b>	<b>221</b>	<b>230</b>	<b>232</b>	<b>229</b>	<b>225</b>	<b>222</b>	<b>220</b>	<b>217</b>
	LH open fireplace	0	0	0	0	0	0	0	0	0	0	0
	LH closed fireplace/inset	0	0	0	0	0	0	0	0	0	0	0
	LH wood stove	0	0	0	0	0	0	0	0	0	0	0
	LH coal stove	0	0	0	0	0	0	0	0	0	0	0
	LH cooker	0	0	0	0	0	0	0	0	0	0	0
	LH SHR stove	0	0	0	0	0	0	0	0	0	0	0
	LH pellet stove	0	0	0	0	0	0	0	0	0	0	0
	LH open fire gas	0	0	0	0	0	0	0	0	0	0	0
	LH closed fire gas	0	0	0	0	0	0	0	0	0	0	0
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	1	28	28	28	27	27	27	27	26	26	25
	LH elec.convector	1	116	115	115	113	112	112	112	110	107	104
	LH elec.storage	1	9	9	9	8	8	8	8	8	8	8
	LH elec.underfloor	1	16	16	16	16	16	16	16	16	16	15
	LH luminous heaters	0	0	0	0	0	0	0	0	0	0	0
	LH tube heaters	0	0	0	0	0	0	0	0	0	0	0
	<b>LH total</b>		<b>169</b>	<b>168</b>	<b>167</b>	<b>165</b>	<b>164</b>	<b>163</b>	<b>163</b>	<b>160</b>	<b>156</b>	<b>153</b>
	RAC (cooling demand), all types <12 kW	1	3	18	22	25	31	34	36	37	38	40
	RAC (heating demand), reversible <12kW	1	2	22	31	41	50	53	52	51	49	47
	<b>Total RAC Room Air Conditioner</b>		<b>4</b>	<b>41</b>	<b>53</b>	<b>66</b>	<b>81</b>	<b>87</b>	<b>88</b>	<b>88</b>	<b>87</b>	<b>87</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	16	21	22	22	23	24	24	23	22	20
	<b>TOTAL SPACE HEATING</b>		<b>291</b>	<b>368</b>	<b>379</b>	<b>383</b>	<b>390</b>	<b>390</b>	<b>385</b>	<b>374</b>	<b>363</b>	<b>351</b>
	<b>TOTAL SPACE COOLING</b>		<b>84</b>	<b>170</b>	<b>187</b>	<b>199</b>	<b>207</b>	<b>209</b>	<b>210</b>	<b>211</b>	<b>212</b>	<b>214</b>
	NRVU electricity	1	19	61	69	74	77	78	79	81	84	87
1	NRVU heat (negative=saving vs. natural vent.)	0	0	0	0	0	0	0	0	0	0	0
	RVU Central Unidir. VU <=125W/fan (1 fan)	1	8	15	17	17	16	16	17	18	19	20
	RVU Central Balanced VU <=125W/fan (2 fans)	1	0	1	2	4	6	7	8	9	10	11
	RVU Local Balanced VU <125 W, also NR (2 fans)	1	0	0	0	1	1	1	2	2	3	3
1	RVU Central Unidir., heat (negative=saving )	0	0	0	0	0	0	0	0	0	0	0
1	RVU Central Balanced, heat (negative=saving )	0	0	0	0	0	0	0	0	0	0	0
1	RVU Local Balanced, heat (negative=saving )	0	0	0	0	0	0	0	0	0	0	0
	<b>Total VU (electricity only)</b>		<b>27</b>	<b>78</b>	<b>89</b>	<b>96</b>	<b>99</b>	<b>102</b>	<b>106</b>	<b>110</b>	<b>115</b>	<b>121</b>
	<b>TOTAL VENTILATION (electricity only)</b>		<b>27</b>	<b>78</b>	<b>89</b>	<b>96</b>	<b>99</b>	<b>102</b>	<b>106</b>	<b>110</b>	<b>115</b>	<b>121</b>

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db	BAU Electricity (in TWh elec), c'td	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>LS, incl. control gear</i>											
	LFL (T12,T8h,T8t,T5,other)	1	91	138	165	185	183	157	123	96	75	59
	HID (HPM, HPS, MH)	1	34	70	73	74	63	42	23	12	7	4
	CFLni (all shapes)	1	2	10	11	11	10	7	4	2	1	1
	CFLi (retrofit for GLS, HL)	1	1	13	17	18	15	12	8	5	3	2
	GLS (DLS & NDLS)	1	90	73	53	39	23	13	8	5	3	2
	HL (DLS & NDLS, LV & MV)	1	8	43	56	66	47	24	12	7	4	2
	LED replacing LFL (retrofit & luminaire)	1	0	0	1	9	27	55	83	109	134	161
	LED replacing HID (retrofit & luminaire)	1	0	0	0	7	21	37	50	61	72	83
	LED replacing CFLni (retrofit & luminaire)	1	0	0	0	0	1	3	4	5	6	7
	LED replacing DLS (retrofit & luminaire)	1	0	0	0	1	2	4	5	6	7	8
	LED replacing NDLS (retrofit & luminaire)	1	0	0	0	4	10	16	22	26	29	32
	<i>Special Purpose Lamps (SPL)</i>	1	40	61	53	45	37	30	30	30	30	30
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	11	17	15	13	10	9	9	9	9	9
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)		225	346	375	392	340	255	178	127	93	69
	SUBTOTAL LED		0	0	2	21	62	115	164	207	248	291
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>276</b>	<b>424</b>	<b>444</b>	<b>470</b>	<b>450</b>	<b>409</b>	<b>381</b>	<b>372</b>	<b>380</b>	<b>399</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>225</b>	<b>346</b>	<b>377</b>	<b>413</b>	<b>403</b>	<b>370</b>	<b>342</b>	<b>334</b>	<b>341</b>	<b>360</b>
	DP TV on-mode, total all types	1	29	75	85	88	80	90	90	84	82	84
	DP TV standby, standard (NoNA)	1	4	2	1	0	0	0	0	0	0	0
	DP TV standby, LoNA	1	0	0	1	1	1	0	0	0	0	0
	DP TV standby, HiNA ('Smart')	1	0	0	2	5	7	9	10	9	8	6
	<b>DP TV standby, total all types</b>		<b>4</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>6</b>
	<b>DP TV total on-mode + standby</b>		<b>33</b>	<b>77</b>	<b>88</b>	<b>95</b>	<b>88</b>	<b>100</b>	<b>100</b>	<b>93</b>	<b>89</b>	<b>90</b>
	DP Monitor on-mode	1	1	15	9	6	6	5	4	4	4	4
	DP Monitor standby	1	0	1	0	0	0	0	0	0	0	0
	<b>DP Monitor total</b>		<b>1</b>	<b>15</b>	<b>9</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	DP Signage on-mode	1	0	1	9	20	24	24	22	21	20	20
	DP Signage standby	1	0	0	1	3	4	4	3	3	3	3
	<b>DP Signage total</b>		<b>0</b>	<b>1</b>	<b>10</b>	<b>23</b>	<b>28</b>	<b>27</b>	<b>25</b>	<b>24</b>	<b>23</b>	<b>23</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>30</b>	<b>91</b>	<b>103</b>	<b>115</b>	<b>111</b>	<b>119</b>	<b>116</b>	<b>108</b>	<b>105</b>	<b>107</b>
	<b>DP Electronic Displays, total standby</b>		<b>4</b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>9</b>
	<b>DP Electronic Displays, total</b>		<b>34</b>	<b>94</b>	<b>107</b>	<b>124</b>	<b>123</b>	<b>132</b>	<b>129</b>	<b>120</b>	<b>116</b>	<b>116</b>
	SSTB	1	0	3	1	0	0	0	0	0	0	0
	CSTB	1	0	7	17	19	20	19	20	22	23	25
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>10</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>19</b>	<b>20</b>	<b>22</b>	<b>23</b>	<b>25</b>
	VIDEO players/recorders	1	0	2	3	1	0	0	0	0	0	0
	VIDEO projectors	1	0	2	2	1	0	0	0	0	0	0
	VIDEO game consoles	1	0	5	8	11	13	14	14	14	14	14
	<b>Total VIDEO</b>		<b>0</b>	<b>9</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
	<i>ES &amp; DS, without effects on infrastructure</i>											
	ES tower 1-socket traditional	1	0.0	1.0	0.9	0.6	0.5	0.4	0.4	0.4	0.4	0.4
	ES rack 1-socket traditional	1	0.1	3.2	2.4	2.1	2.1	2.2	2.2	2.2	2.2	2.2
	ES rack 2-socket traditional	1	0.8	14.7	7.8	4.7	5.5	6.4	7.0	7.0	7.0	7.0
	ES rack 2-socket cloud	1		8.2	12.7	14.2	16.5	19.5	21.1	21.1	21.1	21.1
	ES rack 4-socket traditional	1	0.1	1.6	0.8	0.7	0.8	0.9	1.0	1.0	1.0	1.0
	ES rack 4-socket cloud	1		0.9	1.6	2.2	2.6	3.0	3.3	3.3	3.3	3.3
	ES rack 2-socket resilient trad.	1	0.0	0.8	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3
	ES rack 2-socket resilient cloud	1		0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
	ES rack 4-socket resilient trad.	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	1		0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 1-socket traditional	1	0.1	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	ES blade 2-socket traditional	1	0.6	6.7	3.4	2.2	2.5	3.0	3.3	3.3	3.3	3.3
	ES blade 2-socket cloud	1		3.8	5.7	6.8	8.0	9.5	10.3	10.3	10.3	10.3
	ES blade 4-socket traditional	1	0.1	0.8	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.4
	ES blade 4-socket cloud	1		0.5	0.7	0.9	1.0	1.2	1.3	1.3	1.3	1.3
	<b>ES total traditional</b>		<b>2</b>	<b>30</b>	<b>17</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>
	<b>ES total cloud</b>		<b>0</b>	<b>14</b>	<b>21</b>	<b>25</b>	<b>29</b>	<b>34</b>	<b>37</b>	<b>37</b>	<b>37</b>	<b>37</b>
	<b>ES Enterprise Servers total</b>		<b>2</b>	<b>44</b>	<b>38</b>	<b>36</b>	<b>41</b>	<b>48</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>
	DS Online 2	1	0.4	6.5	8.7	11.8	15.0	17.9	18.7	18.8	18.8	18.8
	DS Online 3	1	0.1	1.0	1.3	1.7	2.1	2.5	2.6	2.7	2.7	2.7
	DS Online 4	1	0.3	3.7	4.9	6.5	8.2	9.8	10.3	10.3	10.3	10.3
	<b>DS Data Storage products total</b>		<b>1</b>	<b>11</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>3</b>	<b>55</b>	<b>53</b>	<b>56</b>	<b>67</b>	<b>79</b>	<b>84</b>	<b>84</b>	<b>84</b>	<b>84</b>
	PC Desktop	1	14	22	13	5	3	3	3	3	3	3
	PC Notebook	1	0	7	4	1	1	1	1	1	1	1
	PC Tablet/slate	1	0	0	2	2	1	2	2	2	2	2
	PC Thin client	1	0	0	0	0	0	0	0	0	0	0
	PC Workstation	1	0	1	1	0	0	0	0	0	0	0
	<b>Total PC, electricity</b>		<b>15</b>	<b>31</b>	<b>19</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>



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db	BAU Electricity (in TWh elec), c'td	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	EP-Copier mono	1	10	1	1	0	0	0	0	0	0	0
	EP-Copier colour	1	0	0	1	1	2	2	2	2	2	3
	EP-printer mono	1	9	3	2	2	1	1	1	1	1	1
	EP-printer colour	1	0	1	2	3	3	4	4	5	5	6
	IJ SFD printer	1	1	1	0	0	0	0	0	0	0	0
	IJ MFD printer	1	1	1	2	2	2	2	2	2	3	3
	<b>Total imaging equipment, electricity</b>		<b>22</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>12</b>
	SB Home Gateway, on-mode hours	1	0	4	5	5	6	6	5	5	4	3
	SB Home NAS, on-mode hours	1	0	0	0	1	1	1	1	1	0	0
	SB Home Phones (fixed), on-mode hours	1	0	0	1	1	0	0	0	0	0	0
	SB Office Phones (fixed), on-mode hours	1	0	1	1	1	1	0	0	0	0	0
	SB Home Gateway, standby hours	1	0	2	1	0	0	0	0	0	0	0
	SB Home NAS, standby hours	1	0	0	1	1	1	1	1	1	1	1
	SB Home Phones (fixed), standby hours	1	0	0	0	0	0	0	0	0	0	0
	SB Office Phones (fixed), standby hours	1	0	0	0	0	0	0	0	0	0	0
	SB Home Gateway, idle hours	1	0	4	7	11	11	11	11	10	8	6
	SB Home NAS, idle hours	1	0	0	0	0	0	0	0	0	0	0
	SB Home Phones (fixed), idle hours	1	1	4	4	4	4	3	3	2	2	1
	SB Office Phones (fixed), idle hours	1	1	3	3	2	2	2	2	1	1	1
	<b>Total SB (networked) StandBy (rest)</b>		<b>2</b>	<b>19</b>	<b>22</b>	<b>26</b>	<b>26</b>	<b>25</b>	<b>23</b>	<b>20</b>	<b>16</b>	<b>11</b>
db	<i>EPS Active mode (electricity losses)</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.1	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.1
0.6	EPS 10–12 W	1	0	8.1	12.8	13.8	13.4	12.9	12.4	11.8	11.3	11.1
0.5	EPS 15–20 W	1	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 20–30 W	1	0.0	0.9	1.1	1.0	0.9	0.9	0.8	0.7	0.6	0.5
0.8	EPS 30–65 W, multiple-V	1	0	0	0	0.1	0.2	0.2	0.3	0.4	0.5	0.6
1.0	EPS 30–65 W	1	0	0	0	0.0	0.1	0.2	0.3	0.3	0.2	0.2
1.0	EPS 65–120 W	1	0.0	0.3	0.3	0.3	0.2	0.1	0	0	0	0
0.5	EPS 65–120 W, multiple-V	1	0	1.5	1.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2
0.0	EPS 12–15 W	1	0.0	0.3	0.6	0.9	0.9	0.9	0.8	0.8	0.8	0.7
	<b>EPS, total for active mode</b>		<b>0.1</b>	<b>12.5</b>	<b>17.4</b>	<b>17.8</b>	<b>17.2</b>	<b>16.6</b>	<b>16.0</b>	<b>15.4</b>	<b>14.7</b>	<b>14.5</b>
db	<i>EPS No-load mode</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	1	0.1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9
0.0	EPS 10–12 W	1	0.0	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
0.0	EPS 15–20 W	1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.1</b>	<b>1.8</b>	<b>1.8</b>	<b>1.8</b>	<b>1.6</b>	<b>1.5</b>	<b>1.4</b>	<b>1.3</b>	<b>1.2</b>	<b>1.1</b>
	<b>EPS, overall total (active + no-load)</b>		<b>0.2</b>	<b>14.4</b>	<b>19.3</b>	<b>19.5</b>	<b>18.8</b>	<b>18.1</b>	<b>17.4</b>	<b>16.6</b>	<b>15.9</b>	<b>15.6</b>
	<b>EPS, double counted subtracted</b>		<b>0.2</b>	<b>7.5</b>	<b>9.7</b>	<b>9.9</b>	<b>9.5</b>	<b>9.1</b>	<b>8.7</b>	<b>8.3</b>	<b>7.9</b>	<b>7.7</b>
	UPS below 1.5 kVA	1	0.7	1.5	1.5	1.8	2.2	2.5	2.8	3.1	3.3	3.5
	UPS 1.5 to 5 kVA	1	2.7	5.8	6.3	6.9	8.3	9.7	11.0	12.2	13.3	14.0
	UPS 5 to 10 kVA	1	0.3	0.7	0.8	0.9	1.0	1.2	1.4	1.6	1.7	1.8
	UPS 10 to 200 kVA	1	1.9	4.2	4.6	4.6	5.0	5.8	6.7	7.5	8.2	8.8
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>6</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>19</b>	<b>22</b>	<b>24</b>	<b>27</b>	<b>28</b>
	<b>TOTAL ELECTRONICS</b>		<b>81</b>	<b>244</b>	<b>264</b>	<b>278</b>	<b>289</b>	<b>312</b>	<b>316</b>	<b>309</b>	<b>305</b>	<b>304</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	1	<b>138</b>	<b>139</b>	<b>139</b>	<b>139</b>	<b>139</b>	<b>139</b>	<b>139</b>	<b>138</b>	<b>138</b>	<b>137</b>
	CF open vertical chilled multi deck (RVC2)	1	15	14	13	13	12	12	12	12	12	12
	CF open horizontal frozen island (RHF4)	1	1	1	1	1	1	1	1	1	1	1
	CF other supermarket display (non-BCs)	1	26	26	26	25	25	26	27	28	29	30
	CF Plug in one door beverage cooler	1	18	18	17	16	15	16	16	16	17	17
	CF Plug in horizontal ice cream freezer	1	4	4	4	4	4	4	4	4	4	4
	CF Spiral vending machine	1	3	3	2	2	2	2	2	2	2	2
	<b>Total CF Commercial Refrigeration</b>		<b>68</b>	<b>67</b>	<b>63</b>	<b>60</b>	<b>59</b>	<b>60</b>	<b>61</b>	<b>63</b>	<b>65</b>	<b>67</b>
	PF Storage cabinet Chilled Vertical (CV)	1	1.8	2.5	2.6	2.7	2.8	3.0	3.1	3.2	3.4	3.5
	PF Storage cabinet Frozen Vertical (FV)	1	2.1	2.9	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1
	PF Storage cabinet Chilled Horizontal (CH)	1	1.4	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7
	PF Storage cabinet Frozen Horizontal (FH)	1	0.8	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.6
	<b>PF Storage cabinets All types</b>	1	<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	3.2	7.0	8.2	9.4	10.5	11.5	12.7	13.8	14.9	16.1
	PF Process Chiller AC MT L > 300 kW	1	3.1	6.7	7.9	9.1	10.1	11.1	12.2	13.3	14.4	15.5
	PF Process Chiller AC LT S ≤ 200 kW	1	3.2	7.0	8.2	9.4	10.5	11.6	12.7	13.9	15.0	16.1
	PF Process Chiller AC LT L > 200 kW	1	3.3	7.3	8.5	9.8	10.9	12.0	13.2	14.3	15.5	16.7
	PF Process Chiller WC MT S ≤ 300 kW	1	0.9	1.9	2.3	2.6	2.9	3.2	3.5	3.8	4.2	4.5
	PF Process Chiller WC MT L > 300 kW	1	1.3	2.9	3.4	3.9	4.3	4.8	5.2	5.7	6.2	6.6
	PF Process Chiller WC LT S ≤ 200 kW	1	1.1	2.5	2.9	3.4	3.8	4.1	4.5	4.9	5.3	5.8
	PF Process Chiller WC LT L > 200 kW	1	1.4	3.2	3.7	4.3	4.8	5.2	5.7	6.3	6.8	7.3
	<b>PF Process Chiller All MT&amp;LT</b>	1	<b>18</b>	<b>39</b>	<b>45</b>	<b>52</b>	<b>58</b>	<b>64</b>	<b>70</b>	<b>76</b>	<b>82</b>	<b>88</b>

ELECBAU

db	BAU Electricity (in TWh elec), c'td	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Condensing Unit MT S 0.2-1 kW	1	7	5	5	5	6	6	7	7	8	8
	PF Condensing Unit MT M 1-5 kW	1	17	13	13	13	14	15	17	18	19	21
	PF Condensing Unit MT L 5-20 kW	1	20	16	16	16	18	19	20	22	24	26
	PF Condensing Unit MT XL 20-50 kW	1	20	16	16	16	18	19	20	22	24	25
	PF Condensing Unit LT S 0.1-0.4 kW	1	1	1	1	1	1	1	1	1	1	1
	PF Condensing Unit LT M 0.4-2 kW	1	3	2	2	2	3	3	3	3	4	4
	PF Condensing Unit LT L 2-8 kW	1	5	4	4	4	4	5	5	5	6	6
	PF Condensing Unit LT XL 8-20 kW	1	16	13	12	13	14	15	16	17	18	20
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1</b>	<b>89</b>	<b>71</b>	<b>68</b>	<b>71</b>	<b>77</b>	<b>82</b>	<b>89</b>	<b>96</b>	<b>103</b>	<b>111</b>
	<b>PF Professional Refrigeration, Total</b>		<b>59</b>	<b>75</b>	<b>81</b>	<b>89</b>	<b>98</b>	<b>107</b>	<b>116</b>	<b>125</b>	<b>135</b>	<b>145</b>
	<b>TOTAL FOOD PRESERVATION</b>		<b>265</b>	<b>281</b>	<b>284</b>	<b>288</b>	<b>296</b>	<b>305</b>	<b>316</b>	<b>326</b>	<b>337</b>	<b>349</b>
	CA El. Hobs	1	20	31	35	38	40	43	45	47	50	52
	CA El. Ovens	1	23	23	22	21	20	21	21	21	22	22
	CA Gas Hobs	0	0	0	0	0	0	0	0	0	0	0
	CA Gas Ovens	0	0	0	0	0	0	0	0	0	0	0
	CA Range Hoods	1	10	12	13	14	14	15	16	17	17	18
	<b>Total CA Cooking Appliances</b>		<b>54</b>	<b>67</b>	<b>70</b>	<b>72</b>	<b>75</b>	<b>79</b>	<b>82</b>	<b>85</b>	<b>88</b>	<b>91</b>
	CM Dripfilter (glass)	1	6.3	4.4	3.9	3.2	2.9	2.9	2.9	2.9	2.9	2.9
	CM Dripfilter (thermos)	1	0.4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2
	CM Dripfilter (full automatic)	1	0.0	0.5	0.6	0.6	0.7	0.8	0.9	0.9	1.0	1.1
	CM Pad filter	1	0.0	0.5	0.6	0.6	0.7	0.8	0.8	0.9	0.9	1.0
	CM Hard cap espresso	1	0.0	0.1	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5
	CM Semi-auto espresso	1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
	CM Fully-auto espresso	1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	CM Dripfilter (glass), standby/keep warm	1	4.3	3.0	2.7	2.2	2.0	2.0	2.0	2.0	2.0	2.0
	CM Dripfilter (thermos), standby/keep warm	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	1	0.0	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0
	CM Hard cap espresso, standby/keep warm	1	0.0	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.5
	CM Semi-auto espresso, standby/keep warm	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
	<b>Total CM household Coffee Makers</b>		<b>11</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>11</b>
	<b>TOTAL COOKING</b>		<b>65</b>	<b>78</b>	<b>80</b>	<b>82</b>	<b>85</b>	<b>89</b>	<b>92</b>	<b>96</b>	<b>99</b>	<b>102</b>
	<b>Total WM household Washing Machine</b>	<b>1</b>	<b>53</b>	<b>44</b>	<b>43</b>	<b>40</b>	<b>36</b>	<b>34</b>	<b>31</b>	<b>29</b>	<b>27</b>	<b>25</b>
	<b>Total DW household Dishwasher</b>	<b>1</b>	<b>13</b>	<b>23</b>	<b>27</b>	<b>30</b>	<b>34</b>	<b>37</b>	<b>40</b>	<b>43</b>	<b>45</b>	<b>48</b>
	LD vented el.	1	9	11	12	11	11	11	11	11	11	11
	LD condens el.	1	2	14	18	21	23	24	24	24	24	24
	LD vented gas	0	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>		<b>10</b>	<b>25</b>	<b>29</b>	<b>32</b>	<b>34</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>
	VC dom	1	10	17	23	24	34	39	43	47	49	50
	VC nondom	1	3	5	5	6	7	7	7	8	8	8
	<b>Total VC Vacuum Cleaner</b>		<b>13</b>	<b>22</b>	<b>28</b>	<b>30</b>	<b>41</b>	<b>46</b>	<b>51</b>	<b>55</b>	<b>57</b>	<b>59</b>
	<b>TOTAL CLEANING</b>		<b>89</b>	<b>114</b>	<b>126</b>	<b>132</b>	<b>145</b>	<b>152</b>	<b>157</b>	<b>161</b>	<b>164</b>	<b>165</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	19	53	62	69	76	81	82	82	82	82
0.5	FAN Axial>300Pa	1	33	97	111	117	122	125	126	126	126	126
0.5	FAN Centr.FC	1	8	17	21	23	25	27	27	27	27	27
0.5	FAN Centr.BC-free	1	21	44	53	58	63	69	73	76	77	79
0.5	FAN Centr.BC	1	22	50	60	66	73	80	86	92	100	109
0.5	FAN Cross-flow	1	1	2	3	3	4	4	4	5	5	6
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>53</b>	<b>132</b>	<b>155</b>	<b>168</b>	<b>182</b>	<b>193</b>	<b>199</b>	<b>204</b>	<b>209</b>	<b>214</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	109	139	147	151	150	146	141	135	127	117
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	165	215	227	234	232	224	214	200	183	163
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	334	428	445	454	445	421	383	335	290	262
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>		<b>608</b>	<b>781</b>	<b>819</b>	<b>838</b>	<b>827</b>	<b>791</b>	<b>738</b>	<b>670</b>	<b>600</b>	<b>541</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	7	17	21	25	29	34	40	46	53	62
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	13	32	40	49	58	68	80	93	109	126
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	38	94	118	145	174	206	242	283	323	352
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>59</b>	<b>143</b>	<b>178</b>	<b>219</b>	<b>262</b>	<b>309</b>	<b>361</b>	<b>422</b>	<b>485</b>	<b>540</b>
0.45	<b>Total 3-ph 0.75-375 kW w/w/o VSD</b>		<b>667</b>	<b>924</b>	<b>998</b>	<b>1057</b>	<b>1089</b>	<b>1100</b>	<b>1099</b>	<b>1092</b>	<b>1084</b>	<b>1082</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	8	11	11	12	11	11	11	11	11	11
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	1	1	1	1	1	1	1	2	2
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>8</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	12	15	16	16	16	16	16	16	16	16
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	1	2	2	2	2	3	3	3	3
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>12</b>	<b>16</b>	<b>18</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>20</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	171	208	202	191	178	169	166	165	163	162
0.45	Large 3-ph LV 375-1000kW with VSD	1	9	47	70	96	118	134	143	149	157	164
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>179</b>	<b>254</b>	<b>271</b>	<b>286</b>	<b>296</b>	<b>303</b>	<b>309</b>	<b>314</b>	<b>320</b>	<b>326</b>

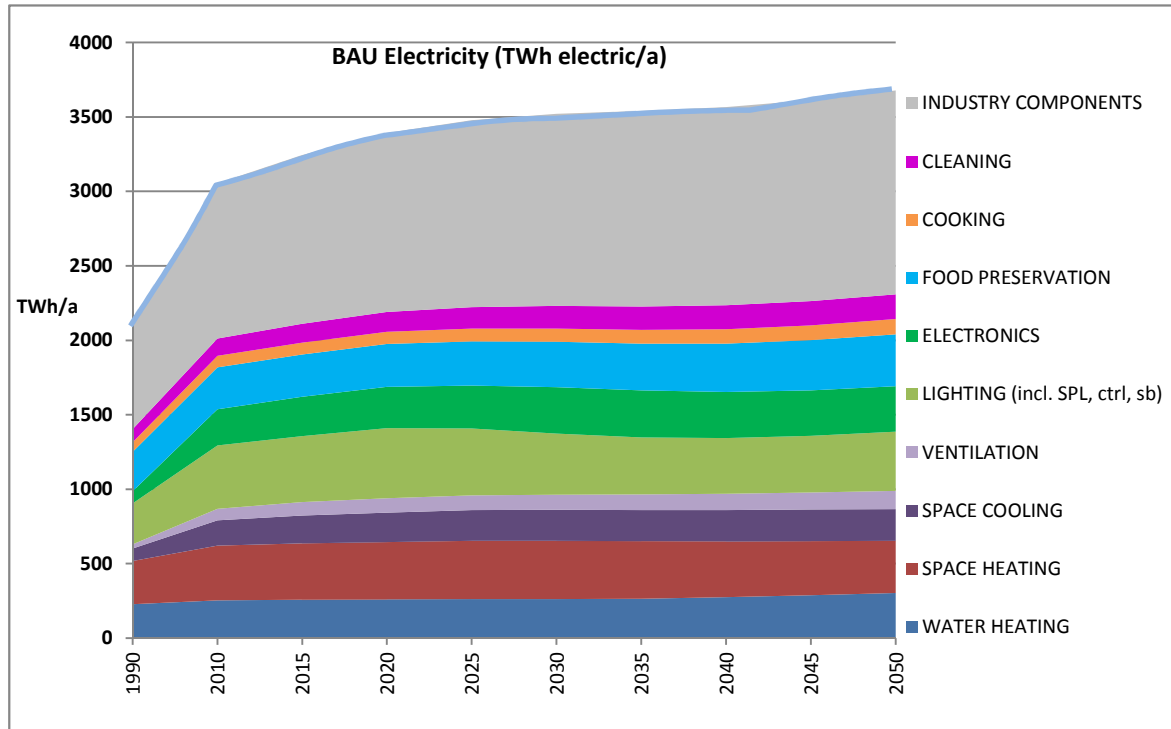
ELECBAU

db	BAU Electricity (in TWh elec), c'td	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	4	5	5	6	6	6	6	6	6	6
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	9	13	14	15	15	16	16	16	17	17
0.45	Explosion motors (L) 3-ph 75-375 kW	1	17	24	27	29	31	32	33	33	34	35
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>29</b>	<b>42</b>	<b>46</b>	<b>49</b>	<b>52</b>	<b>53</b>	<b>55</b>	<b>56</b>	<b>57</b>	<b>58</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	3	3	4	4	4	4	4	4	4	4
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	6	8	9	10	10	10	11	11	11	11
0.45	Brake motors (L) 3-ph 75-375 kW	1	8	12	13	14	15	16	16	17	17	17
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>17</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>33</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (L) 3-ph 75-375 kW	1	1	1	1	1	2	2	2	2	2	2
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	1	<b>45</b>	<b>62</b>	<b>67</b>	<b>71</b>	<b>74</b>	<b>76</b>	<b>77</b>	<b>78</b>	<b>80</b>	<b>81</b>
	<b>Total MT Elec. Motors LV 0.12-1000 kW</b>		<b>527</b>	<b>735</b>	<b>792</b>	<b>839</b>	<b>866</b>	<b>878</b>	<b>883</b>	<b>884</b>	<b>885</b>	<b>889</b>
	including double counted amounts		959	1,336	1,441	1,526	1,575	1,597	1,605	1,607	1,609	1,616
	<b>Total WP Water Pumps</b>	1	<b>88</b>	<b>118</b>	<b>127</b>	<b>137</b>	<b>147</b>	<b>158</b>	<b>169</b>	<b>180</b>	<b>191</b>	<b>202</b>
	CP Fixed Speed 5-1280 l/s	1	24	49	41	36	35	36	37	38	39	40
	CP Variable speed 5-1280 l/s	1	0	9	16	20	22	23	23	24	24	25
	CP Pistons 2-64 l/s	1	1	2	1	1	1	2	2	2	2	2
	<b>Total CP Standard Air Compressors</b>		<b>25</b>	<b>59</b>	<b>58</b>	<b>57</b>	<b>58</b>	<b>60</b>	<b>62</b>	<b>63</b>	<b>65</b>	<b>66</b>
<b>TOTAL INDUSTRY COMPONENTS</b>			693	1044	1133	1202	1254	1289	1313	1331	1349	1371
1	TRAF0 Distribution	1	12	20	22	25	27	30	33	35	38	40
1	TRAF0 Industry oil	1	9	16	17	19	21	23	24	26	28	30
1	TRAF0 Industry dry	1	3	5	5	6	7	7	8	8	9	9
1	TRAF0 Power	1	34	53	60	66	73	79	85	91	98	105
1	TRAF0 DER oil	1	0	0	1	1	2	4	7	10	14	19
1	TRAF0 DER dry	1	0	2	4	6	10	17	28	42	59	79
1	TRAF0 Small	1	2	2	2	2	2	2	2	2	2	2
	<b>Total TRAF0 Utility Transformers</b>		<b>60</b>	<b>98</b>	<b>111</b>	<b>126</b>	<b>142</b>	<b>162</b>	<b>186</b>	<b>215</b>	<b>248</b>	<b>284</b>
<b>TOTAL ENERGY SECTOR</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>(BAU taken as reference = 0)</b>												
<b>(not final energy: distribution losses)</b>												
	Tyres C1, replacement for cars	0	0	0	0	0	0	0	0	0	0	0
	Tyres C1, OEM for cars	0	0	0	0	0	0	0	0	0	0	0
	<b>Tyres C1, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Tyres C2, replacement for vans	0	0	0	0	0	0	0	0	0	0	0
	Tyres C2, OEM for vans	0	0	0	0	0	0	0	0	0	0	0
	<b>Tyres C2, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Tyres C3, replacement for trucks/busses	0	0	0	0	0	0	0	0	0	0	0
	Tyres C3, OEM for trucks/busses	0	0	0	0	0	0	0	0	0	0	0
	<b>Tyres C3, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Tyres, total C1+C2+C3</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL TRANSPORT SECTOR</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>BAU Electricity, Total excl. Energy Sector, in TWh</b>		<b>2097</b>	<b>3055</b>	<b>3244</b>	<b>3391</b>	<b>3477</b>	<b>3520</b>	<b>3540</b>	<b>3566</b>	<b>3613</b>	<b>3678</b>
	BAU Electricity, Total excl. Energy Sector, in PJ		7551	10997	11677	12209	12516	12672	12746	12836	13006	13241
	BAU Electricity, Total excl. Energy Sector, in mtoe		180	263	279	292	299	303	304	307	311	316
<b>BAU Electricity Summary, TWh</b>			<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	WATER HEATING		227	253	258	261	263	262	266	275	288	302
	SPACE HEATING		291	368	379	383	390	390	385	374	363	351
	SPACE COOLING		84	170	187	199	207	209	210	211	212	214
	VENTILATION		27	78	89	96	99	102	106	110	115	121
	LIGHTING (incl. SPL, ctrl, sb)		276	424	444	470	450	409	381	372	380	399
	ELECTRONICS		81	244	264	278	289	312	316	309	305	304
	FOOD PRESERVATION		265	281	284	288	296	305	316	326	337	349
	COOKING		65	78	80	82	85	89	92	96	99	102
	CLEANING		89	114	126	132	145	152	157	161	164	165
	INDUSTRY COMPONENTS		693	1044	1133	1202	1254	1289	1313	1331	1349	1371
	<b>ENERGY SECTOR (see separate below)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>BAU Electricity, Total excl. Energy Sector, in TWh</b>		<b>2097</b>	<b>3055</b>	<b>3244</b>	<b>3391</b>	<b>3477</b>	<b>3520</b>	<b>3540</b>	<b>3566</b>	<b>3613</b>	<b>3678</b>
	BAU Electricity, Total excl. Energy Sector, in PJ		7551	10997	11677	12209	12516	12672	12746	12836	13006	13241
	BAU Electricity, Total excl. Energy Sector, in mtoe		180	263	279	292	299	303	304	307	311	316

## ELECBAU

In Eurostat, energy consumed in Energy Sector and Distribution losses not counted as Final energy, hence Energy Sector separately reported:

	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ENERGY SECTOR (reference BAU=0)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>BAU Electricity, Total incl. Energy Sector, in TWh</b>	<b>2097</b>	<b>3055</b>	<b>3244</b>	<b>3391</b>	<b>3477</b>	<b>3520</b>	<b>3540</b>	<b>3566</b>	<b>3613</b>	<b>3678</b>
BAU Electricity, Total incl. Energy Sector, in PJ	7551	10997	11677	12209	12516	12672	12746	12836	13006	13241
BAU Electricity, Total incl. Energy Sector, in mtoe	180	263	279	292	299	303	304	307	311	316



### Sector subdivision for BAU Electricity (same sector definitions and same order of presentation as in Eurostat Energy Balances)

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Energy Sector: see separate reporting above; not included in other sector totals

Transport Sector: see separate reporting below; not included in other sector totals

<b>BAU Electricity (summary INDUSTRY, TWh)</b>	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	7	8	8	8	8	8	8	8	9	9
<b>SPACE HEATING</b>	23	30	30	30	29	29	28	27	26	25
<b>SPACE &amp; HT PROCESS COOLING</b>	22	38	42	44	45	45	45	45	45	45
<b>VENTILATION</b>	2	7	8	9	9	9	9	10	10	10
<b>LIGHTING</b>	39	61	65	71	71	67	65	64	66	69
<b>ELECTRONICS</b>	4	11	11	12	14	15	16	16	16	16
<b>FOOD PRESERVATION</b>	22	40	45	51	57	62	68	74	80	86
<b>COOKING</b>	0	0	0	0	0	0	0	0	0	0
<b>CLEANING</b>	0	1	1	1	1	1	1	1	1	1
<b>INDUSTRY COMPONENTS</b>	428	630	679	717	744	759	769	775	781	790
<b>BAU Electricity, Industry, in TWh</b>	<b>547</b>	<b>826</b>	<b>889</b>	<b>942</b>	<b>978</b>	<b>996</b>	<b>1009</b>	<b>1020</b>	<b>1034</b>	<b>1051</b>
BAU Electricity, Industry, in PJ	1968	2973	3200	3393	3520	3587	3631	3672	3721	3785
BAU Electricity, Industry, in mtoe	47	71	76	81	84	86	87	88	89	90

<b>BAU Electricity (summary TRANSPORT, TWh)</b>	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<small>(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)</small>										
<b>TYRES for INDUSTRY-sector-related transport</b>	0	0	0	0	0	0	0	0	0	0
<b>TYRES for SERVICE-sector-related transport</b>	0	0	0	0	0	0	0	0	0	0
<b>TYRES for RESIDENTIAL-sector-related transport</b>	0	0	0	0	0	0	0	0	0	0
<b>TYRES for OTHER-sector-related transport</b>	0	0	0	0	0	0	0	0	0	0
<b>BAU Electricity, Transport, in TWh</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
BAU Electricity, Transport, in PJ	0	0	0	0	0	0	0	0	0	0
BAU Electricity, Transport, in mtoe	0	0	0	0	0	0	0	0	0	0

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BAU Electricity (summary TERTIARY/SERVICES, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	70	78	80	81	81	81	82	85	89	94
SPACE HEATING	90	134	142	147	151	151	149	144	139	134
SPACE & HT PROCESS COOLING	54	112	123	130	134	135	135	135	136	136
VENTILATION	16	53	59	64	66	67	68	70	72	75
LIGHTING	151	252	269	292	295	279	265	264	273	290
ELECTRONICS	32	95	99	109	122	135	139	140	140	142
FOOD PRESERVATION	112	108	104	102	104	107	111	116	121	126
COOKING	7	8	8	7	7	8	8	8	8	9
CLEANING	6	8	9	10	11	11	12	12	12	13
INDUSTRY COMPONENTS	172	282	313	335	354	368	377	383	391	398
<b>BAU Electricity, Services, in TWh</b>	<b>711</b>	<b>1131</b>	<b>1206</b>	<b>1278</b>	<b>1325</b>	<b>1342</b>	<b>1346</b>	<b>1357</b>	<b>1381</b>	<b>1416</b>
BAU Electricity, Services, in PJ	2560	4071	4341	4599	4771	4832	4847	4886	4973	5098
BAU Electricity, Services, in mtoe	61	97	104	110	114	115	116	117	119	122

BAU Electricity (summary RESIDENTIAL, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	148	164	168	170	171	171	173	179	187	196
SPACE HEATING	174	198	201	202	204	205	203	199	193	188
SPACE & HT PROCESS COOLING	2	10	11	13	15	17	17	18	18	19
VENTILATION	8	17	20	21	23	25	27	29	32	34
LIGHTING	83	106	105	103	79	58	46	40	37	36
ELECTRONICS	44	136	152	155	151	160	159	151	146	144
FOOD PRESERVATION	127	128	128	128	128	128	127	127	127	126
COOKING	58	70	72	75	77	81	84	88	91	94
CLEANING	83	105	117	121	134	139	144	148	150	151
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>BAU Electricity, Residential, in TWh</b>	<b>725</b>	<b>934</b>	<b>974</b>	<b>987</b>	<b>981</b>	<b>983</b>	<b>981</b>	<b>978</b>	<b>982</b>	<b>989</b>
BAU Electricity, Residential, in PJ	2609	3361	3506	3553	3532	3537	3531	3522	3534	3559
BAU Electricity, Residential, in mtoe	62	80	84	85	84	84	84	84	84	85

BAU Electricity (summary OTHER, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	2	3	3	3	3	3	3	3	3	3
SPACE HEATING	4	6	6	5	5	5	5	5	4	4
SPACE & HT PROCESS COOLING	6	10	11	12	12	13	13	13	13	13
VENTILATION	0	1	1	1	2	2	2	2	2	2
LIGHTING	3	4	5	5	5	4	4	4	4	4
ELECTRONICS	1	2	2	2	2	2	2	2	2	2
FOOD PRESERVATION	5	6	6	7	8	8	9	9	10	11
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	94	132	141	149	156	162	167	172	177	182
<b>BAU Electricity, Other sectors, in TWh</b>	<b>115</b>	<b>165</b>	<b>175</b>	<b>184</b>	<b>192</b>	<b>199</b>	<b>205</b>	<b>210</b>	<b>216</b>	<b>222</b>
BAU Electricity, Other sectors, in PJ	414	592	629	663	693	716	736	756	777	800
BAU Electricity, Other sectors, in mtoe	10	14	15	16	17	17	18	18	19	19

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BAU Electricity (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		227	253	258	261	263	262	266	275	288	302
	Residential	148	164	168	170	171	171	173	179	187	196
	Tertiary / Services	70	78	80	81	81	81	82	85	89	94
	Industry	7	8	8	8	8	8	8	8	9	9
	Other	2	3	3	3	3	3	3	3	3	3
<b>SPACE HEATING. All sectors, TWh</b>		291	368	379	383	390	390	385	374	363	351
	Residential	174	198	201	202	204	205	203	199	193	188
	Tertiary / Services	90	134	142	147	151	151	149	144	139	134
	Industry	23	30	30	30	29	29	28	27	26	25
	Other	4	6	6	5	5	5	5	5	4	4
<b>SPACE COOLING. All sectors, TWh</b>		84	170	187	199	207	209	210	211	212	214
& HT PROCESS	Residential	2	10	11	13	15	17	17	18	18	19
	Tertiary / Services	54	112	123	130	134	135	135	135	136	136
	Industry	22	38	42	44	45	45	45	45	45	45
	Other	6	10	11	12	12	13	13	13	13	13
<b>VENTILATION. All sectors, TWh</b>		27	78	89	96	99	102	106	110	115	121
	Residential	8	17	20	21	23	25	27	29	32	34
	Tertiary / Services	16	53	59	64	66	67	68	70	72	75
	Industry	2	7	8	9	9	9	9	10	10	10
	Other	0	1	1	1	2	2	2	2	2	2
<b>LIGHTING. All sectors, TWh</b>		276	424	444	470	450	409	381	372	380	399
	Residential	83	106	105	103	79	58	46	40	37	36
	Tertiary / Services	151	252	269	292	295	279	265	264	273	290
	Industry	39	61	65	71	71	67	65	64	66	69
	Other	3	4	5	5	5	4	4	4	4	4
<b>ELECTRONICS. All sectors, TWh</b>		81	244	264	278	289	312	316	309	305	304
	Residential	44	136	152	155	151	160	159	151	146	144
	Tertiary / Services	32	95	99	109	122	135	139	140	140	142
	Industry	4	11	11	12	14	15	16	16	16	16
	Other	1	2	2	2	2	2	2	2	2	2
<b>FOOD PRESERVE. All sectors, TWh</b>		265	281	284	288	296	305	316	326	337	349
	Residential	127	128	128	128	128	128	127	127	127	126
	Tertiary / Services	112	108	104	102	104	107	111	116	121	126
	Industry	22	40	45	51	57	62	68	74	80	86
	Other	5	6	6	7	8	8	9	9	10	11
<b>COOKING. All sectors, TWh</b>		65	78	80	82	85	89	92	96	99	102
	Residential	58	70	72	75	77	81	84	88	91	94
	Tertiary / Services	7	8	8	7	7	8	8	8	8	9
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>		89	114	126	132	145	152	157	161	164	165
	Residential	83	105	117	121	134	139	144	148	150	151
	Tertiary / Services	6	8	9	10	11	11	12	12	12	13
	Industry	0	1	1	1	1	1	1	1	1	1
	Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>		693	1044	1133	1202	1254	1289	1313	1331	1349	1371
	Residential	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services	172	282	313	335	354	368	377	383	391	398
	Industry	428	630	679	717	744	759	769	775	781	790
	Other	94	132	141	149	156	162	167	172	177	182
<b>TYRES. Transport sector, TWh</b>		0	0	0	0	0	0	0	0	0	0
	Residential transport	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services transport	0	0	0	0	0	0	0	0	0	0
	Industry transport	0	0	0	0	0	0	0	0	0	0
	Other transport	0	0	0	0	0	0	0	0	0	0
<b>ALL PRODUCTS. All sectors, TWh</b>		2097	3055	3244	3391	3477	3520	3540	3566	3613	3678
	Residential	725	934	974	987	981	983	981	978	982	989
	Tertiary / Services	711	1131	1206	1278	1325	1342	1346	1357	1381	1416
	Industry	547	826	889	942	978	996	1009	1020	1034	1051
	Other	115	165	175	184	192	199	205	210	216	222
	Transport	0	0	0	0	0	0	0	0	0	0

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BAU Electricity (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
	Tertiary / Services	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
	Industry	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential	60%	54%	53%	53%	52%	53%	53%	53%	53%	53%
	Tertiary / Services	31%	36%	37%	38%	39%	39%	39%	39%	38%	38%
	Industry	8%	8%	8%	8%	8%	7%	7%	7%	7%	7%
	Other	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE COOLING.</b>											
<b>&amp; HT PROCESS</b>											
	Residential	2%	6%	6%	6%	7%	8%	8%	8%	9%	9%
	Tertiary / Services	65%	66%	66%	65%	65%	65%	64%	64%	64%	64%
	Industry	26%	22%	22%	22%	22%	22%	21%	21%	21%	21%
	Other	8%	6%	6%	6%	6%	6%	6%	6%	6%	6%
<b>VENTILATION</b>											
	Residential	29%	21%	22%	22%	23%	24%	25%	26%	28%	28%
	Tertiary / Services	61%	68%	67%	67%	66%	65%	64%	63%	62%	62%
	Industry	8%	9%	9%	9%	9%	9%	9%	9%	9%	9%
	Other	1%	2%	2%	2%	2%	2%	1%	1%	1%	1%
<b>LIGHTING.</b>											
	Residential	30%	25%	24%	22%	18%	14%	12%	11%	10%	9%
	Tertiary / Services	55%	59%	61%	62%	66%	68%	70%	71%	72%	73%
	Industry	14%	14%	15%	15%	16%	16%	17%	17%	17%	17%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
	Residential	54%	56%	58%	56%	52%	51%	50%	49%	48%	47%
	Tertiary / Services	40%	39%	37%	39%	42%	43%	44%	45%	46%	47%
	Industry	5%	5%	4%	4%	5%	5%	5%	5%	5%	5%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>											
	Residential	48%	45%	45%	44%	43%	42%	40%	39%	38%	36%
	Tertiary / Services	42%	38%	37%	35%	35%	35%	35%	35%	36%	36%
	Industry	8%	14%	16%	18%	19%	20%	22%	23%	24%	25%
	Other	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
<b>COOKING.</b>											
	Residential	89%	90%	91%	91%	91%	91%	91%	92%	92%	92%
	Tertiary / Services	11%	10%	9%	9%	9%	9%	9%	8%	8%	8%
	Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
	Residential	93%	92%	92%	92%	92%	92%	92%	92%	92%	92%
	Tertiary / Services	6%	7%	7%	8%	7%	7%	7%	8%	8%	8%
	Industry	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
	Residential	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Tertiary / Services	25%	27%	28%	28%	28%	29%	29%	29%	29%	29%
	Industry	62%	60%	60%	60%	59%	59%	59%	58%	58%	58%
	Other	14%	13%	12%	12%	12%	13%	13%	13%	13%	13%
<b>TYRES.</b>											
	Residential transport										
	Tertiary / Services transport										
	Industry transport										
	Other transport										
<b>ALL PRODUCTS.</b>											
	Residential	35%	31%	30%	29%	28%	28%	28%	27%	27%	27%
	Tertiary / Services	34%	37%	37%	38%	38%	38%	38%	38%	38%	38%
	Industry	26%	27%	27%	28%	28%	28%	28%	29%	29%	29%
	Other	5%	5%	5%	5%	6%	6%	6%	6%	6%	6%
	Transport	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

ELECECO

db	ECO Electricity (in TWh elec)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	225	250	230	202	177	167	166	172	181	189
	<b>Total CH Central Heating combi, water heat</b>	0.02	2	3	3	3	3	3	3	3	3	3
	<b>TOTAL WATER HEATING</b>		227	253	233	205	180	170	169	175	184	192
	<i>CH non-electric</i>	0	0	0	0	0	0	0	0	0	0	0
	<i>CH electric resistance boiler, 1st estimate</i>	1	50	40	35	30	25	20	15	10	5	0
	<i>CH heat pump, 1st estimate</i>	1	24	56	63	66	74	83	91	100	108	117
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	28	27	24	19	13	14	14	14	13	13
	<b>Total CH Central Heating boiler, space heat</b>		102	123	121	115	112	117	120	123	126	129
	SFB Wood Manual	0	0	0	0	0	0	0	0	0	0	0
	SFB Wood Direct Draft	0	0	0	0	0	0	0	0	0	0	0
	SFB Coal	0	0	0	0	0	0	0	0	0	0	0
	SFB Pellets	0	0	0	0	0	0	0	0	0	0	0
	SFB Wood chips	0	0	0	0	0	0	0	0	0	0	0
	<b>Total Solid Fuel Boiler</b>		0	0	0	0	0	0	0	0	0	0
	CHAE-S (≤ 400 kW)	1	4	11	12	12	12	12	12	12	12	12
	CHAE-L (> 400 kW)	1	6	14	16	16	15	14	13	12	11	11
	CHWE-S (≤ 400 kW)	1	0	1	1	1	1	1	1	1	1	1
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	1	3	4	4	3	3	3	3	3	2
	CHWE-L (> 1500 kW)	1	1	2	2	2	2	2	2	2	2	2
	CHF	0.05	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-S	1	23	36	40	41	41	41	41	42	43	44
	HT PCH-AE-L	1	22	35	38	39	39	37	37	37	38	39
	HT PCH-WE-S	1	5	8	8	9	9	9	9	9	10	10
	HT PCH-WE-M	1	9	15	16	17	18	18	18	19	19	20
	HT PCH-WE-L	1	2	3	3	3	4	4	4	4	4	4
	AC rooftop	1	3	8	8	7	5	3	1	1	0	0
	AC splits	1	4	13	13	11	10	9	8	7	6	6
	AC VRF	1	0	3	5	6	7	9	10	11	11	12
	ACF	0.05	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Cooling</b>		82	152	165	170	167	162	159	159	161	163
	AC rooftop (rev)	1	4	13	13	11	7	4	2	1	0	0
	AC splits (rev)	1	8	25	25	23	20	17	15	13	12	11
	AC VRF (rev)	1	0	8	11	15	18	20	22	23	24	23
	ACF (rev)	0.05	0	0	0	0	0	0	0	0	0	0
	AHF	0.05	5	3	3	2	2	1	1	1	1	1
	AHE	1	1	3	2	1	1	1	1	1	1	1
	<b>SubTotal AHC central Air Heating</b>		18	52	54	52	48	44	41	39	38	36
	<b>Total AHC central Air Heating &amp; Cooling</b>		100	204	219	222	215	205	200	198	198	199
	LH open fireplace	0	0	0	0	0	0	0	0	0	0	0
	LH closed fireplace/inset	0	0	0	0	0	0	0	0	0	0	0
	LH wood stove	0	0	0	0	0	0	0	0	0	0	0
	LH coal stove	0	0	0	0	0	0	0	0	0	0	0
	LH cooker	0	0	0	0	0	0	0	0	0	0	0
	LH SHR stove	0	0	0	0	0	0	0	0	0	0	0
	LH pellet stove	0	0	0	0	0	0	0	0	0	0	0
	LH open fire gas	0	0	0	0	0	0	0	0	0	0	0
	LH closed fire gas	0	0	0	0	0	0	0	0	0	0	0
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	1	28	28	27	24	22	22	22	22	21	20
	LH elec.convectector	1	116	115	112	103	97	97	97	95	92	89
	LH elec.storage	1	9	9	8	7	7	6	6	6	6	6
	LH elec.underfloor	1	16	16	16	15	14	13	13	12	12	12
	LH luminous heaters	0	0	0	0	0	0	0	0	0	0	0
	LH tube heaters	0	0	0	0	0	0	0	0	0	0	0
	<b>LH total</b>		169	168	163	149	140	138	138	135	131	127
	RAC (cooling demand), all types <12 kW	1	3	18	20	21	25	27	29	30	31	32
	RAC (heating demand), reversible <12kW	1	2	22	29	34	40	41	40	39	37	36
	<b>Total RAC Room Air Conditioner</b>		4	41	49	56	64	68	69	68	68	67
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	16	20	14	11	10	11	11	11	10	10
	<b>TOTAL SPACE HEATING</b>		291	366	367	350	340	339	340	337	332	328
	<b>TOTAL SPACE COOLING</b>		84	170	185	192	192	189	187	189	191	194
	NRVU electricity	1	19	61	67	68	66	64	64	66	69	72
1	NRVU heat (negative=saving vs. natural vent.)	0	0	0	0	0	0	0	0	0	0	0
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	8	15	16	14	11	9	9	10	10	11
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	1	2	2	3	4	4	4	5	5
	RVU Local Balanced VU<125 W, also NR (2 fans)	1	0	0	0	0	1	1	1	1	2	2
1	RVU Central Unidir., heat (negative=saving )	0	0	0	0	0	0	0	0	0	0	0
1	RVU Central Balanced, heat (negative=saving )	0	0	0	0	0	0	0	0	0	0	0
1	RVU Local Balanced, heat (negative=saving )	0	0	0	0	0	0	0	0	0	0	0
	<b>Total VU (electricity only)</b>		27	78	85	85	81	77	78	82	86	90
	<b>TOTAL VENTILATION (electricity only)</b>		27	78	85	85	81	77	78	82	86	90





ELECECO

db	ECO Electricity (in TWh elec), c'td	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	EP-Copier mono	1	10	1	0	0	0	0	0	0	0	0
	EP-Copier colour	1	0	0	0	0	1	1	1	1	1	1
	EP-printer mono	1	9	2	1	1	1	1	1	0	0	0
	EP-printer colour	1	0	1	1	1	1	1	1	1	2	2
	IJ SFD printer	1	1	0	0	0	0	0	0	0	0	0
	IJ MFD printer	1	1	1	0	0	0	1	1	1	1	1
	<b>Total imaging equipment, electricity</b>		<b>22</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>
	SB Home Gateway, on-mode hours	1	0	4	5	5	6	6	5	5	4	3
	SB Home NAS, on-mode hours	1	0	0	0	1	1	1	1	1	0	0
	SB Home Phones (fixed), on-mode hours	1	0	0	1	1	0	0	0	0	0	0
	SB Office Phones (fixed), on-mode hours	1	0	1	1	1	1	0	0	0	0	0
	SB Home Gateway, standby hours	1	0	2	1	0	0	0	0	0	0	0
	SB Home NAS, standby hours	1	0	0	1	1	1	1	1	1	1	1
	SB Home Phones (fixed), standby hours	1	0	0	0	0	0	0	0	0	0	0
	SB Office Phones (fixed), standby hours	1	0	0	0	0	0	0	0	0	0	0
	SB Home Gateway, idle hours	1	0	4	7	11	11	11	11	10	8	6
	SB Home NAS, idle hours	1	0	0	0	0	0	0	0	0	0	0
	SB Home Phones (fixed), idle hours	1	1	4	4	4	4	3	3	2	2	1
	SB Office Phones (fixed), idle hours	1	1	3	3	2	2	2	2	1	1	1
	<b>Total SB (networked) StandBy (rest)</b>		<b>2</b>	<b>19</b>	<b>22</b>	<b>25</b>	<b>26</b>	<b>25</b>	<b>23</b>	<b>20</b>	<b>16</b>	<b>11</b>
db	<i>EPS Active mode (electricity losses)</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.1	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9
0.6	EPS 10–12 W	1	0	8.0	11.0	10.0	8.6	8.6	8.7	8.7	8.8	8.8
0.5	EPS 15–20 W	1	0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
1.0	EPS 20–30 W	1	0.0	0.9	0.9	0.7	0.6	0.6	0.6	0.5	0.5	0.4
0.8	EPS 30–65 W, multiple-V	1	0	0	0	0.1	0.2	0.2	0.3	0.4	0.5	0.5
1.0	EPS 30-65 W	1	0	0	0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
1.0	EPS 65–120 W	1	0.0	0.3	0.3	0.2	0.1	0.0	0	0	0	0
0.5	EPS 65–120 W, multiple-V	1	0	1.5	1.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2
0.0	EPS 12–15 W	1	0.0	0.3	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.6
	<b>EPS, total for active mode</b>		<b>0.1</b>	<b>12.4</b>	<b>15.0</b>	<b>12.9</b>	<b>11.3</b>	<b>11.3</b>	<b>11.4</b>	<b>11.5</b>	<b>11.6</b>	<b>11.7</b>
db	<i>EPS No-load mode</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	1	0.1	1.2	0.9	0.5	0.3	0.3	0.3	0.3	0.3	0.4
0.0	EPS 10–12 W	1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30-65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.1</b>	<b>1.8</b>	<b>1.3</b>	<b>0.7</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
	<b>EPS, overall total (active + no-load)</b>		<b>0.2</b>	<b>14.2</b>	<b>16.3</b>	<b>13.7</b>	<b>11.7</b>	<b>11.8</b>	<b>11.8</b>	<b>11.9</b>	<b>12.1</b>	<b>12.2</b>
	<b>EPS, double counted subtracted</b>		<b>0.2</b>	<b>7.4</b>	<b>8.1</b>	<b>6.6</b>	<b>5.5</b>	<b>5.6</b>	<b>5.6</b>	<b>5.6</b>	<b>5.7</b>	<b>5.8</b>
	UPS below 1.5 kVA	1	0.7	1.5	1.5	0.5	0.2	0.2	0.2	0.3	0.3	0.3
	UPS 1.5 to 5 kVA	1	2.7	5.8	6.3	4.3	1.3	1.1	1.3	1.4	1.6	1.6
	UPS 5 to 10 kVA	1	0.3	0.7	0.8	0.8	0.7	0.8	0.9	1.0	1.1	1.2
	UPS 10 to 200 kVA	1	1.9	4.2	4.6	4.2	3.7	3.7	4.2	4.7	5.2	5.5
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>6</b>	<b>12</b>	<b>13</b>	<b>10</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>
	<b>TOTAL ELECTRONICS</b>		<b>80</b>	<b>241</b>	<b>248</b>	<b>233</b>	<b>217</b>	<b>220</b>	<b>214</b>	<b>215</b>	<b>220</b>	<b>225</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>1</b>	<b>138</b>	<b>104</b>	<b>87</b>	<b>74</b>	<b>61</b>	<b>50</b>	<b>41</b>	<b>37</b>	<b>34</b>	<b>32</b>
	CF open vertical chilled multi deck (RVC2)	1	15	14	13	11	8	7	7	7	7	7
	CF open horizontal frozen island (RHF4)	1	1	1	1	1	1	1	1	1	1	1
	CF other supermarket display (non-BCs)	1	26	26	26	23	20	20	20	21	21	22
	CF Plug in one door beverage cooler	1	18	18	17	13	10	10	10	10	11	11
	CF Plug in horizontal ice cream freezer	1	4	4	4	4	3	3	4	4	4	4
	CF Spiral vending machine	1	3	3	2	1	1	1	1	1	1	1
	<b>Total CF Commercial Refrigeration</b>		<b>68</b>	<b>67</b>	<b>63</b>	<b>53</b>	<b>44</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>46</b>
	PF Storage cabinet Chilled Vertical (CV)	1	1.8	2.5	2.6	2.3	1.8	1.7	1.8	1.9	2.0	2.1
	PF Storage cabinet Frozen Vertical (FV)	1	2.1	2.9	3.0	2.7	2.1	2.0	2.1	2.2	2.3	2.4
	PF Storage cabinet Chilled Horizontal (CH)	1	1.4	1.9	2.0	1.8	1.4	1.4	1.4	1.5	1.6	1.6
	PF Storage cabinet Frozen Horizontal (FH)	1	0.8	1.2	1.2	1.1	0.8	0.8	0.8	0.9	0.9	0.9
	<b>PF Storage cabinets All types</b>	<b>1</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	3.2	7.0	8.2	9.2	10.0	10.7	11.7	12.7	13.8	14.8
	PF Process Chiller AC MT L > 300 kW	1	3.1	6.7	7.9	8.9	9.6	10.4	11.3	12.3	13.3	14.3
	PF Process Chiller AC LT S ≤ 200 kW	1	3.2	7.0	8.2	9.3	10.1	10.9	11.8	12.9	14.0	15.0
	PF Process Chiller AC LT L > 200 kW	1	3.3	7.3	8.5	9.6	10.4	11.2	12.2	13.3	14.4	15.5
	PF Process Chiller WC MT S ≤ 300 kW	1	0.9	1.9	2.3	2.6	2.8	3.0	3.3	3.5	3.8	4.1
	PF Process Chiller WC MT L > 300 kW	1	1.3	2.9	3.4	3.8	4.1	4.5	4.9	5.3	5.7	6.2
	PF Process Chiller WC LT S ≤ 200 kW	1	1.1	2.5	2.9	3.3	3.6	3.9	4.2	4.6	5.0	5.3
	PF Process Chiller WC LT L > 200 kW	1	1.4	3.2	3.7	4.2	4.5	4.9	5.3	5.8	6.3	6.7
	<b>PF Process Chiller All MT&amp;LT</b>	<b>1</b>	<b>18</b>	<b>39</b>	<b>45</b>	<b>51</b>	<b>55</b>	<b>59</b>	<b>65</b>	<b>70</b>	<b>76</b>	<b>82</b>

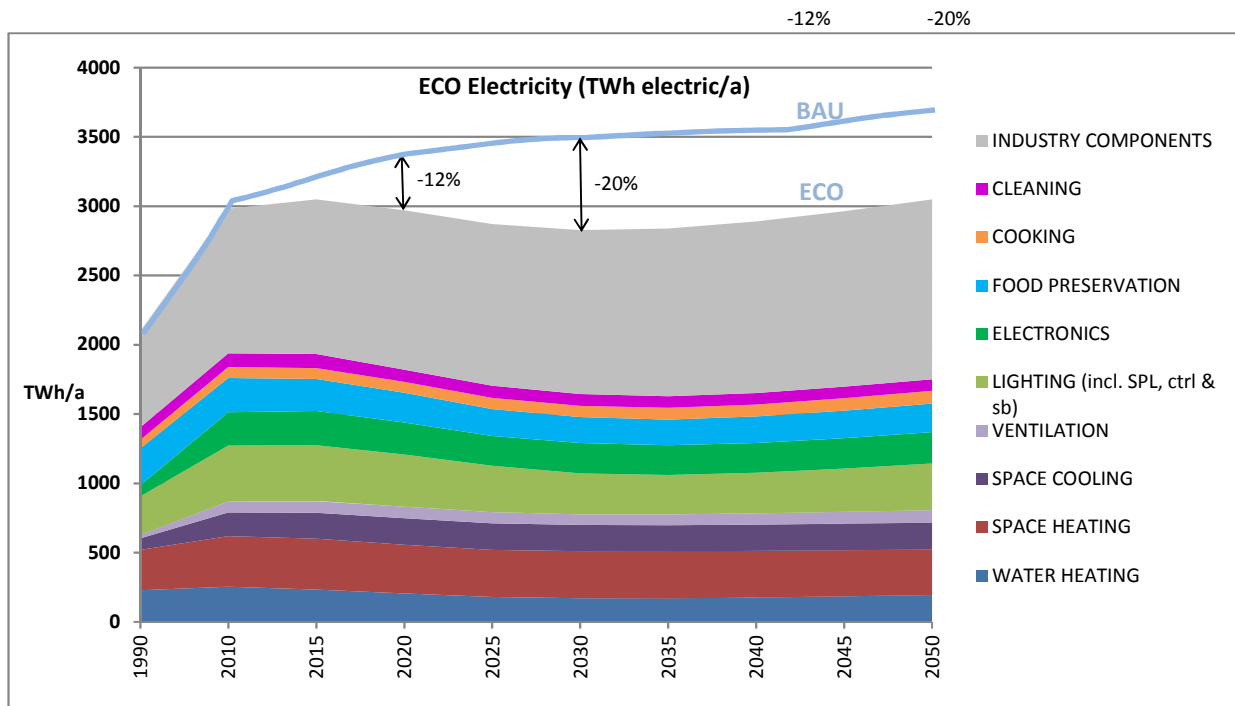




# ELECECO

In Eurostat, energy consumed in Energy Sector and Distribution losses not counted as Final energy, hence Energy Sector separately reported:

	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ENERGY SECTOR (only improvement over BAU)</b>	<b>0</b>	<b>0</b>	<b>-2</b>	<b>-6</b>	<b>-12</b>	<b>-19</b>	<b>-27</b>	<b>-37</b>	<b>-46</b>	<b>-56</b>
<b>ECO Electricity, Total incl. Energy Sector, in TWh</b>	<b>2097</b>	<b>2981</b>	<b>3047</b>	<b>2964</b>	<b>2858</b>	<b>2809</b>	<b>2811</b>	<b>2853</b>	<b>2918</b>	<b>2993</b>
ECO Electricity, Total incl. Energy Sector, in PJ	7551	10733	10969	10669	10287	10112	10118	10270	10505	10775
ECO Electricity, Total incl. Energy Sector, in mtoe	180	256	262	255	246	242	242	245	251	257



## Sector subdivision for ECO Electricity (same sector definitions and same order of presentation as in Eurostat Energy Balances)

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

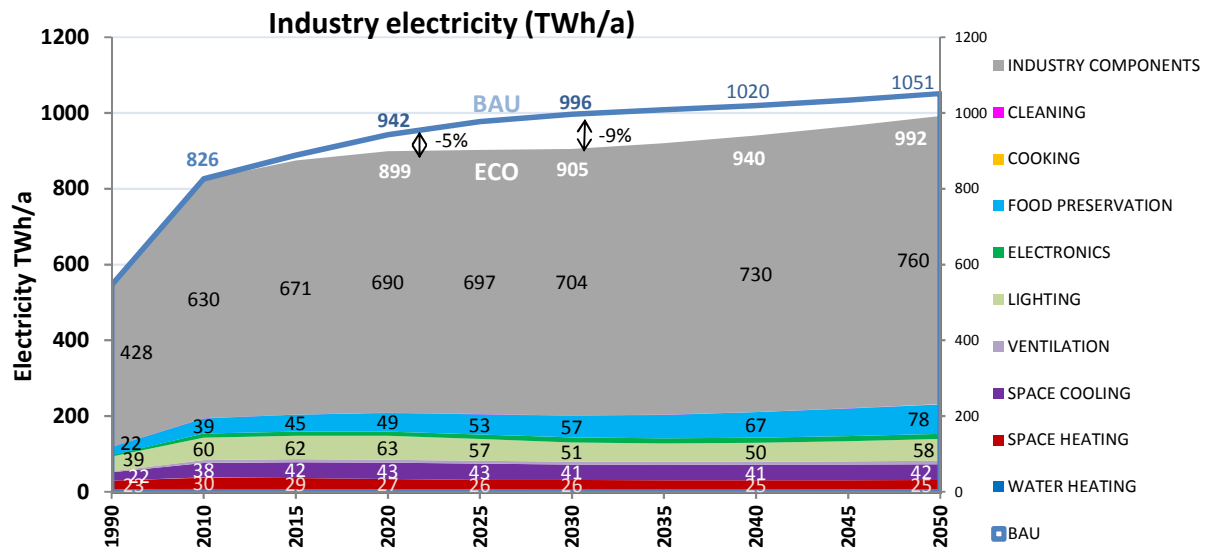
Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Energy Sector: see separate reporting above; not included in other sector totals

Transport Sector: see separate reporting below; not included in other sector totals

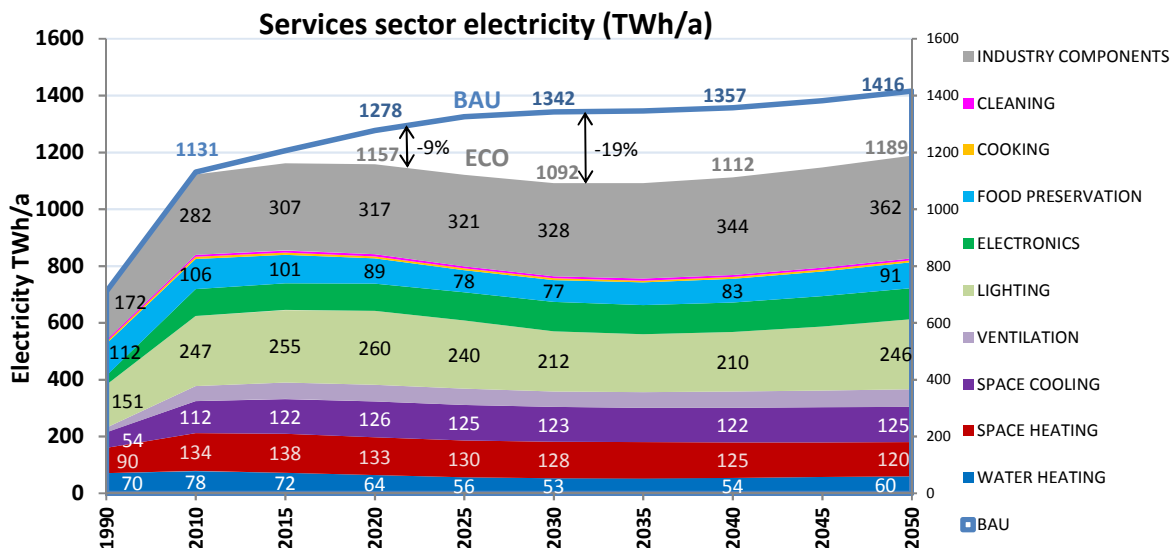
<b>ECO Electricity (summary INDUSTRY, TWh)</b>	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	7	8	7	6	5	5	5	5	6	6
<b>SPACE HEATING</b>	23	30	29	27	26	26	25	25	25	25
<b>SPACE COOLING</b>	22	38	42	43	43	41	41	41	41	42
<b>VENTILATION</b>	2	7	8	8	8	8	8	8	8	9
<b>LIGHTING</b>	39	60	62	63	57	51	49	50	53	58
<b>ELECTRONICS</b>	4	11	10	11	12	13	13	13	13	14
<b>FOOD PRESERVATION</b>	22	39	45	49	53	57	62	67	73	78
<b>COOKING</b>	0	0	0	0	0	0	0	0	0	0
<b>CLEANING</b>	0	1	1	0	0	0	0	1	1	1
<b>INDUSTRY COMPONENTS</b>	428	630	671	690	697	704	716	730	744	760
<b>ECO Electricity, Industry, in TWh</b>	<b>547</b>	<b>823</b>	<b>874</b>	<b>899</b>	<b>902</b>	<b>905</b>	<b>920</b>	<b>940</b>	<b>964</b>	<b>992</b>
ECO Electricity, Industry, in PJ	1968	2964	3148	3235	3247	3257	3310	3385	3472	3570
ECO Electricity, Industry, in mtoe	47	71	75	77	78	78	79	81	83	85
For comparison: Eurostat Energy Balance ed. May 2018, Electricity in Industry	85	88	86							

-5%      -9%



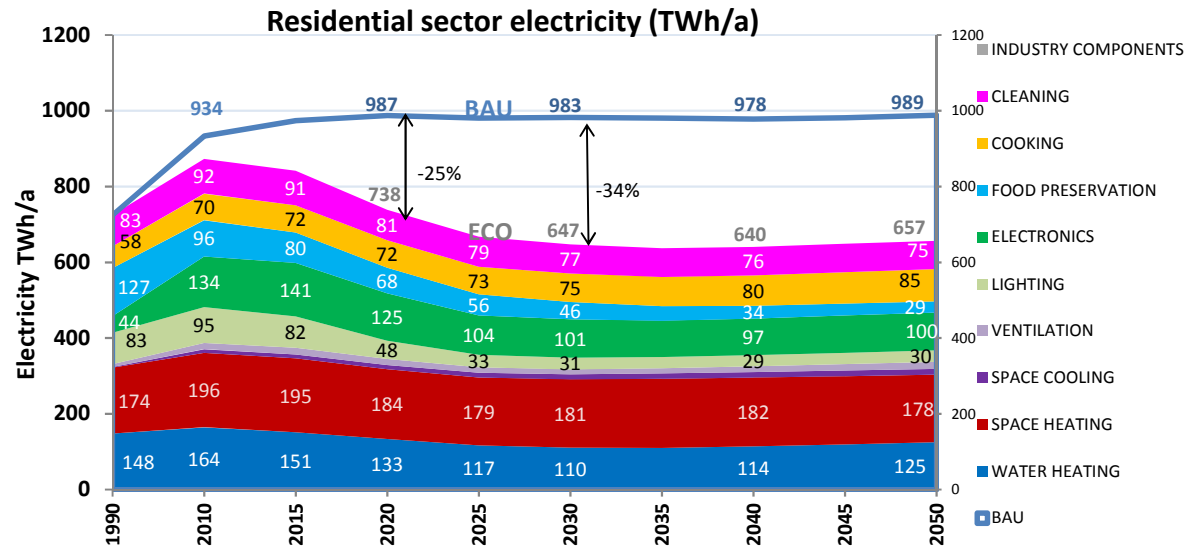
ECO Electricity (summary TRANSPORT, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	0	0	0	0	0	0	0	0	0	0
TYRES for SERVICE-sector-related transport	0	0	0	0	0	0	0	0	0	0
TYRES for RESIDENTIAL-sector-related transport	0	0	0	0	0	0	0	0	0	0
TYRES for OTHER-sector-related transport	0	0	0	0	0	0	0	0	0	0
ECO Electricity, Transport, in TWh	0	0	0	0	0	0	0	0	0	0
ECO Electricity, Transport, in PJ	0	0	0	0	0	0	0	0	0	0
ECO Electricity, Transport, in mtoe	0	0	0	0	0	0	0	0	0	0

ECO Electricity (summary TERTIARY/SERVICES, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	70	78	72	64	56	53	52	54	57	60
SPACE HEATING	90	134	138	133	130	128	127	125	123	120
SPACE COOLING	54	112	122	126	125	123	121	122	123	125
VENTILATION	16	53	58	59	57	55	55	57	59	62
LIGHTING	151	247	255	260	240	212	203	210	225	246
ELECTRONICS	32	94	94	95	99	104	103	104	106	110
FOOD PRESERVATION	112	106	101	89	78	77	79	83	87	91
COOKING	7	8	7	7	7	7	7	7	7	7
CLEANING	6	8	8	7	7	7	7	7	7	7
INDUSTRY COMPONENTS	172	282	307	317	321	328	336	344	353	362
ECO Electricity, Services, in TWh	711	1121	1162	1157	1120	1092	1091	1112	1147	1189
ECO Electricity, Services, in PJ	2560	4037	4182	4166	4033	3931	3928	4003	4128	4280
ECO Electricity, Services, in mtoe	61	96	100	100	96	94	94	96	99	102
For comparison: Eurostat Energy Balance ed. May 2018, Electricity in Services sector	38	73	72							



ELECECO

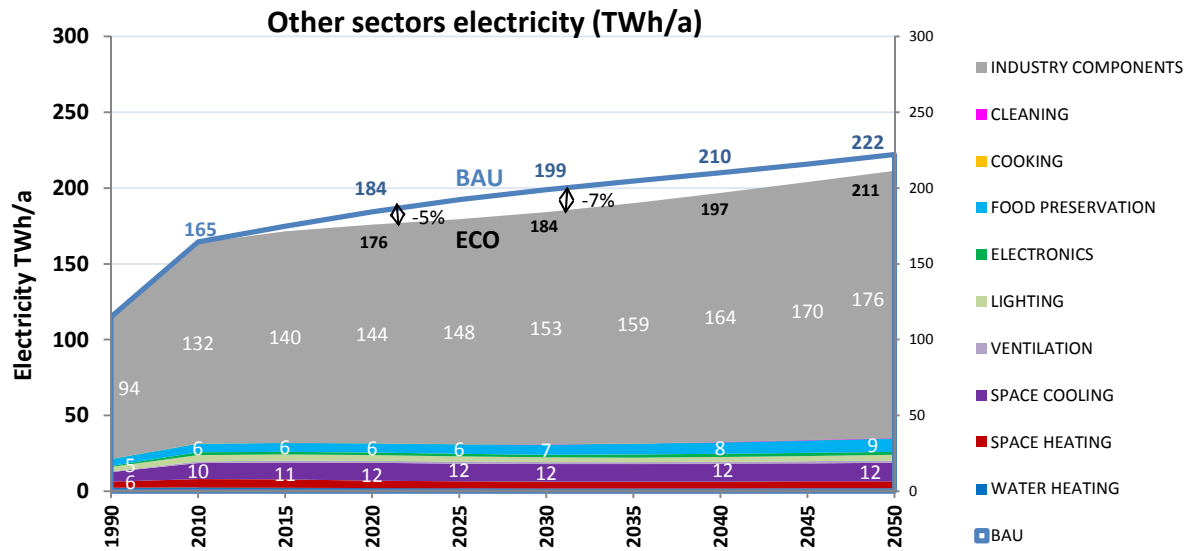
ECO Electricity (summary RESIDENTIAL, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	148	164	151	133	117	110	110	114	119	125
SPACE HEATING	174	196	195	184	179	181	182	182	180	178
SPACE COOLING	2	10	10	11	12	13	14	14	15	15
VENTILATION	8	17	18	16	14	13	14	15	17	18
LIGHTING	83	95	82	48	33	31	30	29	30	30
ELECTRONICS	44	134	141	125	104	101	96	97	98	100
FOOD PRESERVATION	127	96	80	68	56	46	38	34	31	29
COOKING	58	70	72	72	73	75	77	80	83	85
CLEANING	83	92	91	81	79	77	76	76	75	75
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO Electricity, Residential, in TWh</b>	<b>725</b>	<b>873</b>	<b>841</b>	<b>738</b>	<b>668</b>	<b>647</b>	<b>637</b>	<b>640</b>	<b>649</b>	<b>657</b>
ECO Electricity, Residential, in PJ	2609	3142	3028	2658	2404	2329	2293	2305	2335	2364
ECO Electricity, Residential, in mtoe	62	75	72	63	57	56	55	55	56	56
For comparison: Eurostat Energy Balance ed. May 2018, Electricity in Residential sector	52	73	68							



# ELECECO

(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

ECO Electric energy (summary OTHER)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	2	3	2	2	2	2	2	2	2	2
SPACE HEATING	4	6	5	5	5	5	5	5	5	5
SPACE COOLING	6	10	11	12	12	12	12	12	12	12
VENTILATION	0	1	1	1	1	1	1	1	1	1
LIGHTING	3	4	4	4	3	3	3	3	3	4
ELECTRONICS	1	2	2	2	2	2	2	2	2	2
FOOD PRESERVATION	5	6	6	6	6	7	7	8	8	9
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	94	132	140	144	148	153	159	164	170	176
<b>ECO Electricity, Other sectors, in TWh</b>	<b>115</b>	<b>164</b>	<b>171</b>	<b>176</b>	<b>179</b>	<b>184</b>	<b>190</b>	<b>197</b>	<b>204</b>	<b>211</b>
ECO Electricity, Other sectors, in PJ	414	590	617	633	646	663	684	709	734	761
ECO Electricity, Other sectors, in mtoe	10	14	15	15	15	16	16	17	18	18
For comparison: Eurostat Energy Balance ed. May 2018, Electricity in Other sectors	5	4	5							
					-5%		-7%			





ELECECO

ECO Electricity (summary FUNCTIONS, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>	227	253	233	205	180	170	169	175	184	192
Residential	148	164	151	133	117	110	110	114	119	125
Tertiary / Services	70	78	72	64	56	53	52	54	57	60
Industry	7	8	7	6	5	5	5	5	6	6
Other	2	3	2	2	2	2	2	2	2	2
<b>SPACE HEATING. All sectors, TWh</b>	291	366	367	350	340	339	340	337	332	328
Residential	174	196	195	184	179	181	182	182	180	178
Tertiary / Services	90	134	138	133	130	128	127	125	123	120
Industry	23	30	29	27	26	26	25	25	25	25
Other	4	6	5	5	5	5	5	5	5	5
<b>SPACE COOLING. All sectors, TWh</b>	84	170	185	192	192	189	187	189	191	194
<b>&amp; HT PROCESS</b>										
Residential	2	10	10	11	12	13	14	14	15	15
Tertiary / Services	54	112	122	126	125	123	121	122	123	125
Industry	22	38	42	43	43	41	41	41	41	42
Other	6	10	11	12	12	12	12	12	12	12
<b>VENTILATION. All sectors, TWh</b>	27	78	85	85	81	77	78	82	86	90
Residential	8	17	18	16	14	13	14	15	17	18
Tertiary / Services	16	53	58	59	57	55	55	57	59	62
Industry	2	7	8	8	8	8	8	8	8	9
Other	0	1	1	1	1	1	1	1	1	1
<b>LIGHTING. All sectors, TWh</b>	276	406	403	375	333	296	284	293	312	338
Residential	83	95	82	48	33	31	30	29	30	30
Tertiary / Services	151	247	255	260	240	212	203	210	225	246
Industry	39	60	62	63	57	51	49	50	53	58
Other	3	4	4	4	3	3	3	3	3	4
<b>ELECTRONICS. All sectors, TWh</b>	80	241	248	233	217	220	214	215	220	225
Residential	44	134	141	125	104	101	96	97	98	100
Tertiary / Services	32	94	94	95	99	104	103	104	106	110
Industry	4	11	10	11	12	13	13	13	13	14
Other	1	2	2	2	2	2	2	2	2	2
<b>FOOD PRESERVE. All sectors, TWh</b>	265	247	231	213	194	186	187	192	199	207
Residential	127	96	80	68	56	46	38	34	31	29
Tertiary / Services	112	106	101	89	78	77	79	83	87	91
Industry	22	39	45	49	53	57	62	67	73	78
Other	5	6	6	6	6	7	7	8	8	9
<b>COOKING. All sectors, TWh</b>	65	78	79	79	80	82	84	87	89	92
Residential	58	70	72	72	73	75	77	80	83	85
Tertiary / Services	7	8	7	7	7	7	7	7	7	7
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>	89	100	100	88	87	84	83	83	83	83
Residential	83	92	91	81	79	77	76	76	75	75
Tertiary / Services	6	8	8	7	7	7	7	7	7	7
Industry	0	1	1	0	0	0	0	1	1	1
Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>	693	1044	1117	1151	1167	1185	1211	1238	1267	1298
Residential	0	0	0	0	0	0	0	0	0	0
Tertiary / Services	172	282	307	317	321	328	336	344	353	362
Industry	428	630	671	690	697	704	716	730	744	760
Other	94	132	140	144	148	153	159	164	170	176
<b>TYRES. Transport sector, TWh</b>	0	0	0	0	0	0	0	0	0	0
Residential transport	0	0	0	0	0	0	0	0	0	0
Tertiary / Services transport	0	0	0	0	0	0	0	0	0	0
Industry transport	0	0	0	0	0	0	0	0	0	0
Other transport	0	0	0	0	0	0	0	0	0	0
<b>ALL PRODUCTS. All sectors, TWh</b>	2097	2981	3049	2970	2869	2828	2838	2889	2964	3049
Residential	725	873	841	738	668	647	637	640	649	657
Tertiary / Services	711	1121	1162	1157	1120	1092	1091	1112	1147	1189
Industry	547	823	874	899	902	905	920	940	964	992
Other	115	164	171	176	179	184	190	197	204	211
Transport	0	0	0	0	0	0	0	0	0	0

ELECECO

ECO Electricity (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
	Tertiary / Services	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
	Industry	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential	60%	54%	53%	53%	53%	53%	54%	54%	54%	54%
	Tertiary / Services	31%	37%	37%	38%	38%	38%	37%	37%	37%	37%
	Industry	8%	8%	8%	8%	8%	8%	7%	7%	8%	8%
	Other	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE COOLING.</b>											
& HT PROCESS	Residential	2%	6%	6%	6%	6%	7%	7%	8%	8%	8%
	Tertiary / Services	65%	66%	66%	66%	65%	65%	65%	64%	64%	64%
	Industry	26%	22%	22%	22%	22%	22%	22%	22%	22%	22%
	Other	8%	6%	6%	6%	6%	6%	6%	6%	6%	6%
<b>VENTILATION</b>											
	Residential	29%	21%	21%	19%	18%	17%	18%	19%	20%	20%
	Tertiary / Services	61%	68%	68%	69%	71%	71%	71%	70%	69%	69%
	Industry	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%
	Other	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
<b>LIGHTING.</b>											
	Residential	30%	23%	20%	13%	10%	10%	10%	10%	10%	9%
	Tertiary / Services	55%	61%	63%	69%	72%	71%	71%	72%	72%	73%
	Industry	14%	15%	15%	17%	17%	17%	17%	17%	17%	17%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
	Residential	54%	56%	57%	54%	48%	46%	45%	45%	45%	44%
	Tertiary / Services	40%	39%	38%	41%	46%	47%	48%	48%	48%	49%
	Industry	5%	5%	4%	5%	6%	6%	6%	6%	6%	6%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>											
	Residential	48%	39%	35%	32%	29%	25%	20%	18%	16%	14%
	Tertiary / Services	42%	43%	44%	42%	40%	41%	42%	43%	43%	44%
	Industry	8%	16%	19%	23%	27%	31%	33%	35%	37%	38%
	Other	2%	2%	3%	3%	3%	4%	4%	4%	4%	4%
<b>COOKING.</b>											
	Residential	89%	90%	91%	91%	92%	92%	92%	92%	92%	93%
	Tertiary / Services	11%	10%	9%	9%	8%	8%	8%	8%	8%	7%
	Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
	Residential	93%	92%	92%	91%	91%	91%	91%	91%	90%	90%
	Tertiary / Services	6%	8%	8%	8%	8%	8%	9%	9%	9%	9%
	Industry	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
	Residential	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Tertiary / Services	25%	27%	27%	28%	28%	28%	28%	28%	28%	28%
	Industry	62%	60%	60%	60%	60%	59%	59%	59%	59%	59%
	Other	14%	13%	12%	13%	13%	13%	13%	13%	13%	14%
<b>TYRES.</b>											
	Residential transport										
	Tertiary / Services transport										
	Industry transport										
	Other transport										
<b>ALL PRODUCTS.</b>											
	Residential	35%	29%	28%	25%	23%	23%	22%	22%	22%	22%
	Tertiary / Services	34%	38%	38%	39%	39%	39%	38%	38%	39%	39%
	Industry	26%	28%	29%	30%	31%	32%	32%	33%	33%	33%
	Other	5%	5%	6%	6%	6%	7%	7%	7%	7%	7%
	Transport	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

ELECSAVE

db	SAVED Electricity (BAU-ECO, in TWh elec)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	0	0	25	55	82	91	95	98	103	108
	<b>Total CH Central Heating combi, water heat</b>	0.02	0	0	0	1	1	1	2	2	2	2
	<b>TOTAL WATER HEATING</b>		0	0	25	56	83	93	96	100	105	110
	<i>CH non-electric</i>	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<i>CH electric resistance boiler, 1st estimate</i>	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<i>CH heat pump, 1st estimate</i>	1	0.0	0.0	-2.1	-2.7	-8.0	-13.5	-19.1	-24.6	-30.2	-35.7
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	0.0	2.5	6.8	9.5	15.9	16.7	17.2	16.5	15.3	14.2
	<b>Total CH Central Heating boiler, space heat</b>		0	3	5	7	8	3	-2	-8	-15	-22
	SFB Wood Manual	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Wood Direct Draft	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Coal	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Pellets	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Wood chips	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total Solid Fuel Boiler</b>		0	0	0	0	0	0	0	0	0	0
	CHAE-S (≤ 400 kW)	1	0	0	0.0	0.1	0.4	0.6	0.9	1.0	0.9	0.8
	CHAE-L (> 400 kW)	1	0	0	0.0	0.2	0.7	0.9	1.1	1.1	1.0	0.8
	CHWE-S (≤ 400 kW)	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHWE-L (> 1500 kW)	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHF	0.05	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	1	0	0	0.1	1.1	2.7	3.9	4.2	3.8	3.3	2.8
	HT PCH-AE-L	1	0	0	0.1	1.2	3.1	5.0	6.0	6.1	5.8	5.3
	HT PCH-WE-S	1	0	0	0.0	0.1	0.3	0.4	0.4	0.3	0.2	0.1
	HT PCH-WE-M	1	0	0	0.0	0.2	0.5	0.6	0.5	0.2	0.1	0.0
	HT PCH-WE-L	1	0	0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	AC rooftop	1	0	0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
	AC splits	1	0	0	0.0	0.4	0.8	1.1	1.0	0.8	0.6	0.5
	AC VRF	1	0	0	0.0	0.2	0.5	0.8	1.1	1.2	1.1	1.0
	ACF	0.05	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC central Air Cooling</b>		0	0	0	4	9	14	15	15	13	11
	AC rooftop (rev)	1	0	0	0.2	1.1	1.6	1.5	0.8	0.2	0.0	0.0
	AC splits (rev)	1	0	0	0.5	1.9	3.3	4.0	3.7	3.1	2.7	2.3
	AC VRF (rev)	1	0	0	0.2	1.0	2.3	3.9	4.8	5.1	4.9	4.6
	ACF (rev)	0.05	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AHF	0.05	0	0	0.1	0.2	0.4	0.5	0.5	0.4	0.4	0.3
	AHE	1	0	0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC central Air Heating</b>		0	0	1	4	8	10	10	9	8	7
	<b>Total AHC central Air Heating &amp; Cooling</b>		0	0	1	8	17	24	25	24	22	19
	LH open fireplace	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH closed fireplace/inset	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH wood stove	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH coal stove	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH cooker	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH SHR stove	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH pellet stove	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH open fire gas	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH closed fire gas	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH flueless fuel heater	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	1	0	0	0.8	3.4	5.0	5.0	4.9	4.8	4.8	4.8
	LH elec.convector	1	0	0	2.7	10.5	15.2	15.5	14.8	14.7	14.8	15.0
	LH elec.storage	1	0	0	0.2	1.0	1.6	2.0	2.0	1.9	1.9	1.9
	LH elec.underfloor	1	0	0	0.3	1.3	2.1	2.8	3.1	3.4	3.7	3.6
	LH luminous heaters	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH tube heaters	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>LH total</b>		0	0	4	16	24	25	25	25	25	25
	RAC (cooling demand), all types <12 kW	1	0.0	0.0	1.6	3.9	6.0	6.7	7.1	7.4	7.6	7.9
	RAC (heating demand), reversible <12kW	1	0.0	0.0	2.3	6.4	10.4	12.1	12.2	12.0	11.7	11.4
	<b>Total RAC Room Air Conditioner</b>		0	0	4	10	16	19	19	19	19	19
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	0	1	7	11	12	13	13	12	12	11
	<b>TOTAL SPACE HEATING</b>		0	3	12	34	50	51	45	38	30	23
	<b>TOTAL SPACE COOLING</b>		0	0	2	8	15	20	23	22	21	19
	NRVU electricity	1	0	0	1.7	5.9	10.3	14.0	14.9	14.7	14.8	15.1
1	NRVU heat (negative=saving vs. natural ventilation)	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	0	0	1.4	3.5	5.6	7.4	7.8	8.3	8.9	9.5
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	0	0.4	1.4	2.5	3.6	4.1	4.6	5.0	5.5
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	0.0	0.1	0.3	0.5	0.7	0.8	1.0	1.2
1	RVU Central Unidir., heat (negative=saving )	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	RVU Central Balanced, heat (negative=saving )	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	RVU Local Balanced, heat (negative=saving )	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total VU (electricity only)</b>		0	0	3	11	19	25	27	29	30	31
	<b>TOTAL VENTILATION (electricity only)</b>		-	-	3	11	19	25	27	29	30	31

ELECSAVE

db	SAVED Electricity (BAU-ECO, in TWh elec)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>LS, incl. control gear (BAU-ECO)</i>											
	LFL (T12,T8h,T8t,T5,other)	1	0	1	6	20	65	93	93	80	66	53
	HID (HPM, HPS, MH)	1	0	1	14	24	26	23	15	10	6	3
	CFLni (all shapes)	1	0	0	1	3	4	4	2	1	1	1
	CFLi (retrofit for GLS, HL)	1	0	-3	-4	1	9	11	8	5	3	2
	GLS (DLS & NDLS)	1	0	23	40	39	23	13	8	5	3	2
	HL (DLS & NDLS, LV & MV)	1	0	-5	-3	42	46	24	12	7	4	2
	LED replacing LFL (retrofit & luminaire)	1	0	0	-1	-7	-28	-36	-33	-24	-15	-6
	LED replacing HID (retrofit & luminaire)	1	0	0	-10	-14	-11	-6	-2	0	2	4
	LED replacing CFLni (retrofit & luminaire)	1	0	0	0	-1	-1	-1	0	0	0	1
	LED replacing DLS (retrofit & luminaire)	1	0	0	-1	-3	-3	-2	-1	-1	0	0
	LED replacing NDLS (retrofit & luminaire)	1	0	0	-1	-9	-12	-9	-6	-3	-1	0
	<i>Special Purpose Lamps (SPL)</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	0	0	0	0	0	0	0	0	0	0
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)		0	18	54	128	173	168	138	108	82	63
	SUBTOTAL LED		0	0	-13	-33	-56	-55	-42	-28	-14	-2
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>0</b>	<b>18</b>	<b>41</b>	<b>95</b>	<b>117</b>	<b>113</b>	<b>96</b>	<b>80</b>	<b>68</b>	<b>61</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>0</b>	<b>18</b>	<b>41</b>	<b>95</b>	<b>117</b>	<b>113</b>	<b>96</b>	<b>80</b>	<b>68</b>	<b>61</b>
	DP TV on-mode, total all types	1	0.0	0.0	5.9	21.0	38.2	52.5	56.5	47.9	39.8	35.4
	DP TV standby, standard (NoNA)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP TV standby, total all types</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DP TV total on-mode + standby</b>		<b>0</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>38</b>	<b>52</b>	<b>57</b>	<b>48</b>	<b>40</b>	<b>35</b>
	DP Monitor on-mode	1	0.0	0.0	1.0	3.1	3.3	3.5	3.0	2.3	2.1	1.9
	DP Monitor standby	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>
	DP Signage on-mode	1	0.0	0.0	0.0	0.0	0.8	3.9	6.8	6.3	3.7	1.0
	DP Signage standby	1	0.0	0.0	0.0	0.0	0.1	0.6	1.0	0.9	0.6	0.2
	<b>DP Signage total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>8</b>	<b>7</b>	<b>4</b>	<b>1</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>0</b>	<b>0</b>	<b>7</b>	<b>24</b>	<b>42</b>	<b>60</b>	<b>66</b>	<b>57</b>	<b>46</b>	<b>38</b>
	<b>DP Electronic Displays, total standby</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>
	<b>DP Electronic Displays, total</b>		<b>0</b>	<b>0</b>	<b>7</b>	<b>24</b>	<b>42</b>	<b>60</b>	<b>67</b>	<b>57</b>	<b>46</b>	<b>39</b>
	SSTB	1	0	1.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	1	0	0.0	2.1	4.4	4.6	4.4	4.7	5.1	5.4	5.8
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>
	VIDEO players/recorders	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	1	0	0	0.6	1.1	1.2	1.1	1.1	1.1	1.1	1.1
	<b>Total VIDEO</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>											
	ES tower 1-socket traditional	1	0	0	0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 1-socket traditional	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 2-socket traditional	1	0	0	0	0.3	0.4	0.4	0.4	0.4	0.4	0.4
	ES rack 2-socket cloud	1	0	0	0	0.8	0.9	1.0	1.0	1.0	1.0	1.0
	ES rack 4-socket traditional	1	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 4-socket cloud	1	0	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	ES rack 2-socket resilient trad.	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket resilient cloud	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient trad.	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 2-socket traditional	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 2-socket cloud	1	0	0	0	0.3	0.4	0.4	0.4	0.4	0.4	0.4
	ES blade 4-socket traditional	1	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	ES blade 4-socket cloud	1	0	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	<b>ES total traditional</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>
	<b>ES total cloud</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1.3</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>1.8</b>	<b>1.8</b>	<b>1.8</b>
	<b>ES Enterprise Servers total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2.0</b>	<b>2.4</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>
	DS Online 2	1	0	0	0	0.1	0.3	0.4	0.5	0.5	0.5	0.5
	DS Online 3	1	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	DS Online 4	1	0	0	0	0.1	0.2	0.3	0.3	0.3	0.3	0.3
	<b>DS Data Storage products total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0.6</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2.2</b>	<b>3.0</b>	<b>3.3</b>	<b>3.5</b>	<b>3.5</b>	<b>3.5</b>	<b>3.5</b>
	PC Desktop	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Notebook	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Tablet/slate	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Thin client	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total PC, electricity</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

ELECSAVE

db	SAVED Electricity (BAU-ECO, in TWh elec)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	EP-Copier mono	1	0	0.5	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.0
	EP-Copier colour	1	0	0.1	0.6	1.0	1.2	1.3	1.4	1.5	1.6	1.7
	EP-printer mono	1	0	0.6	1.1	0.9	0.8	0.7	0.6	0.5	0.4	0.3
	EP-printer colour	1	0	0.1	1.2	1.7	2.1	2.5	2.9	3.2	3.6	3.9
	IJ SFD printer	1	0	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0
	IJ MFD printer	1	0	0.6	1.1	1.3	1.4	1.6	1.7	1.8	2.0	2.1
	<b>Total imaging equipment, electricity</b>		<b>0</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>
	SB Home Gateway, on-mode hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, on-mode hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), on-mode hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), on-mode hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, standby hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), standby hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	1	0	0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, idle hours	1	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	SB Home Phones (fixed), idle hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), idle hours	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total SB (networked) StandBy (rest)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
db	<i>EPS Active mode (for electricity losses)</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.0	0.0	0.2	0.4	0.4	0.4	0.3	0.3	0.2	0.2
0.6	EPS 10–12 W	1	0.0	0.1	1.9	3.9	4.8	4.3	3.7	3.1	2.5	2.3
0.5	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	1	0.0	0.0	0.2	0.3	0.3	0.3	0.2	0.2	0.1	0.1
0.8	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 65–120 W	1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2
	<b>EPS, total for active mode</b>		<b>0.0</b>	<b>0.1</b>	<b>2.4</b>	<b>4.9</b>	<b>5.9</b>	<b>5.3</b>	<b>4.6</b>	<b>3.8</b>	<b>3.1</b>	<b>2.8</b>
db	<i>EPS No-load mode</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	1	0.0	0.0	0.3	0.7	0.8	0.8	0.7	0.6	0.6	0.5
0.0	EPS 10–12 W	1	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1
0.0	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.0</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>0.8</b>	<b>0.7</b>	<b>0.6</b>
	<b>EPS, overall total (active + no-load)</b>		<b>0.0</b>	<b>0.2</b>	<b>3.0</b>	<b>5.9</b>	<b>7.1</b>	<b>6.4</b>	<b>5.5</b>	<b>4.7</b>	<b>3.9</b>	<b>3.5</b>
	<b>EPS, double counted subtracted</b>		<b>0.0</b>	<b>0.1</b>	<b>1.6</b>	<b>3.2</b>	<b>4.0</b>	<b>3.5</b>	<b>3.1</b>	<b>2.6</b>	<b>2.2</b>	<b>2.0</b>
	UPS below 1.5 kVA	1	0.0	0.0	0.0	1.3	2.0	2.3	2.6	2.8	3.0	3.2
	UPS 1.5 to 5 kVA	1	0.0	0.0	0.0	2.6	6.9	8.5	9.7	10.8	11.7	12.4
	UPS 5 to 10 kVA	1	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.6	0.6	0.6
	UPS 10 to 200 kVA	1	0.0	0.0	0.0	0.4	1.2	2.2	2.5	2.8	3.1	3.3
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>10</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>18</b>	<b>20</b>
	<b>TOTAL ELECTRONICS</b>		<b>0</b>	<b>4</b>	<b>16</b>	<b>45</b>	<b>72</b>	<b>93</b>	<b>102</b>	<b>94</b>	<b>85</b>	<b>79</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>1</b>	<b>0</b>	<b>35</b>	<b>53</b>	<b>65</b>	<b>78</b>	<b>89</b>	<b>97</b>	<b>102</b>	<b>104</b>	<b>106</b>
	CF open vertical chilled multi deck (RVC2)	1	0	0	0.1	1.6	4.2	5.2	5.1	5.1	5.2	5.3
	CF open horizontal frozen island (RHF4)	1	0	0	0.0	0.1	0.3	0.4	0.4	0.4	0.4	0.4
	CF other supermarket display (non-BCs)	1	0	0	0.2	2.2	5.0	6.5	7.1	7.4	7.7	8.0
	CF Plug in one door beverage cooler	1	0	0	0.1	2.2	5.2	5.9	5.8	6.0	6.2	6.4
	CF Plug in horizontal ice cream freezer	1	0	0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1
	CF Spiral vending machine	1	0	0	0.1	0.2	0.5	0.7	0.7	0.8	0.8	0.8
	<b>Total CF Commercial Refrigeration</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>	<b>21</b>
	PF Storage cabinet Chilled Vertical (CV)	1	0	0	0	0.4	1.0	1.2	1.3	1.3	1.4	1.4
	PF Storage cabinet Frozen Vertical (FV)	1	0	0	0	0.5	1.2	1.4	1.5	1.6	1.6	1.7
	PF Storage cabinet Chilled Horizontal (CH)	1	0	0	0	0.3	0.8	0.9	1.0	1.0	1.0	1.1
	PF Storage cabinet Frozen Horizontal (FH)	1	0	0	0	0.2	0.5	0.6	0.6	0.6	0.7	0.7
	<b>PF Storage cabinets All types</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.3</b>	<b>3.4</b>	<b>4.1</b>	<b>4.3</b>	<b>4.5</b>	<b>4.7</b>	<b>4.9</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	0	0	0	0.2	0.5	0.9	1.0	1.1	1.2	1.3
	PF Process Chiller AC MT L > 300 kW	1	0	0	0	0.2	0.5	0.8	0.9	1.0	1.1	1.1
	PF Process Chiller AC LT S ≤ 200 kW	1	0	0	0	0.2	0.5	0.8	0.9	1.0	1.1	1.1
	PF Process Chiller AC LT L > 200 kW	1	0	0	0	0.2	0.5	0.8	0.9	1.0	1.1	1.2
	PF Process Chiller WC MT S ≤ 300 kW	1	0	0	0	0.1	0.2	0.2	0.3	0.3	0.3	0.4
	PF Process Chiller WC MT L > 300 kW	1	0	0	0	0.1	0.2	0.3	0.4	0.4	0.4	0.5
	PF Process Chiller WC LT S ≤ 200 kW	1	0	0	0	0.1	0.2	0.3	0.3	0.4	0.4	0.4
	PF Process Chiller WC LT L > 200 kW	1	0	0	0	0.1	0.2	0.4	0.4	0.5	0.5	0.5
	<b>PF Process Chiller All MT&amp;LT</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.1</b>	<b>2.7</b>	<b>4.4</b>	<b>5.1</b>	<b>5.6</b>	<b>6.1</b>	<b>6.5</b>

ELECSAVE

db	SAVED Electricity (BAU-ECO, in TWh elec)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Condensing Unit MT S 0.2-1 kW	1	0	0	0	0.2	0.5	0.6	0.6	0.7	0.7	0.8
	PF Condensing Unit MT M 1-5 kW	1	0	0	0	0.5	1.0	1.1	1.1	1.2	1.3	1.4
	PF Condensing Unit MT L 5-20 kW	1	0	0	0	0.7	1.5	1.6	1.7	1.8	2.0	2.1
	PF Condensing Unit MT XL 20-50 kW	1	0	0	0	0.7	1.4	1.5	1.6	1.7	1.8	2.0
	PF Condensing Unit LT S 0.1-0.4 kW	1	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Condensing Unit LT M 0.4-2 kW	1	0	0	0	0.2	0.3	0.3	0.4	0.4	0.4	0.4
	PF Condensing Unit LT L 2-8 kW	1	0	0	0	0.4	0.7	0.7	0.8	0.8	0.9	1.0
	PF Condensing Unit LT XL 8-20 kW	1	0	0	0	0.7	1.3	1.4	1.5	1.6	1.8	1.9
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>3.4</b>	<b>6.6</b>	<b>7.2</b>	<b>7.7</b>	<b>8.3</b>	<b>9.0</b>	<b>9.7</b>
	<b>PF Professional Refrigeration, Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>3.8</b>	<b>8.8</b>	<b>11.4</b>	<b>12.5</b>	<b>13.4</b>	<b>14.3</b>	<b>15.3</b>
	<b>TOTAL FOOD PRESERVATION</b>		<b>0</b>	<b>35</b>	<b>53</b>	<b>75</b>	<b>102</b>	<b>119</b>	<b>129</b>	<b>135</b>	<b>138</b>	<b>142</b>
	CA El. Hobs	1	0	0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
	CA El. Ovens	1	0	0	0.0	0.5	1.0	1.6	2.2	2.3	2.3	2.3
	CA Gas Hobs	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CA Gas Ovens	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CA Range Hoods	1	0	0	0.1	0.7	1.9	3.3	4.3	4.7	5.1	5.4
	<b>Total CA Cooking Appliances</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>
	CM Dripfilter (glass)	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (thermos)	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic)	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Hard cap espresso	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Semi-auto espresso	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	1	0	0	0.3	1.1	1.0	1.0	1.0	1.0	1.0	1.0
	CM Dripfilter (thermos), standby/keep warm	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	1	0	0	0.1	0.3	0.4	0.4	0.4	0.5	0.5	0.5
	CM Hard cap espresso, standby/keep warm	1	0	0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	CM Semi-auto espresso, standby/keep warm	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	1	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	<b>Total CM household Coffee Makers</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>TOTAL COOKING</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>
	<b>Total WM household Washing Machine</b>	1	<b>0</b>	<b>9</b>	<b>14</b>	<b>16</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>14</b>	<b>11</b>	<b>9</b>
	<b>Total DW household Dishwasher</b>	1	<b>0</b>	<b>5</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>15</b>	<b>16</b>	<b>17</b>
	LD vented el.	1	0	0	0.1	0.3	0.5	0.6	0.6	0.6	0.6	0.6
	LD condens el.	1	0	0	0.8	3.2	6.2	8.2	8.9	9.3	9.7	10.1
	LD vented gas	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>11</b>
	VC dom	1	0	0	4.3	13.5	21.6	26.9	31.8	36.0	39.2	41.1
	VC nondom	1	0	0	0.5	2.1	2.7	2.9	3.1	3.4	3.6	3.9
	<b>Total VC Vacuum Cleaner</b>		<b>0</b>	<b>0</b>	<b>5</b>	<b>16</b>	<b>24</b>	<b>30</b>	<b>35</b>	<b>39</b>	<b>43</b>	<b>45</b>
	<b>TOTAL CLEANING</b>		<b>0</b>	<b>14</b>	<b>27</b>	<b>44</b>	<b>58</b>	<b>67</b>	<b>73</b>	<b>78</b>	<b>81</b>	<b>82</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	0	0	2.4	7.1	12.6	15.8	17.0	17.0	17.0	17.0
0.5	FAN Axial>300Pa	1	0	0	2.2	7.4	13.9	18.2	19.9	19.9	19.9	19.9
0.5	FAN Centr.FC	1	0	0	0.8	3.2	5.7	7.5	8.0	8.0	8.0	8.0
0.5	FAN Centr.BC-free	1	0	0	1.9	5.2	8.8	10.8	11.6	12.0	12.2	12.4
0.5	FAN Centr.BC	1	0	0	2.5	6.6	11.0	13.4	14.7	15.8	17.1	18.6
0.5	FAN Cross-flow	1	0	0	0.5	1.5	2.2	2.7	2.9	3.1	3.4	3.7
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>0</b>	<b>0</b>	<b>5</b>	<b>15</b>	<b>27</b>	<b>34</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	0	0	5.8	24.7	39.6	38.6	34.2	28.6	21.7	13.3
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	0	0	8.4	38.6	65.4	66.1	58.4	48.0	34.8	18.1
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	0	0	15.3	58.7	98.7	122.3	102.8	69.9	37.0	13.8
0.45	<b>Total 3-ph 0.75-375 kW no VSD</b>		<b>0</b>	<b>1</b>	<b>29</b>	<b>122</b>	<b>204</b>	<b>227</b>	<b>195</b>	<b>147</b>	<b>94</b>	<b>45</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	0	0	-0.9	-9.4	-16.9	-15.5	-13.0	-10.0	-6.2	-1.4
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	0	0	-4.2	-21.3	-36.1	-35.0	-30.0	-23.6	-15.5	-5.3
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	0	0	-8.7	-34.2	-56.5	-69.0	-55.3	-34.5	-14.2	-0.1
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>0</b>	<b>0</b>	<b>-14</b>	<b>-65</b>	<b>-109</b>	<b>-119</b>	<b>-98</b>	<b>-68</b>	<b>-36</b>	<b>-7</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>0</b>	<b>0</b>	<b>16</b>	<b>57</b>	<b>94</b>	<b>107</b>	<b>97</b>	<b>78</b>	<b>58</b>	<b>39</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	0	0	0	0.0	0.4	0.8	0.8	0.7	0.6	0.6
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.5</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>0.7</b>	<b>0.7</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	0	0	0	0.0	0.6	1.2	1.1	1.0	0.9	0.8
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	0	0	0.0	0.1	0.3	0.3	0.3	0.2	0.2
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.8</b>	<b>1.4</b>	<b>1.3</b>	<b>1.3</b>	<b>1.2</b>	<b>1.1</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	0	0	0	0.0	0.4	0.7	0.9	0.9	0.7	0.6
0.45	Large 3-ph LV 375-1000kW with VSD	1	0	0	0	0.1	0.5	1.0	1.4	1.6	1.6	1.6
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>0.9</b>	<b>1.7</b>	<b>2.3</b>	<b>2.6</b>	<b>2.3</b>	<b>2.2</b>

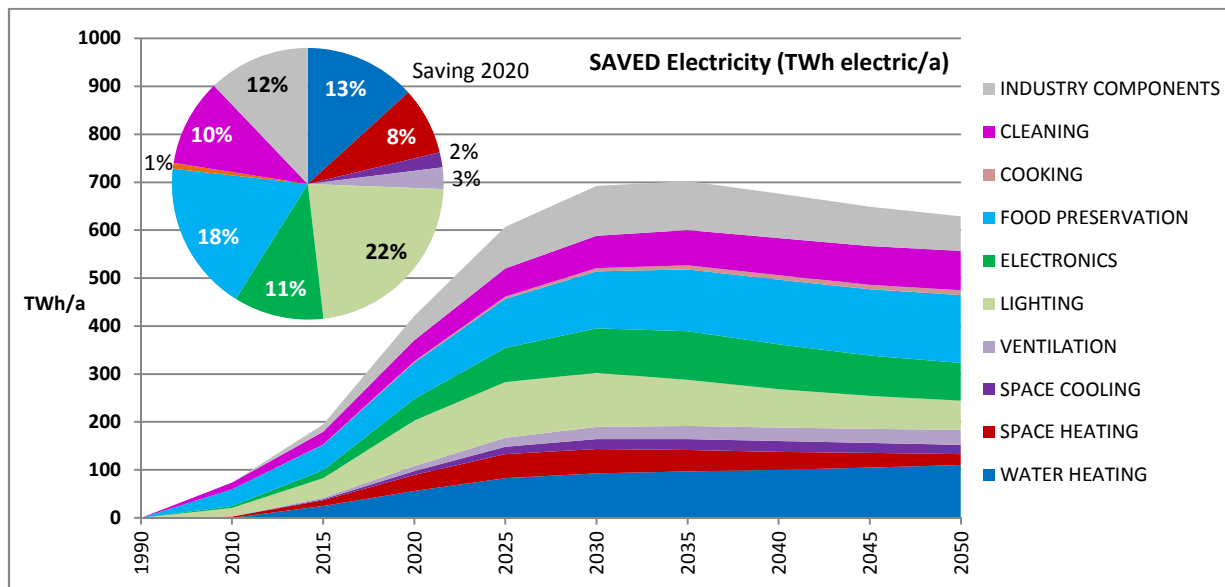
ELECSAVE

db	SAVED Electricity (BAU-ECO, in TWh elec)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.2	0.4	0.4	0.4	0.4	0.3
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.2	0.4	0.5	0.5	0.4	0.4
0.45	Explosion motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.1	0.3	0.5	0.5	0.5	0.5
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.2</b>	<b>1.4</b>	<b>1.3</b>	<b>1.3</b>	<b>1.2</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.2	0.3	0.3	0.3	0.2	0.2
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.1	0.3	0.3	0.3	0.3	0.3
0.45	Brake motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.1	0.2	0.2	0.3	0.2	0.2
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.4</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>1.2</b>	<b>2.5</b>	<b>3.1</b>	<b>2.9</b>	<b>2.6</b>	<b>2.4</b>
	<b>Total MT Elec. Motors LV 0.12-1000 kW</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>31</b>	<b>54</b>	<b>64</b>	<b>59</b>	<b>48</b>	<b>37</b>	<b>26</b>
	<b>Total WP Water Pumps</b>	1	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>
	CP Fixed Speed 5-1280 l/s	1	0	0	0.2	0.6	1.0	1.1	1.0	0.9	0.8	0.7
	CP Variable speed 5-1280 l/s	1	0	0	0.0	0.2	0.4	0.5	0.5	0.4	0.3	0.1
	CP Pistons 2-64 l/s	1	0	0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
	<b>Total CP Standard Air Compressors</b>		<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0.9</b>	<b>1.5</b>	<b>1.7</b>	<b>1.5</b>	<b>1.3</b>	<b>1.1</b>	<b>0.9</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>0</b>	<b>0</b>	<b>16</b>	<b>51</b>	<b>87</b>	<b>104</b>	<b>102</b>	<b>93</b>	<b>82</b>	<b>72</b>
1	TRAFO Distribution	1	0	0	0.6	2.1	3.7	5.4	7.3	9.3	11.4	13.6
1	TRAFO Industry oil	1	0	0	0.7	2.6	4.7	6.9	9.3	11.1	11.8	12.6
1	TRAFO Industry dry	1	0	0	0.1	0.5	0.8	1.2	1.7	2.1	2.5	2.6
1	TRAFO Power	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	TRAFO DER oil	1	0	0	0.1	0.3	0.8	1.5	2.5	4.0	5.6	7.5
1	TRAFO DER dry	1	0	0	0.2	0.9	2.0	3.8	6.6	10.3	14.5	19.4
1	TRAFO Small	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total TRAFO Utility Transformers</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>12</b>	<b>19</b>	<b>27</b>	<b>37</b>	<b>46</b>	<b>56</b>
	<b>TOTAL ENERGY SECTOR</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>12</b>	<b>19</b>	<b>27</b>	<b>37</b>	<b>46</b>	<b>56</b>
	<b>(not final energy: distribution losses)</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>12</b>	<b>19</b>	<b>27</b>	<b>37</b>	<b>46</b>	<b>56</b>
	Tyres C1, replacement for cars	0	0	0	0	0	0	0	0	0	0	0
	Tyres C1, OEM for cars	0	0	0	0	0	0	0	0	0	0	0
	<b>Tyres C1, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Tyres C2, replacement for vans	0	0	0	0	0	0	0	0	0	0	0
	Tyres C2, OEM for vans	0	0	0	0	0	0	0	0	0	0	0
	<b>Tyres C2, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Tyres C3, replacement for trucks/busses	0	0	0	0	0	0	0	0	0	0	0
	Tyres C3, OEM for trucks/busses	0	0	0	0	0	0	0	0	0	0	0
	<b>Tyres C3, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Tyres, total C1+C2+C3</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL TRANSPORT SECTOR</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>SAVED Electricity, Total excl. Energy Sector, in TWh</b>		<b>0</b>	<b>73</b>	<b>195</b>	<b>422</b>	<b>607</b>	<b>692</b>	<b>703</b>	<b>676</b>	<b>649</b>	<b>629</b>
	SAVED Electricity, Total excl. Energy Sector, in PJ		0	264	702	1517	2185	2493	2529	2435	2336	2265
	SAVED Electricity, Total excl. Energy Sector, in mtoe		0	6	17	36	52	60	60	58	56	54
	<b>SAVED Electricity (BAU-ECO, summary in TWh elec)</b>		<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>		<b>0</b>	<b>0</b>	<b>25</b>	<b>56</b>	<b>83</b>	<b>93</b>	<b>96</b>	<b>100</b>	<b>105</b>	<b>110</b>
	<b>SPACE HEATING</b>		<b>0</b>	<b>3</b>	<b>12</b>	<b>34</b>	<b>50</b>	<b>51</b>	<b>45</b>	<b>38</b>	<b>30</b>	<b>23</b>
	<b>SPACE COOLING</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>15</b>	<b>20</b>	<b>23</b>	<b>22</b>	<b>21</b>	<b>19</b>
	<b>VENTILATION</b>		<b>0</b>	<b>0</b>	<b>3</b>	<b>11</b>	<b>19</b>	<b>25</b>	<b>27</b>	<b>29</b>	<b>30</b>	<b>31</b>
	<b>LIGHTING (incl. SPL, ctrl, sb)</b>		<b>0</b>	<b>18</b>	<b>41</b>	<b>95</b>	<b>117</b>	<b>113</b>	<b>96</b>	<b>80</b>	<b>68</b>	<b>61</b>
	<b>ELECTRONICS</b>		<b>0</b>	<b>4</b>	<b>16</b>	<b>45</b>	<b>72</b>	<b>93</b>	<b>102</b>	<b>94</b>	<b>85</b>	<b>79</b>
	<b>FOOD PRESERVATION</b>		<b>0</b>	<b>35</b>	<b>53</b>	<b>75</b>	<b>102</b>	<b>119</b>	<b>129</b>	<b>135</b>	<b>138</b>	<b>142</b>
	<b>COOKING</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>
	<b>CLEANING</b>		<b>0</b>	<b>14</b>	<b>27</b>	<b>44</b>	<b>58</b>	<b>67</b>	<b>73</b>	<b>78</b>	<b>81</b>	<b>82</b>
	<b>INDUSTRY COMPONENTS</b>		<b>0</b>	<b>0</b>	<b>16</b>	<b>51</b>	<b>87</b>	<b>104</b>	<b>102</b>	<b>93</b>	<b>82</b>	<b>72</b>
	<b>ENERGY SECTOR (see separate below)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>SAVED Electricity, Total excl. Energy Sector, in TWh</b>		<b>0</b>	<b>73</b>	<b>195</b>	<b>422</b>	<b>607</b>	<b>692</b>	<b>703</b>	<b>676</b>	<b>649</b>	<b>629</b>
	SAVED Electricity, Total excl. Energy Sector, in PJ		0	264	702	1517	2185	2493	2529	2435	2336	2265
	SAVED Electricity, Total excl. Energy Sector, in mtoe		0	6	17	36	52	60	60	58	56	54

## ELECSAVE

In Eurostat, energy consumed in Energy Sector and Distribution losses not counted as Final energy, hence Energy Sector separately reported :

	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ENERGY SECTOR (improvement over BAU)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>12</b>	<b>19</b>	<b>27</b>	<b>37</b>	<b>46</b>	<b>56</b>
<b>SAVED Electricity, Total incl. Energy Sector, in TWh</b>	<b>0</b>	<b>73</b>	<b>197</b>	<b>428</b>	<b>619</b>	<b>711</b>	<b>730</b>	<b>713</b>	<b>695</b>	<b>685</b>
SAVED Electricity, Total incl. Energy Sector, in PJ	0	264	708	1540	2228	2561	2628	2567	2501	2466
SAVED Electricity, Total incl. Energy Sector, in mtoe	0	6	17	37	53	61	63	61	60	59
trafo ELEC save / total Eco ELEC	0.00%	0.00%	0.06%	0.21%	0.42%	0.66%	0.96%	1.27%	1.55%	1.83%
Saving in % versus BAU (from 1990=0)	0.0%	2.4%	6.0%	12.4%	17.5%	19.7%	19.8%	19.0%	18.0%	17.1%
Saving In % versus BAU (from 2010=0)	-3.5%	0.0%	3.7%	10.3%	15.4%	17.6%	17.8%	16.9%	15.9%	15.1%



### Sector subdivision for SAVED Electricity (same sector definitions and same order of presentation as in Eurostat Energy Balances)

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Energy Sector: see separate reporting above; not included in other sector totals

Transport Sector: see separate reporting below; not included in other sector totals

SAVED Electricity (summary INDUSTRY, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	1	2	3	3	3	3	3	3
SPACE HEATING	0	0	1	2	3	3	2	1	0	0
SPACE COOLING	0	0	0	1	3	4	4	4	4	3
VENTILATION	0	0	0	1	1	2	2	2	2	2
LIGHTING	0	1	4	8	14	17	16	14	13	12
ELECTRONICS	0	0	0	1	2	2	3	3	3	3
FOOD PRESERVATION	0	0	1	2	4	5	6	7	7	8
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	8	27	47	55	52	45	37	30
<b>SAVED Electricity, Industry, in TWh</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>44</b>	<b>76</b>	<b>92</b>	<b>89</b>	<b>80</b>	<b>69</b>	<b>60</b>
SAVED Electricity, Industry, in PJ	0	8	52	158	273	330	321	287	249	215
SAVED Electricity, Industry, in mtoe	0	0	1	4	7	8	8	7	6	5

SAVED Electricity (summary TRANSPORT, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	0	0	0	0	0	0	0	0	0	0
TYRES for SERVICE-sector-related transport	0	0	0	0	0	0	0	0	0	0
TYRES for RESIDENTIAL-sector-related transport	0	0	0	0	0	0	0	0	0	0
TYRES for OTHER-sector-related transport	0	0	0	0	0	0	0	0	0	0
<b>SAVED Electricity, Transport, in TWh</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
SAVED Electricity, Transport, in PJ	0	0	0	0	0	0	0	0	0	0
SAVED Electricity, Transport, in mtoe	0	0	0	0	0	0	0	0	0	0



## ELECSAVE

<b>SAVED Electricity (summary TERTIARY/SERVICES, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	8	17	26	29	30	31	32	34
SPACE HEATING	0	1	4	13	21	23	22	19	17	14
SPACE COOLING	0	0	1	4	9	12	14	14	13	12
VENTILATION	0	0	1	5	9	12	13	13	13	13
LIGHTING	0	5	14	32	55	68	62	54	47	43
ELECTRONICS	0	1	5	14	23	31	36	36	34	32
FOOD PRESERVATION	0	2	4	13	26	31	32	33	34	35
COOKING	0	0	0	0	1	1	1	1	2	2
CLEANING	0	1	1	3	4	4	5	5	5	5
INDUSTRY COMPONENTS	0	0	6	19	32	40	41	40	38	37
<b>SAVED Electricity, Services, in TWh</b>	<b>0</b>	<b>10</b>	<b>44</b>	<b>120</b>	<b>205</b>	<b>250</b>	<b>255</b>	<b>245</b>	<b>235</b>	<b>227</b>
SAVED Electricity, Services, in PJ	0	34	159	433	738	902	918	883	845	817
SAVED Electricity, Services, in mtoe	0	1	4	10	18	22	22	21	20	20

<b>SAVED Electricity (summary RESIDENTIAL)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	16	36	54	60	63	65	68	72
SPACE HEATING	0	2	7	18	25	24	21	17	13	9
SPACE COOLING	0	0	1	2	3	3	3	3	4	4
VENTILATION	0	0	2	5	8	11	13	14	15	16
LIGHTING	0	12	22	55	46	27	17	11	7	6
ELECTRONICS	0	2	11	30	47	59	63	55	48	44
FOOD PRESERVATION	0	32	48	60	72	82	89	93	95	97
COOKING	0	0	1	3	4	6	7	8	8	8
CLEANING	0	13	25	40	54	63	68	72	75	76
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED Electricity, Residential, in TWh</b>	<b>0</b>	<b>61</b>	<b>133</b>	<b>249</b>	<b>313</b>	<b>336</b>	<b>344</b>	<b>338</b>	<b>333</b>	<b>332</b>
SAVED Electricity, Residential, in PJ	0	219	478	896	1128	1208	1238	1217	1199	1195
SAVED Electricity, Residential, in mtoe	0	5	11	21	27	29	30	29	29	29

(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

<b>SAVED Electricity (summary OTHER, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	0	1	1	1	1	1	1	1
SPACE HEATING	0	0	0	0	1	0	0	0	0	0
SPACE COOLING	0	0	0	0	1	1	1	1	1	1
VENTILATION	0	0	0	0	0	0	0	0	0	0
LIGHTING	0	0	1	1	1	1	1	1	1	1
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	1	1	1	1	2	2	2	2
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	2	5	8	9	9	8	7	6
<b>SAVED Electricity, Other sectors, in TWh</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>8</b>	<b>13</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>
SAVED Electricity, Other sectors, in PJ	0	3	12	30	47	53	52	48	43	38
SAVED Electricity, Other sectors, in mtoe	0	0	0	1	1	1	1	1	1	1

ELECSAVE

SAVED Electricity (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		0	0	25	56	83	93	96	100	105	110
	Residential	0	0	16	36	54	60	63	65	68	72
	Tertiary / Services	0	0	8	17	26	29	30	31	32	34
	Industry	0	0	1	2	3	3	3	3	3	3
	Other	0	0	0	1	1	1	1	1	1	1
<b>SPACE HEATING. All sectors, TWh</b>		0	3	12	34	50	51	45	38	30	23
	Residential	0	2	7	18	25	24	21	17	13	9
	Tertiary / Services	0	1	4	13	21	23	22	19	17	14
	Industry	0	0	1	2	3	3	2	1	0	0
	Other	0	0	0	0	1	0	0	0	0	0
<b>SPACE COOLING. All sectors, TWh</b>		0	0	2	8	15	20	23	22	21	19
<b>&amp; HT PROCESS</b>											
	Residential	0	0	1	2	3	3	3	3	4	4
	Tertiary / Services	0	0	1	4	9	12	14	14	13	12
	Industry	0	0	0	1	3	4	4	4	4	3
	Other	0	0	0	0	1	1	1	1	1	1
<b>VENTILATION. All sectors, TWh</b>		0	0	3	11	19	25	27	29	30	31
	Residential	0	0	2	5	8	11	13	14	15	16
	Tertiary / Services	0	0	1	5	9	12	13	13	13	13
	Industry	0	0	0	1	1	2	2	2	2	2
	Other	0	0	0	0	0	0	0	0	0	0
<b>LIGHTING. All sectors, TWh</b>		0	18	41	95	117	113	96	80	68	61
	Residential	0	12	22	55	46	27	17	11	7	6
	Tertiary / Services	0	5	14	32	55	68	62	54	47	43
	Industry	0	1	4	8	14	17	16	14	13	12
	Other	0	0	1	1	1	1	1	1	1	1
<b>ELECTRONICS. All sectors, TWh</b>		0	4	16	45	72	93	102	94	85	79
	Residential	0	2	11	30	47	59	63	55	48	44
	Tertiary / Services	0	1	5	14	23	31	36	36	34	32
	Industry	0	0	0	1	2	2	3	3	3	3
	Other	0	0	0	0	0	0	0	0	0	0
<b>FOOD PRESERVE. All sectors, TWh</b>		0	35	53	75	102	119	129	135	138	142
	Residential	0	32	48	60	72	82	89	93	95	97
	Tertiary / Services	0	2	4	13	26	31	32	33	34	35
	Industry	0	0	1	2	4	5	6	7	7	8
	Other	0	0	1	1	1	1	2	2	2	2
<b>COOKING. All sectors, TWh</b>		0	0	1	3	5	7	8	9	9	10
	Residential	0	0	1	3	4	6	7	8	8	8
	Tertiary / Services	0	0	0	0	1	1	1	1	2	2
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>		0	14	27	44	58	67	73	78	81	82
	Residential	0	13	25	40	54	63	68	72	75	76
	Tertiary / Services	0	1	1	3	4	4	5	5	5	5
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>		0	0	16	51	87	104	102	93	82	72
	Residential	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services	0	0	6	19	32	40	41	40	38	37
	Industry	0	0	8	27	47	55	52	45	37	30
	Other	0	0	2	5	8	9	9	8	7	6
<b>TYRES. Transport sector, TWh</b>		0	0	0	0	0	0	0	0	0	0
	Residential transport	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services transport	0	0	0	0	0	0	0	0	0	0
	Industry transport	0	0	0	0	0	0	0	0	0	0
	Other transport	0	0	0	0	0	0	0	0	0	0
<b>ALL PRODUCTS. All sectors, TWh</b>		0	73	195	422	607	692	703	676	649	629
	Residential	0	61	133	249	313	336	344	338	333	332
	Tertiary / Services	0	10	44	120	205	250	255	245	235	227
	Industry	0	2	15	44	76	92	89	80	69	60
	Other	0	1	3	8	13	15	14	13	12	11
	Transport	0	0	0	0	0	0	0	0	0	0

ELECSAVE

SAVED Electricity (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential			65%	65%	65%	65%	65%	65%	65%	65%
	Tertiary / Services			31%	31%	31%	31%	31%	31%	31%	31%
	Industry			3%	3%	3%	3%	3%	3%	3%	3%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential		60%	54%	53%	51%	48%	47%	45%	44%	40%
	Tertiary / Services		25%	36%	39%	41%	45%	48%	51%	55%	63%
	Industry		12%	8%	7%	7%	6%	5%	4%	2%	-2%
	Other		3%	2%	1%	1%	1%	1%	0%	-1%	-2%
<b>SPACE COOLING.</b>											
<b>&amp; HT PROCESS</b>											
	Residential			40%	24%	18%	15%	15%	15%	17%	19%
	Tertiary / Services			51%	57%	59%	61%	61%	61%	61%	60%
	Industry			7%	15%	17%	19%	19%	18%	17%	17%
	Other			2%	4%	5%	5%	5%	5%	5%	5%
<b>VENTILATION</b>											
	Residential			52%	46%	45%	45%	46%	48%	50%	52%
	Tertiary / Services			41%	47%	47%	47%	47%	44%	43%	42%
	Industry			6%	7%	7%	7%	6%	6%	6%	6%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>LIGHTING.</b>											
	Residential		64%	55%	58%	40%	24%	17%	14%	11%	9%
	Tertiary / Services		27%	35%	33%	47%	60%	65%	68%	69%	71%
	Industry		7%	9%	8%	12%	15%	17%	18%	19%	19%
	Other		1%	2%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
	Residential		60%	69%	67%	65%	64%	62%	58%	56%	56%
	Tertiary / Services		35%	28%	30%	32%	33%	35%	38%	40%	40%
	Industry		4%	3%	2%	2%	3%	3%	3%	3%	3%
	Other		1%	0%	0%	0%	0%	0%	0%	0%	0%
<b>FOOD PRESERVE.</b>											
	Residential		92%	91%	80%	70%	69%	69%	69%	69%	69%
	Tertiary / Services		6%	7%	17%	25%	26%	25%	25%	25%	25%
	Industry		1%	1%	2%	4%	4%	5%	5%	5%	5%
	Other		1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>COOKING.</b>											
	Residential			92%	89%	86%	84%	84%	83%	83%	83%
	Tertiary / Services			8%	11%	14%	16%	16%	17%	17%	17%
	Industry			0%	0%	0%	0%	0%	0%	0%	0%
	Other			0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
	Residential		96%	94%	92%	93%	93%	93%	93%	93%	93%
	Tertiary / Services		4%	5%	7%	7%	6%	6%	6%	6%	7%
	Industry		0%	0%	1%	1%	1%	1%	1%	1%	1%
	Other		0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
	Residential		0%	0%	0%	0%	0%	0%	0%	0%	0%
	Tertiary / Services		23%	39%	37%	37%	38%	40%	43%	46%	51%
	Industry		56%	51%	53%	54%	53%	51%	49%	45%	41%
	Other		21%	10%	10%	9%	9%	9%	8%	8%	8%
<b>TYRES.</b>											
	Residential transport										
	Tertiary / Services transport										
	Industry transport										
	Other transport										
<b>ALL PRODUCTS.</b>											
	Residential	90%	83%	68%	59%	52%	48%	49%	50%	51%	53%
	Tertiary / Services	9%	13%	23%	29%	34%	36%	36%	36%	36%	36%
	Industry	1%	3%	7%	10%	12%	13%	13%	12%	11%	9%
	Other	0%	1%	2%	2%	2%	2%	2%	2%	2%	2%
	Transport	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

## FUELBAU

db	BAU Fossil Fuel (Final Energy in TWh NCV)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	159	176	179	181	183	182	184	190	200	209
	<b>Total CH Central Heating combi, water heat</b>	0.02	254	408	433	451	474	503	538	576	615	654
	<b>TOTAL WATER HEATING</b>		<b>413</b>	<b>584</b>	<b>612</b>	<b>632</b>	<b>656</b>	<b>685</b>	<b>722</b>	<b>766</b>	<b>814</b>	<b>864</b>
	CH non-electric	0	2213	2004	1809	1656	1535	1496	1446	1368	1248	1095
	CH electric resistance boiler, 1st estimate	1	0	0	0	0	0	0	0	0	0	0
	CH heat pump, 1st estimate	1	0	0	0	0	0	0	0	0	0	0
	CH auxiliary electricity (incl. circulator), 1st estimate	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CH Central Heating boiler, space heat</b>		<b>2213</b>	<b>2004</b>	<b>1809</b>	<b>1656</b>	<b>1535</b>	<b>1496</b>	<b>1446</b>	<b>1368</b>	<b>1248</b>	<b>1095</b>
	SFB Wood Manual	0	345	90	70	52	35	21	13	9	7	6
	SFB Wood Direct Draft	0	2	24	44	62	74	72	72	77	89	103
	SFB Coal	0	107	30	20	13	7	3	1	1	1	1
	SFB Pellets	0	0	9	16	23	28	31	31	32	33	34
	SFB Wood chips	0	0	15	18	20	18	18	19	20	21	22
	<b>Total Solid Fuel Boiler</b>		<b>454</b>	<b>168</b>	<b>169</b>	<b>170</b>	<b>162</b>	<b>144</b>	<b>136</b>	<b>139</b>	<b>151</b>	<b>166</b>
	CHAE-S (<= 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHAE-L (> 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-S (<= 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-M (> 400 kW; <= 1500 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-L (> 1500 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHF	0.05	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	HT PCH-AE-S	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-L	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-S	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-M	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-L	1	0	0	0	0	0	0	0	0	0	0
	AC rooftop	1	0	0	0	0	0	0	0	0	0	0
	AC splits	1	0	0	0	0	0	0	0	0	0	0
	AC VRF	1	0	0	0	0	0	0	0	0	0	0
	ACF	0.05	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC central Air Cooling</b>		<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
	AC rooftop (rev)	1	0	0	0	0	0	0	0	0	0	0
	AC splits (rev)	1	0	0	0	0	0	0	0	0	0	0
	AC VRF (rev)	1	0	0	0	0	0	0	0	0	0	0
	ACF (rev)	0.05	0.0	0.2	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.7
	AHF	0.05	215	161	136	118	103	91	80	71	63	55
	AHE	1	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Heating</b>		<b>215</b>	<b>161</b>	<b>137</b>	<b>119</b>	<b>104</b>	<b>92</b>	<b>81</b>	<b>72</b>	<b>64</b>	<b>56</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>		<b>215</b>	<b>161</b>	<b>137</b>	<b>119</b>	<b>104</b>	<b>92</b>	<b>81</b>	<b>72</b>	<b>64</b>	<b>57</b>
	LH open fireplace	0	14	18	19	20	21	21	21	21	21	21
	LH closed fireplace/inset	0	18	41	49	56	62	65	66	66	65	63
	LH wood stove	0	39	38	38	38	39	39	39	39	38	37
	LH coal stove	0	27	15	13	11	10	8	7	5	4	4
	LH cooker	0	7	11	12	14	15	16	16	16	15	15
	LH SHR stove	0	17	21	23	25	28	30	33	35	36	36
	LH pellet stove	0	0	8	11	14	16	18	18	18	18	17
	LH open fire gas	0	1	1	1	1	1	1	1	1	1	1
	LH closed fire gas	0	14	13	12	12	12	12	12	11	11	11
	LH flueless fuel heater	0	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH elec.portable	1	0	0	0	0	0	0	0	0	0	0
	LH elec.convactor	1	0	0	0	0	0	0	0	0	0	0
	LH elec.storage	1	0	0	0	0	0	0	0	0	0	0
	LH elec.underfloor	1	0	0	0	0	0	0	0	0	0	0
	LH luminous heaters	0	5	5	5	5	5	5	5	4	4	4
	LH tube heaters	0	12	12	12	12	11	11	10	10	10	9
	<b>Total LH Local Heaters</b>		<b>152</b>	<b>182</b>	<b>195</b>	<b>209</b>	<b>220</b>	<b>226</b>	<b>228</b>	<b>227</b>	<b>224</b>	<b>219</b>
	RAC (cooling demand), all RAC types <12 kW	1	0	0	0	0	0	0	0	0	0	0
	o/w RAC reversible (heating demand)	1	0	0	0	0	0	0	0	0	0	0
	<b>Total RAC Room Air Conditioner</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL SPACE HEATING</b>		<b>3033</b>	<b>2515</b>	<b>2310</b>	<b>2153</b>	<b>2020</b>	<b>1958</b>	<b>1892</b>	<b>1806</b>	<b>1685</b>	<b>1536</b>
	<b>TOTAL SPACE COOLING</b>		<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
	NRVU electricity	1	0	0	0	0	0	0	0	0	0	0
1	NRVU heat (negative=saving vs. natural ventilation)	0	-136	-636	-757	-859	-942	-1009	-1076	-1144	-1213	-1283
	RVU Central Unidir. VU <=125W/fan (1 fan)	1	0	0	0	0	0	0	0	0	0	0
	RVU Central Balanced VU <=125W/fan (2 fans)	1	0	0	0	0	0	0	0	0	0	0
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	0	0	0	0	0	0	0	0
1	RVU Central Unidir., heat (negative=saving )	0	-16	-32	-36	-36	-34	-34	-35	-38	-40	-43
1	RVU Central Balanced, heat (negative=saving )	0	-1	-8	-16	-29	-43	-55	-63	-70	-76	-83
1	RVU Local Balanced, heat (negative=saving )	0	0	-1	-2	-4	-7	-10	-14	-17	-21	-24
1	<b>Total VU (heat saving vs. natural ventilation)</b>		<b>-153</b>	<b>-678</b>	<b>-812</b>	<b>-928</b>	<b>-1026</b>	<b>-1107</b>	<b>-1188</b>	<b>-1268</b>	<b>-1350</b>	<b>-1433</b>
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## FUELBAU

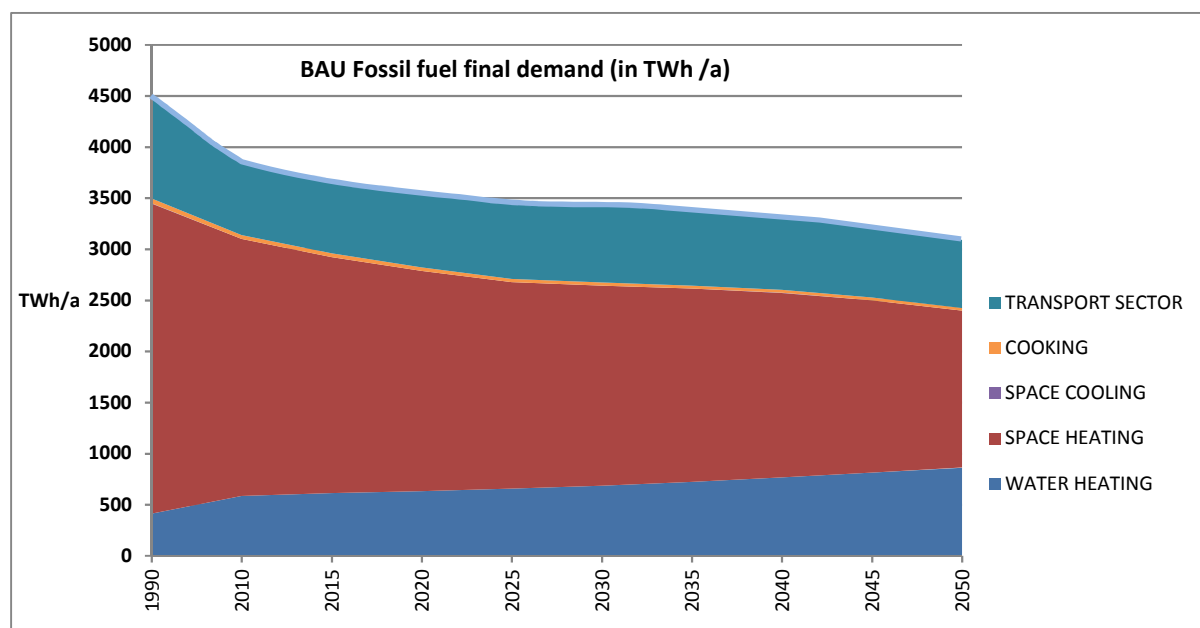
db	BAU Fossil Fuel (Final Energy in TWh NCV)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL ELECTRONICS</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL FOOD PRESERVATION</b>		0	0	0	0	0	0	0	0	0	0
	CA El. Hobs	1	0	0	0	0	0	0	0	0	0	0
	CA El. Ovens	1	0	0	0	0	0	0	0	0	0	0
	CA Gas Hobs	0	35	29	28	27	26	24	23	22	21	19
	CA Gas Ovens	0	14	10	9	8	8	7	7	7	6	6
	CA Range Hoods	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CA Cooking Appliances</b>		<b>49</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>33</b>	<b>31</b>	<b>30</b>	<b>29</b>	<b>27</b>	<b>26</b>
	<b>Total CM household Coffee Makers</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL COOKING</b>		<b>49</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>33</b>	<b>31</b>	<b>30</b>	<b>29</b>	<b>27</b>	<b>26</b>
	<b>Total WM household Washing Machine</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total DW household Dishwasher</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total LD household Laundry Drier</b>		<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
	<b>Total VC Vacuum Cleaner</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL CLEANING</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL ENERGY SECTOR (BAU taken as reference =0) (not final energy: distribution losses)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Tyres C1, replacement for cars	0	439	324	299	290	290	283	272	258	245	233
	Tyres C1, OEM for cars	0	132	95	93	89	87	85	82	78	74	70
	<b>Tyres C1, total</b>		<b>572</b>	<b>419</b>	<b>392</b>	<b>379</b>	<b>377</b>	<b>368</b>	<b>354</b>	<b>336</b>	<b>319</b>	<b>303</b>
	Tyres C2, replacement for vans	0	128	110	105	110	117	123	120	114	108	103
	Tyres C2, OEM for vans	0	27	23	22	24	25	26	25	24	23	22
	<b>Tyres C2, total</b>		<b>155</b>	<b>133</b>	<b>126</b>	<b>134</b>	<b>141</b>	<b>148</b>	<b>145</b>	<b>138</b>	<b>131</b>	<b>125</b>
	Tyres C3, replacement for trucks/busses	0	204	149	137	169	181	199	202	200	197	195
	Tyres C3, OEM for trucks/busses	0	45	33	33	37	40	44	45	45	44	43
	<b>Tyres C3, total</b>		<b>250</b>	<b>181</b>	<b>170</b>	<b>206</b>	<b>222</b>	<b>243</b>	<b>247</b>	<b>244</b>	<b>241</b>	<b>238</b>
	<b>Tyres, total C1+C2+C3</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>TOTAL TRANSPORT SECTOR</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>BAU Final Fuel, Total excl. Energy Sector, in TWh</b>		<b>4472</b>	<b>3871</b>	<b>3648</b>	<b>3541</b>	<b>3450</b>	<b>3435</b>	<b>3391</b>	<b>3320</b>	<b>3219</b>	<b>3092</b>
	BAU Final Fuel, Total excl. Energy Sector, in PJ		16100	13936	13133	12746	12420	12366	12208	11952	11589	11130
	BAU Final Fuel, Total excl. Energy Sector, in mtoe		385	333	314	304	297	295	292	285	277	266

db	BAU Fuel Summary, TWh	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WATER HEATING</b>		<b>413</b>	<b>584</b>	<b>612</b>	<b>632</b>	<b>656</b>	<b>685</b>	<b>722</b>	<b>766</b>	<b>814</b>	<b>864</b>
	<b>SPACE HEATING</b>		<b>3033</b>	<b>2515</b>	<b>2310</b>	<b>2153</b>	<b>2020</b>	<b>1958</b>	<b>1892</b>	<b>1806</b>	<b>1685</b>	<b>1536</b>
	<b>SPACE COOLING</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
1	<i>VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	LIGHTING (incl. SPL, ctrl, sb)		0	0	0	0	0	0	0	0	0	0
	ELECTRONICS		0	0	0	0	0	0	0	0	0	0
	FOOD PRESERVATION		0	0	0	0	0	0	0	0	0	0
	COOKING		49	39	37	35	33	31	30	29	27	26
	CLEANING		0	0	0	0	0	0	0	0	0	0
	INDUSTRY COMPONENTS		0	0	0	0	0	0	0	0	0	0
	<b>ENERGY SECTOR (see separate below)</b>											
	<b>TRANSPORT SECTOR</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>BAU Final Fuel, Total excl. Energy Sector, in TWh</b>		<b>4472</b>	<b>3871</b>	<b>3648</b>	<b>3541</b>	<b>3450</b>	<b>3435</b>	<b>3391</b>	<b>3320</b>	<b>3219</b>	<b>3092</b>
	BAU Final Fuel, Total excl. Energy Sector, in PJ		16100	13936	13133	12746	12420	12366	12208	11952	11589	11130
	BAU Final Fuel, Total excl. Energy Sector, in mtoe		385	333	314	304	297	295	292	285	277	266

In Eurostat, energy consumed in Energy Sector and Distribution losses not counted as Final energy, hence Energy Sector separately reported :

	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ENERGY SECTOR (reference BAU=0)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>BAU Fuel, Total incl. Energy Sector, in TWh</b>	<b>4472</b>	<b>3871</b>	<b>3648</b>	<b>3541</b>	<b>3450</b>	<b>3435</b>	<b>3391</b>	<b>3320</b>	<b>3219</b>	<b>3092</b>
BAU Fuel, Total incl. Energy Sector, in PJ	16100	13936	13133	12746	12420	12366	12208	11952	11589	11130
BAU Fuel, Total incl. Energy Sector, in mtoe	385	333	314	304	297	295	292	285	277	266

## FUELBAU



### Sector subdivision for BAU Final Fuel (same sector definitions and same order of presentation as in Eurostat Energy Balances)

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Energy Sector: see separate reporting above; not included in other sector totals

Transport Sector: see separate reporting below; not included in other sector totals

BAU Final Fuel (summary INDUSTRY, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	17	26	27	28	29	31	32	35	37	39
SPACE HEATING	368	322	291	266	245	234	224	211	194	173
SPACE & HT PROCESS COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	0	0	0	0	0	0	0	0
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>BAU Final Fuel, Industry, in TWh</b>	<b>386</b>	<b>348</b>	<b>318</b>	<b>294</b>	<b>274</b>	<b>265</b>	<b>256</b>	<b>246</b>	<b>231</b>	<b>212</b>
BAU Final Fuel, Industry, in PJ	1388	1253	1143	1058	985	953	923	885	831	765
BAU Final Fuel, Industry, in mtoe	33	30	27	25	24	23	22	21	20	18

BAU Final Fuel (summary TRANSPORT, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	165	127	119	134	142	152	152	147	143	139
TYRES for SERVICE-sector-related transport	329	252	237	261	274	290	289	280	271	263
TYRES for RESIDENTIAL-sector-related transport	457	335	314	303	302	294	283	269	255	243
TYRES for OTHER-sector-related transport	26	20	19	21	22	23	23	22	22	21
<b>BAU Final Fuel, Transport, in TWh</b>	<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
BAU Final Fuel, Transport, in PJ	3516	2639	2479	2591	2663	2734	2688	2587	2490	2398
BAU Final Fuel, Transport, in mtoe	84	63	59	62	64	65	64	62	59	57

## FUELBAU

<b>BAU Final Fuel (summary TERTIARY/SERVICES, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WATER HEATING</b>	125	177	185	192	199	207	218	232	246	261
<b>SPACE HEATING</b>	692	602	546	503	468	452	435	412	380	340
<b>SPACE &amp; HT PROCESS COOLING</b>	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> <i>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>	0	0	0	0	0	0	0	0	0	0
<b>LIGHTING</b>	0	0	0	0	0	0	0	0	0	0
<b>ELECTRONICS</b>	0	0	0	0	0	0	0	0	0	0
<b>FOOD PRESERVATION</b>	0	0	0	0	0	0	0	0	0	0
<b>COOKING</b>	8	7	7	6	6	6	5	5	5	5
<b>CLEANING</b>	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMPONENTS</b>	0	0	0	0	0	0	0	0	0	0
<b>BAU Final Fuel, Services, in TWh</b>	<b>826</b>	<b>786</b>	<b>738</b>	<b>701</b>	<b>672</b>	<b>666</b>	<b>660</b>	<b>650</b>	<b>631</b>	<b>606</b>
BAU Final Fuel, Services, in PJ	2974	2829	2658	2524	2421	2397	2374	2339	2273	2182
BAU Final Fuel, Services, in mtoe	71	68	63	60	58	57	57	56	54	52

<b>BAU Fuel (summary RESIDENTIAL, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WATER HEATING</b>	266	375	394	407	422	441	464	492	523	555
<b>SPACE HEATING</b>	1862	1490	1381	1299	1230	1197	1161	1115	1049	965
<b>SPACE &amp; HT PROCESS COOLING</b>	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> <i>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>	0	0	0	0	0	0	0	0	0	0
<b>LIGHTING</b>	0	0	0	0	0	0	0	0	0	0
<b>ELECTRONICS</b>	0	0	0	0	0	0	0	0	0	0
<b>FOOD PRESERVATION</b>	0	0	0	0	0	0	0	0	0	0
<b>COOKING</b>	41	32	31	29	27	26	25	23	22	21
<b>CLEANING</b>	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMPONENTS</b>	0	0	0	0	0	0	0	0	0	0
<b>BAU Final Fuel, Residential, in TWh</b>	<b>2169</b>	<b>1898</b>	<b>1806</b>	<b>1735</b>	<b>1679</b>	<b>1663</b>	<b>1650</b>	<b>1631</b>	<b>1594</b>	<b>1541</b>
BAU Final Fuel, Residential, in PJ	7807	6833	6500	6245	6044	5988	5939	5870	5739	5549
BAU Final Fuel, Residential, in mtoe	186	163	155	149	144	143	142	140	137	133

(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

<b>BAU Fuel (summary OTHER, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WATER HEATING</b>	4	6	6	6	7	7	7	8	8	9
<b>SPACE HEATING</b>	111	100	92	85	78	75	72	68	63	57
<b>SPACE &amp; HT PROCESS COOLING</b>	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> <i>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>	0	0	0	0	0	0	0	0	0	0
<b>LIGHTING</b>	0	0	0	0	0	0	0	0	0	0
<b>ELECTRONICS</b>	0	0	0	0	0	0	0	0	0	0
<b>FOOD PRESERVATION</b>	0	0	0	0	0	0	0	0	0	0
<b>COOKING</b>	0	0	0	0	0	0	0	0	0	0
<b>CLEANING</b>	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMPONENTS</b>	0	0	0	0	0	0	0	0	0	0
<b>BAU Final Fuel, Other sectors, in TWh</b>	<b>115</b>	<b>106</b>	<b>98</b>	<b>91</b>	<b>85</b>	<b>82</b>	<b>79</b>	<b>75</b>	<b>71</b>	<b>66</b>
BAU Final Fuel, Other sectors, in PJ	415	383	352	328	306	294	284	271	255	237
BAU Final Fuel, Other sectors, in mtoe	10	9	8	8	7	7	7	6	6	6

## FUELBAU

BAU Final Fuel (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		413	584	612	632	656	685	722	766	814	864
	Residential	266	375	394	407	422	441	464	492	523	555
	Tertiary / Services	125	177	185	192	199	207	218	232	246	261
	Industry	17	26	27	28	29	31	32	35	37	39
	Other	4	6	6	6	7	7	7	8	8	9
<b>SPACE HEATING. All sectors, TWh</b>		3033	2515	2310	2153	2020	1958	1892	1806	1685	1536
	Residential	1862	1490	1381	1299	1230	1197	1161	1115	1049	965
	Tertiary / Services	692	602	546	503	468	452	435	412	380	340
	Industry	368	322	291	266	245	234	224	211	194	173
	Other	111	100	92	85	78	75	72	68	63	57
<b>COOKING. All sectors, TWh</b>		49	39	37	35	33	31	30	29	27	26
	Residential	41	32	31	29	27	26	25	23	22	21
	Tertiary / Services	8	7	7	6	6	6	5	5	5	5
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>TYRES. Transport sector, TWh</b>		977	733	689	720	740	759	747	719	692	666
	Residential transport	457	335	314	303	302	294	283	269	255	243
	Tertiary / Services transport	329	252	237	261	274	290	289	280	271	263
	Industry transport	165	127	119	134	142	152	152	147	143	139
	Other transport	26	20	19	21	22	23	23	22	22	21
<b>ALL PRODUCTS. All sectors, TWh</b>		4472	3871	3648	3541	3450	3435	3391	3320	3219	3092
	Residential	2169	1898	1806	1735	1679	1663	1650	1631	1594	1541
	Tertiary / Services	826	786	738	701	672	666	660	650	631	606
	Industry	386	348	318	294	274	265	256	246	231	212
	Other	115	106	98	91	85	82	79	75	71	66
	Transport	977	733	689	720	740	759	747	719	692	666
BAU Final Fuel (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
	Tertiary / Services	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
	Industry	4%	4%	4%	4%	4%	4%	4%	5%	5%	5%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential	61%	59%	60%	60%	61%	61%	61%	62%	62%	63%
	Tertiary / Services	23%	24%	24%	23%	23%	23%	23%	23%	23%	22%
	Industry	12%	13%	13%	12%	12%	12%	12%	12%	12%	11%
	Other	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
<b>COOKING.</b>											
	Residential	83%	83%	82%	82%	82%	82%	82%	82%	82%	82%
	Tertiary / Services	17%	17%	18%	18%	18%	18%	18%	18%	18%	18%
	Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>TYRES.</b>											
	Residential transport	47%	46%	46%	42%	41%	39%	38%	37%	37%	36%
	Tertiary / Services transport	34%	34%	34%	36%	37%	38%	39%	39%	39%	40%
	Industry transport	17%	17%	17%	19%	19%	20%	20%	20%	21%	21%
	Other transport	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>											
	Residential	48%	49%	49%	49%	49%	48%	49%	49%	50%	50%
	Tertiary / Services	18%	20%	20%	20%	19%	19%	19%	20%	20%	20%
	Industry	9%	9%	9%	8%	8%	8%	8%	7%	7%	7%
	Other	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
	Transport	22%	19%	19%	20%	21%	22%	22%	22%	21%	22%



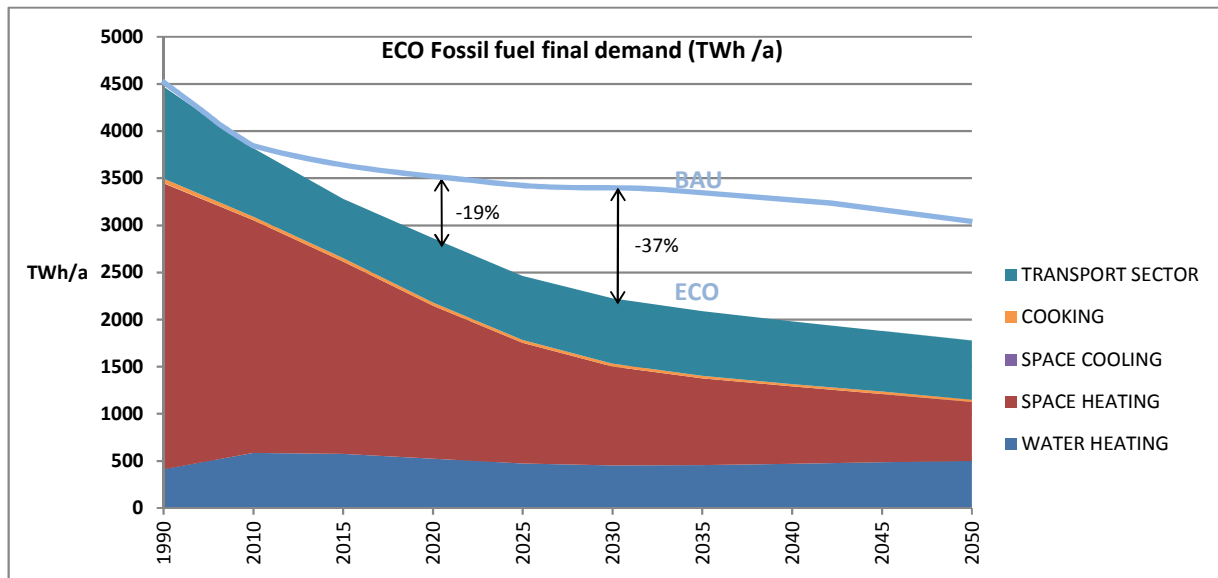
FUELECO

db	ECO Fossil Fuel (Final Energy in TWh NCV)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	159	176	162	142	125	118	117	121	127	133
	<b>Total CH Central Heating combi, water heat</b>	0.02	254	408	412	379	347	333	337	347	357	366
	<b>TOTAL WATER HEATING</b>		413	584	574	521	472	451	455	469	484	500
	<i>CH non-electric</i>	0	2213	1957	1547	1154	846	657	548	457	362	260
	<i>CH electric resistance boiler, 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>CH heat pump, 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CH Central Heating boiler, space heat</b>		2213	1957	1547	1154	846	657	548	457	362	260
	SFB Wood Manual	0	345	90	69	48	30	16	9	6	5	4
	SFB Wood Direct Draft	0	2	24	44	61	70	67	67	71	81	93
	SFB Coal	0	107	30	20	12	6	2	1	1	1	1
	SFB Pellets	0	0	9	16	22	26	28	29	29	30	31
	SFB Wood chips	0	0	15	17	19	16	15	16	17	18	19
	<b>Total Solid Fuel Boiler</b>		454	168	167	162	150	129	121	124	134	148
	CHAE-S (≤ 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHAE-L (> 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-S (≤ 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-L (> 1500 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHF	0.05	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	HT PCH-AE-S	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-L	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-S	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-M	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-L	1	0	0	0	0	0	0	0	0	0	0
	AC rooftop	1	0	0	0	0	0	0	0	0	0	0
	AC splits	1	0	0	0	0	0	0	0	0	0	0
	AC VRF	1	0	0	0	0	0	0	0	0	0	0
	ACF	0.05	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>SubTotal AHC central Air Cooling</b>		0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
	AC rooftop (rev)	1	0	0	0	0	0	0	0	0	0	0
	AC splits (rev)	1	0	0	0	0	0	0	0	0	0	0
	AC VRF (rev)	1	0	0	0	0	0	0	0	0	0	0
	ACF (rev)	0.05	0.0	0.2	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6
	AHF	0.05	215	161	134	108	85	68	58	51	45	40
	AHE	1	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Heating</b>		215	161	134	108	86	69	59	52	46	41
	<b>Total AHC central Air Heating &amp; Cooling</b>		215	161	134	108	86	69	59	52	46	41
	LH open fireplace	0	14	18	19	19	17	16	15	13	13	12
	LH closed fireplace/inset	0	18	41	48	54	56	57	56	54	52	51
	LH wood stove	0	39	38	37	37	35	34	33	32	31	30
	LH coal stove	0	27	15	13	11	9	7	6	4	3	3
	LH cooker	0	7	11	12	13	14	14	14	14	13	13
	LH SHR stove	0	17	21	22	24	26	29	31	33	33	33
	LH pellet stove	0	0	8	11	14	15	16	17	17	16	16
	LH open fire gas	0	1	1	1	1	1	1	1	1	1	1
	LH closed fire gas	0	14	13	12	12	10	10	9	8	8	8
	LH flueless fuel heater	0	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH elec.portable	1	0	0	0	0	0	0	0	0	0	0
	LH elec.convactor	1	0	0	0	0	0	0	0	0	0	0
	LH elec.storage	1	0	0	0	0	0	0	0	0	0	0
	LH elec.underfloor	1	0	0	0	0	0	0	0	0	0	0
	LH luminous heaters	0	5	5	5	5	4	4	4	4	3	3
	LH tube heaters	0	12	12	12	11	10	9	8	8	8	8
	<b>Total LH Local Heaters</b>		152	182	193	200	198	196	193	188	182	177
	<b>Total RAC Room Air Conditioner</b>		0	0	0	0	0	0	0	0	0	0
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	0	0	0	0	0	0	0	0	0	0
	<b>TOTAL SPACE HEATING</b>		3033	2468	2041	1624	1280	1050	921	820	725	626
	<b>TOTAL SPACE COOLING</b>		0	0	0	0	0	0	0	0	0	0
	NRVU electricity	1	0	0	0	0	0	0	0	0	0	0
1	NRVU heat (negative=saving vs. natural ventilation)	0	-136	-636	-777	-925	-1054	-1157	-1228	-1291	-1354	-1417
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	0	0	0	0	0	0	0	0	0	0
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	0	0	0	0	0	0	0	0	0
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	0	0	0	0	0	0	0	0
1	RVU Central Unidir., heat (negative=saving )	0	-16	-32	-46	-61	-75	-88	-93	-99	-106	-113
1	RVU Central Balanced, heat (negative=saving )	0	-1	-8	-17	-31	-46	-60	-69	-76	-83	-90
1	RVU Local Balanced, heat (negative=saving )	0	0	-1	-2	-5	-8	-13	-17	-21	-26	-30
1	<b>Total VU (heat saving vs. natural ventilation)</b>		-153	-678	-843	-1022	-1184	-1317	-1406	-1487	-1569	-1650
1	<i>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>		0	0	-35	-92	-136	-166	-166	-162	-159	-157

## FUELECO

db	ECO Fossil Fuel (Final Energy in TWh NCV)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL ELECTRONICS</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL FOOD PRESERVATION</b>		0	0	0	0	0	0	0	0	0	0
	CA El. Hobs	1	0	0	0	0	0	0	0	0	0	0
	CA El. Ovens	1	0	0	0	0	0	0	0	0	0	0
	CA Gas Hobs	0	35	29	28	27	25	24	23	21	20	19
	CA Gas Ovens	0	14	10	9	8	7	6	5	5	5	5
	CA Range Hoods	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CA Cooking Appliances</b>		<b>49</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>32</b>	<b>30</b>	<b>28</b>	<b>26</b>	<b>25</b>	<b>24</b>
	<b>Total CM household Coffee Makers</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL COOKING</b>		<b>49</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>32</b>	<b>30</b>	<b>28</b>	<b>26</b>	<b>25</b>	<b>24</b>
	<b>TOTAL CLEANING</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL ENERGY SECTOR (only improvement over BAU) (not final energy: distribution losses)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Tyres C1, replacement for cars	0	439	321	259	265	256	249	240	231	224	217
	Tyres C1, OEM for cars	0	132	95	93	88	81	78	76	72	69	66
	<b>Tyres C1, total</b>		<b>572</b>	<b>416</b>	<b>352</b>	<b>353</b>	<b>337</b>	<b>327</b>	<b>316</b>	<b>303</b>	<b>293</b>	<b>283</b>
	Tyres C2, replacement for vans	0	128	109	96	106	107	113	111	106	102	98
	Tyres C2, OEM for vans	0	27	23	22	24	24	25	24	23	22	21
	<b>Tyres C2, total</b>		<b>155</b>	<b>132</b>	<b>117</b>	<b>130</b>	<b>131</b>	<b>137</b>	<b>135</b>	<b>129</b>	<b>124</b>	<b>119</b>
	Tyres C3, replacement for trucks/busses	0	204	147	126	163	171	187	190	187	185	183
	Tyres C3, OEM for trucks/busses	0	45	33	33	37	39	43	43	43	42	42
	<b>Tyres C3, total</b>		<b>250</b>	<b>180</b>	<b>158</b>	<b>200</b>	<b>210</b>	<b>229</b>	<b>233</b>	<b>230</b>	<b>227</b>	<b>224</b>
	<b>Tyres, total C1+C2+C3</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>TOTAL TRANSPORT SECTOR</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>ECO Final Fuel, Total excl. Energy Sector, in TWh</b>		<b>4472</b>	<b>3819</b>	<b>3281</b>	<b>2863</b>	<b>2462</b>	<b>2225</b>	<b>2088</b>	<b>1978</b>	<b>1879</b>	<b>1777</b>
	ECO Final Fuel, Total excl. Energy Sector, in PJ		16100	13748	11812	10305	8865	8009	7516	7122	6765	6396
	ECO Final Fuel, Total excl. Energy Sector, in mtoe		385	328	282	246	212	191	180	170	162	153
db	<b>ECO Fuel Summary, TWh</b>	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WATER HEATING</b>		<b>413</b>	<b>584</b>	<b>574</b>	<b>521</b>	<b>472</b>	<b>451</b>	<b>455</b>	<b>469</b>	<b>484</b>	<b>500</b>
	<b>SPACE HEATING</b>		<b>3033</b>	<b>2468</b>	<b>2041</b>	<b>1624</b>	<b>1280</b>	<b>1050</b>	<b>921</b>	<b>820</b>	<b>725</b>	<b>626</b>
	<b>SPACE COOLING</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
1	<i>VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>		<i>0</i>	<i>0</i>	<i>-35</i>	<i>-92</i>	<i>-136</i>	<i>-166</i>	<i>-166</i>	<i>-162</i>	<i>-159</i>	<i>-157</i>
	LIGHTING (incl. SPL, ctrl, sb)		0	0	0	0	0	0	0	0	0	0
	ELECTRONICS		0	0	0	0	0	0	0	0	0	0
	FOOD PRESERVATION		0	0	0	0	0	0	0	0	0	0
	COOKING		49	39	37	35	32	30	28	26	25	24
	CLEANING		0	0	0	0	0	0	0	0	0	0
	INDUSTRY COMPONENTS		0	0	0	0	0	0	0	0	0	0
	<b>ENERGY SECTOR (see separate below)</b>											
	<b>TRANSPORT SECTOR</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>ECO Final Fuel, Total excl. Energy Sector, in TWh</b>		<b>4472</b>	<b>3819</b>	<b>3281</b>	<b>2863</b>	<b>2462</b>	<b>2225</b>	<b>2088</b>	<b>1978</b>	<b>1879</b>	<b>1777</b>
	ECO Final Fuel, Total excl. Energy Sector, in PJ		16100	13748	11812	10305	8865	8009	7516	7122	6765	6396
	ECO Final Fuel, Total excl. Energy Sector, in mtoe		385	328	282	246	212	191	180	170	162	153
	For comparison: Eurostat Energy Balance ed. May 2018, Final Energy except Electricity (in mtoe), includes solid fuel, oil, gas, renewables, wastes, derived heat		899	919	850							
	In Eurostat, energy consumed in Energy Sector and Distribution losses not counted as Final energy, hence Energy Sector separately reported :											
			<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>ENERGY SECTOR (only improvement over BAU)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ECO Fuel, Total incl. Energy Sector, in TWh</b>		<b>4472</b>	<b>3819</b>	<b>3281</b>	<b>2863</b>	<b>2462</b>	<b>2225</b>	<b>2088</b>	<b>1978</b>	<b>1879</b>	<b>1777</b>
	ECO Fuel, Total incl. Energy Sector, in PJ		16100	13748	11812	10305	8865	8009	7516	7122	6765	6396
	ECO Fuel, Total incl. Energy Sector, in mtoe		385	328	282	246	212	191	180	170	162	153
						-19%		-37%				

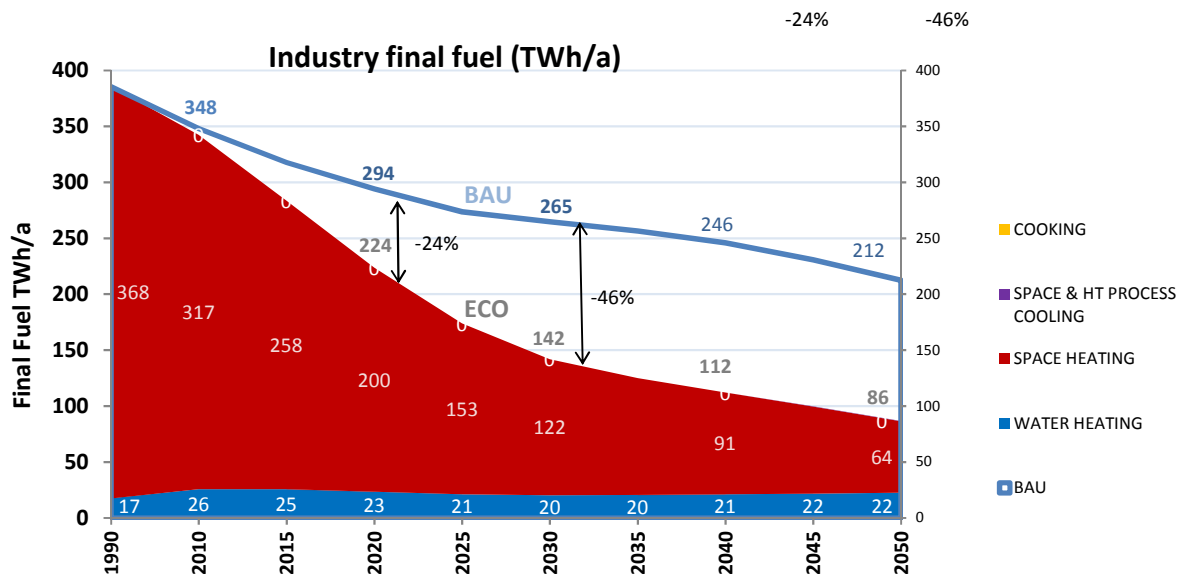
# FUELECO



## Sector subdivision for ECO Final Fuel (same sector definitions and same order of presentation as in Eurostat Energy Balances)

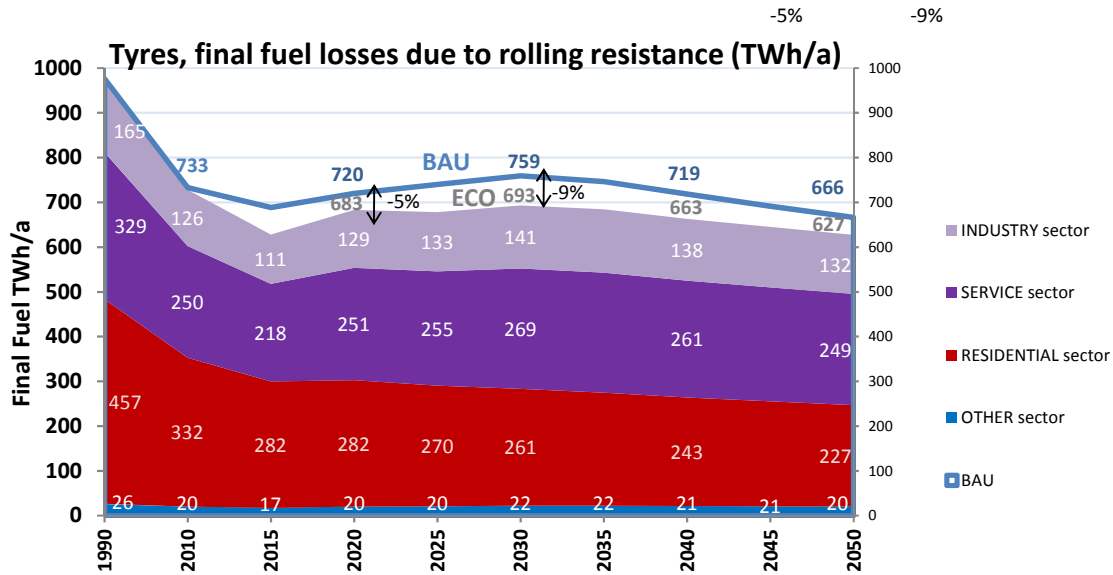
Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units  
 Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating  
 Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby  
 Energy Sector: see separate reporting above; not included in other sector totals  
 Transport Sector: see separate reporting below; not included in other sector totals

ECO Final Fuel (summary INDUSTRY, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	17	26	25	23	21	20	20	21	22	22
SPACE HEATING	368	317	258	200	153	122	104	91	78	64
SPACE & HT PROCESS COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	-3	-8	-12	-14	-14	-13	-12	-12
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO Final Fuel, Industry, in TWh</b>	<b>386</b>	<b>342</b>	<b>283</b>	<b>224</b>	<b>174</b>	<b>142</b>	<b>125</b>	<b>112</b>	<b>100</b>	<b>86</b>
ECO Final Fuel, Industry, in PJ	1388	1233	1020	805	625	510	449	403	358	311
ECO Final Fuel, Industry, in mtoe	33	29	24	19	15	12	11	10	9	7
For comparison: Eurostat Energy Balance ed. May 2018, Final Energy in Industry except Electricity (in mtoe), includes solid fuel, oil, gas, renewables, wastes, derived heat	285	202	190							



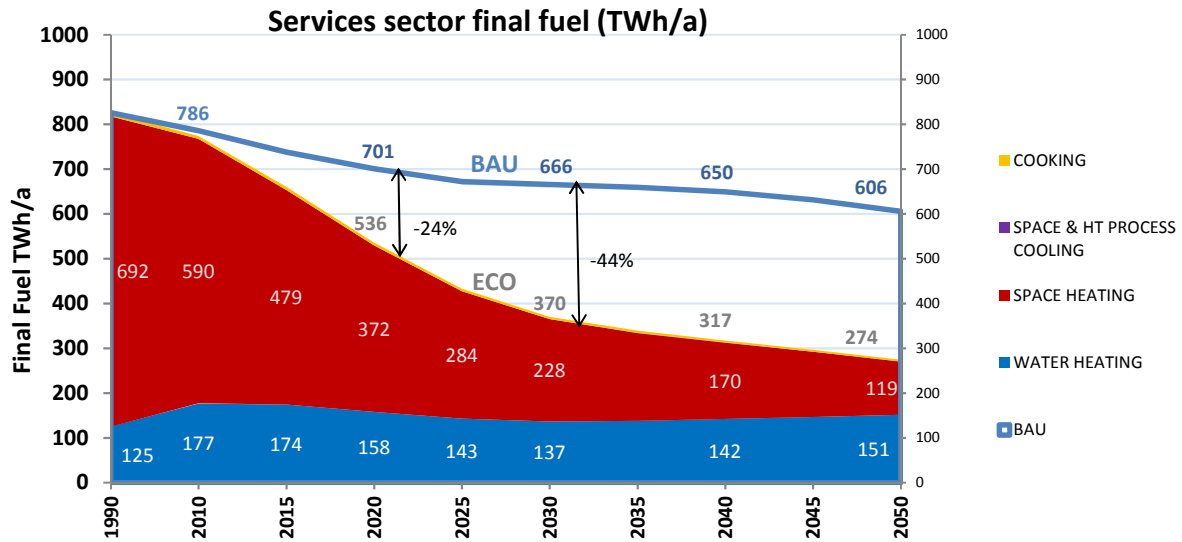
## FUELECO

ECO Final Fuel (summary TRANSPORT, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<small>(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)</small>										
TYRES for INDUSTRY-sector-related transport	165	126	111	129	133	141	142	138	135	132
TYRES for SERVICE-sector-related transport	329	250	218	251	255	269	268	261	255	249
TYRES for RESIDENTIAL-sector-related transport	457	332	282	282	270	261	253	243	235	227
TYRES for OTHER-sector-related transport	26	20	17	20	20	22	22	21	21	20
<b>ECO Final Fuel, Transport, in TWh</b>	<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
ECO Final Fuel, Transport, in PJ	3516	2620	2261	2457	2441	2496	2463	2387	2321	2256
ECO Final Fuel, Transport, in mtoe	84	63	54	59	58	60	59	57	55	54
For comparison: Eurostat Energy Balance ed. May 2018, Final Energy in Road Transport (in mtoe) (Electricity not removed, but negligible)	238	299	293							



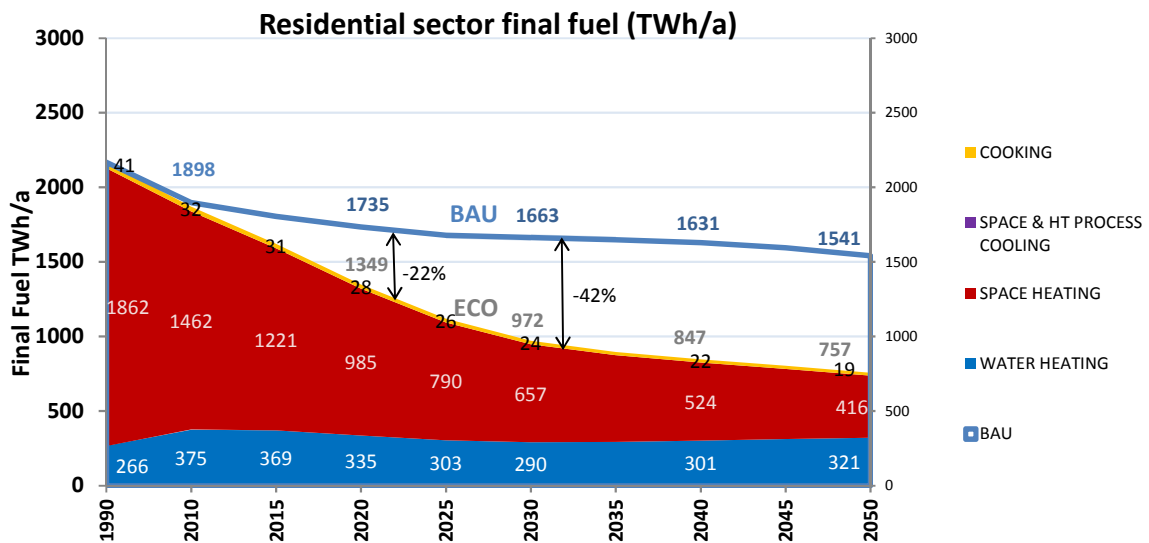
ECO Fuel (summary TERTIARY/SERVICES, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	125	177	174	158	143	137	138	142	147	151
SPACE HEATING	692	590	479	372	284	228	196	170	145	119
SPACE & HT PROCESS COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	-19	-55	-82	-101	-99	-93	-88	-83
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	8	7	7	6	6	5	5	5	5	4
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO Final Fuel, Services, in TWh</b>	<b>826</b>	<b>774</b>	<b>660</b>	<b>536</b>	<b>433</b>	<b>370</b>	<b>339</b>	<b>317</b>	<b>297</b>	<b>274</b>
ECO Final Fuel, Services, in PJ	2974	2787	2375	1929	1559	1333	1220	1142	1068	988
ECO Final Fuel, Services, in mtoe	71	67	57	46	37	32	29	27	26	24
For comparison: Eurostat Energy Balance ed. May 2018, Final Energy in Services sector except Electricity (in mtoe), includes solid fuel, oil, gas, renewables, wastes, derived heat	71	85	75							

-24%                      -44%



ECO Fuel (summary RESIDENTIAL, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	266	375	369	335	303	290	292	301	311	321
SPACE HEATING	1862	1462	1221	985	790	657	582	524	471	416
SPACE & HT PROCESS COOLING	0	0	0	0	0	0	0	0	0	0
TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	-13	-28	-40	-49	-50	-53	-57	-60
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	41	32	31	28	26	24	23	22	21	19
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO Final Fuel, Residential, in TWh</b>	<b>2169</b>	<b>1870</b>	<b>1621</b>	<b>1349</b>	<b>1120</b>	<b>972</b>	<b>897</b>	<b>847</b>	<b>803</b>	<b>757</b>
ECO Final Fuel, Residential, in PJ	7807	6731	5835	4855	4031	3498	3229	3048	2890	2726
ECO Final Fuel, Residential, in mtoe	186	161	139	116	96	84	77	73	69	65
For comparison: Eurostat Energy Balance ed. May 2018, Final Energy in Residential sector except Electricity (in mtoe), includes solid fuel, oil, gas, renewables, wastes, derived heat	222	247	208							

-22%      -42%

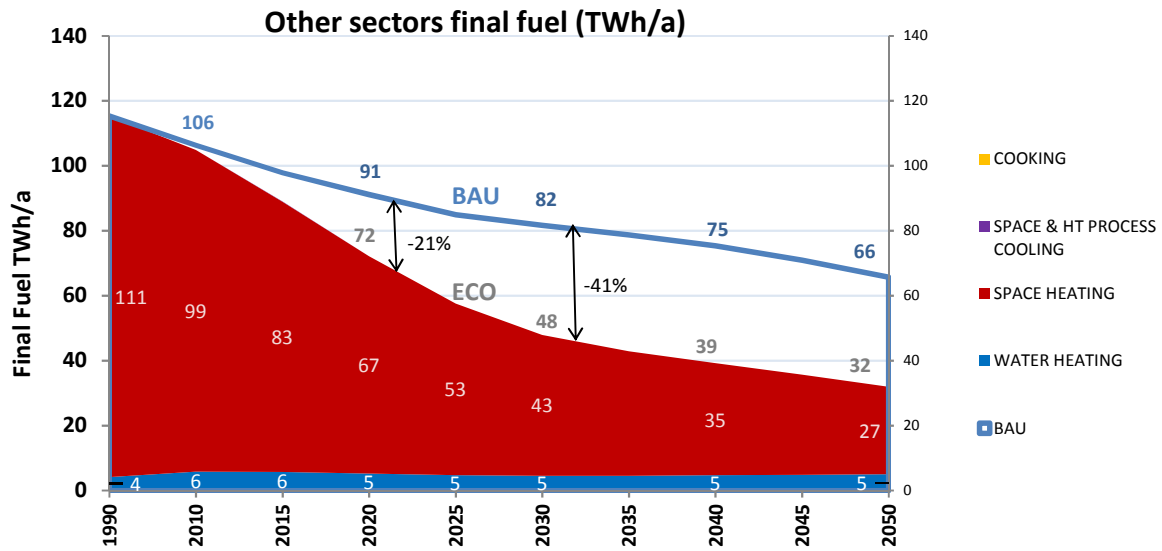


# FUELECO

(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

ECO Fuel (summary OTHER, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	4	6	6	5	5	5	5	5	5	5
SPACE HEATING	111	99	83	67	53	43	38	35	31	27
SPACE & HT PROCESS COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	0	-1	-2	-2	-2	-2	-2	-2
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO Final Fuel, Other sectors, in TWh</b>	<b>115</b>	<b>105</b>	<b>89</b>	<b>72</b>	<b>58</b>	<b>48</b>	<b>43</b>	<b>39</b>	<b>36</b>	<b>32</b>
ECO Final Fuel, Other sectors, in PJ	415	378	320	260	207	172	154	141	128	115
ECO Final Fuel, Other sectors, in mtoe	10	9	8	6	5	4	4	3	3	3
For comparison: Eurostat Energy Balance ed. May 2018, Final Energy in Other sectors except Electricity (in mtoe), includes solid fuel, oil, gas, renewables, wastes, derived heat	42	27	24							

-21%                      -41%



FUELECO

ECO Final Fuel (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		413	584	574	521	472	451	455	469	484	500
	Residential	266	375	369	335	303	290	292	301	311	321
	Tertiary / Services	125	177	174	158	143	137	138	142	147	151
	Industry	17	26	25	23	21	20	20	21	22	22
	Other	4	6	6	5	5	5	5	5	5	5
<b>SPACE HEATING. All sectors, TWh</b>		3033	2468	2041	1624	1280	1050	921	820	725	626
	Residential	1862	1462	1221	985	790	657	582	524	471	416
	Tertiary / Services	692	590	479	372	284	228	196	170	145	119
	Industry	368	317	258	200	153	122	104	91	78	64
	Other	111	99	83	67	53	43	38	35	31	27
1	<b>VENTILATION. All sectors, TWh</b>	0	0	-35	-92	-136	-166	-166	-162	-159	-157
	(from heat saving) Residential	0	0	-13	-28	-40	-49	-50	-53	-57	-60
	(vs. BAU) Tertiary / Services	0	0	-19	-55	-82	-101	-99	-93	-88	-83
	(double count) Industry	0	0	-3	-8	-12	-14	-14	-13	-12	-12
	Other	0	0	0	-1	-2	-2	-2	-2	-2	-2
<b>COOKING. All sectors, TWh</b>		49	39	37	35	32	30	28	26	25	24
	Residential	41	32	31	28	26	24	23	22	21	19
	Tertiary / Services	8	7	7	6	6	5	5	5	5	4
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>TYRES. Transport sector, TWh</b>		977	728	628	683	678	693	684	663	645	627
	Residential transport	457	332	282	282	270	261	253	243	235	227
	Tertiary / Services transport	329	250	218	251	255	269	268	261	255	249
	Industry transport	165	126	111	129	133	141	142	138	135	132
	Other transport	26	20	17	20	20	22	22	21	21	20
<b>ALL PRODUCTS. All sectors, TWh</b>		4472	3819	3281	2863	2462	2225	2088	1978	1879	1777
	Residential	2169	1870	1621	1349	1120	972	897	847	803	757
	Tertiary / Services	826	774	660	536	433	370	339	317	297	274
	Industry	386	342	283	224	174	142	125	112	100	86
	Other	115	105	89	72	58	48	43	39	36	32
	Transport	977	728	628	683	678	693	684	663	645	627
ECO Final Fuel (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
	Tertiary / Services	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
	Industry	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential	61%	59%	60%	61%	62%	63%	63%	64%	65%	67%
	Tertiary / Services	23%	24%	23%	23%	22%	22%	21%	21%	20%	19%
	Industry	12%	13%	13%	12%	12%	12%	11%	11%	11%	10%
	Other	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</b>										
	Residential			36%	30%	30%	29%	30%	33%	36%	38%
	Tertiary / Services			55%	60%	61%	61%	60%	58%	55%	53%
	Industry			8%	8%	8%	8%	8%	8%	8%	7%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>COOKING.</b>											
	Residential	83%	83%	82%	82%	82%	82%	82%	82%	82%	82%
	Tertiary / Services	17%	17%	18%	18%	18%	18%	18%	18%	18%	18%
	Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>TYRES.</b>											
	Residential transport	47%	46%	45%	41%	40%	38%	37%	37%	36%	36%
	Tertiary / Services transport	34%	34%	35%	37%	38%	39%	39%	39%	40%	40%
	Industry transport	17%	17%	18%	19%	20%	20%	21%	21%	21%	21%
	Other transport	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>											
	Residential	48%	49%	49%	47%	45%	44%	43%	43%	43%	43%
	Tertiary / Services	18%	20%	20%	19%	18%	17%	16%	16%	16%	15%
	Industry	9%	9%	9%	8%	7%	6%	6%	6%	5%	5%
	Other	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
	Transport	22%	19%	19%	24%	28%	31%	33%	34%	34%	35%

FUELSAVE

db	SAVED Fossil Fuel (Final Energy in TWh NCV)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	0	0	17	39	58	64	67	69	72	76
	<b>Total CH Central Heating combi, water heat</b>	0.02	0	0	21	72	127	170	200	229	258	288
	<b>TOTAL WATER HEATING</b>		0	0	38	111	185	234	267	298	330	364
	<i>CH non-electric</i>	0	0	47	262	502	688	840	898	911	885	834
	<i>CH electric resistance boiler, 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>CH heat pump, 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CH Central Heating boiler, space heat</b>		0	47	262	502	688	840	898	911	885	834
	SFB Wood Manual	0	0.0	0.0	1.1	3.9	5.2	5.1	4.0	2.8	2.2	1.8
	SFB Wood Direct Draft	0	0.0	0.0	0.4	1.5	3.3	4.6	5.3	6.3	7.7	9.6
	SFB Coal	0	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1
	SFB Pellets	0	0.0	0.0	0.2	0.7	1.6	2.3	2.6	2.8	3.1	3.4
	SFB Wood chips	0	0.0	0.0	0.3	1.2	2.0	2.6	2.9	3.0	3.2	3.4
	<b>Total Solid Fuel Boiler</b>		0	0	2	8	12	15	15	15	16	18
	CHAE-S (≤ 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHAE-L (> 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-S (≤ 400 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHWE-L (> 1500 kW)	1	0	0	0	0	0	0	0	0	0	0
	CHF	0.05	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	HT PCH-AE-S	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-L	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-S	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-M	1	0	0	0	0	0	0	0	0	0	0
	HT PCH-WE-L	1	0	0	0	0	0	0	0	0	0	0
	AC rooftop	1	0	0	0	0	0	0	0	0	0	0
	AC splits	1	0	0	0	0	0	0	0	0	0	0
	AC VRF	1	0	0	0	0	0	0	0	0	0	0
	ACF	0.05	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	<b>SubTotal AHC central Air Cooling</b>		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	AC rooftop (rev)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC splits (rev)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC VRF (rev)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ACF (rev)	0.05	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	AHF	0.05	0.0	0.0	2.5	10.3	18.0	22.8	22.3	19.8	17.4	15.2
	AHE	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC central Air Heating</b>		0	0	3	10	18	23	22	20	18	15
	<b>Total AHC central Air Heating &amp; Cooling</b>		0	0	3	10	18	23	22	20	18	15
	LH open fireplace	0	0.0	0.0	0.2	1.2	3.4	5.1	6.3	7.4	8.0	8.1
	LH closed fireplace/inset	0	0.0	0.0	0.4	2.3	5.7	8.5	10.4	11.9	12.8	12.7
	LH wood stove	0	0.0	0.0	0.3	1.5	3.5	5.1	6.1	7.0	7.5	7.5
	LH coal stove	0	0.0	0.0	0.1	0.4	0.8	0.9	0.9	0.9	0.9	0.7
	LH cooker	0	0.0	0.0	0.1	0.5	1.4	2.0	2.3	2.2	2.2	2.3
	LH SHR stove	0	0.0	0.0	0.2	0.7	1.4	1.9	2.2	2.5	2.7	2.8
	LH pellet stove	0	0.0	0.0	0.1	0.4	1.0	1.4	1.4	1.4	1.4	1.5
	LH open fire gas	0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4
	LH closed fire gas	0	0.0	0.0	0.1	0.6	1.6	2.3	2.8	3.1	3.1	3.0
	LH flueless fuel heater	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.convactor	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.storage	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.underfloor	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH luminous heaters	0	0.0	0.0	0.1	0.4	0.7	0.9	0.9	0.8	0.8	0.8
	LH tube heaters	0	0.0	0.0	0.2	0.9	1.5	2.0	2.1	2.0	1.9	1.8
	<b>Total LH Local Heaters</b>		0	0	2	9	21	31	36	40	42	42
	<b>Total RAC Room Air Conditioner</b>		0	0	0	0	0	0	0	0	0	0
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	0	0	0	0	0	0	0	0	0	0
	<b>TOTAL SPACE HEATING</b>		0	47	268	529	740	908	972	986	961	910
	<b>TOTAL SPACE COOLING</b>		0	0	0	0	0	0	0	0	0	0
	NRVU electricity	1	0	0	0	0	0	0	0	0	0	0
1	NRVU heat (negative=saving vs. natural vent.)	0	0	0	20	66	111	148	152	147	141	134
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	0	0	0	0	0	0	0	0	0	0
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	0	0	0	0	0	0	0	0	0
	RVU Local Blncd VU (<125 W, also NR) (2 fans)	1	0	0	0	0	0	0	0	0	0	0
1	RVU Central Unidir., heat (negative=saving )	0	0	0	10	26	41	54	57	62	66	70
1	RVU Central Balanced, heat (negative=saving )	0	0	0	1	2	4	5	6	6	7	8
1	RVU Local Balanced, heat (negative=saving )	0	0	0	0	1	2	2	3	4	5	6
1	<b>Total VU (heat saving vs. natural ventilation)</b>		0	0	31	94	158	210	218	219	219	217
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</b>		0	0	35	92	136	166	166	162	159	157



## FUELSAVE

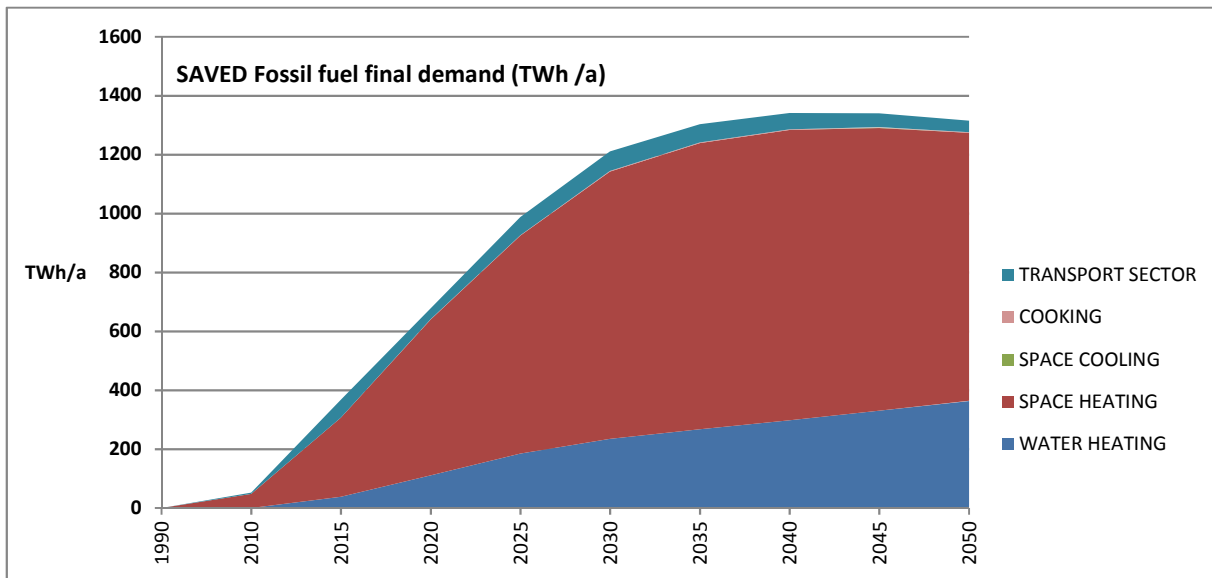
db	SAVED Fossil Fuel (Final Energy in TWh NCV)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL ELECTRONICS</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL FOOD PRESERVATION</b>		0	0	0	0	0	0	0	0	0	0
	CA El. Hobs	1	0	0	0	0	0	0	0	0	0	0
	CA El. Ovens	1	0	0	0	0	0	0	0	0	0	0
	CA Gas Hobs	0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.5	0.4	0.4
	CA Gas Ovens	0	0.0	0.0	0.0	0.3	0.8	1.2	1.6	1.6	1.6	1.6
	CA Range Hoods	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CA Cooking Appliances</b>		0	0	0	0	1	2	2	2	2	2
	<b>Total CM household Coffee Makers</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL COOKING</b>		0	0	0	0	1	2	2	2	2	2
	<b>TOTAL CLEANING</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL INDUSTRY COMPONENTS</b>		0	0	0	0	0	0	0	0	0	0
	<b>TOTAL ENERGY SECTOR (not final energy)</b>		0	0	0	0	0	0	0	0	0	0
	Tyres C1, replacement for cars	0	0	3	40	25	34	34	32	27	22	16
	Tyres C1, OEM for cars	0	0	0	0	1	6	7	6	5	5	4
	<b>Tyres C1, total</b>		0	3	40	26	40	41	38	33	26	20
	Tyres C2, replacement for vans	0	0	1	9	4	9	10	9	8	6	5
	Tyres C2, OEM for vans	0	0	0	0	0	1	1	1	1	1	1
	<b>Tyres C2, total</b>		0	1	9	4	11	11	10	9	7	6
	Tyres C3, replacement for trucks/busses	0	0	1	12	7	10	12	13	12	12	12
	Tyres C3, OEM for trucks/busses	0	0	0	0	0	1	2	2	2	2	2
	<b>Tyres C3, total</b>		0	1	12	7	11	14	14	14	14	14
	<b>Tyres, total C1+C2+C3</b>		0	5	60	37	62	66	62	55	47	39
	<b>TOTAL TRANSPORT SECTOR</b>		0	5	60	37	62	66	62	55	47	39
	<b>SAVED Final Fuel, Total excl. Energy Sector, TWh</b>		0	52	367	678	988	1210	1303	1341	1340	1315
	SAVED Final Fuel, Total excl. Energy Sector, in PJ		0	189	1322	2441	3555	4357	4692	4829	4824	4734
	SAVED Final Fuel, Total excl. Energy Sector, in mtoe		0	5	32	58	85	104	112	115	115	113

db	SAVED Fuel Summary, TWh	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WATER HEATING</b>		0	0	38	111	185	234	267	298	330	364
	<b>SPACE HEATING</b>		0	47	268	529	740	908	972	986	961	910
	<b>SPACE COOLING</b>		0	0	0	0	0	0	0	0	0	0
1	<i>VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>		0	0	35	92	136	166	166	162	159	157
	LIGHTING (incl. SPL, ctrl, sb)		0	0	0	0	0	0	0	0	0	0
	ELECTRONICS		0	0	0	0	0	0	0	0	0	0
	FOOD PRESERVATION		0	0	0	0	0	0	0	0	0	0
	COOKING		0	0	0	0	1	2	2	2	2	2
	CLEANING		0	0	0	0	0	0	0	0	0	0
	INDUSTRY COMPONENTS		0	0	0	0	0	0	0	0	0	0
	<b>ENERGY SECTOR</b>		0	5	60	37	62	66	62	55	47	39
	<b>TRANSPORT SECTOR</b>		0	5	60	37	62	66	62	55	47	39
	<b>SAVED Final Fuel, Total excl. Energy Sector, TWh</b>		0	52	367	678	988	1210	1303	1341	1340	1315
	SAVED Final Fuel, Total excl. Energy Sector, in PJ		0	189	1322	2441	3555	4357	4692	4829	4824	4734
	SAVED Final Fuel, Total excl. Energy Sector, in mtoe		0	5	32	58	85	104	112	115	115	113

In Eurostat, energy consumed in Energy Sector and Distribution losses are not counted as Final energy, therefore Energy Sector separately reported :

	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ENERGY SECTOR (only improvement over BAU)</b>	0	0	0	0	0	0	0	0	0	0
SAVED Fuel, Total incl. Energy Sector, in TWh	0	52	367	678	988	1210	1303	1341	1340	1315
SAVED Fuel, Total incl. Energy Sector, in PJ	0	189	1321.62	2440.59	3555.07	4357.05	4691.86	4829.17	4823.73	4733.89
SAVED Fuel, Total incl. Energy Sector, in mtoe	0	5	32	58	85	104	112	115	115	113

## FUELSAVE



### Sector subdivision for SAVED Final Fuel (same sector definitions and same order of presentation as in Eurostat Energy Balances)

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Energy Sector: see separate reporting above; not included in other sector totals

Transport Sector: see separate reporting below; not included in other sector totals

SAVED Final Fuel (summary INDUSTRY, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	2	5	8	10	12	13	15	17
SPACE HEATING	0	6	33	66	92	113	120	120	116	109
SPACE COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	3	8	12	14	14	13	12	12
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED Final Fuel, Industry, in TWh</b>	<b>0</b>	<b>6</b>	<b>34</b>	<b>70</b>	<b>100</b>	<b>123</b>	<b>132</b>	<b>134</b>	<b>131</b>	<b>126</b>
SAVED Final Fuel, Industry, in PJ	0	20	123	253	360	443	474	482	473	454
SAVED Final Fuel, Industry, in mtoe	0	0	3	6	9	11	11	12	11	11

SAVED Final Fuel (summary TRANSPORT, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<i>(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)</i>										
TYRES for INDUSTRY-sector-related transport	0	1	9	5	9	10	10	9	8	8
TYRES for SERVICE-sector-related transport	0	2	18	11	19	21	20	19	17	15
TYRES for RESIDENTIAL-sector-related transport	0	2	32	21	32	33	30	26	21	16
TYRES for OTHER-sector-related transport	0	0	1	1	1	2	2	1	1	1
<b>SAVED Final Fuel, Transport, in TWh</b>	<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>	<b>39</b>
SAVED Final Fuel, Transport, in PJ	0	19	218	134	222	238	224	200	170	142
SAVED Final Fuel, Transport, in mtoe	0	0	5	3	5	6	5	5	4	3

## FUELSAVE

<b>SAVED Final Fuel (summary TERTIARY/SERVICES, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	12	34	56	71	81	90	100	110
SPACE HEATING	0	12	67	132	183	224	239	242	235	221
SPACE COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	19	55	82	101	99	93	88	83
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED Final Fuel, Services, in TWh</b>	<b>0</b>	<b>12</b>	<b>79</b>	<b>165</b>	<b>239</b>	<b>295</b>	<b>320</b>	<b>332</b>	<b>335</b>	<b>332</b>
SAVED Final Fuel, Services, in PJ	0	42	283	595	862	1064	1154	1196	1205	1194
SAVED Final Fuel, Services, in mtoe	0	1	7	14	21	25	28	29	29	29

<b>SAVED Final Fuel (summary RESIDENTIAL, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	25	71	119	151	172	191	212	234
SPACE HEATING	0	28	160	314	440	540	579	591	578	549
SPACE COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	13	28	40	49	50	53	57	60
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	1	1	2	2	2	2
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED Final Fuel, Residential, in TWh</b>	<b>0</b>	<b>28</b>	<b>185</b>	<b>386</b>	<b>559</b>	<b>692</b>	<b>753</b>	<b>784</b>	<b>791</b>	<b>784</b>
SAVED Final Fuel, Residential, in PJ	0	102	665	1389	2013	2491	2711	2821	2849	2823
SAVED Final Fuel, Residential, in mtoe	0	2	16	33	48	59	65	67	68	67

(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

<b>SAVED Final Fuel (summary OTHER, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	0	1	2	2	3	3	3	4
SPACE HEATING	0	1	9	18	26	31	33	33	32	30
SPACE COOLING	0	0	0	0	0	0	0	0	0	0
<sup>1</sup> TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)	0	0	0	1	2	2	2	2	2	2
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED Final Fuel, Other sectors, in TWh</b>	<b>0</b>	<b>1</b>	<b>9</b>	<b>19</b>	<b>27</b>	<b>34</b>	<b>36</b>	<b>36</b>	<b>35</b>	<b>34</b>
SAVED Final Fuel, Other sectors, in PJ	0	5	32	68	99	122	129	130	127	122
SAVED Final Fuel, Other sectors, in mtoe	0	0	1	2	2	3	3	3	3	3

FUELSAVE

SAVED Final Fuel (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		0	0	38	111	185	234	267	298	330	364
	Residential	0	0	25	71	119	151	172	191	212	234
	Tertiary / Services	0	0	12	34	56	71	81	90	100	110
	Industry	0	0	2	5	8	10	12	13	15	17
	Other	0	0	0	1	2	2	3	3	3	4
<b>SPACE HEATING. All sectors, TWh</b>		0	47	268	529	740	908	972	986	961	910
	Residential	0	28	160	314	440	540	579	591	578	549
	Tertiary / Services	0	12	67	132	183	224	239	242	235	221
	Industry	0	6	33	66	92	113	120	120	116	109
	Other	0	1	9	18	26	31	33	33	32	30
1	<b>VENTILATION. All sectors, TWh</b>	0	0	35	92	136	166	166	162	159	157
	<i>(from heat saving) Residential</i>	0	0	13	28	40	49	50	53	57	60
	<i>(vs. BAU) Tertiary / Services</i>	0	0	19	55	82	101	99	93	88	83
	<i>(double count) Industry</i>	0	0	3	8	12	14	14	13	12	12
	<i>Other</i>	0	0	0	1	2	2	2	2	2	2
<b>COOKING. All sectors, TWh</b>		0	0	0	0	1	2	2	2	2	2
	Residential	0	0	0	0	1	1	2	2	2	2
	Tertiary / Services	0	0	0	0	0	0	0	0	0	0
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>TYRES. Transport sector, TWh</b>		0	5	60	37	62	66	62	55	47	39
	Residential transport	0	2	32	21	32	33	30	26	21	16
	Tertiary / Services transport	0	2	18	11	19	21	20	19	17	15
	Industry transport	0	1	9	5	9	10	10	9	8	8
	Other transport	0	0	1	1	1	2	2	1	1	1
<b>ALL PRODUCTS. All sectors, TWh</b>		0	52	367	678	988	1210	1303	1341	1340	1315
	Residential	0	28	185	386	559	692	753	784	791	784
	Tertiary / Services	0	12	79	165	239	295	320	332	335	332
	Industry	0	6	34	70	100	123	132	134	131	126
	Other	0	1	9	19	27	34	36	36	35	34
	Transport	0	5	60	37	62	66	62	55	47	39
SAVED Final Fuel (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential			64%	64%	64%	64%	64%	64%	64%	64%
	Tertiary / Services			30%	30%	30%	30%	30%	30%	30%	30%
	Industry			4%	4%	4%	4%	5%	5%	5%	5%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential		60%	60%	59%	59%	59%	60%	60%	60%	60%
	Tertiary / Services		25%	25%	25%	25%	25%	25%	25%	24%	24%
	Industry		12%	12%	12%	12%	12%	12%	12%	12%	12%
	Other		3%	3%	3%	3%	3%	3%	3%	3%	3%
<i>TOTAL VENTILATION (from heat saving vs. BAU; already included in FUEL for space heating)</i>											
	<i>Residential</i>			36%	30%	30%	29%	30%	33%	36%	38%
	<i>Tertiary / Services</i>			55%	60%	61%	61%	60%	58%	55%	53%
	<i>Industry</i>			8%	8%	8%	8%	8%	8%	8%	7%
	<i>Other</i>			1%	1%	1%	1%	1%	1%	1%	1%
<b>COOKING.</b>											
	Residential				87%	87%	87%	88%	88%	88%	88%
	Tertiary / Services				13%	13%	13%	12%	12%	12%	12%
	Industry				0%	0%	0%	0%	0%	0%	0%
	Other				0%	0%	0%	0%	0%	0%	0%
<b>TYRES.</b>											
	Residential transport			53%	56%	52%	50%	49%	47%	44%	41%
	Tertiary / Services transport			30%	28%	31%	32%	33%	33%	35%	37%
	Industry transport			15%	13%	15%	16%	16%	17%	18%	19%
	Other transport			2%	2%	2%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>											
	Residential		54%	50%	57%	57%	57%	58%	58%	59%	60%
	Tertiary / Services		22%	21%	24%	24%	24%	25%	25%	25%	25%
	Industry		11%	9%	10%	10%	10%	10%	10%	10%	10%
	Other		3%	2%	3%	3%	3%	3%	3%	3%	3%
	Transport		10%	16%	5%	6%	5%	5%	4%	4%	3%

FNRGBAU

db	BAU Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	384	426	434	439	441	440	445	461	483	507
	<b>Total CH Central Heating combi, water heat</b>	0.02	256	411	437	455	478	507	542	581	620	659
	<b>TOTAL WATER HEATING</b>		<b>640</b>	<b>837</b>	<b>870</b>	<b>893</b>	<b>919</b>	<b>948</b>	<b>988</b>	<b>1041</b>	<b>1103</b>	<b>1166</b>
	<i>CH non-electric</i>	0	2213	2004	1809	1656	1535	1496	1446	1368	1248	1095
	<i>CH electric resistance boiler, 1st estimate</i>	1	50	40	35	30	25	20	15	10	5	0
	<i>CH heat pump, 1st estimate</i>	1	24	56	60	63	66	69	72	75	78	81
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	28	30	30	28	29	31	31	30	28	27
	<b>Total CH Central Heating boiler, space heat</b>		<b>2314</b>	<b>2130</b>	<b>1935</b>	<b>1777</b>	<b>1655</b>	<b>1616</b>	<b>1565</b>	<b>1483</b>	<b>1359</b>	<b>1203</b>
	SFB Wood Manual	0	345	90	70	52	35	21	13	9	7	6
	SFB Wood Direct Draft	0	2	24	44	62	74	72	72	77	89	103
	SFB Coal	0	107	30	20	13	7	3	1	1	1	1
	SFB Pellets	0	0	9	16	23	28	31	31	32	33	34
	SFB Wood chips	0	0	15	18	20	18	18	19	20	21	22
	<b>Total Solid Fuel Boiler</b>		<b>454</b>	<b>168</b>	<b>169</b>	<b>170</b>	<b>162</b>	<b>144</b>	<b>136</b>	<b>139</b>	<b>151</b>	<b>166</b>
	CHAE-S (<= 400 kW)	1	4	11	12	13	13	12	13	13	13	13
	CHAE-L (> 400 kW)	1	6	14	16	17	16	15	14	13	12	12
	CHWE-S (<= 400 kW)	1	0	1	1	1	1	1	1	1	1	1
	CHWE-M (> 400 kW; <= 1500 kW)	1	1	3	4	4	3	3	3	3	3	3
	CHWE-L (> 1500 kW)	1	1	2	2	2	2	2	2	2	2	2
	CHF	0.05	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-S	1	23	36	40	43	44	45	45	46	47	47
	HT PCH-AE-L	1	22	35	38	40	42	42	43	43	44	44
	HT PCH-WE-S	1	5	8	8	9	9	9	10	10	10	10
	HT PCH-WE-M	1	9	15	16	18	18	19	19	19	19	20
	HT PCH-WE-L	1	2	3	3	4	4	4	4	4	4	4
	AC rooftop	1	3	8	8	7	5	3	2	1	0	0
	AC splits	1	4	13	13	12	11	10	9	8	7	6
	AC VRF	1	0	3	5	6	8	9	11	12	12	13
	ACF	0.05	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Cooling</b>		<b>82</b>	<b>152</b>	<b>166</b>	<b>174</b>	<b>177</b>	<b>176</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>175</b>
	AC rooftop (rev)	1	4	13	13	12	9	6	3	1	0	0
	AC splits (rev)	1	8	25	25	25	23	21	19	17	15	13
	AC VRF (rev)	1	0	8	12	16	20	24	27	28	29	28
	ACF (rev)	0.05	0	0	0	0	1	1	1	1	1	1
	AHF	0.05	219	164	139	121	105	93	82	73	64	57
	AHE	1	1	3	2	1	1	1	1	1	1	1
	<b>SubTotal AHC central Air Heating</b>		<b>233</b>	<b>213</b>	<b>192</b>	<b>175</b>	<b>159</b>	<b>145</b>	<b>132</b>	<b>120</b>	<b>109</b>	<b>100</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>		<b>314</b>	<b>365</b>	<b>358</b>	<b>349</b>	<b>336</b>	<b>321</b>	<b>307</b>	<b>294</b>	<b>284</b>	<b>274</b>
	LH open fireplace	0	14	18	19	20	21	21	21	21	21	21
	LH closed fireplace/inset	0	18	41	49	56	62	65	66	66	65	63
	LH wood stove	0	39	38	38	38	39	39	39	39	38	37
	LH coal stove	0	27	15	13	11	10	8	7	5	4	4
	LH cooker	0	7	11	12	14	15	16	16	16	15	15
	LH SHR stove	0	17	21	23	25	28	30	33	35	36	36
	LH pellet stove	0	0	8	11	14	16	18	18	18	18	17
	LH open fire gas	0	1	1	1	1	1	1	1	1	1	1
	LH closed fire gas	0	14	13	12	12	12	12	12	11	11	11
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	1	28	28	28	27	27	27	27	26	26	25
	LH elec.convector	1	116	115	115	113	112	112	112	110	107	104
	LH elec.storage	1	9	9	9	8	8	8	8	8	8	8
	LH elec.underfloor	1	16	16	16	16	16	16	16	16	16	15
	LH luminous heaters	0	5	5	5	5	5	5	5	4	4	4
	LH tube heaters	0	12	12	12	12	11	11	10	10	10	9
	<b>LH total</b>		<b>321</b>	<b>350</b>	<b>362</b>	<b>374</b>	<b>384</b>	<b>390</b>	<b>391</b>	<b>387</b>	<b>380</b>	<b>371</b>
	RAC (cooling demand), all types <12 kW	1	3	18	22	25	31	34	36	37	38	40
	RAC (heating demand), reversible <12kW	1	2	22	31	41	50	53	52	51	49	47
	<b>Total RAC Room Air Conditioner</b>		<b>4</b>	<b>41</b>	<b>53</b>	<b>66</b>	<b>81</b>	<b>87</b>	<b>88</b>	<b>88</b>	<b>87</b>	<b>87</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	<b>16</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>24</b>	<b>23</b>	<b>22</b>	<b>20</b>
	<b>TOTAL SPACE HEATING</b>		<b>3324</b>	<b>2883</b>	<b>2689</b>	<b>2536</b>	<b>2410</b>	<b>2348</b>	<b>2277</b>	<b>2180</b>	<b>2048</b>	<b>1886</b>
	<b>TOTAL SPACE COOLING</b>		<b>84</b>	<b>171</b>	<b>187</b>	<b>199</b>	<b>207</b>	<b>210</b>	<b>210</b>	<b>211</b>	<b>213</b>	<b>214</b>
	NRVU electricity	1	19	61	69	74	77	78	79	81	84	87
1	NRVU heat (negative=saving vs. natural ventilation)	0	-136	-636	-757	-859	-942	-1009	-1076	-1144	-1213	-1283
	RVU Central Unidir. VU <=125W/fan (1 fan)	1	8	15	17	17	16	16	17	18	19	20
	RVU Central Balanced VU <=125W/fan (2 fans)	1	0	1	2	4	6	7	8	9	10	11
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	0	1	1	1	2	2	3	3
1	RVU Central Unidir., heat (negative=saving )	0	-16	-32	-36	-36	-34	-34	-35	-38	-40	-43
1	RVU Central Balanced, heat (negative=saving )	0	-1	-8	-16	-29	-43	-55	-63	-70	-76	-83
1	RVU Local Balanced, heat (negative=saving )	0	0	-1	-2	-4	-7	-10	-14	-17	-21	-24
	<b>Total VU (electricity+ (negative) heat saving)</b>		<b>-127</b>	<b>-600</b>	<b>-723</b>	<b>-832</b>	<b>-926</b>	<b>-1005</b>	<b>-1082</b>	<b>-1158</b>	<b>-1234</b>	<b>-1312</b>
	<b>TOTAL VENTILATION (from electricity)</b>		<b>27</b>	<b>78</b>	<b>89</b>	<b>96</b>	<b>99</b>	<b>102</b>	<b>106</b>	<b>110</b>	<b>115</b>	<b>121</b>
1	<b>TOTAL VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</b>		-	-	-	-	-	-	-	-	-	-

# FNRRGBAU

db	BAU Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>LS, final energy incl. control gear</i>											
	LFL (T12,T8h,T8t,T5,other)	1	91	138	165	185	183	157	123	96	75	59
	HID (HPM, HPS, MH)	1	34	70	73	74	63	42	23	12	7	4
	CFLni (all shapes)	1	2	10	11	11	10	7	4	2	1	1
	CFLi (retrofit for GLS, HL)	1	1	13	17	18	15	12	8	5	3	2
	GLS (DLS & NDLS)	1	90	73	53	39	23	13	8	5	3	2
	HL (DLS & NDLS, LV & MV)	1	8	43	56	66	47	24	12	7	4	2
	LED replacing LFL (retrofit & luminaire)	1	0	0	1	9	27	55	83	109	134	161
	LED replacing HID (retrofit & luminaire)	1	0	0	0	7	21	37	50	61	72	83
	LED replacing CFLni (retrofit & luminaire)	1	0	0	0	0	1	3	4	5	6	7
	LED replacing DLS (retrofit & luminaire)	1	0	0	0	1	2	4	5	6	7	8
	LED replacing NDLS (retrofit & luminaire)	1	0	0	0	4	10	16	22	26	29	32
	<i>Special Purpose Lamps (SPL)</i>	1	40	61	53	45	37	30	30	30	30	30
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	11	17	15	13	10	9	9	9	9	9
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>276</b>	<b>424</b>	<b>444</b>	<b>470</b>	<b>450</b>	<b>409</b>	<b>381</b>	<b>372</b>	<b>380</b>	<b>399</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>225</b>	<b>346</b>	<b>377</b>	<b>413</b>	<b>403</b>	<b>370</b>	<b>342</b>	<b>334</b>	<b>341</b>	<b>360</b>
	DP TV on-mode, total all types	1	28.9	75.0	84.9	88.4	80.1	90.3	89.8	83.9	81.6	83.7
	DP TV standby, standard (NoNA)	1	3.8	2.4	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	1	0.0	0.1	0.7	1.2	0.8	0.2	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	1	0.0	0.0	1.8	4.9	7.5	9.3	9.7	8.8	7.5	6.3
	<b>DP TV standby, total all types</b>		<b>4</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>6</b>
	<b>DP TV total on-mode + standby</b>		<b>33</b>	<b>77</b>	<b>88</b>	<b>95</b>	<b>88</b>	<b>100</b>	<b>100</b>	<b>93</b>	<b>89</b>	<b>90</b>
	DP Monitor on-mode	1	0.9	14.6	8.9	6.2	6.0	5.4	4.3	3.7	3.6	3.5
	DP Monitor standby	1	0.2	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>		<b>1</b>	<b>15</b>	<b>9</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	DP Signage on-mode	1	0.0	1.0	8.9	20.2	24.5	23.5	21.9	20.8	19.9	19.6
	DP Signage standby	1	0.0	0.2	1.3	3.0	3.7	3.5	3.3	3.1	3.0	2.9
	<b>DP Signage total</b>		<b>0</b>	<b>1</b>	<b>10</b>	<b>23</b>	<b>28</b>	<b>27</b>	<b>25</b>	<b>24</b>	<b>23</b>	<b>23</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>30</b>	<b>91</b>	<b>103</b>	<b>115</b>	<b>111</b>	<b>119</b>	<b>116</b>	<b>108</b>	<b>105</b>	<b>107</b>
	<b>DP Electronic Displays, total standby</b>		<b>4</b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>9</b>
	<b>DP Electronic Displays, total</b>		<b>34</b>	<b>94</b>	<b>107</b>	<b>124</b>	<b>123</b>	<b>132</b>	<b>129</b>	<b>120</b>	<b>116</b>	<b>116</b>
	SSTB	1	0	3	1	0	0	0	0	0	0	0
	CSTB	1	0	7	17	19	20	19	20	22	23	25
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>10</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>19</b>	<b>20</b>	<b>22</b>	<b>23</b>	<b>25</b>
	VIDEO players/recorders	1	0	2	3	1	0	0	0	0	0	0
	VIDEO projectors	1	0	2	2	1	0	0	0	0	0	0
	VIDEO game consoles	1	0	5	8	11	13	14	14	14	14	14
	<b>Total VIDEO</b>		<b>0</b>	<b>9</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>											
	ES tower 1-socket traditional	1	0.0	1.0	0.9	0.6	0.5	0.4	0.4	0.4	0.4	0.4
	ES rack 1-socket traditional	1	0.1	3.2	2.4	2.1	2.1	2.2	2.2	2.2	2.2	2.2
	ES rack 2-socket traditional	1	0.8	14.7	7.8	4.7	5.5	6.4	7.0	7.0	7.0	7.0
	ES rack 2-socket cloud	1	0.0	8.2	12.7	14.2	16.5	19.5	21.1	21.1	21.1	21.1
	ES rack 4-socket traditional	1	0.1	1.6	0.8	0.7	0.8	0.9	1.0	1.0	1.0	1.0
	ES rack 4-socket cloud	1	0.0	0.9	1.6	2.2	2.6	3.0	3.3	3.3	3.3	3.3
	ES rack 2-socket resilient trad.	1	0.0	0.8	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3
	ES rack 2-socket resilient cloud	1	0.0	0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
	ES rack 4-socket resilient trad.	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 1-socket traditional	1	0.1	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	ES blade 2-socket traditional	1	0.6	6.7	3.4	2.2	2.5	3.0	3.3	3.3	3.3	3.3
	ES blade 2-socket cloud	1	0.0	3.8	5.7	6.8	8.0	9.5	10.3	10.3	10.3	10.3
	ES blade 4-socket traditional	1	0.1	0.8	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.4
	ES blade 4-socket cloud	1	0.0	0.5	0.7	0.9	1.0	1.2	1.3	1.3	1.3	1.3
	<b>ES total traditional</b>		<b>2</b>	<b>30</b>	<b>17</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>
	<b>ES total cloud</b>		<b>0</b>	<b>14</b>	<b>21</b>	<b>25</b>	<b>29</b>	<b>34</b>	<b>37</b>	<b>37</b>	<b>37</b>	<b>37</b>
	<b>ES Enterprise Servers total</b>		<b>2</b>	<b>44</b>	<b>38</b>	<b>36</b>	<b>41</b>	<b>48</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>
	DS Online 2	1	0.4	6.5	8.7	11.8	15.0	17.9	18.7	18.8	18.8	18.8
	DS Online 3	1	0.1	1.0	1.3	1.7	2.1	2.5	2.6	2.7	2.7	2.7
	DS Online 4	1	0.3	3.7	4.9	6.5	8.2	9.8	10.3	10.3	10.3	10.3
	<b>DS Data Storage products total</b>		<b>1</b>	<b>11</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>3</b>	<b>55</b>	<b>53</b>	<b>56</b>	<b>67</b>	<b>79</b>	<b>84</b>	<b>84</b>	<b>84</b>	<b>84</b>
	PC Desktop	1	14	22	13	5	3	3	3	3	3	3
	PC Notebook	1	0	7	4	1	1	1	1	1	1	1
	PC Tablet/slate	1	0	0	2	2	1	2	2	2	2	2
	PC Thin client	1	0	0	0	0	0	0	0	0	0	0
	PC Workstation	1	0	1	1	0	0	0	0	0	0	0
	<b>Total PC, electricity</b>		<b>15</b>	<b>31</b>	<b>19</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>
	EP-Copier mono	1	10	1	1	0	0	0	0	0	0	0
	EP-Copier colour	1	0	0	1	1	2	2	2	2	2	3
	EP-printer mono	1	9	3	2	2	1	1	1	1	1	1
	EP-printer colour	1	0	1	2	3	3	4	4	5	5	6
	IJ SFD printer	1	1	1	0	0	0	0	0	0	0	0
	IJ MFD printer	1	1	1	2	2	2	2	2	2	3	3
	<b>Total imaging equipment, electricity</b>		<b>22</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>12</b>



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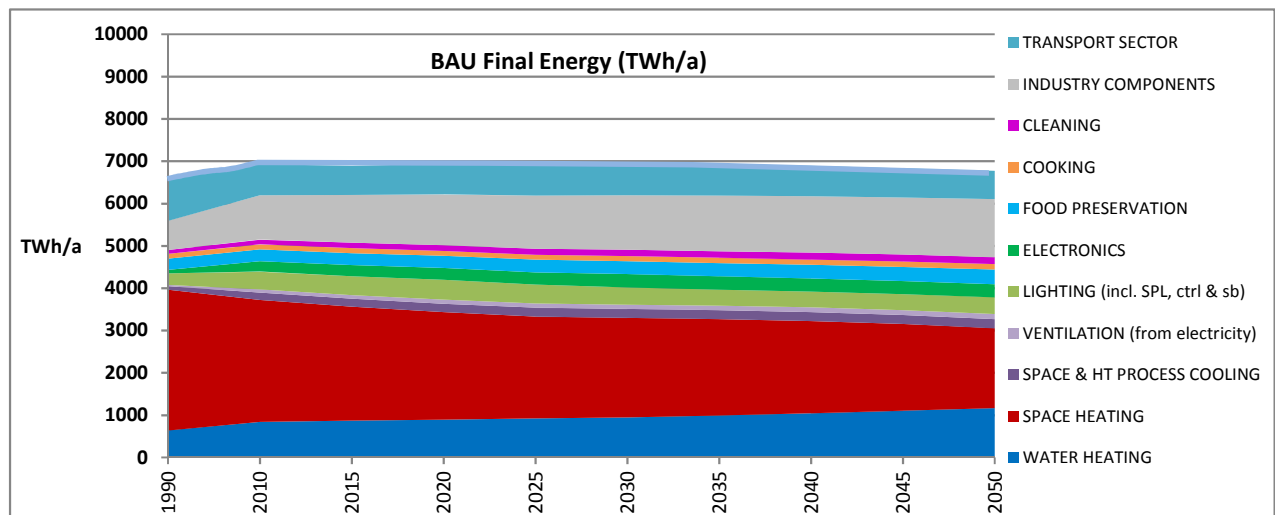
db	BAU Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	1	20	31	35	38	40	43	45	47	50	52
	CA El. Ovens	1	23	23	22	21	20	21	21	21	22	22
	CA Gas Hobs	0	35	29	28	27	26	24	23	22	21	19
	CA Gas Ovens	0	14	10	9	8	8	7	7	7	6	6
	CA Range Hoods	1	10	12	13	14	14	15	16	17	17	18
	<b>Total CA Cooking Appliances</b>		<b>103</b>	<b>106</b>	<b>107</b>	<b>107</b>	<b>108</b>	<b>110</b>	<b>112</b>	<b>114</b>	<b>116</b>	<b>117</b>
	CM Dripfilter (glass)	1	6	4	4	3	3	3	3	3	3	3
	CM Dripfilter (thermos)	1	0	1	1	1	1	1	1	1	1	1
	CM Dripfilter (full automatic)	1	0	0	1	1	1	1	1	1	1	1
	CM Pad filter	1	0	1	1	1	1	1	1	1	1	1
	CM Hard cap espresso	1	0	0	0	0	1	1	1	1	1	1
	CM Semi-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (glass), standby/keep warm	1	4	3	3	2	2	2	2	2	2	2
	CM Dripfilter (thermos), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (full automatic), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Pad filter, standby/keep warm	1	0	1	1	1	1	1	1	1	1	1
	CM Hard cap espresso, standby/keep warm	1	0	0	0	0	1	1	1	1	1	1
	CM Semi-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CM household Coffee Makers</b>		<b>11</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>11</b>
	<b>TOTAL COOKING</b>		<b>114</b>	<b>117</b>	<b>117</b>	<b>117</b>	<b>118</b>	<b>120</b>	<b>122</b>	<b>124</b>	<b>126</b>	<b>128</b>
	Total WM household Washing Machine	1	53	44	43	40	36	34	31	29	27	25
	Total DW household Dishwasher	1	13	23	27	30	34	37	40	43	45	48
	LD vented el.	1	9	11	12	11	11	11	11	11	11	11
	LD condens el.	1	2	14	18	21	23	24	24	24	24	24
	LD vented gas	0	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>		<b>10</b>	<b>25</b>	<b>29</b>	<b>33</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>
	VC dom	1	10	17	23	24	34	39	43	47	49	50
	VC nondom	1	3	5	5	6	7	7	7	8	8	8
	<b>Total VC Vacuum Cleaner</b>		<b>13</b>	<b>22</b>	<b>28</b>	<b>30</b>	<b>41</b>	<b>46</b>	<b>51</b>	<b>55</b>	<b>57</b>	<b>59</b>
	<b>TOTAL CLEANING</b>		<b>89</b>	<b>114</b>	<b>127</b>	<b>132</b>	<b>145</b>	<b>152</b>	<b>157</b>	<b>161</b>	<b>164</b>	<b>166</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	19	53	62	69	76	81	82	82	82	82
0.5	FAN Axial>300Pa	1	33	97	111	117	122	125	126	126	126	126
0.5	FAN Centr.FC	1	8	17	21	23	25	27	27	27	27	27
0.5	FAN Centr.BC-free	1	21	44	53	58	63	69	73	76	77	79
0.5	FAN Centr.BC	1	22	50	60	66	73	80	86	92	100	109
0.5	FAN Cross-flow	1	1	2	3	3	4	4	4	5	5	6
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>53</b>	<b>132</b>	<b>155</b>	<b>168</b>	<b>182</b>	<b>193</b>	<b>199</b>	<b>204</b>	<b>209</b>	<b>214</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	109	139	147	151	150	146	141	135	127	117
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	165	215	227	234	232	224	214	200	183	163
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	334	428	445	454	445	421	383	335	290	262
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>		<b>608</b>	<b>781</b>	<b>819</b>	<b>838</b>	<b>827</b>	<b>791</b>	<b>738</b>	<b>670</b>	<b>600</b>	<b>541</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	7	17	21	25	29	34	40	46	53	62
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	13	32	40	49	58	68	80	93	109	126
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	38	94	118	145	174	206	242	283	323	352
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>59</b>	<b>143</b>	<b>178</b>	<b>219</b>	<b>262</b>	<b>309</b>	<b>361</b>	<b>422</b>	<b>485</b>	<b>540</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>667</b>	<b>924</b>	<b>998</b>	<b>1057</b>	<b>1089</b>	<b>1100</b>	<b>1099</b>	<b>1092</b>	<b>1084</b>	<b>1082</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	8	11	11	12	11	11	11	11	11	11
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	1	1	1	1	1	1	1	2	2
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>8</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	12	15	16	16	16	16	16	16	16	16
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	1	2	2	2	2	3	3	3	3
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>12</b>	<b>16</b>	<b>18</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>20</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	171	208	202	191	178	169	166	165	163	162
0.45	Large 3-ph LV 375-1000kW with VSD	1	9	47	70	96	118	134	143	149	157	164
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>179</b>	<b>254</b>	<b>271</b>	<b>286</b>	<b>296</b>	<b>303</b>	<b>309</b>	<b>314</b>	<b>320</b>	<b>326</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	4	5	5	6	6	6	6	6	6	6
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	9	13	14	15	15	16	16	16	17	17
0.45	Explosion motors (L) 3-ph 75-375 kW	1	17	24	27	29	31	32	33	33	34	35
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>29</b>	<b>42</b>	<b>46</b>	<b>49</b>	<b>52</b>	<b>53</b>	<b>55</b>	<b>56</b>	<b>57</b>	<b>58</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	3	3	4	4	4	4	4	4	4	4
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	6	8	9	10	10	10	11	11	11	11
0.45	Brake motors (L) 3-ph 75-375 kW	1	8	12	13	14	15	16	16	17	17	17
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>17</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>33</b>



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db	BAU Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (L) 3-ph 75-375 kW	1	1	1	1	1	2	2	2	2	2	2
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	1	<b>45</b>	<b>62</b>	<b>67</b>	<b>71</b>	<b>74</b>	<b>76</b>	<b>77</b>	<b>78</b>	<b>80</b>	<b>81</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>		<b>527</b>	<b>735</b>	<b>792</b>	<b>839</b>	<b>866</b>	<b>878</b>	<b>883</b>	<b>884</b>	<b>885</b>	<b>889</b>
	<b>Total WP Water Pumps</b>	1	<b>88</b>	<b>118</b>	<b>127</b>	<b>137</b>	<b>147</b>	<b>158</b>	<b>169</b>	<b>180</b>	<b>191</b>	<b>202</b>
	CP Fixed Speed 5-1280 l/s	1	24	49	41	36	35	36	37	38	39	40
	CP Variable speed 5-1280 l/s	1	0	9	16	20	22	23	23	24	24	25
	CP Pistons 2-64 l/s	1	1	2	1	1	1	2	2	2	2	2
	<b>Total CP Standard Air Compressors</b>		<b>25</b>	<b>59</b>	<b>58</b>	<b>57</b>	<b>58</b>	<b>60</b>	<b>62</b>	<b>63</b>	<b>65</b>	<b>66</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>693</b>	<b>1044</b>	<b>1133</b>	<b>1202</b>	<b>1254</b>	<b>1289</b>	<b>1313</b>	<b>1331</b>	<b>1349</b>	<b>1371</b>
	<b>Total TRAFU Utility Transformers</b>											
	<b>TOTAL ENERGY SECTOR</b>											
	(not final energy: distribution losses)											
	Tyres C1, replacement for cars	0	439	324	299	290	290	283	272	258	245	233
	Tyres C1, OEM for cars	0	132	95	93	89	87	85	82	78	74	70
	<b>Tyres C1, total</b>		<b>572</b>	<b>419</b>	<b>392</b>	<b>379</b>	<b>377</b>	<b>368</b>	<b>354</b>	<b>336</b>	<b>319</b>	<b>303</b>
	Tyres C2, replacement for vans	0	128	110	105	110	117	123	120	114	108	103
	Tyres C2, OEM for vans	0	27	23	22	24	25	26	25	24	23	22
	<b>Tyres C2, total</b>		<b>155</b>	<b>133</b>	<b>126</b>	<b>134</b>	<b>141</b>	<b>148</b>	<b>145</b>	<b>138</b>	<b>131</b>	<b>125</b>
	Tyres C3, replacement for trucks/busses	0	204	149	137	169	181	199	202	200	197	195
	Tyres C3, OEM for trucks/busses	0	45	33	33	37	40	44	45	45	44	43
	<b>Tyres C3, total</b>		<b>250</b>	<b>181</b>	<b>170</b>	<b>206</b>	<b>222</b>	<b>243</b>	<b>247</b>	<b>244</b>	<b>241</b>	<b>238</b>
	<b>Tyres, total C1+C2+C3</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>TRANSPORT SECTOR</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>BAU Final Energy, Total, in TWh</b>		<b>6570</b>	<b>6926</b>	<b>6892</b>	<b>6932</b>	<b>6926</b>	<b>6955</b>	<b>6932</b>	<b>6886</b>	<b>6832</b>	<b>6770</b>
	BAU Final Energy, Total, in PJ		23651	24933	24810	24955	24935	25038	24954	24788	24595	24371
	BAU Final Energy, Total, in mtoe		565	596	593	596	596	598	596	592	587	582

BAU Final Energy (summary ALL SECTORS)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	640	837	870	893	919	948	988	1041	1103	1166
<b>SPACE HEATING</b>	3324	2883	2689	2536	2410	2348	2277	2180	2048	1886
<b>SPACE &amp; HT PROCESS COOLING</b>	84	171	187	199	207	210	210	211	213	214
<b>VENTILATION (from electricity)</b>	27	78	89	96	99	102	106	110	115	121
<b>LIGHTING (incl. SPL, ctrl &amp; sb)</b>	276	424	444	470	450	409	381	372	380	399
<b>ELECTRONICS</b>	81	244	264	278	289	312	316	309	305	304
<b>FOOD PRESERVATION</b>	265	281	284	288	296	305	316	326	337	349
<b>COOKING</b>	114	117	117	117	118	120	122	124	126	128
<b>CLEANING</b>	89	114	127	132	145	152	157	161	164	166
<b>INDUSTRY COMPONENTS</b>	693	1044	1133	1202	1254	1289	1313	1331	1349	1371
<b>ENERGY SECTOR (not final energy)</b>										
<b>TRANSPORT SECTOR</b>	977	733	689	720	740	759	747	719	692	666
<b>BAU Final Energy, Total, in TWh</b>	6570	6926	6892	6932	6926	6955	6932	6886	6832	6770
BAU Final Energy, Total, in PJ	23651	24933	24810	24955	24935	25038	24954	24788	24595	24371
BAU Final Energy, Total, in mtoe	565	596	593	596	596	598	596	592	587	582



**Sector subdivision for BAU Final Energy** (same sector definitions and same order of presentation as in Eurostat Energy Balances)

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Energy Sector: see separate reporting above; not included in other sector totals

Transport Sector: see separate reporting below; not included in other sector totals

<b>BAU Final Energy (summary INDUSTRY)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	24	33	35	36	37	39	40	43	45	48
SPACE HEATING	391	353	321	296	274	263	252	238	220	198
SPACE & HT PROCESS COOLING	22	38	42	44	45	45	45	45	45	45
VENTILATION	2	7	8	9	9	9	9	10	10	10
LIGHTING	39	61	65	71	71	67	65	64	66	69
ELECTRONICS	4	11	11	12	14	15	16	16	16	16
FOOD PRESERVATION	22	40	45	51	57	62	68	74	80	86
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	1	1	1	1	1	1	1	1	1
INDUSTRY COMPONENTS	428	630	679	717	744	759	769	775	781	790
<b>BAU Final Energy, Industry, in TWh</b>	<b>932</b>	<b>1174</b>	<b>1207</b>	<b>1236</b>	<b>1251</b>	<b>1261</b>	<b>1265</b>	<b>1266</b>	<b>1264</b>	<b>1264</b>
BAU Final Energy, Industry, in PJ	3356	4226	4344	4451	4505	4540	4554	4557	4552	4550
BAU Final Energy, Industry, in mtoe	80	101	104	106	108	108	109	109	109	109
<b>BAU Final Energy (summary TRANSPORT)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	165	127	119	134	142	152	152	147	143	139
TYRES for SERVICE-sector-related transport	329	252	237	261	274	290	289	280	271	263
TYRES for RESIDENTIAL-sector-related transport	457	335	314	303	302	294	283	269	255	243
TYRES for OTHER-sector-related transport	26	20	19	21	22	23	23	22	22	21
<b>BAU Final Energy, Transport, in TWh</b>	<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
BAU Final Energy, Transport, in PJ	3516	2639	2479	2591	2663	2734	2688	2587	2490	2398
BAU Final Energy, Transport, in mtoe	84	63	59	62	64	65	64	62	59	57
<b>BAU Final Energy (summary SERVICES)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	196	255	265	272	280	289	301	317	336	355
SPACE HEATING	782	736	688	650	618	604	584	557	519	474
SPACE & HT PROCESS COOLING	54	112	123	131	134	135	135	136	136	137
VENTILATION	16	53	59	64	66	67	68	70	72	75
LIGHTING	151	252	269	292	295	279	265	264	273	290
ELECTRONICS	32	95	99	109	122	135	139	140	140	142
FOOD PRESERVATION	112	108	104	102	104	107	111	116	121	126
COOKING	16	15	14	14	13	13	13	13	13	13
CLEANING	6	8	9	10	11	11	12	12	12	13
INDUSTRY COMPONENTS	172	282	313	335	354	368	377	383	391	398
<b>BAU Final Energy, Services, in TWh</b>	<b>1537</b>	<b>1917</b>	<b>1944</b>	<b>1979</b>	<b>1998</b>	<b>2008</b>	<b>2006</b>	<b>2007</b>	<b>2013</b>	<b>2022</b>
BAU Final Energy, Services, in PJ	5534	6900	6999	7124	7192	7229	7221	7225	7247	7279
BAU Final Energy, Services, in mtoe	132	165	167	170	172	173	172	173	173	174
<b>BAU Final Energy (summary RESIDENTIAL)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	414	540	561	576	593	611	636	671	711	751
SPACE HEATING	2036	1688	1583	1501	1434	1402	1364	1313	1242	1153
SPACE & HT PROCESS COOLING	2	10	11	13	15	17	17	18	18	19
VENTILATION	8	17	20	21	23	25	27	29	32	34
LIGHTING	83	106	105	103	79	58	46	40	37	36
ELECTRONICS	44	136	152	155	151	160	159	151	146	144
FOOD PRESERVATION	127	128	128	128	128	128	127	127	127	126
COOKING	99	103	103	103	105	107	109	111	113	115
CLEANING	83	105	117	121	134	140	144	148	151	152
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>BAU Final Energy, Residential, in TWh</b>	<b>2893</b>	<b>2832</b>	<b>2780</b>	<b>2722</b>	<b>2660</b>	<b>2646</b>	<b>2631</b>	<b>2609</b>	<b>2576</b>	<b>2530</b>
BAU Final Energy, Residential, in PJ	10416	10194	10007	9798	9577	9526	9470	9392	9274	9108
BAU Final Energy, Residential, in mtoe	249	243	239	234	229	228	226	224	221	218

## FNRGBAU

(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

<b>BAU Final Energy (summary OTHER)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WATER HEATING</b>	6	8	9	9	9	9	10	10	11	12
<b>SPACE HEATING</b>	115	106	97	90	84	80	76	72	67	61
<b>SPACE &amp; HT PROCESS COOLING</b>	6	10	11	12	12	13	13	13	13	13
<b>VENTILATION</b>	0	1	1	1	2	2	2	2	2	2
<b>LIGHTING</b>	3	4	5	5	5	4	4	4	4	4
<b>ELECTRONICS</b>	1	2	2	2	2	2	2	2	2	2
<b>FOOD PRESERVATION</b>	5	6	6	7	8	8	9	9	10	11
<b>COOKING</b>	0	0	0	0	0	0	0	0	0	0
<b>CLEANING</b>	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMPONENTS</b>	94	132	141	149	156	162	167	172	177	182
<b>BAU Final Energy, Other sectors, in TWh</b>	<b>230</b>	<b>271</b>	<b>273</b>	<b>275</b>	<b>277</b>	<b>281</b>	<b>283</b>	<b>285</b>	<b>287</b>	<b>288</b>
BAU Final Energy, Other sectors, in PJ	830	975	982	991	998	1010	1020	1028	1033	1036
BAU Final Energy, Other sectors, in mtoe	20	23	23	24	24	24	24	25	25	25

FNRGBAU

BAU Final Energy (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		640	837	870	893	919	948	988	1041	1103	1166
	Residential	414	540	561	576	593	611	636	671	711	751
	Tertiary / Services	196	255	265	272	280	289	301	317	336	355
	Industry	24	33	35	36	37	39	40	43	45	48
	Other	6	8	9	9	9	9	10	10	11	12
<b>SPACE HEATING. All sectors, TWh</b>		3324	2883	2689	2536	2410	2348	2277	2180	2048	1886
	Residential	2036	1688	1583	1501	1434	1402	1364	1313	1242	1153
	Tertiary / Services	782	736	688	650	618	604	584	557	519	474
	Industry	391	353	321	296	274	263	252	238	220	198
	Other	115	106	97	90	84	80	76	72	67	61
<b>SPACE COOLING. All sectors, TWh</b>		84	171	187	199	207	210	210	211	213	214
<b>&amp; HT PROCESS</b>											
	Residential	2	10	11	13	15	17	17	18	18	19
	Tertiary / Services	54	112	123	131	134	135	135	136	136	137
	Industry	22	38	42	44	45	45	45	45	45	45
	Other	6	10	11	12	12	13	13	13	13	13
<b>VENTILATION. All sectors, TWh</b>		27	78	89	96	99	102	106	110	115	121
	Residential	8	17	20	21	23	25	27	29	32	34
	Tertiary / Services	16	53	59	64	66	67	68	70	72	75
	Industry	2	7	8	9	9	9	9	10	10	10
	Other	0	1	1	1	2	2	2	2	2	2
<b>LIGHTING. All sectors, TWh</b>		276	424	444	470	450	409	381	372	380	399
	Residential	83	106	105	103	79	58	46	40	37	36
	Tertiary / Services	151	252	269	292	295	279	265	264	273	290
	Industry	39	61	65	71	71	67	65	64	66	69
	Other	3	4	5	5	5	4	4	4	4	4
<b>ELECTRONICS. All sectors, TWh</b>		81	244	264	278	289	312	316	309	305	304
	Residential	44	136	152	155	151	160	159	151	146	144
	Tertiary / Services	32	95	99	109	122	135	139	140	140	142
	Industry	4	11	11	12	14	15	16	16	16	16
	Other	1	2	2	2	2	2	2	2	2	2
<b>FOOD PRESERVE. All sectors, TWh</b>		265	281	284	288	296	305	316	326	337	349
	Residential	127	128	128	128	128	128	127	127	127	126
	Tertiary / Services	112	108	104	102	104	107	111	116	121	126
	Industry	22	40	45	51	57	62	68	74	80	86
	Other	5	6	6	7	8	8	9	9	10	11
<b>COOKING. All sectors, TWh</b>		114	117	117	117	118	120	122	124	126	128
	Residential	99	103	103	103	105	107	109	111	113	115
	Tertiary / Services	16	15	14	14	13	13	13	13	13	13
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>		89	114	127	132	145	152	157	161	164	166
	Residential	83	105	117	121	134	140	144	148	151	152
	Tertiary / Services	6	8	9	10	11	11	12	12	12	13
	Industry	0	1	1	1	1	1	1	1	1	1
	Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>		693	1044	1133	1202	1254	1289	1313	1331	1349	1371
	Residential	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services	172	282	313	335	354	368	377	383	391	398
	Industry	428	630	679	717	744	759	769	775	781	790
	Other	94	132	141	149	156	162	167	172	177	182
<b>TYRES. Transport sector, TWh</b>		977	733	689	720	740	759	747	719	692	666
	Residential transport	457	335	314	303	302	294	283	269	255	243
	Tertiary / Services transport	329	252	237	261	274	290	289	280	271	263
	Industry transport	165	127	119	134	142	152	152	147	143	139
	Other transport	26	20	19	21	22	23	23	22	22	21
<b>ALL PRODUCTS. All sectors, TWh</b>		6570	6926	6892	6932	6926	6955	6932	6886	6832	6770
	Residential	2893	2832	2780	2722	2660	2646	2631	2609	2576	2530
	Tertiary / Services	1537	1917	1944	1979	1998	2008	2006	2007	2013	2022
	Industry	932	1174	1207	1236	1251	1261	1265	1266	1264	1264
	Other	230	271	273	275	277	281	283	285	287	288
	Transport	977	733	689	720	740	759	747	719	692	666

FNRGBAU

BAU Final Energy (summary FUNCTIONS, %)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>										
Residential	65%	65%	64%	64%	64%	64%	64%	64%	64%	64%
Tertiary / Services	31%	31%	30%	30%	30%	30%	30%	30%	30%	30%
Industry	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>										
Residential	61%	59%	59%	59%	60%	60%	60%	60%	61%	61%
Tertiary / Services	24%	26%	26%	26%	26%	26%	26%	26%	25%	25%
Industry	12%	12%	12%	12%	11%	11%	11%	11%	11%	10%
Other	3%	4%	4%	4%	3%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>										
<b>&amp; HT PROCESS</b>										
Residential	2%	6%	6%	6%	7%	8%	8%	8%	9%	9%
Tertiary / Services	65%	66%	66%	65%	65%	65%	64%	64%	64%	64%
Industry	26%	22%	22%	22%	22%	22%	21%	21%	21%	21%
Other	8%	6%	6%	6%	6%	6%	6%	6%	6%	6%
<b>VENTILATION</b>										
Residential	29%	21%	22%	22%	23%	24%	25%	26%	28%	28%
Tertiary / Services	61%	68%	67%	67%	66%	65%	64%	63%	62%	62%
Industry	8%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Other	1%	2%	2%	2%	2%	2%	1%	1%	1%	1%
<b>LIGHTING.</b>										
Residential	30%	25%	24%	22%	18%	14%	12%	11%	10%	9%
Tertiary / Services	55%	59%	61%	62%	66%	68%	70%	71%	72%	73%
Industry	14%	14%	15%	15%	16%	16%	17%	17%	17%	17%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>										
Residential	54%	56%	58%	56%	52%	51%	50%	49%	48%	47%
Tertiary / Services	40%	39%	37%	39%	42%	43%	44%	45%	46%	47%
Industry	5%	5%	4%	4%	5%	5%	5%	5%	5%	5%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>										
Residential	48%	45%	45%	44%	43%	42%	40%	39%	38%	36%
Tertiary / Services	42%	38%	37%	35%	35%	35%	35%	35%	36%	36%
Industry	8%	14%	16%	18%	19%	20%	22%	23%	24%	25%
Other	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
<b>COOKING.</b>										
Residential	86%	88%	88%	88%	89%	89%	89%	89%	90%	90%
Tertiary / Services	14%	12%	12%	12%	11%	11%	11%	11%	10%	10%
Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>										
Residential	93%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Tertiary / Services	6%	7%	7%	8%	7%	7%	7%	8%	8%	8%
Industry	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>										
Residential	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tertiary / Services	25%	27%	28%	28%	28%	29%	29%	29%	29%	29%
Industry	62%	60%	60%	60%	59%	59%	59%	58%	58%	58%
Other	14%	13%	12%	12%	12%	13%	13%	13%	13%	13%
<b>TYRES.</b>										
Residential transport	47%	46%	46%	42%	41%	39%	38%	37%	37%	36%
Tertiary / Services transport	34%	34%	34%	36%	37%	38%	39%	39%	39%	40%
Industry transport	17%	17%	17%	19%	19%	20%	20%	20%	21%	21%
Other transport	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>										
Residential	44%	41%	40%	39%	38%	38%	38%	38%	38%	37%
Tertiary / Services	23%	28%	28%	29%	29%	29%	29%	29%	29%	30%
Industry	14%	17%	18%	18%	18%	18%	18%	18%	19%	19%
Other	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Transport	15%	11%	10%	10%	11%	11%	11%	10%	10%	10%

FNRGECO

db	ECO Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	<b>384</b>	<b>426</b>	<b>392</b>	<b>344</b>	<b>302</b>	<b>285</b>	<b>284</b>	<b>293</b>	<b>308</b>	<b>323</b>
	<b>Total CH Central Heating combi, water heat</b>	0.02	<b>256</b>	<b>411</b>	<b>415</b>	<b>382</b>	<b>350</b>	<b>336</b>	<b>340</b>	<b>350</b>	<b>360</b>	<b>369</b>
	<b>TOTAL WATER HEATING</b>		<b>640</b>	<b>837</b>	<b>807</b>	<b>726</b>	<b>652</b>	<b>621</b>	<b>624</b>	<b>644</b>	<b>668</b>	<b>692</b>
	<i>CH non-electric</i>	0	2213	1957	1547	1154	846	657	548	457	362	260
	<i>CH electric resistance boiler, 1st estimate</i>	1	50	40	35	30	25	20	15	10	5	0
	<i>CH heat pump, 1st estimate</i>	1	24	56	63	66	74	83	91	100	108	117
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	28	27	24	19	13	14	14	14	13	13
	<b>Total CH Central Heating boiler, space heat</b>		<b>2314</b>	<b>2080</b>	<b>1668</b>	<b>1269</b>	<b>959</b>	<b>773</b>	<b>668</b>	<b>580</b>	<b>489</b>	<b>390</b>
	SFB Wood Manual	0	345	90	69	48	30	16	9	6	5	4
	SFB Wood Direct Draft	0	2	24	44	61	70	67	67	71	81	93
	SFB Coal	0	107	30	20	12	6	2	1	1	1	1
	SFB Pellets	0	0	9	16	22	26	28	29	29	30	31
	SFB Wood chips	0	0	15	17	19	16	15	16	17	18	19
	<b>Total Solid Fuel Boiler</b>		<b>454</b>	<b>168</b>	<b>167</b>	<b>162</b>	<b>150</b>	<b>129</b>	<b>121</b>	<b>124</b>	<b>134</b>	<b>148</b>
	CHAE-S (<= 400 kW)	1	4	11	12	12	12	12	12	12	12	12
	CHAE-L (> 400 kW)	1	6	14	16	16	15	14	13	12	11	11
	CHWE-S (<= 400 kW)	1	0	1	1	1	1	1	1	1	1	1
	CHWE-M (> 400 kW; <= 1500 kW)	1	1	3	4	4	3	3	3	3	3	2
	CHWE-L (> 1500 kW)	1	1	2	2	2	2	2	2	2	2	2
	CHF	0.05	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-S	1	23	36	40	41	41	41	41	42	43	44
	HT PCH-AE-L	1	22	35	38	39	39	37	37	37	38	39
	HT PCH-WE-S	1	5	8	8	9	9	9	9	9	10	10
	HT PCH-WE-M	1	9	15	16	17	18	18	18	19	19	20
	HT PCH-WE-L	1	2	3	3	3	4	4	4	4	4	4
	AC rooftop	1	3	8	8	7	5	3	1	1	0	0
	AC splits	1	4	13	13	11	10	9	8	7	6	6
	AC VRF	1	0	3	5	6	7	9	10	11	11	12
	ACF	0.05	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Cooling</b>		<b>82</b>	<b>152</b>	<b>165</b>	<b>170</b>	<b>167</b>	<b>162</b>	<b>159</b>	<b>159</b>	<b>161</b>	<b>163</b>
	AC rooftop (rev)	1	4	13	13	11	7	4	2	1	0	0
	AC splits (rev)	1	8	25	25	23	20	17	15	13	12	11
	AC VRF (rev)	1	0	8	11	15	18	20	22	23	24	23
	ACF (rev)	0.05	0	0	0	0	0	1	1	1	1	1
	AHF	0.05	219	164	137	110	87	70	59	52	46	41
	AHE	1	1	3	2	1	1	1	1	1	1	1
	<b>SubTotal AHC central Air Heating</b>		<b>233</b>	<b>213</b>	<b>188</b>	<b>160</b>	<b>134</b>	<b>112</b>	<b>100</b>	<b>91</b>	<b>84</b>	<b>77</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>		<b>314</b>	<b>365</b>	<b>354</b>	<b>330</b>	<b>301</b>	<b>274</b>	<b>259</b>	<b>250</b>	<b>245</b>	<b>240</b>
	LH open fireplace	0	14	18	19	19	17	16	15	13	13	12
	LH closed fireplace/inset	0	18	41	48	54	56	57	56	54	52	51
	LH wood stove	0	39	38	37	37	35	34	33	32	31	30
	LH coal stove	0	27	15	13	11	9	7	6	4	3	3
	LH cooker	0	7	11	12	13	14	14	14	14	13	13
	LH SHR stove	0	17	21	22	24	26	29	31	33	33	33
	LH pellet stove	0	0	8	11	14	15	16	17	17	16	16
	LH open fire gas	0	1	1	1	1	1	1	1	1	1	1
	LH closed fire gas	0	14	13	12	12	10	10	9	8	8	8
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	1	28	28	27	24	22	22	22	22	21	20
	LH elec.convector	1	116	115	112	103	97	97	97	95	92	89
	LH elec.storage	1	9	9	8	7	7	6	6	6	6	6
	LH elec.underfloor	1	16	16	16	15	14	13	13	12	12	12
	LH luminous heaters	0	5	5	5	4	4	4	4	4	3	3
	LH tube heaters	0	12	12	12	11	10	9	8	8	8	8
	<b>LH total</b>		<b>321</b>	<b>350</b>	<b>356</b>	<b>349</b>	<b>338</b>	<b>334</b>	<b>331</b>	<b>323</b>	<b>313</b>	<b>304</b>
	RAC (cooling demand), all types <12 kW	1	3	18	20	21	25	27	29	30	31	32
	RAC (heating demand), reversible <12kW	1	2	22	29	34	40	41	40	39	37	36
	<b>Total RAC Room Air Conditioner</b>		<b>4</b>	<b>41</b>	<b>49</b>	<b>56</b>	<b>64</b>	<b>68</b>	<b>69</b>	<b>68</b>	<b>68</b>	<b>67</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	<b>16</b>	<b>20</b>	<b>14</b>	<b>11</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>10</b>
	<b>TOTAL SPACE HEATING</b>		<b>3324</b>	<b>2833</b>	<b>2408</b>	<b>1974</b>	<b>1620</b>	<b>1389</b>	<b>1260</b>	<b>1156</b>	<b>1057</b>	<b>954</b>
	<b>TOTAL SPACE COOLING</b>		<b>84</b>	<b>171</b>	<b>186</b>	<b>192</b>	<b>192</b>	<b>189</b>	<b>188</b>	<b>189</b>	<b>192</b>	<b>195</b>
	NRVU electricity	1	19	61	67	68	66	64	64	66	69	72
1	NRVU heat (negative=saving vs. natural ventilation)	0	-136	-636	-777	-925	-1054	-1157	-1228	-1291	-1354	-1417
	RVU Central Unidir. VU <=125W/fan (1 fan)	1	8	15	16	14	11	9	9	10	10	11
	RVU Central Balanced VU <=125W/fan (2 fans)	1	0	1	2	2	3	4	4	4	5	5
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	0	0	1	1	1	1	2	2
1	RVU Central Unidir., heat (negative=saving )	0	-16	-32	-46	-61	-75	-88	-93	-99	-106	-113
1	RVU Central Balanced, heat (negative=saving )	0	-1	-8	-17	-31	-46	-60	-69	-76	-83	-90
1	RVU Local Balanced, heat (negative=saving )	0	0	-1	-2	-5	-8	-13	-17	-21	-26	-30
	<b>Total VU (electricity + (negative) heat saving vs. natural ventilation)</b>		<b>-127</b>	<b>-600</b>	<b>-758</b>	<b>-938</b>	<b>-1103</b>	<b>-1240</b>	<b>-1327</b>	<b>-1405</b>	<b>-1483</b>	<b>-1560</b>
	<b>TOTAL VENTILATION (from electricity)</b>		<b>27</b>	<b>78</b>	<b>85</b>	<b>85</b>	<b>81</b>	<b>77</b>	<b>78</b>	<b>82</b>	<b>86</b>	<b>90</b>
1	<i>TOTAL VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</i>		-	-	-35	-92	-136	-166	-166	-162	-159	-157

FNRGECO

db	ECO Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>LS, final energy incl. control gear</i>											
	LFL (T12,T8h,T8t,T5,other)	1	91	136	159	165	118	64	31	16	10	6
	HID (HPM, HPS, MH)	1	34	69	59	50	37	20	8	3	1	0
	CFLni (all shapes)	1	2	9	9	8	5	3	1	0	0	0
	CFLi (etrofit for GLS, HL)	1	1	16	21	16	6	2	0	0	0	0
	GLS (DLS & NDLS)	1	90	50	14	0	0	0	0	0	0	0
	HL (DLS & NDLS, LV & MV)	1	8	47	59	24	1	0	0	0	0	0
	LED replacing LFL (etrofit & luminaire)	1	0	0	2	16	56	91	116	133	149	167
	LED replacing HID (etrofit & luminaire)	1	0	0	10	21	32	43	52	61	70	79
	LED replacing CFLni (etrofit & luminaire)	1	0	0	0	1	3	4	4	5	6	6
	LED replacing DLS (etrofit & luminaire)	1	0	0	1	4	6	6	7	7	7	8
	LED replacing NDLS (etrofit & luminaire)	1	0	0	2	13	22	26	28	29	31	33
	<i>Special Purpose Lamps (SPL)</i>	1	40	61	53	45	37	30	30	30	30	30
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	11	17	15	13	10	9	9	9	9	9
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>276</b>	<b>406</b>	<b>403</b>	<b>375</b>	<b>333</b>	<b>296</b>	<b>284</b>	<b>293</b>	<b>312</b>	<b>338</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>225</b>	<b>328</b>	<b>336</b>	<b>318</b>	<b>286</b>	<b>257</b>	<b>246</b>	<b>254</b>	<b>273</b>	<b>299</b>
	DP TV on-mode, total all types	1	28.9	75.0	79.0	67.4	41.9	37.8	33.2	36.1	41.8	48.2
	DP TV standby, standard (NoNA)	1	3.8	2.4	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	1	0.0	0.1	0.7	1.2	0.8	0.2	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	1	0.0	0.0	1.8	4.9	7.5	9.3	9.7	8.8	7.5	6.3
	<b>DP TV standby, total all types</b>		<b>4</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>6</b>
	<b>DP TV total on-mode + standby</b>		<b>33</b>	<b>77</b>	<b>82</b>	<b>74</b>	<b>50</b>	<b>47</b>	<b>43</b>	<b>45</b>	<b>49</b>	<b>54</b>
	DP Monitor on-mode	1	0.9	14.6	7.9	3.1	2.7	1.9	1.4	1.4	1.5	1.6
	DP Monitor standby	1	0.2	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>		<b>1</b>	<b>15</b>	<b>8</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>
	DP Signage on-mode	1	0.0	1.0	8.9	20.2	23.7	19.7	15.1	14.5	16.1	18.6
	DP Signage standby	1	0.0	0.2	1.3	3.0	3.6	3.0	2.3	2.2	2.4	2.8
	<b>DP Signage total</b>		<b>0</b>	<b>1</b>	<b>10</b>	<b>23</b>	<b>27</b>	<b>23</b>	<b>17</b>	<b>17</b>	<b>19</b>	<b>21</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>30</b>	<b>91</b>	<b>96</b>	<b>91</b>	<b>68</b>	<b>59</b>	<b>50</b>	<b>52</b>	<b>59</b>	<b>68</b>
	<b>DP Electronic Displays, total standby</b>		<b>4</b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>
	<b>DP Electronic Displays, total</b>		<b>34</b>	<b>94</b>	<b>100</b>	<b>100</b>	<b>80</b>	<b>72</b>	<b>62</b>	<b>63</b>	<b>69</b>	<b>77</b>
	SSTB	1	0	2	1	0	0	0	0	0	0	0
	CSTB	1	0	7	15	15	15	15	15	17	18	19
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>9</b>	<b>16</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>17</b>	<b>18</b>	<b>19</b>
	VIDEO players/recorders	1	0	2	3	1	0	0	0	0	0	0
	VIDEO projectors	1	0	2	2	1	0	0	0	0	0	0
	VIDEO game consoles	1	0	5	7	10	12	13	13	13	13	13
	<b>Total VIDEO</b>		<b>0</b>	<b>9</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>											
	ES tower 1-socket traditional	1	0.0	1.0	0.9	0.6	0.4	0.4	0.3	0.3	0.3	0.3
	ES rack 1-socket traditional	1	0.1	3.2	2.4	2.0	2.0	2.2	2.2	2.2	2.2	2.2
	ES rack 2-socket traditional	1	0.8	14.7	7.8	4.4	5.0	6.0	6.5	6.5	6.5	6.5
	ES rack 2-socket cloud	1	0.0	8.2	12.7	13.4	15.6	18.6	20.1	20.1	20.1	20.1
	ES rack 4-socket traditional	1	0.1	1.6	0.8	0.6	0.7	0.9	0.9	0.9	0.9	0.9
	ES rack 4-socket cloud	1	0.0	0.9	1.6	2.0	2.4	2.8	3.1	3.1	3.1	3.1
	ES rack 2-socket resilient trad.	1	0.0	0.8	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3
	ES rack 2-socket resilient cloud	1	0.0	0.4	0.6	0.5	0.5	0.6	0.7	0.7	0.7	0.7
	ES rack 4-socket resilient trad.	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 1-socket traditional	1	0.1	0.9	0.8	0.7	0.6	0.7	0.7	0.7	0.7	0.7
	ES blade 2-socket traditional	1	0.6	6.7	3.4	2.1	2.4	2.9	3.1	3.1	3.1	3.1
	ES blade 2-socket cloud	1	0.0	3.8	5.7	6.5	7.6	9.1	9.9	9.9	9.9	9.9
	ES blade 4-socket traditional	1	0.1	0.8	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.4
	ES blade 4-socket cloud	1	0.0	0.5	0.7	0.8	0.9	1.1	1.1	1.1	1.1	1.1
	<b>ES total traditional</b>		<b>2</b>	<b>30</b>	<b>17</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
	<b>ES total cloud</b>		<b>0</b>	<b>14</b>	<b>21</b>	<b>23</b>	<b>27</b>	<b>32</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>
	<b>ES Enterprise Servers total</b>		<b>2</b>	<b>44</b>	<b>38</b>	<b>34</b>	<b>39</b>	<b>46</b>	<b>49</b>	<b>49</b>	<b>49</b>	<b>49</b>
	DS Online 2	1	0.4	6.5	8.7	11.7	14.6	17.4	18.3	18.3	18.3	18.3
	DS Online 3	1	0.1	1.0	1.3	1.7	2.1	2.5	2.6	2.6	2.6	2.6
	DS Online 4	1	0.3	3.7	4.9	6.4	8.0	9.6	10.0	10.0	10.0	10.0
	<b>DS Data Storage products total</b>		<b>1</b>	<b>11</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>29</b>	<b>31</b>	<b>31</b>	<b>31</b>	<b>31</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>3</b>	<b>55</b>	<b>53</b>	<b>54</b>	<b>64</b>	<b>75</b>	<b>80</b>	<b>80</b>	<b>80</b>	<b>80</b>
	PC Desktop	1	14	22	13	5	3	3	3	3	3	3
	PC Notebook	1	0	7	4	1	1	1	1	1	1	1
	PC Tablet/slate	1	0	0	2	2	1	2	2	2	2	2
	PC Thin client	1	0	0	0	0	0	0	0	0	0	0
	PC Workstation	1	0	1	1	0	0	0	0	0	0	0
	<b>Total PC, electricity</b>		<b>15</b>	<b>31</b>	<b>19</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>
	EP-Copier mono	1	10	1	0	0	0	0	0	0	0	0
	EP-Copier colour	1	0	0	0	0	1	1	1	1	1	1
	EP-printer mono	1	9	2	1	1	1	1	1	0	0	0
	EP-printer colour	1	0	1	1	1	1	1	1	1	2	2
	IJ SFD printer	1	1	0	0	0	0	0	0	0	0	0
	IJ MFD printer	1	1	1	0	0	0	1	1	1	1	1
	<b>Total imaging equipment, electricity</b>		<b>22</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>

FNRGECO

db	ECO Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	1	0.0	4.1	4.9	5.4	5.6	5.6	5.3	4.7	3.8	2.7
	SB Home NAS, on-mode hours	1	0.0	0.2	0.4	0.5	0.6	0.6	0.6	0.6	0.5	0.4
	SB Home Phones (fixed), on-mode hours	1	0.1	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.1
	SB Office Phones (fixed), on-mode hours	1	0.2	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.2
	SB Home Gateway, standby hours	1	0.0	2.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	1	0.0	0.3	0.6	0.8	0.9	1.0	1.0	0.9	0.8	0.6
	SB Home Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	1	0.0	4.1	7.4	10.6	11.4	11.3	10.7	9.5	7.8	5.5
	SB Home NAS, idle hours	1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	SB Home Phones (fixed), idle hours	1	0.5	3.9	4.3	4.4	3.9	3.4	2.8	2.2	1.6	1.0
	SB Office Phones (fixed), idle hours	1	0.8	2.7	2.6	2.4	2.2	2.0	1.8	1.5	1.1	0.8
	<b>Total SB (networked) StandBy (rest)</b>		<b>2</b>	<b>19</b>	<b>22</b>	<b>25</b>	<b>26</b>	<b>25</b>	<b>23</b>	<b>20</b>	<b>16</b>	<b>11</b>
db	<i>EPS Active mode (electricity losses)</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.1	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9
0.6	EPS 10–12 W	1	0.0	8.0	11.0	10.0	8.6	8.6	8.7	8.7	8.8	8.8
0.5	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
1.0	EPS 20–30 W	1	0.0	0.9	0.9	0.7	0.6	0.6	0.6	0.5	0.5	0.4
0.8	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.5
1.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
1.0	EPS 65–120 W	1	0.0	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	1	0.0	1.5	1.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2
0.0	EPS 12–15 W	1	0.0	0.3	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.6
	<b>EPS, total for active mode</b>		<b>0.1</b>	<b>12.4</b>	<b>15.0</b>	<b>12.9</b>	<b>11.3</b>	<b>11.3</b>	<b>11.4</b>	<b>11.5</b>	<b>11.6</b>	<b>11.7</b>
db	<i>EPS No-load mode</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	1	0.1	1.2	0.9	0.5	0.3	0.3	0.3	0.3	0.3	0.4
0.0	EPS 10–12 W	1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.1</b>	<b>1.8</b>	<b>1.3</b>	<b>0.7</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
	<b>EPS, overall total (active + no-load)</b>		<b>0.2</b>	<b>14.2</b>	<b>16.3</b>	<b>13.7</b>	<b>11.7</b>	<b>11.8</b>	<b>11.8</b>	<b>11.9</b>	<b>12.1</b>	<b>12.2</b>
	<b>EPS, double counted subtracted</b>		<b>0.2</b>	<b>7.4</b>	<b>8.1</b>	<b>6.6</b>	<b>5.5</b>	<b>5.6</b>	<b>5.6</b>	<b>5.6</b>	<b>5.7</b>	<b>5.8</b>
	UPS below 1.5 kVA	1	0.7	1.5	1.5	0.5	0.2	0.2	0.2	0.3	0.3	0.3
	UPS 1.5 to 5 kVA	1	2.7	5.8	6.3	4.3	1.3	1.1	1.3	1.4	1.6	1.6
	UPS 5 to 10 kVA	1	0.3	0.7	0.8	0.8	0.7	0.8	0.9	1.0	1.1	1.2
	UPS 10 to 200 kVA	1	1.9	4.2	4.6	4.2	3.7	3.7	4.2	4.7	5.2	5.5
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>6</b>	<b>12</b>	<b>13</b>	<b>10</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>
	<b>TOTAL ELECTRONICS</b>		<b>80</b>	<b>241</b>	<b>248</b>	<b>233</b>	<b>217</b>	<b>220</b>	<b>214</b>	<b>215</b>	<b>220</b>	<b>225</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>1</b>	<b>138</b>	<b>104</b>	<b>87</b>	<b>74</b>	<b>61</b>	<b>50</b>	<b>41</b>	<b>37</b>	<b>34</b>	<b>32</b>
	CF open vertical chilled multi deck (RVC2)	1	15	14	13	11	8	7	7	7	7	7
	CF open horizontal frozen island (RHF4)	1	1	1	1	1	1	1	1	1	1	1
	CF other supermarket display (non-BCs)	1	26	26	26	23	20	20	20	21	21	22
	CF Plug in one door beverage cooler	1	18	18	17	13	10	10	10	10	11	11
	CF Plug in horizontal ice cream freezer	1	4	4	4	4	3	3	4	4	4	4
	CF Spiral vending machine	1	3	3	2	1	1	1	1	1	1	1
	<b>Total CF Commercial Refrigeration</b>		<b>68</b>	<b>67</b>	<b>63</b>	<b>53</b>	<b>44</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>46</b>
	PF Storage cabinet Chilled Vertical (CV)	1	1.8	2.5	2.6	2.3	1.8	1.7	1.8	1.9	2.0	2.1
	PF Storage cabinet Frozen Vertical (FV)	1	2.1	2.9	3.0	2.7	2.1	2.0	2.1	2.2	2.3	2.4
	PF Storage cabinet Chilled Horizontal (CH)	1	1.4	1.9	2.0	1.8	1.4	1.4	1.4	1.5	1.6	1.6
	PF Storage cabinet Frozen Horizontal (FH)	1	0.8	1.2	1.2	1.1	0.8	0.8	0.8	0.9	0.9	0.9
	<b>PF Storage cabinets All types</b>	<b>1</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	3	7	8	9	10	11	12	13	14	15
	PF Process Chiller AC MT L > 300 kW	1	3	7	8	9	10	10	11	12	13	14
	PF Process Chiller AC LT S ≤ 200 kW	1	3	7	8	9	10	11	12	13	14	15
	PF Process Chiller AC LT L > 200 kW	1	3	7	9	10	10	11	12	13	14	16
	PF Process Chiller WC MT S ≤ 300 kW	1	1	2	2	3	3	3	3	4	4	4
	PF Process Chiller WC MT L > 300 kW	1	1	3	3	4	4	4	5	5	6	6
	PF Process Chiller WC LT S ≤ 200 kW	1	1	3	3	3	4	4	4	5	5	5
	PF Process Chiller WC LT L > 200 kW	1	1	3	4	4	5	5	5	6	6	7
	<b>PF Process Chiller All MT&amp;LT</b>	<b>1</b>	<b>18</b>	<b>39</b>	<b>45</b>	<b>51</b>	<b>55</b>	<b>59</b>	<b>65</b>	<b>70</b>	<b>76</b>	<b>82</b>
	PF Condensing Unit MT S 0.2-1 kW	1	7	5	5	5	5	5	6	6	7	7
	PF Condensing Unit MT M 1-5 kW	1	17	13	13	13	13	14	15	17	18	19
	PF Condensing Unit MT L 5-20 kW	1	20	16	16	16	16	17	19	20	22	23
	PF Condensing Unit MT XL 20-50 kW	1	20	16	16	16	16	17	19	20	22	23
	PF Condensing Unit LT S 0.1-0.4 kW	1	1	1	1	1	1	1	1	1	1	1
	PF Condensing Unit LT M 0.4-2 kW	1	3	2	2	2	2	3	3	3	3	3
	PF Condensing Unit LT L 2-8 kW	1	5	4	4	4	4	4	4	5	5	5
	PF Condensing Unit LT XL 8-20 kW	1	16	13	12	12	12	13	14	15	17	18
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1</b>	<b>89</b>	<b>71</b>	<b>68</b>	<b>68</b>	<b>70</b>	<b>75</b>	<b>81</b>	<b>87</b>	<b>94</b>	<b>101</b>
	<b>PF Professional Refrigeration, Total</b>		<b>59</b>	<b>75</b>	<b>81</b>	<b>86</b>	<b>89</b>	<b>95</b>	<b>103</b>	<b>112</b>	<b>121</b>	<b>130</b>
	<b>TOTAL FOOD PRESERVATION</b>		<b>265</b>	<b>247</b>	<b>231</b>	<b>213</b>	<b>194</b>	<b>186</b>	<b>187</b>	<b>192</b>	<b>199</b>	<b>207</b>

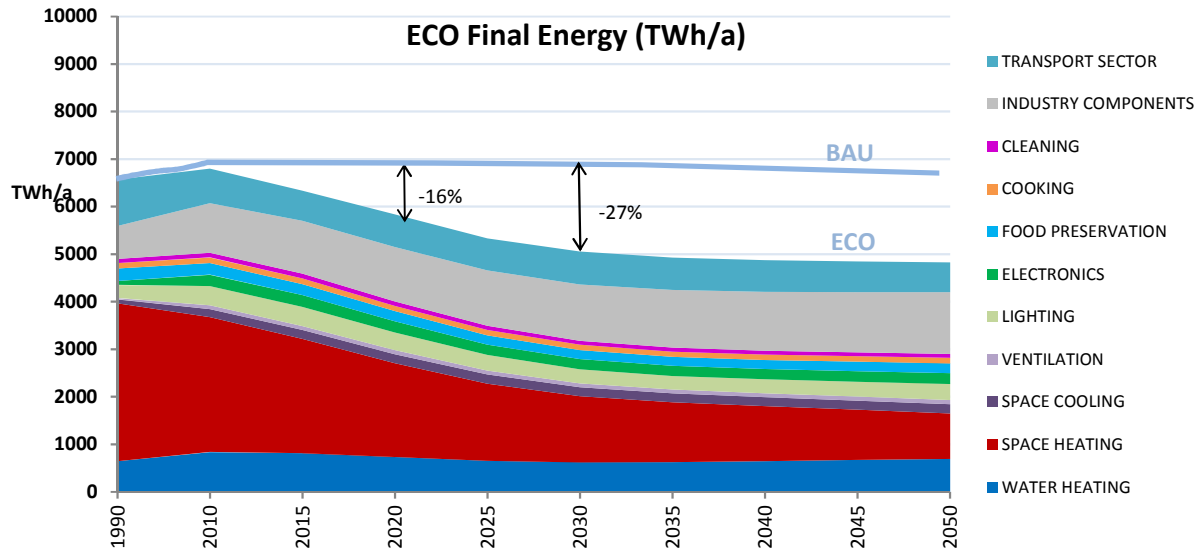


FNRGECO

db	ECO Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	1	20	31	35	38	40	43	45	47	49	51
	CA El. Ovens	1	23	23	22	20	19	19	19	19	19	19
	CA Gas Hobs	0	35	29	28	27	25	24	23	21	20	19
	CA Gas Ovens	0	14	10	9	8	7	6	5	5	5	5
	CA Range Hoods	1	10	12	13	13	12	12	12	12	12	13
	<b>Total CA Cooking Appliances</b>		<b>103</b>	<b>106</b>	<b>107</b>	<b>106</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>105</b>	<b>106</b>	<b>107</b>
	CM Dripfilter (glass)	1	6	4	4	3	3	3	3	3	3	3
	CM Dripfilter (thermos)	1	0	1	1	1	1	1	1	1	1	1
	CM Dripfilter (full automatic)	1	0	0	1	1	1	1	1	1	1	1
	CM Pad filter	1	0	1	1	1	1	1	1	1	1	1
	CM Hard cap espresso	1	0	0	0	0	1	1	1	1	1	1
	CM Semi-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (glass), standby/keep warm	1	4	3	2	1	1	1	1	1	1	1
	CM Dripfilter (thermos), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (full automatic), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Pad filter, standby/keep warm	1	0	1	1	0	0	0	0	0	0	1
	CM Hard cap espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Semi-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CM household Coffee Makers</b>		<b>11</b>	<b>11</b>	<b>10</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>
	<b>TOTAL COOKING</b>		<b>114</b>	<b>117</b>	<b>116</b>	<b>114</b>	<b>112</b>	<b>111</b>	<b>112</b>	<b>113</b>	<b>114</b>	<b>116</b>
	<b>Total WM household Washing Machine</b>	1	<b>53</b>	<b>35</b>	<b>28</b>	<b>24</b>	<b>19</b>	<b>17</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>
	<b>Total DW household Dishwasher</b>	1	<b>13</b>	<b>19</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>25</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
	LD vented el.	1	9	11	11	11	10	10	10	10	10	10
	LD condens el.	1	2	14	17	18	17	16	15	15	14	13
	LD vented gas	0	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>		<b>10</b>	<b>25</b>	<b>28</b>	<b>29</b>	<b>28</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>24</b>
	VC dom	1	10	17	18	10	12	12	12	11	10	9
	VC nondom	1	3	5	5	4	4	4	4	4	4	4
	<b>Total VC Vacuum Cleaner</b>		<b>13</b>	<b>22</b>	<b>23</b>	<b>14</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>14</b>
	<b>TOTAL CLEANING</b>		<b>89</b>	<b>100</b>	<b>100</b>	<b>88</b>	<b>87</b>	<b>84</b>	<b>84</b>	<b>84</b>	<b>84</b>	<b>83</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	19	53	60	62	64	65	65	65	65	65
0.5	FAN Axial>300Pa	1	33	97	109	110	108	107	106	106	106	106
0.5	FAN Centr.FC	1	8	17	20	20	19	19	19	19	19	19
0.5	FAN Centr.BC-free	1	21	44	51	53	55	59	62	64	65	66
0.5	FAN Centr.BC	1	22	50	57	59	62	66	71	76	83	90
0.5	FAN Cross-flow	1	1	2	2	2	2	1	2	2	2	2
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>53</b>	<b>132</b>	<b>149</b>	<b>153</b>	<b>155</b>	<b>159</b>	<b>162</b>	<b>166</b>	<b>170</b>	<b>174</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	109	138	141	126	110	107	107	106	105	104
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	165	214	219	195	167	158	155	152	148	145
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	334	428	430	395	347	298	280	265	253	248
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>		<b>608</b>	<b>780</b>	<b>790</b>	<b>716</b>	<b>623</b>	<b>564</b>	<b>542</b>	<b>523</b>	<b>506</b>	<b>496</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	7	17	22	34	46	50	53	56	59	63
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	13	32	44	70	94	103	110	117	124	131
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	38	94	126	179	231	275	297	318	337	353
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>59</b>	<b>143</b>	<b>192</b>	<b>284</b>	<b>371</b>	<b>428</b>	<b>460</b>	<b>491</b>	<b>521</b>	<b>547</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>667</b>	<b>924</b>	<b>982</b>	<b>1000</b>	<b>995</b>	<b>992</b>	<b>1002</b>	<b>1014</b>	<b>1027</b>	<b>1043</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	8	11	11	12	11	11	11	11	11	11
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	1	1	1	1	1	1	1	1	1
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>8</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	12	15	16	16	16	15	15	15	15	15
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	1	2	2	2	2	2	3	3	3
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>12</b>	<b>16</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>17</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>19</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	171	208	202	190	178	168	165	164	163	161
0.45	Large 3-ph LV 375-1000kW with VSD	1	9	47	70	96	117	133	141	148	155	163
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>179</b>	<b>254</b>	<b>271</b>	<b>286</b>	<b>295</b>	<b>301</b>	<b>306</b>	<b>312</b>	<b>318</b>	<b>324</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	4	5	5	6	6	6	6	6	6	6
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	9	13	14	15	15	15	16	16	16	17
0.45	Explosion motors (L) 3-ph 75-375 kW	1	17	24	27	29	30	31	32	33	34	34
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>29</b>	<b>42</b>	<b>46</b>	<b>49</b>	<b>51</b>	<b>52</b>	<b>53</b>	<b>55</b>	<b>56</b>	<b>57</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	3	3	4	4	4	4	4	4	4	4
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	6	8	9	10	10	10	10	11	11	11
0.45	Brake motors (L) 3-ph 75-375 kW	1	8	12	13	14	15	16	16	16	17	17
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>17</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>

FNRGECO

db	ECO Final Energy (in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (L) 3-ph 75-375 kW	1	1	1	1	1	2	2	2	2	2	2
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>1</b>	<b>45</b>	<b>62</b>	<b>67</b>	<b>71</b>	<b>73</b>	<b>73</b>	<b>74</b>	<b>75</b>	<b>77</b>	<b>78</b>
	<b>Total MT Elec. Motors LV 0.12-1000 kW</b>		<b>527</b>	<b>735</b>	<b>784</b>	<b>808</b>	<b>812</b>	<b>814</b>	<b>824</b>	<b>835</b>	<b>848</b>	<b>863</b>
	<b>Total WP Water Pumps</b>	<b>1</b>	<b>88</b>	<b>118</b>	<b>126</b>	<b>134</b>	<b>143</b>	<b>153</b>	<b>164</b>	<b>175</b>	<b>186</b>	<b>196</b>
	CP Fixed Speed 5-1280 l/s	1	24	49	41	35	34	35	36	37	38	39
	CP Variable speed 5-1280 l/s	1	0	9	16	20	22	22	23	24	24	25
	CP Pistons 2-64 l/s	1	1	2	1	1	1	1	2	2	2	2
	<b>Total CP Standard Air Compressors</b>		<b>25</b>	<b>59</b>	<b>58</b>	<b>56</b>	<b>57</b>	<b>58</b>	<b>60</b>	<b>62</b>	<b>63</b>	<b>65</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>693</b>	<b>1044</b>	<b>1117</b>	<b>1151</b>	<b>1167</b>	<b>1185</b>	<b>1211</b>	<b>1238</b>	<b>1267</b>	<b>1298</b>
	<b>Total TRAFU Utility Transformers</b>											
	<b>TOTAL ENERGY SECTOR</b>											
	(not final energy: distribution losses)											
	Tyres C1, replacement for cars	0	439	321	259	265	256	249	240	231	224	217
	Tyres C1, OEM for cars	0	132	95	93	88	81	78	76	72	69	66
	<b>Tyres C1, total</b>		<b>572</b>	<b>416</b>	<b>352</b>	<b>353</b>	<b>337</b>	<b>327</b>	<b>316</b>	<b>303</b>	<b>293</b>	<b>283</b>
	Tyres C2, replacement for vans	0	128	109	96	106	107	113	111	106	102	98
	Tyres C2, OEM for vans	0	27	23	22	24	24	25	24	23	22	21
	<b>Tyres C2, total</b>		<b>155</b>	<b>132</b>	<b>117</b>	<b>130</b>	<b>131</b>	<b>137</b>	<b>135</b>	<b>129</b>	<b>124</b>	<b>119</b>
	Tyres C3, replacement for trucks/busses	0	204	147	126	163	171	187	190	187	185	183
	Tyres C3, OEM for trucks/busses	0	45	33	33	37	39	43	43	43	42	42
	<b>Tyres C3, total</b>		<b>250</b>	<b>180</b>	<b>158</b>	<b>200</b>	<b>210</b>	<b>229</b>	<b>233</b>	<b>230</b>	<b>227</b>	<b>224</b>
	<b>Tyres, total C1+C2+C3</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>TOTAL TRANSPORT SECTOR</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>ECO Final Energy, Total, in TWh</b>		<b>6570</b>	<b>6800</b>	<b>6330</b>	<b>5832</b>	<b>5332</b>	<b>5052</b>	<b>4926</b>	<b>4868</b>	<b>4843</b>	<b>4826</b>
	ECO Final Energy, Total, in PJ		23651	24480	22787	20997	19195	18189	17733	17524	17435	17372
	ECO Final Energy, Total, in mtoe		565	585	544	502	458	434	424	419	416	415
	<b>ECO Final Energy (summary ALL SECTORS)</b>		<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>		<b>640</b>	<b>837</b>	<b>807</b>	<b>726</b>	<b>652</b>	<b>621</b>	<b>624</b>	<b>644</b>	<b>668</b>	<b>692</b>
	<b>SPACE HEATING</b>		<b>3324</b>	<b>2833</b>	<b>2408</b>	<b>1974</b>	<b>1620</b>	<b>1389</b>	<b>1260</b>	<b>1156</b>	<b>1057</b>	<b>954</b>
	<b>SPACE COOLING</b>		<b>84</b>	<b>171</b>	<b>186</b>	<b>192</b>	<b>192</b>	<b>189</b>	<b>188</b>	<b>189</b>	<b>192</b>	<b>195</b>
	<b>VENTILATION (from electricity)</b>		<b>27</b>	<b>78</b>	<b>85</b>	<b>85</b>	<b>81</b>	<b>77</b>	<b>78</b>	<b>82</b>	<b>86</b>	<b>90</b>
1	<b>VENTILATION (from heat savings vs. BAU)</b>		<b>0</b>	<b>0</b>	<b>-35</b>	<b>-92</b>	<b>-136</b>	<b>-166</b>	<b>-166</b>	<b>-162</b>	<b>-159</b>	<b>-157</b>
	(already included in NRG for space heating)											
	<b>LIGHTING (incl. SPL, ctrl &amp; sb)</b>		<b>276</b>	<b>406</b>	<b>403</b>	<b>375</b>	<b>333</b>	<b>296</b>	<b>284</b>	<b>293</b>	<b>312</b>	<b>338</b>
	<b>ELECTRONICS</b>		<b>80</b>	<b>241</b>	<b>248</b>	<b>233</b>	<b>217</b>	<b>220</b>	<b>214</b>	<b>215</b>	<b>220</b>	<b>225</b>
	<b>FOOD PRESERVATION</b>		<b>265</b>	<b>247</b>	<b>231</b>	<b>213</b>	<b>194</b>	<b>186</b>	<b>187</b>	<b>192</b>	<b>199</b>	<b>207</b>
	<b>COOKING</b>		<b>114</b>	<b>117</b>	<b>116</b>	<b>114</b>	<b>112</b>	<b>111</b>	<b>112</b>	<b>113</b>	<b>114</b>	<b>116</b>
	<b>CLEANING</b>		<b>89</b>	<b>100</b>	<b>100</b>	<b>88</b>	<b>87</b>	<b>84</b>	<b>84</b>	<b>84</b>	<b>84</b>	<b>83</b>
	<b>INDUSTRY COMPONENTS</b>		<b>693</b>	<b>1044</b>	<b>1117</b>	<b>1151</b>	<b>1167</b>	<b>1185</b>	<b>1211</b>	<b>1238</b>	<b>1267</b>	<b>1298</b>
	<b>ENERGY SECTOR (not final energy)</b>											
	<b>TRANSPORT SECTOR</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>ECO Final Energy, Total, in TWh</b>		<b>6570</b>	<b>6800</b>	<b>6330</b>	<b>5832</b>	<b>5332</b>	<b>5052</b>	<b>4926</b>	<b>4868</b>	<b>4843</b>	<b>4826</b>
	ECO Final Energy, Total, in PJ		23651	24480	22787	20997	19195	18189	17733	17524	17435	17372
	ECO Final Energy, Total, in mtoe		565	585	544	502	458	434	424	419	416	415
	For comparison: Eurostat Energy Balance May 2018, Final Energy Consumption (in mtoe)		1085	1163	1086							
						-16%		-27%				

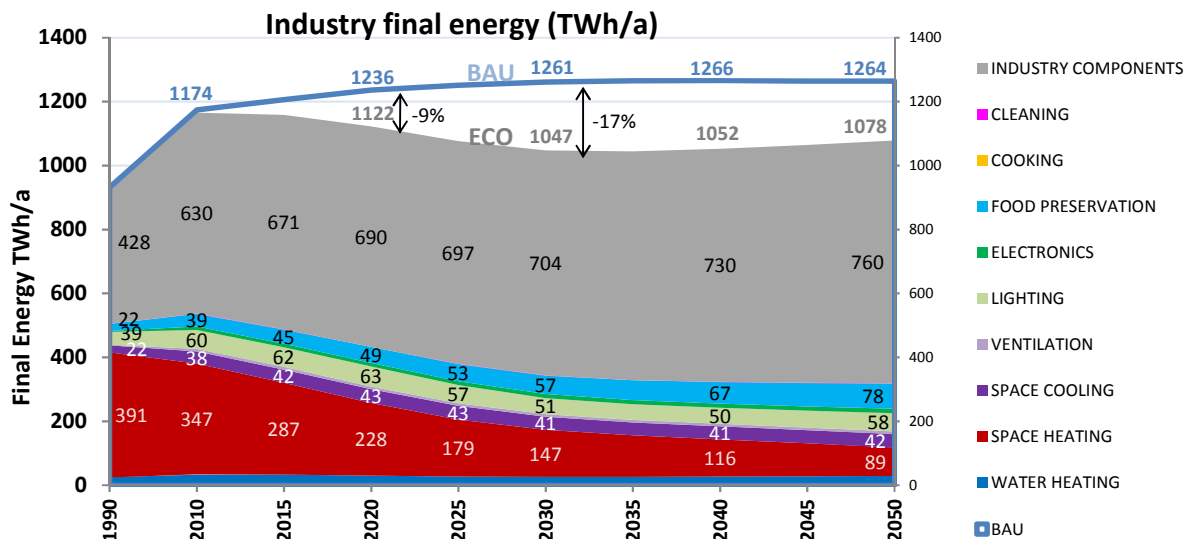


**Sector subdivision for ECO Final energy** (same sector definitions and same order of presentation as in Eurostat Energy Balances)

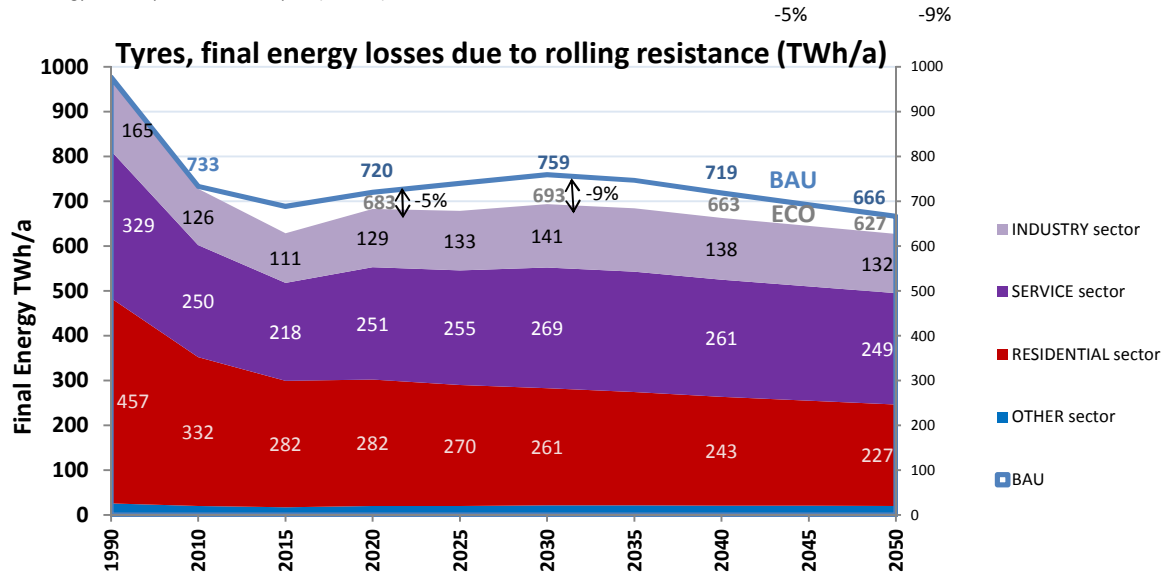
Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units  
 Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating  
 Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby  
 Energy Sector: see separate reporting above; not included in other sector totals  
 Transport Sector: see separate reporting below; not included in other sector totals

ECO Final Energy (summary INDUSTRY)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	24	33	33	29	27	25	26	26	27	28
SPACE HEATING	391	347	287	228	179	147	130	116	103	89
SPACE COOLING	22	38	42	43	43	41	41	41	41	42
VENTILATION	2	7	8	8	8	8	8	8	8	9
LIGHTING	39	60	62	63	57	51	49	50	53	58
ELECTRONICS	4	11	10	11	12	13	13	13	13	14
FOOD PRESERVATION	22	39	45	49	53	57	62	67	73	78
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	1	1	0	0	0	0	1	1	1
INDUSTRY COMPONENTS	428	630	671	690	697	704	716	730	744	760
<b>ECO Final Energy, Industry, in TWh</b>	<b>932</b>	<b>1166</b>	<b>1158</b>	<b>1122</b>	<b>1076</b>	<b>1047</b>	<b>1044</b>	<b>1052</b>	<b>1064</b>	<b>1078</b>
ECO Final Energy, Industry, in PJ	3356	4197	4168	4039	3872	3768	3760	3788	3830	3881
ECO Final Energy, Industry, in mtoe	80	100	100	96	92	90	90	90	91	93
For comparison: Eurostat Energy Balance May 2018, Final Energy Consumption in Industry (in mtoe)	371	291	276							

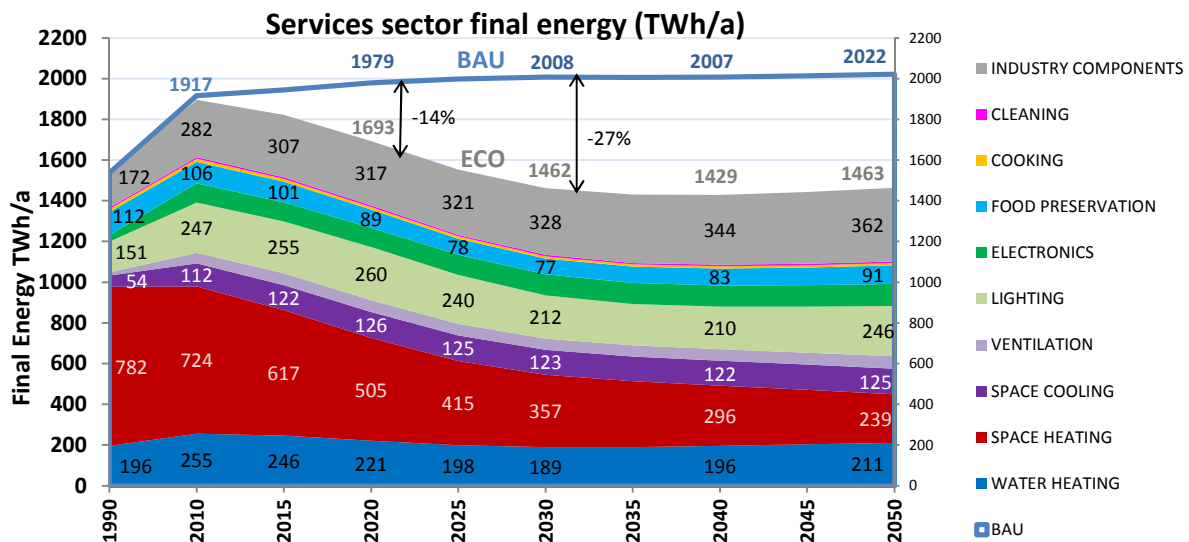
-9%      -17%



ECO Final Energy (summary TRANSPORT)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	165	126	111	129	133	141	142	138	135	132
TYRES for SERVICE-sector-related transport	329	250	218	251	255	269	268	261	255	249
TYRES for RESIDENTIAL-sector-related transport	457	332	282	282	270	261	253	243	235	227
TYRES for OTHER-sector-related transport	26	20	17	20	20	22	22	21	21	20
<b>ECO Final Energy, Transport, in TWh</b>	<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
ECO Final Energy, Transport, in PJ	3516	2620	2261	2457	2441	2496	2463	2387	2321	2256
ECO Final Energy, Transport, in mtoe	84	63	54	59	58	60	59	57	55	54
For comparison: Eurostat Energy Balance May 2018, Final Energy Consumption Road Transport (in mtoe)	238	299	293							

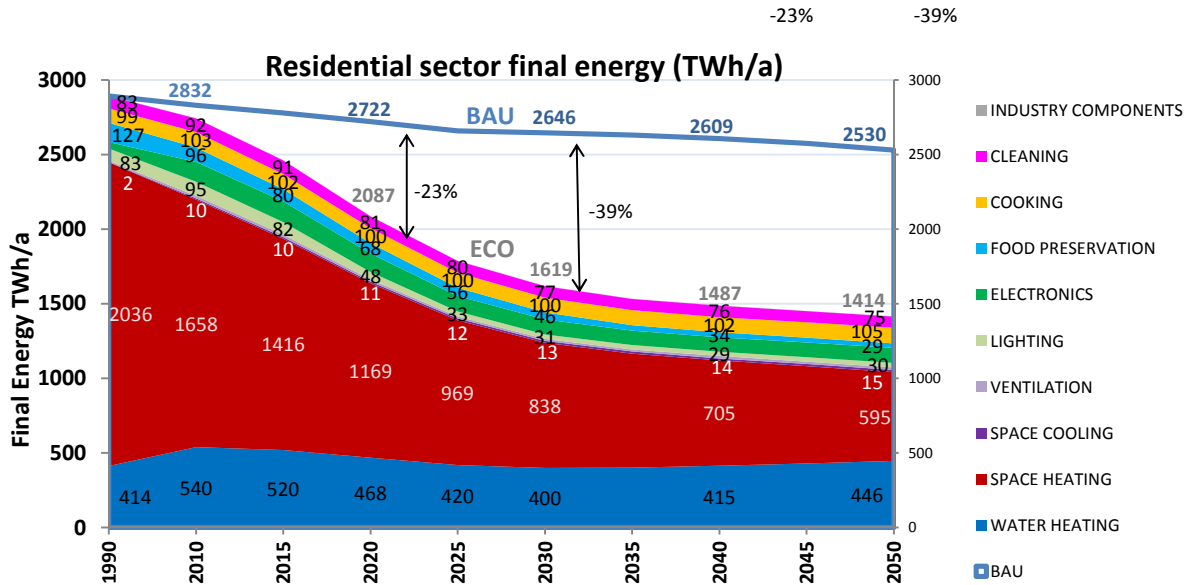


ECO Final Energy (summary SERVICES)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	196	255	246	221	198	189	190	196	203	211
SPACE HEATING	782	724	617	505	415	357	323	296	268	239
SPACE COOLING	54	112	122	126	125	123	121	122	123	125
VENTILATION	16	53	58	59	57	55	55	57	59	62
LIGHTING	151	247	255	260	240	212	203	210	225	246
ELECTRONICS	32	94	94	95	99	104	103	104	106	110
FOOD PRESERVATION	112	106	101	89	78	77	79	83	87	91
COOKING	16	15	14	13	12	12	12	11	11	11
CLEANING	6	8	8	7	7	7	7	7	7	7
<b>INDUSTRY COMPONENTS</b>	<b>172</b>	<b>282</b>	<b>307</b>	<b>317</b>	<b>321</b>	<b>328</b>	<b>336</b>	<b>344</b>	<b>353</b>	<b>362</b>
<b>ECO Final Energy, Services, in TWh</b>	<b>1537</b>	<b>1895</b>	<b>1821</b>	<b>1693</b>	<b>1554</b>	<b>1462</b>	<b>1430</b>	<b>1429</b>	<b>1443</b>	<b>1463</b>
ECO Final Energy, Services, in PJ	5534	6823	6557	6095	5593	5264	5149	5146	5196	5268
ECO Final Energy, Services, in mtoe	132	163	157	146	134	126	123	123	124	126
For comparison: Eurostat Energy Balance May 2018, Final Energy Consumption Services sector (in mtoe)	109	158	147							



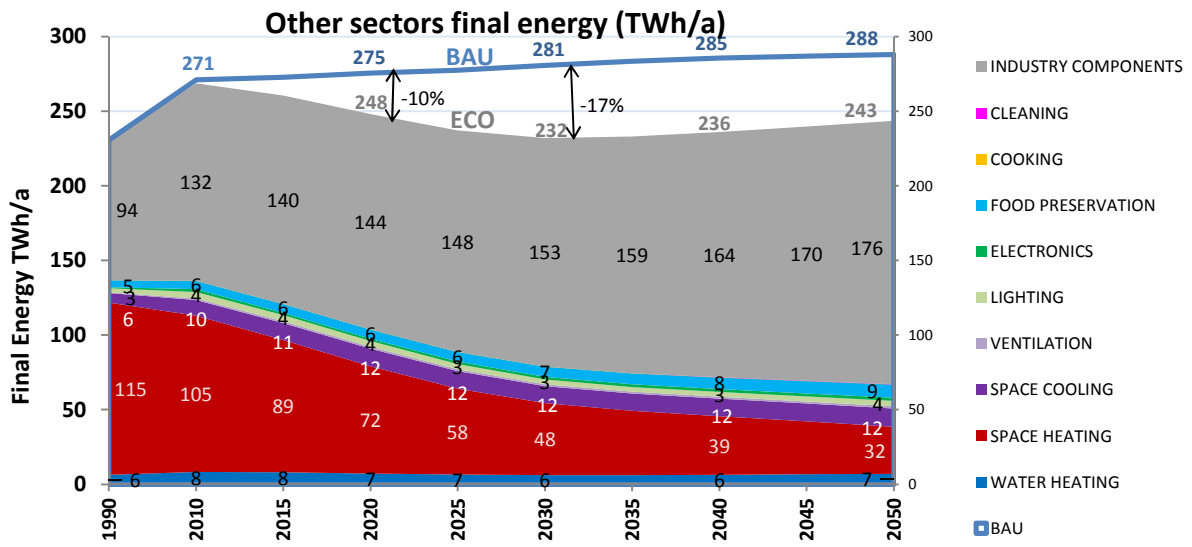
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ECO Final Energy (summary RESIDENTIAL)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	414	540	520	468	420	400	402	415	430	446
SPACE HEATING	2036	1658	1416	1169	969	838	764	705	651	595
SPACE COOLING	2	10	10	11	12	13	14	14	15	15
VENTILATION	8	17	18	16	14	13	14	15	17	18
LIGHTING	83	95	82	48	33	31	30	29	30	30
ELECTRONICS	44	134	141	125	104	101	96	97	98	100
FOOD PRESERVATION	127	96	80	68	56	46	38	34	31	29
COOKING	99	103	102	100	100	100	100	102	103	105
CLEANING	83	92	91	81	80	77	76	76	76	75
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO Final Energy, Residential, in TWh</b>	<b>2893</b>	<b>2743</b>	<b>2462</b>	<b>2087</b>	<b>1788</b>	<b>1619</b>	<b>1534</b>	<b>1487</b>	<b>1452</b>	<b>1414</b>
ECO Final Energy, Residential, in PJ	10416	9873	8863	7513	6435	5827	5522	5353	5226	5090
ECO Final Energy, Residential, in mtoe	249	236	212	179	154	139	132	128	125	122
For comparison: Eurostat Energy Balance May 2018, Final Energy Consumption in Residential sector (in mtoe)	274	320	276							



(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

ECO Final Energy (summary OTHER)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	6	8	8	7	7	6	6	6	7	7
SPACE HEATING	115	105	89	72	58	48	43	39	35	32
SPACE COOLING	6	10	11	12	12	12	12	12	12	12
VENTILATION	0	1	1	1	1	1	1	1	1	1
LIGHTING	3	4	4	4	3	3	3	3	3	4
ELECTRONICS	1	2	2	2	2	2	2	2	2	2
FOOD PRESERVATION	5	6	6	6	6	7	7	8	8	9
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	94	132	140	144	148	153	159	164	170	176
<b>ECO Final Energy, Other sectors, in TWh</b>	<b>230</b>	<b>269</b>	<b>260</b>	<b>248</b>	<b>237</b>	<b>232</b>	<b>233</b>	<b>236</b>	<b>240</b>	<b>243</b>
ECO Final Energy, Other sectors, in PJ	830	967	937	893	853	835	839	850	863	876
ECO Final Energy, Other sectors, in mtoe	20	23	22	21	20	20	20	20	21	21
For comparison: Eurostat Energy Balance May 2018, Final Energy Consumption in Other sectors (in mtoe)	46	31	29							



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ECO Final Energy (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		640	837	807	726	652	621	624	644	668	692
	Residential	414	540	520	468	420	400	402	415	430	446
	Tertiary / Services	196	255	246	221	198	189	190	196	203	211
	Industry	24	33	33	29	27	25	26	26	27	28
	Other	6	8	8	7	7	6	6	6	7	7
<b>SPACE HEATING. All sectors, TWh</b>		3324	2833	2408	1974	1620	1389	1260	1156	1057	954
	Residential	2036	1658	1416	1169	969	838	764	705	651	595
	Tertiary / Services	782	724	617	505	415	357	323	296	268	239
	Industry	391	347	287	228	179	147	130	116	103	89
	Other	115	105	89	72	58	48	43	39	35	32
<b>SPACE COOLING. All sectors, TWh</b>		84	171	186	192	192	189	188	189	192	195
<b>&amp; HT PROCESS</b>											
	Residential	2	10	10	11	12	13	14	14	15	15
	Tertiary / Services	54	112	122	126	125	123	121	122	123	125
	Industry	22	38	42	43	43	41	41	41	41	42
	Other	6	10	11	12	12	12	12	12	12	12
<b>VENTILATION. All sectors, TWh</b>		27	78	85	85	81	77	78	82	86	90
	Residential	8	17	18	16	14	13	14	15	17	18
	Tertiary / Services	16	53	58	59	57	55	55	57	59	62
	Industry	2	7	8	8	8	8	8	8	8	9
	Other	0	1	1	1	1	1	1	1	1	1
<b>LIGHTING. All sectors, TWh</b>		276	406	403	375	333	296	284	293	312	338
	Residential	83	95	82	48	33	31	30	29	30	30
	Tertiary / Services	151	247	255	260	240	212	203	210	225	246
	Industry	39	60	62	63	57	51	49	50	53	58
	Other	3	4	4	4	3	3	3	3	3	4
<b>ELECTRONICS. All sectors, TWh</b>		80	241	248	233	217	220	214	215	220	225
	Residential	44	134	141	125	104	101	96	97	98	100
	Tertiary / Services	32	94	94	95	99	104	103	104	106	110
	Industry	4	11	10	11	12	13	13	13	13	14
	Other	1	2	2	2	2	2	2	2	2	2
<b>FOOD PRESERVE. All sectors, TWh</b>		265	247	231	213	194	186	187	192	199	207
	Residential	127	96	80	68	56	46	38	34	31	29
	Tertiary / Services	112	106	101	89	78	77	79	83	87	91
	Industry	22	39	45	49	53	57	62	67	73	78
	Other	5	6	6	6	6	7	7	8	8	9
<b>COOKING. All sectors, TWh</b>		114	117	116	114	112	111	112	113	114	116
	Residential	99	103	102	100	100	100	100	102	103	105
	Tertiary / Services	16	15	14	13	12	12	12	11	11	11
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>		89	100	100	88	87	84	84	84	84	83
	Residential	83	92	91	81	80	77	76	76	76	75
	Tertiary / Services	6	8	8	7	7	7	7	7	7	7
	Industry	0	1	1	0	0	0	0	1	1	1
	Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>		693	1044	1117	1151	1167	1185	1211	1238	1267	1298
	Residential	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services	172	282	307	317	321	328	336	344	353	362
	Industry	428	630	671	690	697	704	716	730	744	760
	Other	94	132	140	144	148	153	159	164	170	176
<b>TYRES. Transport sector, TWh</b>		977	728	628	683	678	693	684	663	645	627
	Residential transport	457	332	282	282	270	261	253	243	235	227
	Tertiary / Services transport	329	250	218	251	255	269	268	261	255	249
	Industry transport	165	126	111	129	133	141	142	138	135	132
	Other transport	26	20	17	20	20	22	22	21	21	20
<b>ALL PRODUCTS. All sectors excl. Energy, TWh</b>		6570	6800	6330	5832	5332	5052	4926	4868	4843	4826
	Residential	2893	2743	2462	2087	1788	1619	1534	1487	1452	1414
	Tertiary / Services	1537	1895	1821	1693	1554	1462	1430	1429	1443	1463
	Industry	932	1166	1158	1122	1076	1047	1044	1052	1064	1078
	Other	230	269	260	248	237	232	233	236	240	243
	Transport	977	728	628	683	678	693	684	663	645	627

# FNRGECO

ECO Final energy (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential	65%	65%	64%	64%	64%	64%	64%	64%	64%	64%
	Tertiary / Services	31%	31%	30%	30%	30%	30%	30%	30%	30%	30%
	Industry	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential	61%	59%	59%	59%	60%	60%	61%	61%	62%	62%
	Tertiary / Services	24%	26%	26%	26%	26%	26%	26%	26%	25%	25%
	Industry	12%	12%	12%	12%	11%	11%	10%	10%	10%	9%
	Other	3%	4%	4%	4%	4%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>											
<b>&amp; HT PROCESS</b>											
	Residential	2%	6%	6%	6%	6%	7%	7%	8%	8%	8%
	Tertiary / Services	65%	66%	66%	66%	65%	65%	65%	65%	64%	64%
	Industry	26%	22%	22%	22%	22%	22%	22%	22%	22%	22%
	Other	8%	6%	6%	6%	6%	6%	6%	6%	6%	6%
<b>VENTILATION</b>											
	Residential	29%	21%	21%	19%	18%	17%	18%	19%	20%	20%
	Tertiary / Services	61%	68%	68%	69%	71%	71%	71%	70%	69%	69%
	Industry	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%
	Other	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
<b>LIGHTING.</b>											
	Residential	30%	23%	20%	13%	10%	10%	10%	10%	10%	9%
	Tertiary / Services	55%	61%	63%	69%	72%	71%	71%	72%	72%	73%
	Industry	14%	15%	15%	17%	17%	17%	17%	17%	17%	17%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
	Residential	54%	56%	57%	54%	48%	46%	45%	45%	45%	44%
	Tertiary / Services	40%	39%	38%	41%	46%	47%	48%	48%	48%	49%
	Industry	5%	5%	4%	5%	6%	6%	6%	6%	6%	6%
	Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>											
	Residential	48%	39%	35%	32%	29%	25%	20%	18%	16%	14%
	Tertiary / Services	42%	43%	44%	42%	40%	41%	42%	43%	43%	44%
	Industry	8%	16%	19%	23%	27%	31%	33%	35%	37%	38%
	Other	2%	2%	3%	3%	3%	4%	4%	4%	4%	4%
<b>COOKING.</b>											
	Residential	86%	88%	88%	88%	89%	89%	90%	90%	90%	90%
	Tertiary / Services	14%	12%	12%	12%	11%	11%	10%	10%	10%	10%
	Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
	Residential	93%	92%	92%	91%	91%	91%	91%	91%	90%	90%
	Tertiary / Services	6%	8%	8%	8%	8%	8%	9%	9%	9%	9%
	Industry	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
	Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
	Residential	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Tertiary / Services	25%	27%	27%	28%	28%	28%	28%	28%	28%	28%
	Industry	62%	60%	60%	60%	60%	59%	59%	59%	59%	59%
	Other	14%	13%	12%	13%	13%	13%	13%	13%	13%	14%
<b>TYRES.</b>											
	Residential transport	47%	46%	45%	41%	40%	38%	37%	37%	36%	36%
	Tertiary / Services transport	34%	34%	35%	37%	38%	39%	39%	39%	40%	40%
	Industry transport	17%	17%	18%	19%	20%	20%	21%	21%	21%	21%
	Other transport	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS (excl. Energy sector).</b>											
	Residential	44%	40%	39%	36%	34%	32%	31%	31%	30%	29%
	Tertiary / Services	23%	28%	29%	29%	29%	29%	29%	29%	30%	30%
	Industry	14%	17%	18%	19%	20%	21%	21%	22%	22%	22%
	Other	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%
	Transport	15%	11%	10%	12%	13%	14%	14%	14%	13%	13%



FNRGSAVE

db	SAVED Final Energy (BAU-ECO, in TWh)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	0	0	42	94	140	156	162	167	175	184
	<b>Total CH Central Heating combi, water heat</b>	0.02	0	0	21	73	128	171	202	230	260	290
	<b>TOTAL WATER HEATING</b>		0	0	63	167	267	327	364	397	435	474
	<i>CH non-electric</i>	0	0	47	262	502	688	840	898	911	885	834
	<i>CH electric resistance boiler, 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>CH heat pump, 1st estimate</i>	1	0	0	-2	-3	-8	-14	-19	-25	-30	-36
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	0	3	7	9	16	17	17	16	15	14
	<b>Total CH Central Heating boiler, space heat</b>		0	50	267	509	696	843	896	903	870	813
	SFB Wood Manual	0	0.0	0.0	1.1	3.9	5.2	5.1	4.0	2.8	2.2	1.8
	SFB Wood Direct Draft	0	0.0	0.0	0.4	1.5	3.3	4.6	5.3	6.3	7.7	9.6
	SFB Coal	0	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1
	SFB Pellets	0	0.0	0.0	0.2	0.7	1.6	2.3	2.6	2.8	3.1	3.4
	SFB Wood chips	0	0.0	0.0	0.3	1.2	2.0	2.6	2.9	3.0	3.2	3.4
	<b>Total Solid Fuel Boiler</b>		0	0	2	8	12	15	15	15	16	18
	CHAE-S (≤ 400 kW)	1	0.0	0.0	0.0	0.1	0.4	0.6	0.9	1.0	0.9	0.8
	CHAE-L (> 400 kW)	1	0.0	0.0	0.0	0.2	0.7	0.9	1.1	1.1	1.0	0.8
	CHWE-S (≤ 400 kW)	1	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHWE-L (> 1500 kW)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHF	0.05	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	HT PCH-AE-S	1	0.0	0.0	0.1	1.1	2.7	3.9	4.2	3.8	3.3	2.8
	HT PCH-AE-L	1	0.0	0.0	0.1	1.2	3.1	5.0	6.0	6.1	5.8	5.3
	HT PCH-WE-S	1	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.3	0.2	0.1
	HT PCH-WE-M	1	0.0	0.0	0.0	0.2	0.5	0.6	0.5	0.2	0.1	0.0
	HT PCH-WE-L	1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	AC rooftop	1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
	AC splits	1	0.0	0.0	0.0	0.4	0.8	1.1	1.0	0.8	0.6	0.5
	AC VRF	1	0.0	0.0	0.0	0.2	0.5	0.8	1.1	1.2	1.1	1.0
	ACF	0.05	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	<b>SubTotal AHC central Air Cooling</b>		0	0	0	4	9	14	16	15	14	12
	AC rooftop (rev)	1	0.0	0.0	0.2	1.1	1.6	1.5	0.8	0.2	0.0	0.0
	AC splits (rev)	1	0.0	0.0	0.5	1.9	3.3	4.0	3.7	3.1	2.7	2.3
	AC VRF (rev)	1	0.0	0.0	0.2	1.0	2.3	3.9	4.8	5.1	4.9	4.6
	ACF (rev)	0.05	0.00	0.00	0.01	0.03	0.06	0.09	0.11	0.11	0.11	0.11
	AHF	0.05	0.0	0.0	2.6	10.5	18.4	23.2	22.7	20.2	17.8	15.5
	AHE	1	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC central Air Heating</b>		0	0	4	15	26	33	32	29	26	23
	<b>Total AHC central Air Heating &amp; Cooling</b>		0	0	4	18	35	47	48	44	39	34
	LH open fireplace	0	0.0	0.0	0.2	1.2	3.4	5.1	6.3	7.4	8.0	8.1
	LH closed fireplace/inset	0	0.0	0.0	0.4	2.3	5.7	8.5	10.4	11.9	12.8	12.7
	LH wood stove	0	0.0	0.0	0.3	1.5	3.5	5.1	6.1	7.0	7.5	7.5
	LH coal stove	0	0.0	0.0	0.1	0.4	0.8	0.9	0.9	0.9	0.9	0.7
	LH cooker	0	0.0	0.0	0.1	0.5	1.4	2.0	2.3	2.2	2.2	2.3
	LH SHR stove	0	0.0	0.0	0.2	0.7	1.4	1.9	2.2	2.5	2.7	2.8
	LH pellet stove	0	0.0	0.0	0.1	0.4	1.0	1.4	1.4	1.4	1.4	1.5
	LH open fire gas	0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4
	LH closed fire gas	0	0.0	0.0	0.1	0.6	1.6	2.3	2.8	3.1	3.1	3.0
	LH flueless fuel heater	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	1	0.0	0.0	0.8	3.4	5.0	5.0	4.9	4.8	4.8	4.8
	LH elec.convectector	1	0.0	0.0	2.7	10.5	15.2	15.5	14.8	14.7	14.8	15.0
	LH elec.storage	1	0.0	0.0	0.2	1.0	1.6	2.0	2.0	1.9	1.9	1.9
	LH elec.underfloor	1	0.0	0.0	0.3	1.3	2.1	2.8	3.1	3.4	3.7	3.6
	LH luminous heaters	0	0.0	0.0	0.1	0.4	0.7	0.9	0.9	0.8	0.8	0.8
	LH tube heaters	0	0.0	0.0	0.2	0.9	1.5	2.0	2.1	2.0	1.9	1.8
	<b>LH total</b>		0	0	6	25	45	56	61	65	67	67
	RAC (cooling demand), all types <12 kW	1	0	0	2	4	6	7	7	7	8	8
	RAC (heating demand), reversible <12kW	1	0	0	2	6	10	12	12	12	12	11
	<b>Total RAC Room Air Conditioner</b>		0	0	4	10	16	19	19	19	19	19
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	0	1	7	11	12	13	13	12	12	11
	<b>TOTAL SPACE HEATING</b>		0	50	281	563	790	959	1017	1024	991	932
	<b>TOTAL SPACE COOLING</b>		0	0	2	8	15	21	23	22	21	19
	NRVU electricity	1	0	0	2	6	10	14	15	15	15	15
1	NRVU heat (negative=saving vs. natural ventilation)	0	0	0	20	66	111	148	152	147	141	134
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	0	0	1	3	6	7	8	8	9	9
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	0	0	1	2	4	4	5	5	5
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	0	0	0	0	1	1	1	1
1	RVU Central Unidir., heat (negative=saving)	0	0	0	10	26	41	54	57	62	66	70
1	RVU Central Balanced, heat (negative=saving)	0	0	0	1	2	4	5	6	6	7	8
1	RVU Local Balanced, heat (negative=saving)	0	0	0	0	1	2	2	3	4	5	6
	<b>Total VU (electricity + (negative) heat saving vs. natural ventilation)</b>		0	0	34	105	177	235	246	247	248	248
	<b>TOTAL VENTILATION (from electricity)</b>		-	-	3	11	19	25	27	29	30	31
1	<b>TOTAL VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</b>		-	-	35	92	136	166	166	162	159	157

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db	SAVED Final Energy (BAU-ECO, in TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>LS, final energy incl. control gear (BAU-ECO)</i>										
	LFL (T12,T8h,T8t,T5,other)	1	0	1	6	20	65	93	80	66	53
	HID (HPM, HPS, MH)	1	0	1	14	24	26	23	15	6	3
	CFLni (all shapes)	1	0	0	1	3	4	4	2	1	1
	CFLi (retrofit for GLS, HL)	1	0	-3	-4	1	9	11	8	5	2
	GLS (DLS & NDLS)	1	0	23	40	39	23	8	5	3	2
	HL (DLS & NDLS, LV & MV)	1	0	-5	-3	42	46	24	12	7	2
	LED replacing LFL (retrofit & luminaire)	1	0	0	-1	-7	-28	-36	-24	-15	-6
	LED replacing HID (retrofit & luminaire)	1	0	0	-10	-14	-11	-6	0	2	4
	LED replacing CFLni (retrofit & luminaire)	1	0	0	0	-1	-1	0	0	0	1
	LED replacing DLS (retrofit & luminaire)	1	0	0	-1	-3	-3	-2	-1	0	0
	LED replacing NDLS (retrofit & luminaire)	1	0	0	-1	-9	-12	-9	-6	-3	0
	<i>Special Purpose Lamps (SPL)</i>	1	0	0	0	0	0	0	0	0	0
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	0	0	0	0	0	0	0	0	0
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>0</b>	<b>18</b>	<b>41</b>	<b>95</b>	<b>117</b>	<b>113</b>	<b>96</b>	<b>80</b>	<b>61</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>0</b>	<b>18</b>	<b>41</b>	<b>95</b>	<b>117</b>	<b>113</b>	<b>96</b>	<b>80</b>	<b>61</b>
	DP TV on-mode, total all types	1	0.0	0.0	5.9	21.0	38.2	52.5	56.5	47.9	35.4
	DP TV standby, standard (NoNA)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP TV standby, total all types</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DP TV total on-mode + standby</b>		<b>0</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>38</b>	<b>52</b>	<b>57</b>	<b>48</b>	<b>35</b>
	DP Monitor on-mode	1	0.0	0.0	1.0	3.1	3.3	3.5	3.0	2.3	1.9
	DP Monitor standby	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>
	DP Signage on-mode	1	0.0	0.0	0.0	0.0	0.8	3.9	6.8	6.3	1.0
	DP Signage standby	1	0.0	0.0	0.0	0.0	0.1	0.6	1.0	0.9	0.2
	<b>DP Signage total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>8</b>	<b>7</b>	<b>1</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>0</b>	<b>0</b>	<b>7</b>	<b>24</b>	<b>42</b>	<b>60</b>	<b>66</b>	<b>57</b>	<b>38</b>
	<b>DP Electronic Displays, total standby</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>
	<b>DP Electronic Displays, total</b>		<b>0</b>	<b>0</b>	<b>7</b>	<b>24</b>	<b>42</b>	<b>60</b>	<b>67</b>	<b>57</b>	<b>39</b>
	SSTB	1	0.0	1.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	1	0.0	0.0	2.1	4.4	4.6	4.4	4.7	5.1	5.8
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>
	VIDEO players/recorders	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	1	0.0	0.0	0.6	1.1	1.2	1.1	1.1	1.1	1.1
	<b>Total VIDEO</b>		<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.1</b>	<b>1.2</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>										
	ES tower 1-socket traditional	1	0	0	0	0.1	0.0	0.0	0.0	0.0	0.0
	ES rack 1-socket traditional	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 2-socket traditional	1	0	0	0	0.3	0.4	0.4	0.4	0.4	0.4
	ES rack 2-socket cloud	1	0	0	0	0.8	0.9	1.0	1.0	1.0	1.0
	ES rack 4-socket traditional	1	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1
	ES rack 4-socket cloud	1	0	0	0	0.1	0.2	0.2	0.2	0.2	0.2
	ES rack 2-socket resilient trad.	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket resilient cloud	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient trad.	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 2-socket traditional	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 2-socket cloud	1	0	0	0	0.3	0.4	0.4	0.4	0.4	0.4
	ES blade 4-socket traditional	1	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1
	ES blade 4-socket cloud	1	0	0	0	0.1	0.1	0.2	0.2	0.2	0.2
	<b>ES total traditional</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>
	<b>ES total cloud</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1.3</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>1.8</b>	<b>1.8</b>
	<b>ES Enterprise Servers total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2.0</b>	<b>2.4</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>
	DS Online 2	1	0	0	0	0.1	0.3	0.4	0.5	0.5	0.5
	DS Online 3	1	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1
	DS Online 4	1	0	0	0	0.1	0.2	0.3	0.3	0.3	0.3
	<b>DS Data Storage products total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0.6</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2.2</b>	<b>3.0</b>	<b>3.3</b>	<b>3.5</b>	<b>3.5</b>	<b>3.5</b>
	PC Desktop	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Notebook	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Tablet/slate	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Thin client	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total PC, electricity</b>		<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	EP-Copier mono	1	0.0	0.5	0.5	0.2	0.1	0.1	0.0	0.0	0.0
	EP-Copier colour	1	0.0	0.1	0.6	1.0	1.2	1.3	1.4	1.5	1.7
	EP-printer mono	1	0.0	0.6	1.1	0.9	0.8	0.7	0.6	0.5	0.3
	EP-printer colour	1	0.0	0.1	1.2	1.7	2.1	2.5	2.9	3.2	3.9
	IJ SFD printer	1	0.0	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0
	IJ MFD printer	1	0.0	0.6	1.1	1.3	1.4	1.6	1.7	1.8	2.1
	<b>Total imaging equipment, electricity</b>		<b>0</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>8</b>

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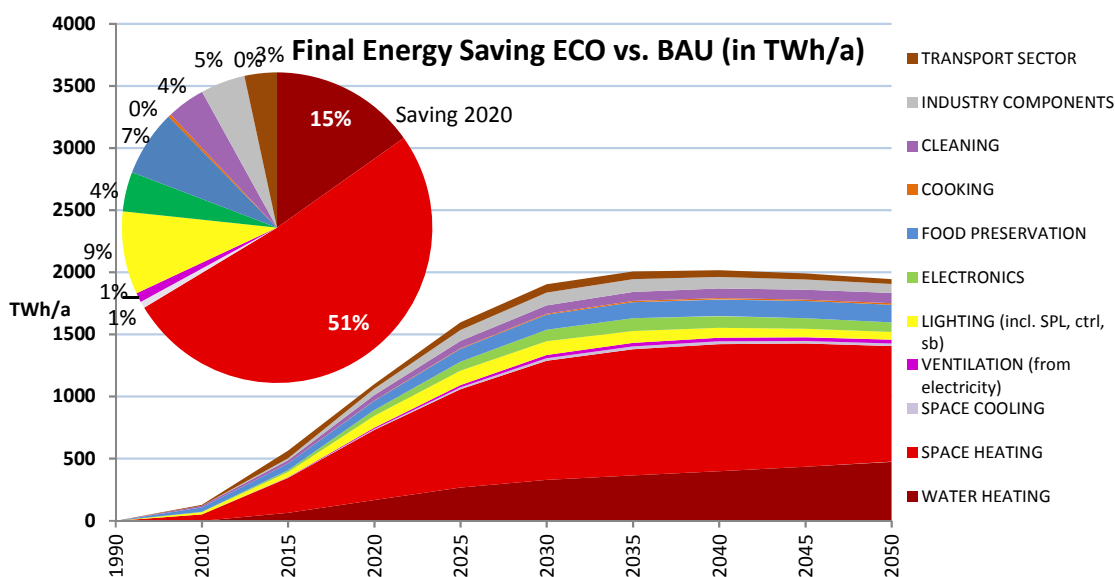
db	SAVED Final Energy (BAU-ECO, in TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, idle hours	1	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1
	SB Home Phones (fixed), idle hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), idle hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total SB (networked) StandBy (rest)</b>		<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.5</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>
db	<i>EPS Active mode (electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.0	0.0	0.2	0.4	0.4	0.4	0.3	0.3	0.2
0.6	EPS 10–12 W	1	0.0	0.1	1.9	3.9	4.8	4.3	3.7	3.1	2.5
0.5	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	1	0.0	0.0	0.2	0.3	0.3	0.3	0.2	0.2	0.1
0.8	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 65–120 W	1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.2	0.2
	<b>EPS, total for active mode</b>		<b>0.0</b>	<b>0.1</b>	<b>2.4</b>	<b>4.9</b>	<b>5.9</b>	<b>5.3</b>	<b>4.6</b>	<b>3.8</b>	<b>3.1</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
0.0	EPS 6–10 W	1	0.0	0.0	0.3	0.7	0.8	0.8	0.7	0.6	0.5
0.0	EPS 10–12 W	1	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1
0.0	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.0</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>0.8</b>	<b>0.7</b>
	<b>EPS, overall total (active + no-load)</b>		<b>0.0</b>	<b>0.2</b>	<b>3.0</b>	<b>5.9</b>	<b>7.1</b>	<b>6.4</b>	<b>5.5</b>	<b>4.7</b>	<b>3.9</b>
	<b>EPS, double counted subtracted</b>		<b>0.0</b>	<b>0.1</b>	<b>1.6</b>	<b>3.2</b>	<b>4.0</b>	<b>3.5</b>	<b>3.1</b>	<b>2.6</b>	<b>2.0</b>
	UPS below 1.5 kVA	1	0.0	0.0	0.0	1.3	2.0	2.3	2.6	2.8	3.0
	UPS 1.5 to 5 kVA	1	0.0	0.0	0.0	2.6	6.9	8.5	9.7	10.8	11.7
	UPS 5 to 10 kVA	1	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.6	0.6
	UPS 10 to 200 kVA	1	0.0	0.0	0.0	0.4	1.2	2.2	2.5	2.8	3.1
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>10</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>18</b>
	<b>TOTAL ELECTRONICS</b>		<b>0</b>	<b>4</b>	<b>16</b>	<b>45</b>	<b>72</b>	<b>93</b>	<b>102</b>	<b>94</b>	<b>85</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	1	<b>0</b>	<b>35</b>	<b>53</b>	<b>65</b>	<b>78</b>	<b>89</b>	<b>97</b>	<b>102</b>	<b>104</b>
	CF open vertical chilled multi deck (RVC2)	1	0.0	0.0	0.1	1.6	4.2	5.2	5.1	5.1	5.2
	CF open horizontal frozen island (RHF4)	1	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.4
	CF other supermarket display (non-BCs)	1	0.0	0.0	0.2	2.2	5.0	6.5	7.1	7.4	7.7
	CF Plug in one door beverage cooler	1	0.0	0.0	0.1	2.2	5.2	5.9	5.8	6.0	6.2
	CF Plug in horizontal ice cream freezer	1	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1
	CF Spiral vending machine	1	0.0	0.0	0.1	0.2	0.5	0.7	0.7	0.8	0.8
	<b>Total CF Commercial Refrigeration</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>21</b>
	PF Storage cabinet Chilled Vertical (CV)	1	0.0	0.0	0.0	0.4	1.0	1.2	1.3	1.3	1.4
	PF Storage cabinet Frozen Vertical (FV)	1	0.0	0.0	0.0	0.5	1.2	1.4	1.5	1.6	1.7
	PF Storage cabinet Chilled Horizontal (CH)	1	0.0	0.0	0.0	0.3	0.8	0.9	1.0	1.0	1.1
	PF Storage cabinet Frozen Horizontal (FH)	1	0.0	0.0	0.0	0.2	0.5	0.6	0.6	0.6	0.7
	<b>PF Storage cabinets All types</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	0.0	0.0	0.0	0.2	0.5	0.9	1.0	1.1	1.2
	PF Process Chiller AC MT L > 300 kW	1	0.0	0.0	0.0	0.2	0.5	0.8	0.9	1.0	1.1
	PF Process Chiller AC LT S ≤ 200 kW	1	0.0	0.0	0.0	0.2	0.5	0.8	0.9	1.0	1.1
	PF Process Chiller AC LT L > 200 kW	1	0.0	0.0	0.0	0.2	0.5	0.8	0.9	1.0	1.1
	PF Process Chiller WC MT S ≤ 300 kW	1	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3
	PF Process Chiller WC MT L > 300 kW	1	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.5
	PF Process Chiller WC LT S ≤ 200 kW	1	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.4
	PF Process Chiller WC LT L > 200 kW	1	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.5	0.5
	<b>PF Process Chiller All MT&amp;LT</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
	PF Condensing Unit MT S 0.2-1 kW	1	0.0	0.0	0.0	0.2	0.5	0.6	0.6	0.7	0.8
	PF Condensing Unit MT M 1-5 kW	1	0.0	0.0	0.0	0.5	1.0	1.1	1.1	1.2	1.3
	PF Condensing Unit MT L 5-20 kW	1	0.0	0.0	0.0	0.7	1.5	1.6	1.7	1.8	2.0
	PF Condensing Unit MT XL 20-50 kW	1	0.0	0.0	0.0	0.7	1.4	1.5	1.6	1.7	1.8
	PF Condensing Unit LT S 0.1-0.4 kW	1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	PF Condensing Unit LT M 0.4-2 kW	1	0.0	0.0	0.0	0.2	0.3	0.3	0.4	0.4	0.4
	PF Condensing Unit LT L 2-8 kW	1	0.0	0.0	0.0	0.4	0.7	0.7	0.8	0.8	0.9
	PF Condensing Unit LT XL 8-20 kW	1	0.0	0.0	0.0	0.7	1.3	1.4	1.5	1.6	1.8
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>
	<b>PF Professional Refrigeration, Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>13</b>	<b>14</b>
	<b>TOTAL FOOD PRESERVATION</b>		<b>0</b>	<b>35</b>	<b>53</b>	<b>75</b>	<b>102</b>	<b>119</b>	<b>129</b>	<b>135</b>	<b>138</b>

FNRGSAVE

db	SAVED Final Energy (BAU-ECO, in TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2
	CA El. Ovens	1	0.0	0.0	0.0	0.5	1.0	1.6	2.2	2.3	2.3
	CA Gas Hobs	0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.4	0.4
	CA Gas Ovens	0	0.0	0.0	0.0	0.3	0.8	1.2	1.6	1.6	1.6
	CA Range Hoods	1	0.0	0.0	0.1	0.7	1.9	3.3	4.3	4.7	5.1
	<b>Total CA Cooking Appliances</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>9</b>	<b>9</b>	<b>10</b>
	CM Dripfilter (glass)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (thermos)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Hard cap espresso	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Semi-auto espresso	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	1	0.0	0.0	0.3	1.1	1.0	1.0	1.0	1.0	1.0
	CM Dripfilter (thermos), standby/keep warm	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	1	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.5	0.5
	CM Hard cap espresso, standby/keep warm	1	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3
	CM Semi-auto espresso, standby/keep warm	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	<b>Total CM household Coffee Makers</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>TOTAL COOKING</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>11</b>	<b>11</b>	<b>12</b>
	<b>Total WM household Washing Machine</b>	1	<b>0</b>	<b>9</b>	<b>14</b>	<b>16</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>14</b>	<b>11</b>
	<b>Total DW household Dishwasher</b>	1	<b>0</b>	<b>5</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>15</b>	<b>16</b>
	LD vented el.	1	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.6	0.6
	LD condens el.	1	0.0	0.0	0.8	3.2	6.2	8.2	8.9	9.3	10.1
	LD vented gas	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>11</b>
	VC dom	1	0	0	4	14	22	27	32	36	39
	VC nondom	1	0	0	1	2	3	3	3	3	4
	<b>Total VC Vacuum Cleaner</b>		<b>0</b>	<b>0</b>	<b>5</b>	<b>16</b>	<b>24</b>	<b>30</b>	<b>35</b>	<b>39</b>	<b>43</b>
	<b>TOTAL CLEANING</b>		<b>-</b>	<b>14</b>	<b>27</b>	<b>44</b>	<b>58</b>	<b>67</b>	<b>73</b>	<b>78</b>	<b>81</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	0	0	2	7	13	16	17	17	17
0.5	FAN Axial>300Pa	1	0	0	2	7	14	18	20	20	20
0.5	FAN Centr.FC	1	0	0	1	3	6	7	8	8	8
0.5	FAN Centr.BC-free	1	0	0	2	5	9	11	12	12	12
0.5	FAN Centr.BC	1	0	0	3	7	11	13	15	16	17
0.5	FAN Cross-flow	1	0	0	1	2	2	3	3	3	4
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>0</b>	<b>0</b>	<b>5</b>	<b>15</b>	<b>27</b>	<b>34</b>	<b>37</b>	<b>38</b>	<b>39</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	0	0	6	25	40	39	34	29	22
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	0	0	8	39	65	66	58	48	35
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	0	0	15	59	99	122	103	70	37
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>		<b>0</b>	<b>1</b>	<b>29</b>	<b>122</b>	<b>204</b>	<b>227</b>	<b>195</b>	<b>147</b>	<b>94</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	0	0	-1	-9	-17	-15	-13	-10	-6
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	0	0	-4	-21	-36	-35	-30	-24	-16
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	0	0	-9	-34	-56	-69	-55	-35	-14
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>0</b>	<b>0</b>	<b>-14</b>	<b>-65</b>	<b>-109</b>	<b>-119</b>	<b>-98</b>	<b>-68</b>	<b>-7</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>0</b>	<b>0</b>	<b>16</b>	<b>57</b>	<b>94</b>	<b>107</b>	<b>97</b>	<b>78</b>	<b>39</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	0	0	0	0.0	0.4	0.8	0.8	0.7	0.6
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.5</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>0.7</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	0	0	0	0.0	0.6	1.2	1.1	1.0	0.9
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	0	0	0.0	0.1	0.3	0.3	0.3	0.2
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.8</b>	<b>1.4</b>	<b>1.3</b>	<b>1.3</b>	<b>1.2</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	0	0	0	0.0	0.4	0.7	0.9	0.9	0.7
0.45	Large 3-ph LV 375-1000kW with VSD	1	0	0	0	0.1	0.5	1.0	1.4	1.6	1.6
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>0.9</b>	<b>1.7</b>	<b>2.3</b>	<b>2.6</b>	<b>2.3</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.2	0.4	0.4	0.4	0.3
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.2	0.4	0.5	0.5	0.4
0.45	Explosion motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.1	0.3	0.5	0.5	0.5
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.2</b>	<b>1.4</b>	<b>1.3</b>	<b>1.3</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.2	0.3	0.3	0.3	0.2
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.1	0.3	0.3	0.3	0.3
0.45	Brake motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.1	0.2	0.2	0.3	0.2
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.4</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>

## FNRRSAVE

db	SAVED Final Energy (BAU-ECO, in TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.2</b>	<b>2.5</b>	<b>3.1</b>	<b>2.9</b>	<b>2.6</b>	<b>2.4</b>
	<b>Total MT Elec. Motors LV 0.12-1000 kW</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>31</b>	<b>54</b>	<b>64</b>	<b>59</b>	<b>48</b>	<b>37</b>
	<b>Total WP Water Pumps</b>	1	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>
	CP Fixed Speed 5-1280 l/s	1	0.0	0.0	0.2	0.6	1.0	1.1	1.0	0.9	0.8
	CP Variable speed 5-1280 l/s	1	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.4	0.3
	CP Pistons 2-64 l/s	1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
	<b>Total CP Standard Air Compressors</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>0</b>	<b>0</b>	<b>16</b>	<b>51</b>	<b>87</b>	<b>104</b>	<b>102</b>	<b>93</b>	<b>82</b>
	<b>Total TRAFU Utility Transformers</b>										
	<b>TOTAL ENERGY SECTOR</b>										
	<i>(not final energy: distribution losses)</i>										
	Tyres C1, replacement for cars	0	0	3	40	25	34	34	32	27	22
	Tyres C1, OEM for cars	0	0	0	0	1	6	7	6	5	4
	<b>Tyres C1, total</b>		<b>0</b>	<b>3</b>	<b>40</b>	<b>26</b>	<b>40</b>	<b>41</b>	<b>38</b>	<b>33</b>	<b>26</b>
	Tyres C2, replacement for vans	0	0	1	9	4	9	10	9	8	6
	Tyres C2, OEM for vans	0	0	0	0	0	1	1	1	1	1
	<b>Tyres C2, total</b>		<b>0</b>	<b>1</b>	<b>9</b>	<b>4</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>7</b>
	Tyres C3, replacement for trucks/busses	0	0	1	12	7	10	12	13	12	12
	Tyres C3, OEM for trucks/busses	0	0	0	0	0	1	2	2	2	2
	<b>Tyres C3, total</b>		<b>0</b>	<b>1</b>	<b>12</b>	<b>7</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
	<b>Tyres, total C1+C2+C3</b>		<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>
	<b>TOTAL TRANSPORT SECTOR</b>		<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>
	<b>SAVED Final Energy, Total, in TWh</b>		<b>0</b>	<b>126</b>	<b>562</b>	<b>1099</b>	<b>1595</b>	<b>1903</b>	<b>2006</b>	<b>2018</b>	<b>1989</b>
	SAVED Final Energy, Total, in PJ		0	453	2023	3958	5741	6850	7221	7264	7160
	SAVED Final Energy, Total, in mtoe		0	11	48	95	137	164	172	173	171
	<b>SAVED Final Energy (BAU-ECO, ALL SECTORS)</b>										
	<b>WATER HEATING</b>		<b>0</b>	<b>0</b>	<b>63</b>	<b>167</b>	<b>267</b>	<b>327</b>	<b>364</b>	<b>397</b>	<b>435</b>
	<b>SPACE HEATING</b>		<b>0</b>	<b>50</b>	<b>281</b>	<b>563</b>	<b>790</b>	<b>959</b>	<b>1017</b>	<b>1024</b>	<b>991</b>
	<b>SPACE COOLING</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>15</b>	<b>21</b>	<b>23</b>	<b>22</b>	<b>21</b>
	<b>VENTILATION (from electricity)</b>		<b>0</b>	<b>0</b>	<b>3</b>	<b>11</b>	<b>19</b>	<b>25</b>	<b>27</b>	<b>29</b>	<b>30</b>
1	<i>VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</i>		<i>0</i>	<i>0</i>	<i>35</i>	<i>92</i>	<i>136</i>	<i>166</i>	<i>166</i>	<i>162</i>	<i>159</i>
	<b>LIGHTING (incl. SPL, ctrl, sb)</b>		<b>0</b>	<b>18</b>	<b>41</b>	<b>95</b>	<b>117</b>	<b>113</b>	<b>96</b>	<b>80</b>	<b>68</b>
	<b>ELECTRONICS</b>		<b>0</b>	<b>4</b>	<b>16</b>	<b>45</b>	<b>72</b>	<b>93</b>	<b>102</b>	<b>94</b>	<b>85</b>
	<b>FOOD PRESERVATION</b>		<b>0</b>	<b>35</b>	<b>53</b>	<b>75</b>	<b>102</b>	<b>119</b>	<b>129</b>	<b>135</b>	<b>138</b>
	<b>COOKING</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>11</b>	<b>11</b>	<b>12</b>
	<b>CLEANING</b>		<b>0</b>	<b>14</b>	<b>27</b>	<b>44</b>	<b>58</b>	<b>67</b>	<b>73</b>	<b>78</b>	<b>81</b>
	<b>INDUSTRY COMPONENTS</b>		<b>0</b>	<b>0</b>	<b>16</b>	<b>51</b>	<b>87</b>	<b>104</b>	<b>102</b>	<b>93</b>	<b>82</b>
	<b>ENERGY SECTOR (not final energy)</b>										
	<b>TRANSPORT SECTOR</b>		<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>
	<b>SAVED Final Energy, Total, in TWh</b>		<b>0</b>	<b>126</b>	<b>562</b>	<b>1099</b>	<b>1595</b>	<b>1903</b>	<b>2006</b>	<b>2018</b>	<b>1989</b>
	SAVED Final Energy, Total, in PJ		0	453	2023	3958	5741	6850	7221	7264	7160
	SAVED Final Energy, Total, in mtoe		0	11	48	95	137	164	172	173	171
	Saving in % versus BAU (from 1990=0)		0.0%	1.8%	8.2%	15.9%	23.0%	27.4%	28.9%	29.3%	29.1%
	Saving In % versus BAU (from 2010=0)		-1.9%	0.0%	6.3%	14.0%	21.2%	25.5%	27.1%	27.5%	27.3%



**Sector subdivision for SAVED Final Energy** (same sector definitions and same order of presentation as in Eurostat Energy Balances)

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units  
 Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating  
 Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby  
 Energy Sector: see separate reporting above; not included in other sector totals  
 Transport Sector: see separate reporting below; not included in other sector totals

SAVED Final Energy (summary INDUSTRY)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	2	6	11	13	15	17	18	20
SPACE HEATING	0	6	34	68	95	116	122	122	117	109
SPACE COOLING	0	0	0	1	3	4	4	4	4	3
VENTILATION	0	0	0	1	1	2	2	2	2	2
LIGHTING	0	1	4	8	14	17	16	14	13	12
ELECTRONICS	0	0	0	1	2	2	3	3	3	3
FOOD PRESERVATION	0	0	1	2	4	5	6	7	7	8
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	8	27	47	55	52	45	37	30
<b>SAVED Final Energy, Industry, in TWh</b>	<b>0</b>	<b>8</b>	<b>49</b>	<b>114</b>	<b>176</b>	<b>215</b>	<b>221</b>	<b>213</b>	<b>200</b>	<b>186</b>
SAVED Final Energy, Industry, in PJ	0	29	176	411	633	772	795	768	721	668
SAVED Final Energy, Industry, in mtoe	0	1	4	10	15	18	19	18	17	16

SAVED Final Energy (summary TRANSPORT)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are decreased energy losses due to improved rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	0	1	9	5	9	10	10	9	8	8
TYRES for SERVICE-sector-related transport	0	2	18	11	19	21	20	19	17	15
TYRES for RESIDENTIAL-sector-related transport	0	2	32	21	32	33	30	26	21	16
TYRES for OTHER-sector-related transport	0	0	1	1	1	2	2	1	1	1
<b>SAVED Final Energy, Transport, in TWh</b>	<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>	<b>39</b>
SAVED Final Energy, Transport, in PJ	0	19	218	134	222	238	224	200	170	142
SAVED Final Energy, Transport, in mtoe	0	0	5	3	5	6	5	5	4	3

## FNRRSAVE

<b>SAVED Final Energy (summary SERVICES)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	19	51	82	100	111	121	132	144
SPACE HEATING	0	12	71	145	204	247	261	261	251	236
SPACE COOLING	0	0	1	4	9	13	14	14	13	12
VENTILATION	0	0	1	5	9	12	13	13	13	13
LIGHTING	0	5	14	32	55	68	62	54	47	43
ELECTRONICS	0	1	5	14	23	31	36	36	34	32
FOOD PRESERVATION	0	2	4	13	26	31	32	33	34	35
COOKING	0	0	0	0	1	1	2	2	2	2
CLEANING	0	1	1	3	4	4	5	5	5	5
INDUSTRY COMPONENTS	0	0	6	19	32	40	41	40	38	37
<b>SAVED Final Energy, Services, in TWh</b>	<b>0</b>	<b>21</b>	<b>123</b>	<b>286</b>	<b>444</b>	<b>546</b>	<b>576</b>	<b>578</b>	<b>570</b>	<b>559</b>
SAVED Final Energy, Services, in PJ	0	77	442	1029	1599	1965	2072	2079	2051	2011
SAVED Final Energy, Services, in mtoe	0	2	11	25	38	47	49	50	49	48

<b>SAVED Final Energy (summary RESIDENTIAL)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	41	108	173	211	234	256	280	305
SPACE HEATING	0	30	167	332	465	564	600	608	591	558
SPACE COOLING	0	0	1	2	3	3	3	3	4	4
VENTILATION	0	0	2	5	8	11	13	14	15	16
LIGHTING	0	12	22	55	46	27	17	11	7	6
ELECTRONICS	0	2	11	30	47	59	63	55	48	44
FOOD PRESERVATION	0	32	48	60	72	82	89	93	95	97
COOKING	0	0	1	3	5	7	9	9	10	10
CLEANING	0	13	25	40	54	63	68	72	75	76
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED Final Energy, Residential, in TWh</b>	<b>0</b>	<b>89</b>	<b>318</b>	<b>635</b>	<b>873</b>	<b>1028</b>	<b>1097</b>	<b>1122</b>	<b>1124</b>	<b>1116</b>
SAVED Final Energy, Residential, in PJ	0	320	1144	2285	3142	3699	3949	4039	4048	4017
SAVED Final Energy, Residential, in mtoe	0	8	27	55	75	88	94	96	97	96

(OTHER sectors corresponds to Agriculture, Forestry, Fishing, Non-specified (other) of Eurostat)

<b>SAVED Final Energy (summary OTHER)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	0	0	1	2	3	3	4	4	4	5
SPACE HEATING	0	1	9	18	26	32	33	33	32	30
SPACE COOLING	0	0	0	0	1	1	1	1	1	1
VENTILATION	0	0	0	0	0	0	0	0	0	0
LIGHTING	0	0	1	1	1	1	1	1	1	1
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	1	1	1	1	2	2	2	2
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	2	5	8	9	9	8	7	6
<b>SAVED Final Energy, Other sectors, in TWh</b>	<b>0</b>	<b>2</b>	<b>12</b>	<b>27</b>	<b>40</b>	<b>49</b>	<b>50</b>	<b>49</b>	<b>47</b>	<b>44</b>
SAVED Final Energy, Other sectors, in PJ	0	8	44	99	145	175	181	178	170	160
SAVED Final Energy, Other sectors, in mtoe	0	0	1	2	3	4	4	4	4	4

FNRGSAVE

SAVED Final Energy (summary FUNCTIONS, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>	0	0	63	167	267	327	364	397	435	474
Residential	0	0	41	108	173	211	234	256	280	305
Tertiary / Services	0	0	19	51	82	100	111	121	132	144
Industry	0	0	2	6	11	13	15	17	18	20
Other	0	0	1	2	3	3	4	4	4	5
<b>SPACE HEATING. All sectors, TWh</b>	0	50	281	563	790	959	1017	1024	991	932
Residential	0	30	167	332	465	564	600	608	591	558
Tertiary / Services	0	12	71	145	204	247	261	261	251	236
Industry	0	6	34	68	95	116	122	122	117	109
Other	0	1	9	18	26	32	33	33	32	30
<b>SPACE COOLING. All sectors, TWh</b>	0	0	2	8	15	21	23	22	21	19
<b>&amp; HT PROCESS</b>										
Residential	0	0	1	2	3	3	3	3	4	4
Tertiary / Services	0	0	1	4	9	13	14	14	13	12
Industry	0	0	0	1	3	4	4	4	4	3
Other	0	0	0	0	1	1	1	1	1	1
<b>VENTILATION. All sectors, TWh</b>	0	0	3	11	19	25	27	29	30	31
Residential	0	0	2	5	8	11	13	14	15	16
Tertiary / Services	0	0	1	5	9	12	13	13	13	13
Industry	0	0	0	1	1	2	2	2	2	2
Other	0	0	0	0	0	0	0	0	0	0
<b>LIGHTING. All sectors, TWh</b>	0	18	41	95	117	113	96	80	68	61
Residential	0	12	22	55	46	27	17	11	7	6
Tertiary / Services	0	5	14	32	55	68	62	54	47	43
Industry	0	1	4	8	14	17	16	14	13	12
Other	0	0	1	1	1	1	1	1	1	1
<b>ELECTRONICS. All sectors, TWh</b>	0	4	16	45	72	93	102	94	85	79
Residential	0	2	11	30	47	59	63	55	48	44
Tertiary / Services	0	1	5	14	23	31	36	36	34	32
Industry	0	0	0	1	2	2	3	3	3	3
Other	0	0	0	0	0	0	0	0	0	0
<b>FOOD PRESERVE. All sectors, TWh</b>	0	35	53	75	102	119	129	135	138	142
Residential	0	32	48	60	72	82	89	93	95	97
Tertiary / Services	0	2	4	13	26	31	32	33	34	35
Industry	0	0	1	2	4	5	6	7	7	8
Other	0	0	1	1	1	1	2	2	2	2
<b>COOKING. All sectors, TWh</b>	0	0	1	3	6	9	11	11	11	12
Residential	0	0	1	3	5	7	9	9	10	10
Tertiary / Services	0	0	0	0	1	1	2	2	2	2
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>	0	14	27	44	58	67	73	78	81	82
Residential	0	13	25	40	54	63	68	72	75	76
Tertiary / Services	0	1	1	3	4	4	5	5	5	5
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>	0	0	16	51	87	104	102	93	82	72
Residential	0	0	0	0	0	0	0	0	0	0
Tertiary / Services	0	0	6	19	32	40	41	40	38	37
Industry	0	0	8	27	47	55	52	45	37	30
Other	0	0	2	5	8	9	9	8	7	6
<b>TYRES. Transport sector, TWh</b>	0	5	60	37	62	66	62	55	47	39
Residential transport	0	2	32	21	32	33	30	26	21	16
Tertiary / Services transport	0	2	18	11	19	21	20	19	17	15
Industry transport	0	1	9	5	9	10	10	9	8	8
Other transport	0	0	1	1	1	2	2	1	1	1
<b>ALL PRODUCTS. All sectors excl. Energy, TWh</b>	0	126	562	1099	1595	1903	2006	2018	1989	1944
Residential	0	89	318	635	873	1028	1097	1122	1124	1116
Tertiary / Services	0	21	123	286	444	546	576	578	570	559
Industry	0	8	49	114	176	215	221	213	200	186
Other	0	2	12	27	40	49	50	49	47	44
Transport	0	5	60	37	62	66	62	55	47	39



FNRGSAVE

SAVED Final Energy (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential			65%	65%	65%	64%	64%	64%	64%	64%
	Tertiary / Services			31%	31%	31%	30%	30%	30%	30%	30%
	Industry			4%	4%	4%	4%	4%	4%	4%	4%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential		60%	59%	59%	59%	59%	59%	59%	60%	60%
	Tertiary / Services		25%	25%	26%	26%	26%	26%	26%	25%	25%
	Industry		12%	12%	12%	12%	12%	12%	12%	12%	12%
	Other		3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>											
<b>&amp; HT PROCESS</b>	Residential			40%	24%	18%	15%	15%	15%	17%	19%
	Tertiary / Services			51%	57%	60%	61%	61%	61%	61%	60%
	Industry			7%	15%	17%	19%	19%	18%	17%	17%
	Other			2%	4%	5%	5%	5%	5%	5%	5%
<b>VENTILATION.</b>											
	Residential			52%	46%	45%	45%	46%	48%	50%	52%
	Tertiary / Services			41%	47%	47%	47%	47%	44%	43%	42%
	Industry			6%	7%	7%	7%	6%	6%	6%	6%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>LIGHTING.</b>											
	Residential		64%	55%	58%	40%	24%	17%	14%	11%	9%
	Tertiary / Services		27%	35%	33%	47%	60%	65%	68%	69%	71%
	Industry		7%	9%	8%	12%	15%	17%	18%	19%	19%
	Other		1%	2%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
	Residential		60%	69%	67%	65%	64%	62%	58%	56%	56%
	Tertiary / Services		35%	28%	30%	32%	33%	35%	38%	40%	40%
	Industry		4%	3%	2%	2%	3%	3%	3%	3%	3%
	Other		1%	0%	0%	0%	0%	0%	0%	0%	0%
<b>FOOD PRESERVE.</b>											
	Residential		92%	91%	80%	70%	69%	69%	69%	69%	69%
	Tertiary / Services		6%	7%	17%	25%	26%	25%	25%	25%	25%
	Industry		1%	1%	2%	4%	4%	5%	5%	5%	5%
	Other		1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>COOKING.</b>											
	Residential			92%	89%	86%	85%	84%	84%	84%	84%
	Tertiary / Services			8%	11%	14%	15%	16%	16%	16%	16%
	Industry			0%	0%	0%	0%	0%	0%	0%	0%
	Other			0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
	Residential		96%	94%	92%	93%	93%	93%	93%	93%	93%
	Tertiary / Services		4%	5%	7%	7%	6%	6%	6%	6%	7%
	Industry		0%	0%	1%	1%	1%	1%	1%	1%	1%
	Other		0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
	Residential		0%	0%	0%	0%	0%	0%	0%	0%	0%
	Tertiary / Services		23%	39%	37%	37%	38%	40%	43%	46%	51%
	Industry		56%	51%	53%	54%	53%	51%	49%	45%	41%
	Other		21%	10%	10%	9%	9%	9%	8%	8%	8%
<b>TYRES.</b>											
	Residential transport			53%	56%	52%	50%	49%	47%	44%	41%
	Tertiary / Services transport			30%	28%	31%	32%	33%	33%	35%	37%
	Industry transport			15%	13%	15%	16%	16%	17%	18%	19%
	Other transport			2%	2%	2%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS (excl. Energy sector).</b>											
	Residential		71%	57%	58%	55%	54%	55%	56%	57%	57%
	Tertiary / Services		17%	22%	26%	28%	29%	29%	29%	29%	29%
	Industry		6%	9%	10%	11%	11%	11%	11%	10%	10%
	Other		2%	2%	2%	3%	3%	3%	2%	2%	2%
	Transport		4%	11%	3%	4%	3%	3%	3%	2%	2%

NRGBAU

db	BAU Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>efficiency elec. gen.&amp;distr. CC (from sheet General)</i>		40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	<b>Total WH dedicated Water Heater</b>	0.78	722	801	815	825	830	828	837	866	908	952
	<b>Total CH Central Heating combi, water heat</b>	0.02	259	416	442	460	483	514	549	588	627	667
	<b>TOTAL WATER HEATING</b>		<b>981</b>	<b>1217</b>	<b>1257</b>	<b>1285</b>	<b>1313</b>	<b>1342</b>	<b>1386</b>	<b>1453</b>	<b>1535</b>	<b>1619</b>
	<i>CH non-electric</i>	0	2213	2004	1809	1656	1535	1496	1446	1368	1248	1095
	<i>CH electric resistance boiler, 1st estimate</i>	1	125	100	87	74	62	50	38	25	13	0
	<i>CH heat pump, 1st estimate</i>	1	60	140	151	158	166	173	181	188	195	203
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	69	74	76	71	73	77	78	75	71	67
	<b>Total CH Central Heating boiler, space heat</b>		<b>2467</b>	<b>2318</b>	<b>2123</b>	<b>1960</b>	<b>1835</b>	<b>1796</b>	<b>1743</b>	<b>1656</b>	<b>1527</b>	<b>1364</b>
	SFB Wood Manual	0	345	90	70	52	35	21	13	9	7	6
	SFB Wood Direct Draft	0	2	24	44	62	74	72	72	77	89	103
	SFB Coal	0	107	30	20	13	7	3	1	1	1	1
	SFB Pellets	0	0	9	16	23	28	31	31	32	33	34
	SFB Wood chips	0	0	15	18	20	18	18	19	20	21	22
	<b>Total Solid Fuel Boiler</b>		<b>454</b>	<b>168</b>	<b>169</b>	<b>170</b>	<b>162</b>	<b>144</b>	<b>136</b>	<b>139</b>	<b>151</b>	<b>166</b>
	CHAE-S (≤ 400 kW)	1	10	26	30	31	31	31	31	32	32	32
	CHAE-L (> 400 kW)	1	15	36	40	41	40	37	35	33	31	30
	CHWE-S (≤ 400 kW)	1	1	3	3	3	3	3	3	3	3	3
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	3	8	9	9	9	8	7	7	7	6
	CHWE-L (> 1500 kW)	1	2	5	6	6	6	5	5	4	4	4
	CHF	0.05	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-S	1	58	91	100	106	110	112	114	115	117	118
	HT PCH-AE-L	1	56	87	95	101	104	106	107	108	109	110
	HT PCH-WE-S	1	12	19	21	22	23	24	24	24	24	25
	HT PCH-WE-M	1	23	37	41	44	46	47	47	48	49	49
	HT PCH-WE-L	1	4	8	8	9	9	10	10	10	10	10
	AC rooftop	1	8	19	19	16	13	8	4	2	1	1
	AC splits	1	11	32	31	29	27	24	22	19	17	15
	AC VRF	1	0	8	12	16	19	23	27	29	31	32
	ACF	0.05	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Cooling</b>		<b>204</b>	<b>380</b>	<b>414</b>	<b>435</b>	<b>441</b>	<b>438</b>	<b>436</b>	<b>435</b>	<b>435</b>	<b>436</b>
	AC rooftop (rev)	1	11	33	33	29	23	14	7	2	0	0
	AC splits (rev)	1	20	61	63	61	58	52	46	41	37	33
	AC VRF (rev)	1	0	20	29	40	49	60	68	71	72	70
	ACF (rev)	0.05	0	0	0	1	1	1	1	1	1	1
	AHF	0.05	226	169	144	124	109	96	85	75	66	58
	AHE	1	3	7	6	4	3	3	3	3	3	2
	<b>SubTotal AHC central Air Heating</b>		<b>260</b>	<b>291</b>	<b>275</b>	<b>259</b>	<b>243</b>	<b>226</b>	<b>209</b>	<b>193</b>	<b>178</b>	<b>165</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>		<b>464</b>	<b>671</b>	<b>688</b>	<b>694</b>	<b>683</b>	<b>664</b>	<b>645</b>	<b>627</b>	<b>614</b>	<b>600</b>
	LH open fireplace	0	14	18	19	20	21	21	21	21	21	21
	LH closed fireplace/inset	0	18	41	49	56	62	65	66	66	65	63
	LH wood stove	0	39	38	38	38	39	39	39	39	38	37
	LH coal stove	0	27	15	13	11	10	8	7	5	4	4
	LH cooker	0	7	11	12	14	15	16	16	16	15	15
	LH SHR stove	0	17	21	23	25	28	30	33	35	36	36
	LH pellet stove	0	0	8	11	14	16	18	18	18	18	17
	LH open fire gas	0	1	1	1	1	1	1	1	1	1	1
	LH closed fire gas	0	14	13	12	12	12	12	12	11	11	11
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	1	70	70	69	68	68	68	67	66	65	63
	LH elec.convector	1	291	289	287	283	281	280	279	274	267	261
	LH elec.storage	1	22	21	21	21	21	21	21	20	20	20
	LH elec.underfloor	1	40	41	41	40	40	40	40	39	39	38
	LH luminous heaters	0	5	5	5	5	5	5	5	4	4	4
	LH tube heaters	0	12	12	12	12	11	11	10	10	10	9
	<b>LH total</b>		<b>575</b>	<b>603</b>	<b>613</b>	<b>622</b>	<b>629</b>	<b>635</b>	<b>635</b>	<b>627</b>	<b>614</b>	<b>600</b>
	RAC (cooling demand), all types <12 kW	1	6	46	55	63	77	85	89	93	96	99
	RAC (heating demand), reversible <12kW	1	4	55	78	102	125	132	131	127	122	117
	<b>Total RAC Room Air Conditioner</b>		<b>11</b>	<b>102</b>	<b>133</b>	<b>165</b>	<b>202</b>	<b>217</b>	<b>220</b>	<b>219</b>	<b>218</b>	<b>216</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	<b>40</b>	<b>52</b>	<b>54</b>	<b>55</b>	<b>57</b>	<b>59</b>	<b>60</b>	<b>57</b>	<b>54</b>	<b>51</b>
	<b>TOTAL SPACE HEATING</b>		<b>3760</b>	<b>3435</b>	<b>3258</b>	<b>3112</b>	<b>2995</b>	<b>2933</b>	<b>2854</b>	<b>2742</b>	<b>2592</b>	<b>2413</b>
	<b>TOTAL SPACE COOLING</b>		<b>210</b>	<b>426</b>	<b>468</b>	<b>498</b>	<b>517</b>	<b>523</b>	<b>525</b>	<b>527</b>	<b>531</b>	<b>535</b>
	NRVU electricity	1	47	153	173	186	192	194	198	203	209	217
1	NRVU heat (negative=saving vs. natural ventilation)	0	-136	-636	-757	-859	-942	-1009	-1076	-1144	-1213	-1283
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	19	38	43	43	41	40	42	45	48	51
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	3	5	9	14	18	20	23	25	27
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	1	1	2	3	4	5	7	8
1	RVU Central Unidir., heat (negative=saving)	0	-16	-32	-36	-36	-34	-34	-35	-38	-40	-43
1	RVU Central Balanced, heat (negative=saving)	0	-1	-8	-16	-29	-43	-55	-63	-70	-76	-83
1	RVU Local Balanced, heat (negative=saving)	0	0	-1	-2	-4	-7	-10	-14	-17	-21	-24
	<b>Total VU (electricity+ (negative) heat saving)</b>		<b>-86</b>	<b>-483</b>	<b>-590</b>	<b>-689</b>	<b>-777</b>	<b>-852</b>	<b>-923</b>	<b>-992</b>	<b>-1061</b>	<b>-1130</b>
	<b>TOTAL VENTILATION (from electricity)</b>		<b>67</b>	<b>194</b>	<b>222</b>	<b>239</b>	<b>249</b>	<b>256</b>	<b>265</b>	<b>276</b>	<b>289</b>	<b>303</b>
1	<i>TOTAL VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</i>		-	-	-	-	-	-	-	-	-	-

db	BAU Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>LS, primary energy incl. control gear</i>											
	LFL (T12,T8h,T8t,T5,other)	1	227	344	411	462	458	392	308	241	189	148
	HID (HPM, HPS, MH)	1	84	175	183	186	158	106	57	31	17	9
	CFLni (all shapes)	1	6	24	26	27	24	17	9	5	3	2
	CFLi (retrofit for GLS, HL)	1	2	32	43	45	38	31	20	13	8	5
	GLS (DLS & NDLS)	1	224	183	134	97	57	33	20	11	7	4
	HL (DLS & NDLS, LV & MV)	1	19	107	139	164	117	59	31	17	9	5
	LED replacing LFL (retrofit & luminaire)	1	0	0	2	23	69	137	207	272	335	402
	LED replacing HID (retrofit & luminaire)	1	0	0	1	18	52	92	125	152	180	208
	LED replacing CFLni (retrofit & luminaire)	1	0	0	0	1	3	7	10	13	15	17
	LED replacing DLS (retrofit & luminaire)	1	0	0	0	2	6	10	13	15	17	19
	LED replacing NDLS (retrofit & luminaire)	1	0	0	1	9	25	41	54	65	73	81
	<i>Special Purpose Lamps (SPL)</i>	1	100	151	132	112	92	76	76	76	76	76
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	28	43	37	31	26	21	21	21	21	21
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>690</b>	<b>1059</b>	<b>1110</b>	<b>1175</b>	<b>1124</b>	<b>1023</b>	<b>951</b>	<b>931</b>	<b>949</b>	<b>998</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>562</b>	<b>865</b>	<b>941</b>	<b>1032</b>	<b>1007</b>	<b>926</b>	<b>854</b>	<b>834</b>	<b>853</b>	<b>901</b>
	DP TV on-mode, total all types	1	72.2	187.4	212.1	221.0	200.2	225.8	224.5	209.8	204.1	209.2
	DP TV standby, standard (NoNA)	1	9.4	5.9	1.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	1	0.0	0.3	1.8	3.0	2.0	0.5	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	1	0.0	0.0	4.5	12.3	18.7	23.4	24.4	22.0	18.8	15.6
	<b>DP TV standby, total all types</b>		<b>9</b>	<b>6</b>	<b>8</b>	<b>16</b>	<b>21</b>	<b>24</b>	<b>24</b>	<b>22</b>	<b>19</b>	<b>16</b>
	<b>DP TV total on-mode + standby</b>		<b>82</b>	<b>194</b>	<b>220</b>	<b>237</b>	<b>221</b>	<b>250</b>	<b>249</b>	<b>232</b>	<b>223</b>	<b>225</b>
	DP Monitor on-mode	1	2.2	36.5	22.3	15.6	15.1	13.5	10.9	9.2	9.0	8.8
	DP Monitor standby	1	0.4	1.5	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>DP Monitor total</b>		<b>3</b>	<b>38</b>	<b>23</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>11</b>	<b>9</b>	<b>9</b>	<b>9</b>
	DP Signage on-mode	1	0.0	2.6	22.2	50.4	61.2	58.9	54.7	52.1	49.6	49.1
	DP Signage standby	1	0.0	0.4	3.3	7.6	9.2	8.8	8.2	7.8	7.4	7.4
	<b>DP Signage total</b>		<b>0</b>	<b>3</b>	<b>26</b>	<b>58</b>	<b>70</b>	<b>68</b>	<b>63</b>	<b>60</b>	<b>57</b>	<b>56</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>74</b>	<b>226</b>	<b>257</b>	<b>287</b>	<b>276</b>	<b>298</b>	<b>290</b>	<b>271</b>	<b>263</b>	<b>267</b>
	<b>DP Electronic Displays, total standby</b>		<b>10</b>	<b>8</b>	<b>12</b>	<b>23</b>	<b>30</b>	<b>33</b>	<b>33</b>	<b>30</b>	<b>26</b>	<b>23</b>
	<b>DP Electronic Displays, total</b>		<b>84</b>	<b>235</b>	<b>268</b>	<b>310</b>	<b>306</b>	<b>331</b>	<b>323</b>	<b>301</b>	<b>289</b>	<b>290</b>
	SSTB	1	0	8	4	0	0	0	0	0	0	0
	CSTB	1	0	18	43	48	49	48	50	54	59	63
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>26</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>48</b>	<b>50</b>	<b>54</b>	<b>59</b>	<b>63</b>
	VIDEO players/recorders	1	0	5	7	2	0	0	0	0	0	0
	VIDEO projectors	1	0	5	5	3	1	0	0	0	0	0
	VIDEO game consoles	1	0	11	20	27	34	35	35	35	35	35
	<b>Total VIDEO</b>		<b>0</b>	<b>22</b>	<b>31</b>	<b>32</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>											
	ES tower 1-socket traditional	1	0.1	2.6	2.1	1.5	1.2	1.0	0.9	0.9	0.9	0.9
	ES rack 1-socket traditional	1	0.3	8.0	5.9	5.2	5.2	5.6	5.6	5.6	5.6	5.6
	ES rack 2-socket traditional	1	1.9	36.8	19.6	11.8	13.6	16.1	17.4	17.4	17.4	17.4
	ES rack 2-socket cloud	1	0.0	20.6	31.8	35.4	41.3	48.8	52.7	52.7	52.7	52.7
	ES rack 4-socket traditional	1	0.2	3.9	2.1	1.7	1.9	2.3	2.5	2.5	2.5	2.5
	ES rack 4-socket cloud	1	0.0	2.3	4.0	5.4	6.4	7.6	8.2	8.2	8.2	8.2
	ES rack 2-socket resilient trad.	1	0.1	1.9	1.1	0.6	0.6	0.7	0.8	0.8	0.8	0.8
	ES rack 2-socket resilient cloud	1	0.0	0.9	1.4	1.4	1.4	1.7	1.8	1.8	1.8	1.8
	ES rack 4-socket resilient trad.	1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	ES rack 4-socket resilient cloud	1	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	ES blade 1-socket traditional	1	0.1	2.3	2.0	1.7	1.7	1.8	1.8	1.8	1.8	1.8
	ES blade 2-socket traditional	1	1.6	16.8	8.5	5.5	6.3	7.5	8.1	8.1	8.1	8.1
	ES blade 2-socket cloud	1	0.0	9.4	14.1	17.1	20.0	23.8	25.7	25.7	25.7	25.7
	ES blade 4-socket traditional	1	0.2	2.1	1.1	0.7	0.9	1.0	1.1	1.1	1.1	1.1
	ES blade 4-socket cloud	1	0.0	1.1	1.8	2.2	2.5	3.0	3.2	3.2	3.2	3.2
	<b>ES total traditional</b>		<b>5</b>	<b>74</b>	<b>43</b>	<b>29</b>	<b>31</b>	<b>36</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>
	<b>ES total cloud</b>		<b>0</b>	<b>34</b>	<b>53</b>	<b>62</b>	<b>72</b>	<b>85</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>
	<b>ES Enterprise Servers total</b>		<b>5</b>	<b>109</b>	<b>96</b>	<b>90</b>	<b>103</b>	<b>121</b>	<b>130</b>	<b>130</b>	<b>130</b>	<b>130</b>
	DS Online 2	1	1.0	16.2	21.8	29.6	37.4	44.7	46.9	47.1	47.1	47.1
	DS Online 3	1	0.2	2.4	3.2	4.2	5.3	6.3	6.6	6.6	6.6	6.6
	DS Online 4	1	0.6	9.3	12.2	16.3	20.5	24.5	25.7	25.8	25.8	25.8
	<b>DS Data Storage products total</b>		<b>2</b>	<b>28</b>	<b>37</b>	<b>50</b>	<b>63</b>	<b>76</b>	<b>79</b>	<b>80</b>	<b>80</b>	<b>80</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>6</b>	<b>137</b>	<b>133</b>	<b>140</b>	<b>166</b>	<b>197</b>	<b>209</b>	<b>210</b>	<b>210</b>	<b>210</b>
	PC Desktop	1	36	54	32	12	7	7	7	7	7	7
	PC Notebook	1	0	19	10	3	2	2	2	2	2	2
	PC Tablet/slate	1	0	0	4	4	4	4	5	5	5	5
	PC Thin client	1	0	1	0	0	0	0	0	0	0	0
	PC Workstation	1	0	3	2	1	1	1	1	1	1	1
	<b>Total PC, electricity</b>		<b>36</b>	<b>76</b>	<b>48</b>	<b>20</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>15</b>
	EP-Copier mono	1	26	3	2	1	1	0	0	0	0	0
	EP-Copier colour	1	0	1	2	4	4	5	5	6	6	6
	EP-printer mono	1	24	7	5	4	4	3	3	2	2	2
	EP-printer colour	1	0	3	5	6	8	9	10	12	13	14
	IJ SFD printer	1	3	2	1	1	0	0	0	0	0	0
	IJ MFD printer	1	3	3	4	4	5	5	6	6	7	7
	<b>Total imaging equipment, electricity</b>		<b>56</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>23</b>	<b>24</b>	<b>26</b>	<b>27</b>	<b>29</b>

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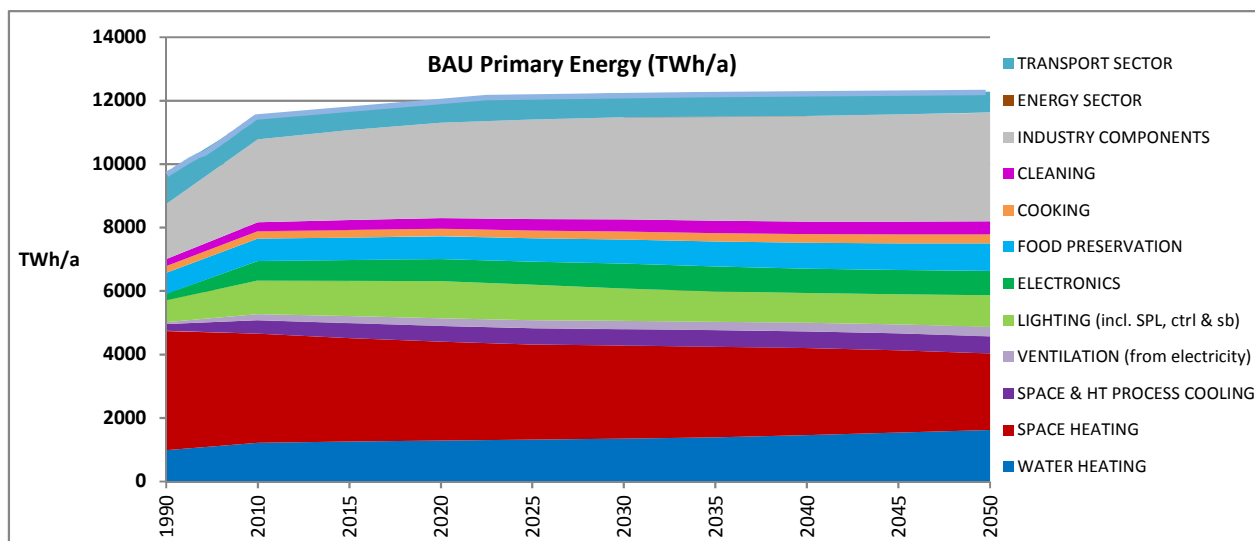
db	BAU Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	1	0.0	10.2	12.2	13.5	14.1	14.0	13.2	11.8	9.6	6.8
	SB Home NAS, on-mode hours	1	0.0	0.5	1.0	1.3	1.5	1.6	1.6	1.5	1.2	0.9
	SB Home Phones (fixed), on-mode hours	1	0.2	1.1	1.3	1.3	1.2	1.0	0.8	0.6	0.5	0.3
	SB Office Phones (fixed), on-mode hours	1	0.5	1.6	1.5	1.5	1.3	1.2	1.1	0.9	0.7	0.5
	SB Home Gateway, standby hours	1	0.0	5.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	1	0.0	0.8	1.5	2.0	2.4	2.5	2.5	2.3	1.9	1.4
	SB Home Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	1	0.0	10.4	18.5	27.3	28.5	28.3	26.8	23.8	19.5	13.8
	SB Home NAS, idle hours	1	0.0	0.3	0.5	0.6	0.7	0.8	0.8	0.7	0.6	0.4
	SB Home Phones (fixed), idle hours	1	1.3	9.7	10.7	11.0	9.8	8.4	6.9	5.5	4.1	2.6
	SB Office Phones (fixed), idle hours	1	1.9	6.7	6.4	6.1	5.6	5.0	4.4	3.7	2.8	1.9
	<b>Total SB (networked) StandBy (rest)</b>		<b>4</b>	<b>47</b>	<b>55</b>	<b>65</b>	<b>65</b>	<b>63</b>	<b>58</b>	<b>51</b>	<b>41</b>	<b>29</b>
db	EPS Active mode (electricity losses)											
0.0	EPS ≤ 6W, low-V	1	0.0	0.8	0.6	0.4	0.3	0.2	0.1	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.2	2.8	2.9	2.9	2.9	2.9	2.9	2.8	2.7	2.8
0.6	EPS 10–12 W	1	0.0	20.3	32.1	34.6	33.5	32.2	30.9	29.6	28.2	27.8
0.5	EPS 15–20 W	1	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
1.0	EPS 20–30 W	1	0.0	2.3	2.7	2.5	2.3	2.1	1.9	1.7	1.5	1.3
0.8	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4
1.0	EPS 30-65 W	1	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.6	0.6	0.6
1.0	EPS 65–120 W	1	0.0	0.6	0.7	0.6	0.4	0.1	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	1	0.0	3.7	3.0	0.7	0.5	0.5	0.5	0.5	0.5	0.5
0.0	EPS 12–15 W	1	0.0	0.7	1.6	2.3	2.3	2.2	2.1	2.0	1.9	1.9
	<b>EPS, total for active mode</b>		<b>0</b>	<b>31</b>	<b>44</b>	<b>44</b>	<b>43</b>	<b>42</b>	<b>40</b>	<b>38</b>	<b>37</b>	<b>36</b>
db	EPS No-load mode											
0.0	EPS ≤ 6W, low-V	1	0.1	1.1	0.8	0.5	0.3	0.2	0.1	0.0	0.0	0.0
0.0	EPS 6–10 W	1	0.2	3.0	3.0	2.9	2.9	2.8	2.6	2.5	2.3	2.2
0.0	EPS 10–12 W	1	0.0	0.5	0.8	0.8	0.8	0.7	0.6	0.5	0.5	0.4
0.0	EPS 15–20 W	1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30-65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.3</b>	<b>4.6</b>	<b>4.6</b>	<b>4.4</b>	<b>4.1</b>	<b>3.8</b>	<b>3.4</b>	<b>3.2</b>	<b>2.9</b>	<b>2.7</b>
	<b>EPS, overall total (active + no-load)</b>		<b>1</b>	<b>36</b>	<b>48</b>	<b>49</b>	<b>47</b>	<b>45</b>	<b>43</b>	<b>42</b>	<b>40</b>	<b>39</b>
	<b>EPS, double counted subtracted</b>		<b>0</b>	<b>19</b>	<b>24</b>	<b>25</b>	<b>24</b>	<b>23</b>	<b>22</b>	<b>21</b>	<b>20</b>	<b>19</b>
	UPS below 1.5 kVA	1	1.8	3.8	3.8	4.5	5.4	6.2	7.0	7.7	8.3	8.7
	UPS 1.5 to 5 kVA	1	6.7	14.5	15.7	17.4	20.7	24.1	27.5	30.6	33.2	35.1
	UPS 5 to 10 kVA	1	0.8	1.8	2.0	2.2	2.6	3.1	3.5	3.9	4.3	4.5
	UPS 10 to 200 kVA	1	4.7	10.6	11.4	11.5	12.4	14.6	16.8	18.8	20.6	22.0
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>14</b>	<b>31</b>	<b>33</b>	<b>36</b>	<b>41</b>	<b>48</b>	<b>55</b>	<b>61</b>	<b>66</b>	<b>70</b>
	<b>TOTAL ELECTRONICS</b>		<b>201</b>	<b>611</b>	<b>659</b>	<b>695</b>	<b>721</b>	<b>781</b>	<b>790</b>	<b>773</b>	<b>762</b>	<b>760</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>1</b>	<b>344</b>	<b>347</b>	<b>348</b>	<b>348</b>	<b>347</b>	<b>347</b>	<b>346</b>	<b>346</b>	<b>344</b>	<b>343</b>
	CF open vertical chilled multi deck (RVC2)	1	37	36	34	31	30	30	30	30	30	31
	CF open horizontal frozen island (RHF4)	1	3	3	3	3	3	3	3	3	3	3
	CF other supermarket display (non-BCs)	1	65	66	65	63	63	66	68	70	73	75
	CF Plug in one door beverage cooler	1	46	45	42	39	39	39	39	40	42	43
	CF Plug in horizontal ice cream freezer	1	10	10	10	9	9	9	9	9	10	10
	CF Spiral vending machine	1	9	8	5	4	4	4	4	4	5	5
	<b>Total CF Commercial Refrigeration</b>		<b>170</b>	<b>168</b>	<b>158</b>	<b>149</b>	<b>147</b>	<b>150</b>	<b>153</b>	<b>157</b>	<b>162</b>	<b>167</b>
	PF Storage cabinet Chilled Vertical (CV)	1	4.5	6.2	6.5	6.8	7.1	7.4	7.7	8.1	8.4	8.7
	PF Storage cabinet Frozen Vertical (FV)	1	5.3	7.2	7.6	8.0	8.3	8.7	9.1	9.4	9.8	10.2
	PF Storage cabinet Chilled Horizontal (CH)	1	3.5	4.8	5.0	5.3	5.5	5.7	6.0	6.3	6.5	6.8
	PF Storage cabinet Frozen Horizontal (FH)	1	2.1	2.9	3.0	3.2	3.3	3.4	3.6	3.8	3.9	4.1
	<b>PF Storage cabinets All types</b>	<b>1</b>	<b>15</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>28</b>	<b>29</b>	<b>30</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	8	17	20	23	26	29	32	34	37	40
	PF Process Chiller AC MT L > 300 kW	1	8	17	20	23	25	28	31	33	36	39
	PF Process Chiller AC LT S ≤ 200 kW	1	8	18	21	24	26	29	32	35	38	40
	PF Process Chiller AC LT L > 200 kW	1	8	18	21	24	27	30	33	36	39	42
	PF Process Chiller WC MT S ≤ 300 kW	1	2	5	6	7	7	8	9	10	10	11
	PF Process Chiller WC MT L > 300 kW	1	3	7	8	10	11	12	13	14	15	17
	PF Process Chiller WC LT S ≤ 200 kW	1	3	6	7	8	9	10	11	12	13	14
	PF Process Chiller WC LT L > 200 kW	1	4	8	9	11	12	13	14	16	17	18
	<b>PF Process Chiller All MT&amp;LT</b>	<b>1</b>	<b>44</b>	<b>96</b>	<b>113</b>	<b>129</b>	<b>145</b>	<b>159</b>	<b>175</b>	<b>190</b>	<b>206</b>	<b>221</b>
	PF Condensing Unit MT S 0.2-1 kW	1	16	13	13	13	14	15	16	18	19	20
	PF Condensing Unit MT M 1-5 kW	1	42	33	32	33	36	39	42	45	48	52
	PF Condensing Unit MT L 5-20 kW	1	51	41	39	41	44	47	51	55	59	64
	PF Condensing Unit MT XL 20-50 kW	1	51	40	39	41	44	47	51	55	59	64
	PF Condensing Unit LT S 0.1-0.4 kW	1	2	2	2	2	2	2	2	2	2	3
	PF Condensing Unit LT M 0.4-2 kW	1	8	6	6	6	7	7	8	8	9	10
	PF Condensing Unit LT L 2-8 kW	1	13	10	10	10	11	12	13	14	15	16
	PF Condensing Unit LT XL 8-20 kW	1	39	31	30	32	34	37	40	43	46	49
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1</b>	<b>222</b>	<b>177</b>	<b>170</b>	<b>178</b>	<b>191</b>	<b>206</b>	<b>222</b>	<b>239</b>	<b>258</b>	<b>278</b>
	<b>PF Professional Refrigeration, Total</b>		<b>148</b>	<b>188</b>	<b>203</b>	<b>224</b>	<b>245</b>	<b>267</b>	<b>290</b>	<b>313</b>	<b>337</b>	<b>362</b>
	<b>TOTAL FOOD PRESERVATION</b>		<b>663</b>	<b>704</b>	<b>710</b>	<b>720</b>	<b>740</b>	<b>763</b>	<b>789</b>	<b>816</b>	<b>844</b>	<b>872</b>

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db	BAU Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	1	51	78	87	94	101	108	113	119	124	129
	CA El. Ovens	1	59	59	55	52	51	52	53	54	54	54
	CA Gas Hobs	0	35	29	28	27	26	24	23	22	21	19
	CA Gas Ovens	0	14	10	9	8	8	7	7	7	6	6
	CA Range Hoods	1	25	31	32	34	36	38	39	41	43	45
	<b>Total CA Cooking Appliances</b>		<b>184</b>	<b>207</b>	<b>211</b>	<b>216</b>	<b>221</b>	<b>229</b>	<b>236</b>	<b>242</b>	<b>248</b>	<b>254</b>
	CM Dripfilter (glass)	1	16	11	10	8	7	7	7	7	7	7
	CM Dripfilter (thermos)	1	1	3	3	3	3	3	3	3	3	3
	CM Dripfilter (full automatic)	1	0	1	1	2	2	2	2	2	3	3
	CM Pad filter	1	0	1	1	2	2	2	2	2	2	2
	CM Hard cap espresso	1	0	0	1	1	1	1	1	1	1	1
	CM Semi-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (glass), standby/keep warm	1	11	8	7	6	5	5	5	5	5	5
	CM Dripfilter (thermos), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (full automatic), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Pad filter, standby/keep warm	1	0	1	2	2	2	2	2	2	2	3
	CM Hard cap espresso, standby/keep warm	1	0	0	1	1	1	1	1	1	1	1
	CM Semi-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CM household Coffee Makers</b>		<b>28</b>	<b>27</b>	<b>26</b>	<b>24</b>	<b>24</b>	<b>24</b>	<b>25</b>	<b>25</b>	<b>26</b>	<b>26</b>
	<b>TOTAL COOKING</b>		<b>212</b>	<b>234</b>	<b>237</b>	<b>240</b>	<b>245</b>	<b>253</b>	<b>261</b>	<b>268</b>	<b>274</b>	<b>281</b>
	<b>Total WM household Washing Machine</b>	1	<b>132</b>	<b>110</b>	<b>106</b>	<b>99</b>	<b>91</b>	<b>84</b>	<b>78</b>	<b>72</b>	<b>67</b>	<b>61</b>
	<b>Total DW household Dishwasher</b>	1	<b>32</b>	<b>58</b>	<b>67</b>	<b>76</b>	<b>85</b>	<b>93</b>	<b>100</b>	<b>107</b>	<b>113</b>	<b>119</b>
	LD vented el.	1	21	28	29	28	28	27	27	27	27	28
	LD condens el.	1	4	35	44	52	59	61	60	60	59	59
	LD vented gas	0	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>		<b>25</b>	<b>63</b>	<b>73</b>	<b>81</b>	<b>86</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>
	VC dom	1	26	42	56	59	85	97	109	117	124	126
	VC nondom	1	8	12	13	15	16	17	18	19	20	21
	<b>Total VC Vacuum Cleaner</b>		<b>33</b>	<b>54</b>	<b>70</b>	<b>74</b>	<b>101</b>	<b>115</b>	<b>127</b>	<b>136</b>	<b>143</b>	<b>147</b>
	<b>TOTAL CLEANING</b>		<b>222</b>	<b>286</b>	<b>316</b>	<b>330</b>	<b>363</b>	<b>379</b>	<b>392</b>	<b>403</b>	<b>410</b>	<b>414</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	48	132	155	173	191	201	205	205	205	205
0.5	FAN Axial>300Pa	1	82	242	277	293	306	313	315	315	315	315
0.5	FAN Centr.FC	1	20	43	52	58	63	67	68	68	68	68
0.5	FAN Centr.BC-free	1	53	111	132	145	159	173	183	189	193	196
0.5	FAN Centr.BC	1	55	125	150	165	181	199	215	230	250	272
0.5	FAN Cross-flow	1	3	6	7	8	10	10	11	12	13	14
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>131</b>	<b>329</b>	<b>387</b>	<b>421</b>	<b>455</b>	<b>482</b>	<b>498</b>	<b>509</b>	<b>522</b>	<b>535</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	273	347	367	377	375	365	352	337	317	293
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	412	536	568	584	580	561	534	499	456	407
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	836	1070	1113	1135	1113	1052	958	838	726	654
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>		<b>1520</b>	<b>1952</b>	<b>2048</b>	<b>2095</b>	<b>2068</b>	<b>1978</b>	<b>1844</b>	<b>1674</b>	<b>1499</b>	<b>1354</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	18	42	52	62	73	85	99	115	133	154
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	33	81	100	122	145	170	199	233	272	315
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	95	236	294	362	436	516	605	709	807	881
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>147</b>	<b>358</b>	<b>446</b>	<b>547</b>	<b>655</b>	<b>772</b>	<b>903</b>	<b>1056</b>	<b>1212</b>	<b>1350</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>1667</b>	<b>2311</b>	<b>2494</b>	<b>2642</b>	<b>2723</b>	<b>2750</b>	<b>2748</b>	<b>2730</b>	<b>2711</b>	<b>2704</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	21	27	29	29	29	29	28	28	28	28
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	2	3	3	3	3	3	4	4	4
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>21</b>	<b>29</b>	<b>31</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	29	38	40	41	41	41	41	41	41	41
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	3	4	5	6	6	7	7	8	8
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>30</b>	<b>41</b>	<b>44</b>	<b>46</b>	<b>47</b>	<b>47</b>	<b>48</b>	<b>48</b>	<b>49</b>	<b>49</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	427	519	505	476	446	422	415	412	409	405
0.45	Large 3-ph LV 375-1000kW with VSD	1	22	116	174	239	295	335	357	374	392	411
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>449</b>	<b>636</b>	<b>679</b>	<b>715</b>	<b>741</b>	<b>757</b>	<b>772</b>	<b>786</b>	<b>800</b>	<b>815</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	9	12	13	14	15	15	15	15	16	16
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	22	31	34	37	38	39	40	41	42	43
0.45	Explosion motors (L) 3-ph 75-375 kW	1	42	61	67	72	76	79	81	83	85	87
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>73</b>	<b>105</b>	<b>115</b>	<b>123</b>	<b>129</b>	<b>133</b>	<b>137</b>	<b>140</b>	<b>143</b>	<b>146</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	6	9	9	10	10	10	11	11	11	11
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	15	21	23	24	25	26	27	27	28	29
0.45	Brake motors (L) 3-ph 75-375 kW	1	21	31	33	36	38	40	41	42	43	44
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>42</b>	<b>60</b>	<b>66</b>	<b>71</b>	<b>74</b>	<b>76</b>	<b>78</b>	<b>80</b>	<b>81</b>	<b>83</b>

NRGBAU

db	BAU Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	1	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	1	2	2	2	2	2	2	2	2	2
0.45	8-pole motors (L) 3-ph 75-375 kW	1	2	3	3	4	4	4	4	4	4	4
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	1	<b>113</b>	<b>154</b>	<b>167</b>	<b>179</b>	<b>185</b>	<b>189</b>	<b>193</b>	<b>196</b>	<b>199</b>	<b>202</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>		<b>1319</b>	<b>1837</b>	<b>1981</b>	<b>2098</b>	<b>2166</b>	<b>2196</b>	<b>2207</b>	<b>2210</b>	<b>2212</b>	<b>2222</b>
	<b>Total WP Water Pumps</b>	1	<b>220</b>	<b>296</b>	<b>318</b>	<b>342</b>	<b>368</b>	<b>395</b>	<b>423</b>	<b>450</b>	<b>478</b>	<b>505</b>
	CP Fixed Speed 5-1280 l/s	1	59	121	103	89	87	89	92	94	96	99
	CP Variable speed 5-1280 l/s	1	0	22	39	51	55	57	59	60	61	62
	CP Pistons 2-64 l/s	1	3	4	4	4	4	4	4	4	4	4
	<b>Total CP Standard Air Compressors</b>		<b>63</b>	<b>147</b>	<b>146</b>	<b>143</b>	<b>146</b>	<b>150</b>	<b>154</b>	<b>158</b>	<b>161</b>	<b>165</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>1733</b>	<b>2610</b>	<b>2832</b>	<b>3004</b>	<b>3134</b>	<b>3223</b>	<b>3282</b>	<b>3327</b>	<b>3373</b>	<b>3427</b>
	TRAFO Distribution	1	30	50	56	62	69	75	82	88	95	101
	TRAFO Industry oil	1	22	39	44	48	52	57	61	65	70	74
	TRAFO Industry dry	1	7	12	14	15	17	18	19	21	22	24
	TRAFO Power	1	86	133	149	165	181	197	213	228	245	262
	TRAFO DER oil	1	0	1	2	4	6	10	16	25	35	47
	TRAFO DER dry	1	0	5	9	16	26	43	69	105	148	198
	TRAFO Small	1	5	5	5	5	5	5	5	5	5	5
	<b>Total TRAFO Utility Transformers</b>		<b>151</b>	<b>246</b>	<b>279</b>	<b>315</b>	<b>356</b>	<b>405</b>	<b>465</b>	<b>537</b>	<b>619</b>	<b>710</b>
	<b>TOTAL ENERGY SECTOR</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>(BAU taken as reference = 0)</b>											
	Tyres C1, replacement for cars	0	439	324	299	290	290	283	272	258	245	233
	Tyres C1, OEM for cars	0	132	95	93	89	87	85	82	78	74	70
	<b>Tyres C1, total</b>		<b>572</b>	<b>419</b>	<b>392</b>	<b>379</b>	<b>377</b>	<b>368</b>	<b>354</b>	<b>336</b>	<b>319</b>	<b>303</b>
	Tyres C2, replacement for vans	0	128	110	105	110	117	123	120	114	108	103
	Tyres C2, OEM for vans	0	27	23	22	24	25	26	25	24	23	22
	<b>Tyres C2, total</b>		<b>155</b>	<b>133</b>	<b>126</b>	<b>134</b>	<b>141</b>	<b>148</b>	<b>145</b>	<b>138</b>	<b>131</b>	<b>125</b>
	Tyres C3, replacement for trucks/busses	0	204	149	137	169	181	199	202	200	197	195
	Tyres C3, OEM for trucks/busses	0	45	33	33	37	40	44	45	45	44	43
	<b>Tyres C3, total</b>		<b>250</b>	<b>181</b>	<b>170</b>	<b>206</b>	<b>222</b>	<b>243</b>	<b>247</b>	<b>244</b>	<b>241</b>	<b>238</b>
	<b>Tyres, total C1+C2+C3</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>TRANSPORT SECTOR</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>BAU Primary Energy, Total, in TWh</b>		<b>9716</b>	<b>11508</b>	<b>11757</b>	<b>12019</b>	<b>12141</b>	<b>12235</b>	<b>12242</b>	<b>12234</b>	<b>12251</b>	<b>12287</b>
	BAU Primary Energy, Total, in PJ		34977	41429	42326	43268	43708	44047	44072	44042	44104	44233
	BAU Primary Energy, Total, in mtoe		835	990	1011	1033	1044	1052	1053	1052	1053	1056
	<b>BAU Primary Energy (summary ALL SECTORS)</b>		<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>		<b>981</b>	<b>1217</b>	<b>1257</b>	<b>1285</b>	<b>1313</b>	<b>1342</b>	<b>1386</b>	<b>1453</b>	<b>1535</b>	<b>1619</b>
	<b>SPACE HEATING</b>		<b>3760</b>	<b>3435</b>	<b>3258</b>	<b>3112</b>	<b>2995</b>	<b>2933</b>	<b>2854</b>	<b>2742</b>	<b>2592</b>	<b>2413</b>
	<b>SPACE &amp; HT PROCESS COOLING</b>		<b>210</b>	<b>426</b>	<b>468</b>	<b>498</b>	<b>517</b>	<b>523</b>	<b>525</b>	<b>527</b>	<b>531</b>	<b>535</b>
	<b>VENTILATION (from electricity)</b>		<b>67</b>	<b>194</b>	<b>222</b>	<b>239</b>	<b>249</b>	<b>256</b>	<b>265</b>	<b>276</b>	<b>289</b>	<b>303</b>
1	<i>VENTILATION (from heat savings vs. BAU)</i> <i>(already included in NRG for space heating)</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<b>LIGHTING (incl. SPL, ctrl &amp; sb)</b>		<b>690</b>	<b>1059</b>	<b>1110</b>	<b>1175</b>	<b>1124</b>	<b>1023</b>	<b>951</b>	<b>931</b>	<b>949</b>	<b>998</b>
	<b>ELECTRONICS</b>		<b>201</b>	<b>611</b>	<b>659</b>	<b>695</b>	<b>721</b>	<b>781</b>	<b>790</b>	<b>773</b>	<b>762</b>	<b>760</b>
	<b>FOOD PRESERVATION</b>		<b>663</b>	<b>704</b>	<b>710</b>	<b>720</b>	<b>740</b>	<b>763</b>	<b>789</b>	<b>816</b>	<b>844</b>	<b>872</b>
	<b>COOKING</b>		<b>212</b>	<b>234</b>	<b>237</b>	<b>240</b>	<b>245</b>	<b>253</b>	<b>261</b>	<b>268</b>	<b>274</b>	<b>281</b>
	<b>CLEANING</b>		<b>222</b>	<b>286</b>	<b>316</b>	<b>330</b>	<b>363</b>	<b>379</b>	<b>392</b>	<b>403</b>	<b>410</b>	<b>414</b>
	<b>INDUSTRY COMPONENTS</b>		<b>1733</b>	<b>2610</b>	<b>2832</b>	<b>3004</b>	<b>3134</b>	<b>3223</b>	<b>3282</b>	<b>3327</b>	<b>3373</b>	<b>3427</b>
	<b>ENERGY SECTOR</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>		<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
	<b>BAU Primary Energy, Total, in TWh</b>		<b>9716</b>	<b>11508</b>	<b>11757</b>	<b>12019</b>	<b>12141</b>	<b>12235</b>	<b>12242</b>	<b>12234</b>	<b>12251</b>	<b>12287</b>
	BAU Primary Energy, Total, in PJ		34977	41429	42326	43268	43708	44047	44072	44042	44104	44233
	BAU Primary Energy, Total, in mtoe		835	990	1011	1033	1044	1052	1053	1052	1053	1056



**Sector subdivision for BAU Primary Energy**

This subdivision uses the same sector definitions as used in Eurostat Energy Balances for Final Energy, plus the Energy sector. The Primary Energy per function and per sector presented here is the sum of the Final Energy consumed for that function in that sector and the share of the additional energy input required for the generation and distribution of that Final Energy. There is no comparable subdivision in Eurostat (see the FNRG-, ELEC- and FUEL- sheets for a comparison with Eurostat data).

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units  
 Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating  
 Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby  
 Transport Sector: see separate reporting below; not included in other sector totals  
 Energy Sector: see separate reporting below. The data considered here are Distribution Losses. As these losses are already considered when computing the Primary Energy for other sectors, only the decrease of the losses in the ECO scenario vs. the BAU scenario is reported. (reference for BAU = 0)

<b>BAU Primary Energy (summary ENERGY SECTOR, TWh)</b>	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>TOTAL ENERGY SECTOR</b> (BAU taken as reference = 0)	0	0	0	0	0	0	0	0	0	0
BAU Primary Energy, Energy Sector, in TWh	0	0	0	0	0	0	0	0	0	0
BAU Primary Energy, Energy Sector, in PJ	0	0	0	0	0	0	0	0	0	0
BAU Primary Energy, Energy Sector, in mtoe	0	0	0	0	0	0	0	0	0	0

<b>BAU Primary Energy (summary INDUSTRY, TWh)</b>	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	35	45	47	48	49	51	53	55	59	62
SPACE HEATING	425	398	367	340	318	306	293	278	258	235
SPACE & HT PROCESS COOLING	55	96	104	110	113	113	112	112	113	113
VENTILATION	6	18	21	22	23	23	24	24	25	26
LIGHTING	98	153	164	177	177	169	162	161	165	173
ELECTRONICS	10	28	27	30	34	38	40	40	40	40
FOOD PRESERVATION	54	99	113	128	142	156	170	185	200	215
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	1	1	2	2	2	2	2	2	2	2
INDUSTRY COMPONENTS	1069	1574	1696	1793	1859	1898	1922	1938	1954	1975
<b>BAU Primary Energy, Industry, in TWh</b>	<b>1752</b>	<b>2412</b>	<b>2540</b>	<b>2650</b>	<b>2718</b>	<b>2756</b>	<b>2778</b>	<b>2796</b>	<b>2815</b>	<b>2841</b>
BAU Primary Energy, Industry, in PJ	6307	8685	9145	9539	9784	9921	10001	10064	10133	10227
BAU Primary Energy, Industry, in mtoe	151	207	218	228	234	237	239	240	242	244

<b>BAU Primary Energy (summary TRANSPORT, TWh)</b>	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	165	127	119	134	142	152	152	147	143	139
TYRES for SERVICE-sector-related transport	329	252	237	261	274	290	289	280	271	263
TYRES for RESIDENTIAL-sector-related transport	457	335	314	303	302	294	283	269	255	243
TYRES for OTHER-sector-related transport	26	20	19	21	22	23	23	22	22	21
<b>BAU Primary Energy, Transport, in TWh</b>	<b>977</b>	<b>733</b>	<b>689</b>	<b>720</b>	<b>740</b>	<b>759</b>	<b>747</b>	<b>719</b>	<b>692</b>	<b>666</b>
BAU Primary Energy, Transport, in PJ	3516	2639	2479	2591	2663	2734	2688	2587	2490	2398
BAU Primary Energy, Transport, in mtoe	84	63	59	62	64	65	64	62	59	57

NRGBAU

<b>BAU Primary Energy (summary TERTIARY/SERVICES, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	302	373	385	394	402	411	424	445	470	495
SPACE HEATING	916	938	901	870	845	830	808	773	728	676
SPACE & HT PROCESS COOLING	136	281	308	326	336	338	338	338	340	341
VENTILATION	41	131	149	160	165	167	170	174	180	187
LIGHTING	378	630	673	729	737	699	664	660	682	724
ELECTRONICS	81	239	247	273	306	337	348	349	350	354
FOOD PRESERVATION	280	270	260	255	259	268	278	289	302	315
COOKING	27	26	25	25	24	25	25	25	26	26
CLEANING	14	21	23	25	27	28	29	30	31	32
INDUSTRY COMPONENTS	429	705	782	839	885	919	942	959	977	996
<b>BAU Primary Energy, Services, in TWh</b>	<b>2604</b>	<b>3613</b>	<b>3753</b>	<b>3895</b>	<b>3986</b>	<b>4021</b>	<b>4025</b>	<b>4043</b>	<b>4085</b>	<b>4146</b>
BAU Primary Energy, Services, in PJ	9373	13006	13511	14023	14349	14477	14491	14554	14707	14926
BAU Primary Energy, Services, in mtoe	224	311	323	335	343	346	346	348	351	356
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<b>BAU Primary Energy (summary RESIDENTIAL, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	635	787	812	831	849	867	895	939	992	1046
SPACE HEATING	2297	1985	1884	1803	1740	1709	1669	1611	1531	1434
SPACE & HT PROCESS COOLING	4	24	28	32	38	41	43	45	46	47
VENTILATION	20	42	49	53	57	61	67	73	79	86
LIGHTING	207	266	262	257	198	144	115	100	93	90
ELECTRONICS	109	339	381	388	377	401	397	378	365	360
FOOD PRESERVATION	317	319	321	320	319	319	319	318	317	316
COOKING	185	208	212	215	221	228	236	242	249	255
CLEANING	207	263	291	303	334	349	360	370	376	379
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>BAU Primary Energy, Residential, in TWh</b>	<b>3981</b>	<b>4232</b>	<b>4241</b>	<b>4202</b>	<b>4132</b>	<b>4120</b>	<b>4102</b>	<b>4077</b>	<b>4049</b>	<b>4013</b>
BAU Primary Energy, Residential, in PJ	14330	15235	15266	15128	14875	14832	14767	14676	14575	14446
BAU Primary Energy, Residential, in mtoe	342	364	365	361	355	354	353	351	348	345
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<b>BAU Primary Energy (summary OTHER, TWh)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
WATER HEATING	10	12	13	13	13	13	14	15	15	16
SPACE HEATING	122	115	106	98	92	88	84	79	74	68
SPACE & HT PROCESS COOLING	16	26	28	30	31	32	32	32	33	33
VENTILATION	1	3	3	4	4	4	4	4	4	4
LIGHTING	7	11	11	12	12	11	10	10	10	11
ELECTRONICS	2	5	4	4	5	5	6	6	6	6
FOOD PRESERVATION	11	15	16	17	19	20	22	23	25	27
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	234	331	353	373	390	405	419	431	443	456
<b>BAU Primary Energy, Other sectors, in TWh</b>	<b>403</b>	<b>518</b>	<b>535</b>	<b>552</b>	<b>566</b>	<b>579</b>	<b>590</b>	<b>601</b>	<b>611</b>	<b>621</b>
BAU Primary Energy, Other sectors, in PJ	1451	1864	1925	1987	2037	2084	2125	2162	2198	2236
BAU Primary Energy, Other sectors, in mtoe	35	45	46	47	49	50	51	52	53	53



NRGBAU

BAU Primary Energy (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		981	1217	1257	1285	1313	1342	1386	1453	1535	1619
	Residential	635	787	812	831	849	867	895	939	992	1046
	Tertiary / Services	302	373	385	394	402	411	424	445	470	495
	Industry	35	45	47	48	49	51	53	55	59	62
	Other	10	12	13	13	13	13	14	15	15	16
<b>SPACE HEATING. All sectors, TWh</b>		3760	3435	3258	3112	2995	2933	2854	2742	2592	2413
	Residential	2297	1985	1884	1803	1740	1709	1669	1611	1531	1434
	Tertiary / Services	916	938	901	870	845	830	808	773	728	676
	Industry	425	398	367	340	318	306	293	278	258	235
	Other	122	115	106	98	92	88	84	79	74	68
<b>SPACE COOLING. All sectors, TWh</b>		210	426	468	498	517	523	525	527	531	535
<b>&amp; HT PROCESS</b>	Residential	4	24	28	32	38	41	43	45	46	47
	Tertiary / Services	136	281	308	326	336	338	338	338	340	341
	Industry	55	96	104	110	113	113	112	112	113	113
	Other	16	26	28	30	31	32	32	32	33	33
<b>VENTILATION. All sectors, TWh</b>		67	194	222	239	249	256	265	276	289	303
	Residential	20	42	49	53	57	61	67	73	79	86
	Tertiary / Services	41	131	149	160	165	167	170	174	180	187
	Industry	6	18	21	22	23	23	24	24	25	26
	Other	1	3	3	4	4	4	4	4	4	4
<b>LIGHTING. All sectors, TWh</b>		690	1059	1110	1175	1124	1023	951	931	949	998
	Residential	207	266	262	257	198	144	115	100	93	90
	Tertiary / Services	378	630	673	729	737	699	664	660	682	724
	Industry	98	153	164	177	177	169	162	161	165	173
	Other	7	11	11	12	12	11	10	10	10	11
<b>ELECTRONICS. All sectors, TWh</b>		201	611	659	695	721	781	790	773	762	760
	Residential	109	339	381	388	377	401	397	378	365	360
	Tertiary / Services	81	239	247	273	306	337	348	349	350	354
	Industry	10	28	27	30	34	38	40	40	40	40
	Other	2	5	4	4	5	5	6	6	6	6
<b>FOOD PRESERVE. All sectors, TWh</b>		663	704	710	720	740	763	789	816	844	872
	Residential	317	319	321	320	319	319	319	318	317	316
	Tertiary / Services	280	270	260	255	259	268	278	289	302	315
	Industry	54	99	113	128	142	156	170	185	200	215
	Other	11	15	16	17	19	20	22	23	25	27
<b>COOKING. All sectors, TWh</b>		212	234	237	240	245	253	261	268	274	281
	Residential	185	208	212	215	221	228	236	242	249	255
	Tertiary / Services	27	26	25	25	24	25	25	25	26	26
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>		222	286	316	330	363	379	392	403	410	414
	Residential	207	263	291	303	334	349	360	370	376	379
	Tertiary / Services	14	21	23	25	27	28	29	30	31	32
	Industry	1	1	2	2	2	2	2	2	2	2
	Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>		1733	2610	2832	3004	3134	3223	3282	3327	3373	3427
	Residential	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services	429	705	782	839	885	919	942	959	977	996
	Industry	1069	1574	1696	1793	1859	1898	1922	1938	1954	1975
	Other	234	331	353	373	390	405	419	431	443	456
<b>TYRES. Transport sector, TWh</b>		977	733	689	720	740	759	747	719	692	666
	Residential transport	457	335	314	303	302	294	283	269	255	243
	Tertiary / Services transport	329	252	237	261	274	290	289	280	271	263
	Industry transport	165	127	119	134	142	152	152	147	143	139
	Other transport	26	20	19	21	22	23	23	22	22	21
<b>ALL PRODUCTS. All sectors, TWh</b>		9716	11508	11757	12019	12141	12235	12242	12234	12251	12287
	Residential	3981	4232	4241	4202	4132	4120	4102	4077	4049	4013
	Tertiary / Services	2604	3613	3753	3895	3986	4021	4025	4043	4085	4146
	Industry	1752	2412	2540	2650	2718	2756	2778	2796	2815	2841
	Other	403	518	535	552	566	579	590	601	611	621
	Transport	977	733	689	720	740	759	747	719	692	666

NRGBAU

BAU Primary Energy (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
Residential		65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Tertiary / Services		31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Industry		4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Other		1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
Residential		61%	58%	58%	58%	58%	58%	58%	59%	59%	59%
Tertiary / Services		24%	27%	28%	28%	28%	28%	28%	28%	28%	28%
Industry		11%	12%	11%	11%	11%	10%	10%	10%	10%	10%
Other		3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>											
<b>&amp; HT PROCESS</b>											
Residential		2%	6%	6%	6%	7%	8%	8%	8%	9%	9%
Tertiary / Services		65%	66%	66%	65%	65%	65%	64%	64%	64%	64%
Industry		26%	22%	22%	22%	22%	22%	21%	21%	21%	21%
Other		8%	6%	6%	6%	6%	6%	6%	6%	6%	6%
<b>VENTILATION (from electricity).</b>											
Residential		29%	21%	22%	22%	23%	24%	25%	26%	28%	28%
Tertiary / Services		61%	68%	67%	67%	66%	65%	64%	63%	62%	62%
Industry		8%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Other		1%	2%	2%	2%	2%	2%	1%	1%	1%	1%
<b>LIGHTING.</b>											
Residential		30%	25%	24%	22%	18%	14%	12%	11%	10%	9%
Tertiary / Services		55%	59%	61%	62%	66%	68%	70%	71%	72%	73%
Industry		14%	14%	15%	15%	16%	16%	17%	17%	17%	17%
Other		1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
Residential		54%	56%	58%	56%	52%	51%	50%	49%	48%	47%
Tertiary / Services		40%	39%	37%	39%	42%	43%	44%	45%	46%	47%
Industry		5%	5%	4%	4%	5%	5%	5%	5%	5%	5%
Other		1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>											
Residential		48%	45%	45%	44%	43%	42%	40%	39%	38%	36%
Tertiary / Services		42%	38%	37%	35%	35%	35%	35%	35%	36%	36%
Industry		8%	14%	16%	18%	19%	20%	22%	23%	24%	25%
Other		2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
<b>COOKING.</b>											
Residential		87%	89%	89%	90%	90%	90%	90%	91%	91%	91%
Tertiary / Services		13%	11%	11%	10%	10%	10%	10%	9%	9%	9%
Industry		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
Residential		93%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Tertiary / Services		6%	7%	7%	8%	7%	7%	7%	8%	8%	8%
Industry		0%	0%	1%	1%	1%	1%	1%	1%	1%	1%
Other		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
Residential		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tertiary / Services		25%	27%	28%	28%	28%	29%	29%	29%	29%	29%
Industry		62%	60%	60%	60%	59%	59%	59%	58%	58%	58%
Other		14%	13%	12%	12%	12%	13%	13%	13%	13%	13%
<b>TYRES.</b>											
Residential transport		47%	46%	46%	42%	41%	39%	38%	37%	37%	36%
Tertiary / Services transport		34%	34%	34%	36%	37%	38%	39%	39%	39%	40%
Industry transport		17%	17%	17%	19%	19%	20%	20%	20%	21%	21%
Other transport		3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>											
Residential		41%	37%	36%	35%	34%	34%	34%	33%	33%	33%
Tertiary / Services		27%	31%	32%	32%	33%	33%	33%	33%	33%	34%
Industry		18%	21%	22%	22%	22%	23%	23%	23%	23%	23%
Other		4%	4%	5%	5%	5%	5%	5%	5%	5%	5%
Transport		10%	6%	6%	6%	6%	6%	6%	6%	6%	5%

NRGECO

db	ECO Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>efficiency elec. gen.&amp;distr. CC (from sheet General)</i>		40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
	<b>Total WH dedicated Water Heater</b>	0.78	<b>722</b>	<b>801</b>	<b>736</b>	<b>647</b>	<b>567</b>	<b>535</b>	<b>533</b>	<b>552</b>	<b>579</b>	<b>607</b>
	<b>Total CH Central Heating combi, water heat</b>	0.02	<b>259</b>	<b>416</b>	<b>420</b>	<b>387</b>	<b>354</b>	<b>340</b>	<b>344</b>	<b>354</b>	<b>364</b>	<b>374</b>
	<b>TOTAL WATER HEATING</b>		<b>981</b>	<b>1217</b>	<b>1157</b>	<b>1034</b>	<b>921</b>	<b>876</b>	<b>878</b>	<b>906</b>	<b>943</b>	<b>981</b>
	<i>CH non-electric</i>	0	2213	1957	1547	1154	846	657	548	457	362	260
	<i>CH electric resistance boiler, 1st estimate</i>	1	125	100	87	74	62	50	38	25	13	0
	<i>CH heat pump, 1st estimate</i>	1	60	140	156	165	186	207	228	250	271	292
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	69	68	59	47	34	35	35	34	33	31
	<b>Total CH Central Heating boiler, space heat</b>		<b>2467</b>	<b>2265</b>	<b>1850</b>	<b>1440</b>	<b>1127</b>	<b>949</b>	<b>849</b>	<b>765</b>	<b>679</b>	<b>584</b>
	SFB Wood Manual	0	345	90	69	48	30	16	9	6	5	4
	SFB Wood Direct Draft	0	2	24	44	61	70	67	67	71	81	93
	SFB Coal	0	107	30	20	12	6	2	1	1	1	1
	SFB Pellets	0	0	9	16	22	26	28	29	29	30	31
	SFB Wood chips	0	0	15	17	19	16	15	16	17	18	19
	<b>Total Solid Fuel Boiler</b>		<b>454</b>	<b>168</b>	<b>167</b>	<b>162</b>	<b>150</b>	<b>129</b>	<b>121</b>	<b>124</b>	<b>134</b>	<b>148</b>
	CHAE-S (≤ 400 kW)	1	10	26	30	31	30	30	29	29	29	30
	CHAE-L (> 400 kW)	1	15	36	40	41	39	35	32	30	29	28
	CHWE-S (≤ 400 kW)	1	1	3	3	3	3	3	3	3	3	3
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	3	8	9	9	9	8	7	7	7	6
	CHWE-L (> 1500 kW)	1	2	5	6	6	5	5	5	4	4	4
	CHF	0.05	0	0	0	0	0	0	0	0	0	0
	HT PCH-AE-S	1	58	91	99	104	104	102	103	106	108	111
	HT PCH-AE-L	1	56	87	95	98	96	93	92	93	95	97
	HT PCH-WE-S	1	12	19	21	22	23	23	23	23	24	25
	HT PCH-WE-M	1	23	37	41	43	45	45	46	47	48	49
	HT PCH-WE-L	1	4	8	8	9	9	9	9	9	10	10
	AC rooftop	1	8	19	19	16	12	8	4	2	1	1
	AC splits	1	11	32	31	28	25	22	19	17	16	14
	AC VRF	1	0	8	12	15	18	21	24	26	28	29
	ACF	0.05	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC central Air Cooling</b>		<b>204</b>	<b>380</b>	<b>413</b>	<b>426</b>	<b>418</b>	<b>404</b>	<b>397</b>	<b>398</b>	<b>402</b>	<b>407</b>
	AC rooftop (rev)	1	11	33	32	26	19	11	5	1	0	0
	AC splits (rev)	1	20	61	62	56	50	42	37	33	30	27
	AC VRF (rev)	1	0	20	29	38	44	50	56	58	59	59
	ACF (rev)	0.05	0	0	0	0	1	1	1	1	1	1
	AHF	0.05	226	169	141	113	90	72	61	54	48	42
	AHE	1	3	7	6	3	3	3	3	2	2	2
	<b>SubTotal AHC central Air Heating</b>		<b>260</b>	<b>291</b>	<b>270</b>	<b>238</b>	<b>205</b>	<b>178</b>	<b>162</b>	<b>150</b>	<b>140</b>	<b>131</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>		<b>464</b>	<b>671</b>	<b>683</b>	<b>664</b>	<b>623</b>	<b>582</b>	<b>559</b>	<b>548</b>	<b>542</b>	<b>538</b>
	LH open fireplace	0	14	18	19	19	17	16	15	13	13	12
	LH closed fireplace/inset	0	18	41	48	54	56	57	56	54	52	51
	LH wood stove	0	39	38	37	37	35	34	33	32	31	30
	LH coal stove	0	27	15	13	11	9	7	6	4	3	3
	LH cooker	0	7	11	12	13	14	14	14	14	13	13
	LH SHR stove	0	17	21	22	24	26	29	31	33	33	33
	LH pellet stove	0	0	8	11	14	15	16	17	17	16	16
	LH open fire gas	0	1	1	1	1	1	1	1	1	1	1
	LH closed fire gas	0	14	13	12	12	10	10	9	8	8	8
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	1	70	70	67	60	55	55	55	54	53	51
	LH elec.convectror	1	291	289	280	257	243	241	242	237	230	223
	LH elec.storage	1	22	21	21	19	17	16	16	16	15	15
	LH elec.underfloor	1	40	41	40	37	35	33	32	31	30	29
	LH luminous heaters	0	5	5	5	5	4	4	4	4	3	3
	LH tube heaters	0	12	12	12	11	10	9	8	8	8	8
	<b>LH total</b>		<b>575</b>	<b>603</b>	<b>601</b>	<b>572</b>	<b>548</b>	<b>541</b>	<b>537</b>	<b>525</b>	<b>509</b>	<b>495</b>
	RAC (cooling demand), all types <12 kW	1	6	46	51	53	62	68	72	74	77	79
	RAC (heating demand), reversible <12kW	1	4	55	72	86	99	102	100	97	93	89
	<b>Total RAC Room Air Conditioner</b>		<b>11</b>	<b>102</b>	<b>123</b>	<b>139</b>	<b>161</b>	<b>170</b>	<b>172</b>	<b>171</b>	<b>170</b>	<b>168</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	<b>40</b>	<b>51</b>	<b>36</b>	<b>27</b>	<b>26</b>	<b>27</b>	<b>27</b>	<b>26</b>	<b>25</b>	<b>24</b>
	<b>TOTAL SPACE HEATING</b>		<b>3760</b>	<b>3382</b>	<b>2959</b>	<b>2498</b>	<b>2130</b>	<b>1899</b>	<b>1770</b>	<b>1661</b>	<b>1556</b>	<b>1446</b>
	<b>TOTAL SPACE COOLING</b>		<b>210</b>	<b>426</b>	<b>464</b>	<b>479</b>	<b>480</b>	<b>472</b>	<b>469</b>	<b>472</b>	<b>479</b>	<b>486</b>
	NRVU electricity	1	47	153	169	171	166	159	161	166	172	180
1	NRVU heat (negative=saving vs. natural ventilation)	0	-136	-636	-777	-925	-1054	-1157	-1228	-1291	-1354	-1417
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	19	38	40	34	27	22	23	24	26	28
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	3	4	6	8	9	10	11	12	13
	RVU Local Blncd VU (<125 W, also NR) (2 fans)	1	0	0	1	1	1	2	3	3	4	5
1	RVU Central Unidir., heat (negative=saving )	0	-16	-32	-46	-61	-75	-88	-93	-99	-106	-113
1	RVU Central Balanced, heat (negative=saving )	0	-1	-8	-17	-31	-46	-60	-69	-76	-83	-90
1	RVU Local Balanced, heat (negative=saving )	0	0	-1	-2	-5	-8	-13	-17	-21	-26	-30
	<b>Total VU (electricity + (negative) heat saving vs. natural ventilation)</b>		<b>-86</b>	<b>-483</b>	<b>-630</b>	<b>-810</b>	<b>-982</b>	<b>-1125</b>	<b>-1210</b>	<b>-1283</b>	<b>-1354</b>	<b>-1425</b>
	<b>TOTAL VENTILATION (from electricity)</b>		<b>67</b>	<b>194</b>	<b>214</b>	<b>212</b>	<b>202</b>	<b>192</b>	<b>196</b>	<b>205</b>	<b>214</b>	<b>225</b>
1	<i>TOTAL VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</i>		-	-	-35	-92	-136	-166	-166	-162	-159	-157

NRGECO

db	ECO Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>LS, primary energy incl. control gear</i>											
	LFL (T12,T8h,T8t,T5,other)	1	227	340	397	413	295	160	76	40	24	15
	HID (HPM, HPS, MH)	1	84	172	148	126	94	49	19	7	2	1
	CFLni (all shapes)	1	6	24	24	20	13	7	3	1	0	0
	CFLi (retrofit for GLS, HL)	1	2	40	52	41	15	4	0	0	0	0
	GLS (DLS & NDLS)	1	224	126	34	0	0	0	0	0	0	0
	HL (DLS & NDLS, LV & MV)	1	19	118	147	60	3	0	0	0	0	0
	LED replacing LFL (retrofit & luminaire)	1	0	0	5	40	139	227	289	332	372	418
	LED replacing HID (retrofit & luminaire)	1	0	0	25	52	80	107	130	151	174	198
	LED replacing CFLni (retrofit & luminaire)	1	0	0	1	3	7	10	11	13	14	16
	LED replacing DLS (retrofit & luminaire)	1	0	0	3	9	14	15	16	17	18	19
	LED replacing NDLS (retrofit & luminaire)	1	0	0	4	31	56	64	69	73	77	81
	<i>Special Purpose Lamps (SPL)</i>	1	100	151	132	112	92	76	76	76	76	76
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	28	43	37	31	26	21	21	21	21	21
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>690</b>	<b>1014</b>	<b>1008</b>	<b>938</b>	<b>833</b>	<b>740</b>	<b>711</b>	<b>731</b>	<b>779</b>	<b>845</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>562</b>	<b>820</b>	<b>839</b>	<b>795</b>	<b>715</b>	<b>643</b>	<b>614</b>	<b>634</b>	<b>682</b>	<b>748</b>
	DP TV on-mode, total all types	1	72.2	187.4	197.4	168.5	104.7	94.5	83.1	90.1	104.5	120.6
	DP TV standby, standard (NoNA)	1	9.4	5.9	1.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	1	0.0	0.3	1.8	3.0	2.0	0.5	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	1	0.0	0.0	4.5	12.3	18.7	23.4	24.4	22.0	18.8	15.6
	<b>DP TV standby, total all types</b>		<b>9</b>	<b>6</b>	<b>8</b>	<b>16</b>	<b>21</b>	<b>24</b>	<b>24</b>	<b>22</b>	<b>19</b>	<b>16</b>
	<b>DP TV total on-mode + standby</b>		<b>82</b>	<b>194</b>	<b>205</b>	<b>184</b>	<b>125</b>	<b>118</b>	<b>107</b>	<b>112</b>	<b>123</b>	<b>136</b>
	DP Monitor on-mode	1	2.2	36.5	19.7	7.8	6.9	4.7	3.4	3.4	3.6	3.9
	DP Monitor standby	1	0.4	1.5	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>DP Monitor total</b>		<b>3</b>	<b>38</b>	<b>20</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>
	DP Signage on-mode	1	0.0	2.6	22.2	50.4	59.2	49.2	37.7	36.3	40.3	46.5
	DP Signage standby	1	0.0	0.4	3.3	7.6	8.9	7.4	5.7	5.4	6.0	7.0
	<b>DP Signage total</b>		<b>0</b>	<b>3</b>	<b>26</b>	<b>58</b>	<b>68</b>	<b>57</b>	<b>43</b>	<b>42</b>	<b>46</b>	<b>53</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>74</b>	<b>226</b>	<b>239</b>	<b>227</b>	<b>171</b>	<b>148</b>	<b>124</b>	<b>130</b>	<b>148</b>	<b>171</b>
	<b>DP Electronic Displays, total standby</b>		<b>10</b>	<b>8</b>	<b>12</b>	<b>23</b>	<b>30</b>	<b>31</b>	<b>30</b>	<b>28</b>	<b>25</b>	<b>23</b>
	<b>DP Electronic Displays, total</b>		<b>84</b>	<b>235</b>	<b>251</b>	<b>250</b>	<b>200</b>	<b>180</b>	<b>154</b>	<b>157</b>	<b>173</b>	<b>194</b>
	SSTB	1	0	5	4	0	0	0	0	0	0	0
	CSTB	1	0	18	38	37	38	37	39	42	45	48
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>22</b>	<b>41</b>	<b>37</b>	<b>38</b>	<b>37</b>	<b>39</b>	<b>42</b>	<b>45</b>	<b>48</b>
	VIDEO players/recorders	1	0	5	7	2	0	0	0	0	0	0
	VIDEO projectors	1	0	5	5	3	1	0	0	0	0	0
	VIDEO game consoles	1	0	11	19	25	31	32	32	32	32	32
	<b>Total VIDEO</b>		<b>0</b>	<b>22</b>	<b>30</b>	<b>29</b>	<b>32</b>	<b>33</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>											
	ES tower 1-socket traditional	1	0.1	2.6	2.1	1.4	1.1	0.9	0.8	0.8	0.8	0.8
	ES rack 1-socket traditional	1	0.3	8.0	5.9	4.9	5.0	5.4	5.5	5.5	5.5	5.5
	ES rack 2-socket traditional	1	1.9	36.8	19.6	11.0	12.6	15.0	16.3	16.3	16.3	16.3
	ES rack 2-socket cloud	1	0.0	20.6	31.8	33.4	39.0	46.4	50.3	50.3	50.3	50.3
	ES rack 4-socket traditional	1	0.2	3.9	2.1	1.6	1.8	2.1	2.3	2.3	2.3	2.3
	ES rack 4-socket cloud	1	0.0	2.3	4.0	5.1	5.9	7.1	7.7	7.7	7.7	7.7
	ES rack 2-socket resilient trad.	1	0.1	1.9	1.1	0.6	0.6	0.7	0.7	0.7	0.7	0.7
	ES rack 2-socket resilient cloud	1	0.0	0.9	1.4	1.3	1.3	1.6	1.7	1.7	1.7	1.7
	ES rack 4-socket resilient trad.	1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	ES rack 4-socket resilient cloud	1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	ES blade 1-socket traditional	1	0.1	2.3	2.0	1.6	1.6	1.7	1.7	1.7	1.7	1.7
	ES blade 2-socket traditional	1	1.6	16.8	8.5	5.2	6.1	7.2	7.8	7.8	7.8	7.8
	ES blade 2-socket cloud	1	0.0	9.4	14.1	16.4	19.1	22.8	24.7	24.7	24.7	24.7
	ES blade 4-socket traditional	1	0.2	2.1	1.1	0.7	0.7	0.9	1.0	1.0	1.0	1.0
	ES blade 4-socket cloud	1	0.0	1.1	1.8	2.0	2.2	2.6	2.9	2.9	2.9	2.9
	<b>ES total traditional</b>		<b>5</b>	<b>74</b>	<b>43</b>	<b>27</b>	<b>29</b>	<b>34</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>
	<b>ES total cloud</b>		<b>0</b>	<b>34</b>	<b>53</b>	<b>58</b>	<b>68</b>	<b>81</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>
	<b>ES Enterprise Servers total</b>		<b>5</b>	<b>109</b>	<b>96</b>	<b>85</b>	<b>97</b>	<b>115</b>	<b>124</b>	<b>124</b>	<b>124</b>	<b>124</b>
	DS Online 2	1	1.0	16.2	21.8	29.3	36.6	43.6	45.6	45.8	45.8	45.8
	DS Online 3	1	0.2	2.4	3.2	4.1	5.1	6.1	6.4	6.5	6.5	6.5
	DS Online 4	1	0.6	9.3	12.2	16.1	20.0	23.9	25.0	25.1	25.1	25.1
	<b>DS Data Storage products total</b>		<b>2</b>	<b>28</b>	<b>37</b>	<b>50</b>	<b>62</b>	<b>74</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>6</b>	<b>137</b>	<b>133</b>	<b>135</b>	<b>159</b>	<b>188</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>
	PC Desktop	1	36	54	32	12	7	7	7	7	7	7
	PC Notebook	1	0	19	10	3	2	2	2	2	2	2
	PC Tablet/slate	1	0	0	4	4	4	4	5	5	5	5
	PC Thin client	1	0	1	0	0	0	0	0	0	0	0
	PC Workstation	1	0	3	2	1	1	1	1	1	1	1
	<b>Total PC, electricity</b>		<b>36</b>	<b>76</b>	<b>48</b>	<b>20</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>15</b>
	EP-Copier mono	1	26	2	1	0	0	0	0	0	0	0
	EP-Copier colour	1	0	0	1	1	1	1	2	2	2	2
	EP-printer mono	1	24	5	3	2	2	1	1	1	1	1
	EP-printer colour	1	0	3	2	2	2	3	3	4	4	4
	IJ SFD printer	1	3	1	0	0	0	0	0	0	0	0
	IJ MFD printer	1	3	2	1	1	1	1	1	2	2	2
	<b>Total imaging equipment, electricity</b>		<b>56</b>	<b>13</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>

NRGECO

db	ECO Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	1	0.0	10.2	12.2	13.5	14.1	14.0	13.2	11.8	9.6	6.8
	SB Home NAS, on-mode hours	1	0.0	0.5	1.0	1.3	1.5	1.6	1.6	1.5	1.2	0.9
	SB Home Phones (fixed), on-mode hours	1	0.2	1.1	1.3	1.3	1.2	1.0	0.8	0.6	0.5	0.3
	SB Office Phones (fixed), on-mode hours	1	0.5	1.6	1.5	1.5	1.3	1.2	1.1	0.9	0.7	0.5
	SB Home Gateway, standby hours	1	0.0	5.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	1	0.0	0.8	1.5	2.0	2.4	2.5	2.5	2.3	1.9	1.4
	SB Home Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	1	0.0	10.4	18.5	26.5	28.5	28.3	26.8	23.8	19.5	13.8
	SB Home NAS, idle hours	1	0.0	0.3	0.3	0.1	0.1	0.2	0.2	0.2	0.3	0.3
	SB Home Phones (fixed), idle hours	1	1.3	9.7	10.7	11.0	9.8	8.4	6.9	5.5	4.1	2.6
	SB Office Phones (fixed), idle hours	1	1.9	6.7	6.4	6.1	5.6	5.0	4.4	3.7	2.8	1.9
	<b>Total SB (networked) StandBy (rest)</b>		<b>4</b>	<b>47</b>	<b>55</b>	<b>63</b>	<b>65</b>	<b>62</b>	<b>58</b>	<b>50</b>	<b>41</b>	<b>28</b>
db	<i>EPS Active mode (electricity losses)</i>											
0.0	EPS ≤ 6W, low-V	1	0.0	0.7	0.5	0.3	0.2	0.1	0.1	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.2	2.8	2.4	2.0	1.9	2.0	2.0	2.1	2.1	2.2
0.6	EPS 10–12 W	1	0.0	20.1	27.4	24.9	21.5	21.5	21.6	21.8	21.9	22.1
0.5	EPS 15–20 W	1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
1.0	EPS 20–30 W	1	0.0	2.3	2.3	1.8	1.6	1.5	1.4	1.3	1.2	1.0
0.8	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4
1.0	EPS 30–65 W	1	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.5	0.5
1.0	EPS 65–120 W	1	0.0	0.6	0.6	0.5	0.3	0.1	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	1	0.0	3.7	3.0	0.7	0.5	0.5	0.5	0.5	0.5	0.5
0.0	EPS 12–15 W	1	0.0	0.7	1.4	1.7	1.5	1.5	1.5	1.5	1.5	1.5
	<b>EPS, total for active mode</b>		<b>0</b>	<b>31</b>	<b>38</b>	<b>32</b>	<b>28</b>	<b>28</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>
db	<i>EPS No-load mode</i>											
0.0	EPS ≤ 6W, low-V	1	0.1	1.1	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	1	0.2	2.9	2.2	1.3	0.8	0.8	0.8	0.8	0.9	0.9
0.0	EPS 10–12 W	1	0.0	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2
0.0	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.3</b>	<b>4.5</b>	<b>3.2</b>	<b>1.8</b>	<b>1.1</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>
	<b>EPS, overall total (active + no-load)</b>		<b>1</b>	<b>36</b>	<b>41</b>	<b>34</b>	<b>29</b>	<b>29</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
	<b>EPS, double counted subtracted</b>		<b>0</b>	<b>19</b>	<b>20</b>	<b>17</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
	UPS below 1.5 kVA	1	1.8	3.8	3.8	1.3	0.5	0.5	0.6	0.7	0.7	0.7
	UPS 1.5 to 5 kVA	1	6.7	14.5	15.7	10.8	3.3	2.8	3.2	3.6	3.9	4.1
	UPS 5 to 10 kVA	1	0.8	1.8	2.0	2.0	1.8	2.0	2.3	2.5	2.8	2.9
	UPS 10 to 200 kVA	1	4.7	10.6	11.4	10.5	9.3	9.2	10.5	11.8	12.9	13.8
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>14</b>	<b>31</b>	<b>33</b>	<b>25</b>	<b>15</b>	<b>15</b>	<b>17</b>	<b>19</b>	<b>20</b>	<b>22</b>
	<b>TOTAL ELECTRONICS</b>		<b>201</b>	<b>602</b>	<b>619</b>	<b>582</b>	<b>542</b>	<b>549</b>	<b>536</b>	<b>538</b>	<b>550</b>	<b>563</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	1	<b>344</b>	<b>260</b>	<b>217</b>	<b>185</b>	<b>152</b>	<b>125</b>	<b>103</b>	<b>92</b>	<b>86</b>	<b>80</b>
	CF open vertical chilled multi deck (RVC2)	1	37	36	33	27	20	17	17	17	17	18
	CF open horizontal frozen island (RHF4)	1	3	3	3	2	2	2	2	2	2	2
	CF other supermarket display (non-BCs)	1	65	66	64	58	51	49	50	52	53	55
	CF Plug in one door beverage cooler	1	46	45	42	34	26	24	25	26	26	27
	CF Plug in horizontal ice cream freezer	1	10	10	10	9	9	9	9	9	9	10
	CF Spiral vending machine	1	9	8	5	3	3	2	2	2	3	3
	<b>Total CF Commercial Refrigeration</b>		<b>170</b>	<b>168</b>	<b>157</b>	<b>133</b>	<b>109</b>	<b>102</b>	<b>105</b>	<b>108</b>	<b>111</b>	<b>115</b>
	PF Storage cabinet Chilled Vertical (CV)	1	4.5	6.2	6.5	5.8	4.5	4.4	4.6	4.8	5.0	5.2
	PF Storage cabinet Frozen Vertical (FV)	1	5.3	7.2	7.6	6.8	5.3	5.0	5.3	5.5	5.7	6.0
	PF Storage cabinet Chilled Horizontal (CH)	1	3.5	4.8	5.0	4.6	3.6	3.5	3.6	3.8	3.9	4.1
	PF Storage cabinet Frozen Horizontal (FH)	1	2.1	2.9	3.0	2.7	2.1	2.0	2.1	2.2	2.2	2.3
	<b>PF Storage cabinets All types</b>	1	<b>15</b>	<b>21</b>	<b>22</b>	<b>20</b>	<b>16</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>18</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	8	17	20	23	25	27	29	32	34	37
	PF Process Chiller AC MT L > 300 kW	1	8	17	20	22	24	26	28	31	33	36
	PF Process Chiller AC LT S ≤ 200 kW	1	8	18	21	23	25	27	30	32	35	38
	PF Process Chiller AC LT L > 200 kW	1	8	18	21	24	26	28	31	33	36	39
	PF Process Chiller WC MT S ≤ 300 kW	1	2	5	6	6	7	7	8	9	10	10
	PF Process Chiller WC MT L > 300 kW	1	3	7	8	9	10	11	12	13	14	15
	PF Process Chiller WC LT S ≤ 200 kW	1	3	6	7	8	9	10	11	11	12	13
	PF Process Chiller WC LT L > 200 kW	1	4	8	9	10	11	12	13	14	16	17
	<b>PF Process Chiller All MT&amp;LT</b>	1	<b>44</b>	<b>96</b>	<b>113</b>	<b>127</b>	<b>138</b>	<b>148</b>	<b>162</b>	<b>176</b>	<b>191</b>	<b>205</b>
	PF Condensing Unit MT S 0.2-1 kW	1	16	13	13	12	13	14	15	16	17	19
	PF Condensing Unit MT M 1-5 kW	1	42	33	32	32	33	36	39	42	45	48
	PF Condensing Unit MT L 5-20 kW	1	51	41	39	39	40	43	47	50	54	59
	PF Condensing Unit MT XL 20-50 kW	1	51	40	39	39	40	43	47	50	54	59
	PF Condensing Unit LT S 0.1-0.4 kW	1	2	2	2	2	2	2	2	2	2	2
	PF Condensing Unit LT M 0.4-2 kW	1	8	6	6	6	6	6	7	7	8	9
	PF Condensing Unit LT L 2-8 kW	1	13	10	10	9	9	10	11	12	13	13
	PF Condensing Unit LT XL 8-20 kW	1	39	31	30	30	31	33	36	39	41	45
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	1	<b>222</b>	<b>177</b>	<b>170</b>	<b>169</b>	<b>175</b>	<b>188</b>	<b>203</b>	<b>218</b>	<b>235</b>	<b>253</b>
	<b>PF Professional Refrigeration, Total</b>		<b>148</b>	<b>188</b>	<b>203</b>	<b>214</b>	<b>223</b>	<b>238</b>	<b>258</b>	<b>280</b>	<b>302</b>	<b>324</b>
	<b>TOTAL FOOD PRESERVATION</b>		<b>663</b>	<b>617</b>	<b>577</b>	<b>532</b>	<b>484</b>	<b>466</b>	<b>466</b>	<b>479</b>	<b>498</b>	<b>518</b>

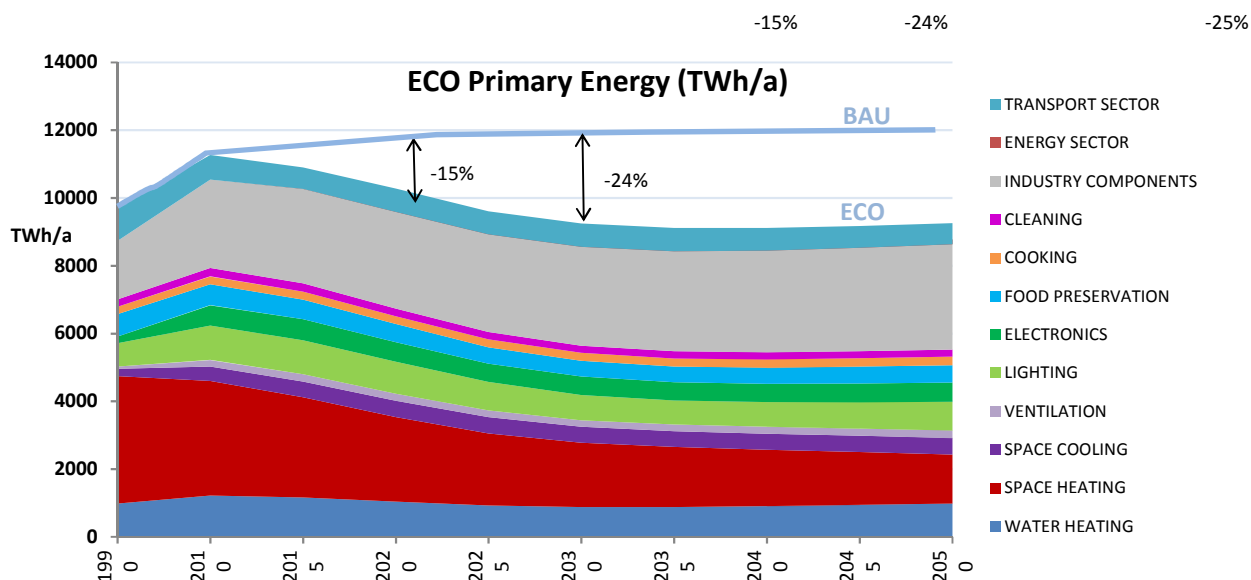
NRGECO

db	ECO Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	1	51	78	87	94	101	107	113	118	123	128
	CA El. Ovens	1	59	59	55	51	48	48	48	48	48	49
	CA Gas Hobs	0	35	29	28	27	25	24	23	21	20	19
	CA Gas Ovens	0	14	10	9	8	7	6	5	5	5	5
	CA Range Hoods	1	25	31	32	32	31	29	29	30	31	32
	<b>Total CA Cooking Appliances</b>		<b>184</b>	<b>207</b>	<b>211</b>	<b>212</b>	<b>212</b>	<b>214</b>	<b>217</b>	<b>222</b>	<b>227</b>	<b>232</b>
	CM Dripfilter (glass)	1	16	11	10	8	7	7	7	7	7	7
	CM Dripfilter (thermos)	1	1	3	3	3	3	3	3	3	3	3
	CM Dripfilter (full automatic)	1	0	1	1	2	2	2	2	2	3	3
	CM Pad filter	1	0	1	1	2	2	2	2	2	2	2
	CM Hard cap espresso	1	0	0	1	1	1	1	1	1	1	1
	CM Semi-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (glass), standby/keep warm	1	11	8	6	3	3	2	2	2	2	2
	CM Dripfilter (thermos), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Dripfilter (full automatic), standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Pad filter, standby/keep warm	1	0	1	1	1	1	1	1	1	1	1
	CM Hard cap espresso, standby/keep warm	1	0	0	1	1	1	1	1	1	1	1
	CM Semi-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	CM Fully-auto espresso, standby/keep warm	1	0	0	0	0	0	0	0	0	0	0
	<b>Total CM household Coffee Makers</b>		<b>28</b>	<b>27</b>	<b>24</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>21</b>	<b>22</b>
	<b>TOTAL COOKING</b>		<b>212</b>	<b>234</b>	<b>236</b>	<b>232</b>	<b>232</b>	<b>234</b>	<b>238</b>	<b>243</b>	<b>249</b>	<b>254</b>
	<b>Total WM household Washing Machine</b>	1	<b>132</b>	<b>87</b>	<b>71</b>	<b>59</b>	<b>49</b>	<b>42</b>	<b>39</b>	<b>38</b>	<b>38</b>	<b>38</b>
	<b>Total DW household Dishwasher</b>	1	<b>32</b>	<b>46</b>	<b>50</b>	<b>54</b>	<b>59</b>	<b>63</b>	<b>67</b>	<b>71</b>	<b>73</b>	<b>76</b>
	LD vented el.	1	21	28	29	28	26	25	25	25	26	26
	LD condens el.	1	4	35	42	45	43	40	38	36	35	34
	LD vented gas	0	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>		<b>25</b>	<b>63</b>	<b>71</b>	<b>72</b>	<b>69</b>	<b>65</b>	<b>63</b>	<b>62</b>	<b>61</b>	<b>60</b>
	VC dom	1	26	42	46	25	31	30	29	28	26	23
	VC nondom	1	8	12	12	10	10	10	10	10	11	11
	<b>Total VC Vacuum Cleaner</b>		<b>33</b>	<b>54</b>	<b>57</b>	<b>35</b>	<b>41</b>	<b>40</b>	<b>39</b>	<b>38</b>	<b>36</b>	<b>34</b>
	<b>TOTAL CLEANING</b>		<b>222</b>	<b>250</b>	<b>249</b>	<b>221</b>	<b>217</b>	<b>211</b>	<b>209</b>	<b>209</b>	<b>209</b>	<b>208</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	48	132	149	155	159	162	162	162	162	162
0.5	FAN Axial>300Pa	1	82	242	272	275	271	268	266	266	266	266
0.5	FAN Centr.FC	1	20	43	50	50	49	48	48	48	48	48
0.5	FAN Centr.BC-free	1	53	111	127	132	137	146	154	159	162	165
0.5	FAN Centr.BC	1	55	125	143	148	154	165	178	191	207	225
0.5	FAN Cross-flow	1	3	6	6	4	4	4	4	4	5	5
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>131</b>	<b>329</b>	<b>374</b>	<b>383</b>	<b>387</b>	<b>396</b>	<b>406</b>	<b>415</b>	<b>425</b>	<b>435</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	273	346	353	315	276	269	267	265	262	259
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	412	536	547	487	416	396	388	379	369	361
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	836	1069	1075	988	866	746	701	663	633	620
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>		<b>1520</b>	<b>1951</b>	<b>1974</b>	<b>1790</b>	<b>1558</b>	<b>1411</b>	<b>1356</b>	<b>1308</b>	<b>1265</b>	<b>1240</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	18	42	54	86	116	124	131	140	148	158
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	33	81	111	176	236	258	274	292	311	328
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	95	236	316	448	577	689	744	795	843	881
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>147</b>	<b>359</b>	<b>480</b>	<b>709</b>	<b>929</b>	<b>1071</b>	<b>1149</b>	<b>1226</b>	<b>1302</b>	<b>1367</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>1667</b>	<b>2309</b>	<b>2455</b>	<b>2500</b>	<b>2487</b>	<b>2481</b>	<b>2505</b>	<b>2534</b>	<b>2567</b>	<b>2608</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	21	27	29	29	28	27	26	26	26	26
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	2	3	3	3	3	3	3	4	4
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>21</b>	<b>29</b>	<b>31</b>	<b>32</b>	<b>31</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	29	38	40	41	40	38	38	38	38	38
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	3	4	5	5	5	6	7	7	8
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>30</b>	<b>41</b>	<b>44</b>	<b>46</b>	<b>45</b>	<b>44</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>46</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	427	519	505	476	445	420	413	410	407	403
0.45	Large 3-ph LV 375-1000kW with VSD	1	22	116	174	239	294	332	353	370	388	407
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>449</b>	<b>636</b>	<b>679</b>	<b>715</b>	<b>738</b>	<b>753</b>	<b>766</b>	<b>779</b>	<b>795</b>	<b>810</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	9	12	13	14	14	14	14	14	15	15
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	22	31	34	37	38	38	39	40	41	42
0.45	Explosion motors (L) 3-ph 75-375 kW	1	42	61	67	72	76	79	80	82	84	86
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>73</b>	<b>105</b>	<b>115</b>	<b>123</b>	<b>128</b>	<b>131</b>	<b>133</b>	<b>136</b>	<b>140</b>	<b>143</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	6	9	9	10	10	10	10	10	10	11
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	15	21	23	24	25	25	26	27	27	28
0.45	Brake motors (L) 3-ph 75-375 kW	1	21	31	33	36	38	39	40	41	42	43
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>42</b>	<b>60</b>	<b>66</b>	<b>71</b>	<b>73</b>	<b>74</b>	<b>76</b>	<b>78</b>	<b>80</b>	<b>81</b>

NRGECO

db	ECO Primary Energy (in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	1	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	1	2	2	2	2	2	2	2	2	2
0.45	8-pole motors (L) 3-ph 75-375 kW	1	2	3	3	4	4	4	4	4	4	4
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	1	<b>113</b>	<b>154</b>	<b>167</b>	<b>179</b>	<b>183</b>	<b>183</b>	<b>185</b>	<b>188</b>	<b>192</b>	<b>196</b>
	<b>Total MT Elec. Motors LV 0.12-1000 kW</b>		<b>1319</b>	<b>1837</b>	<b>1959</b>	<b>2019</b>	<b>2030</b>	<b>2036</b>	<b>2060</b>	<b>2089</b>	<b>2121</b>	<b>2157</b>
	<b>Total WP Water Pumps</b>	1	<b>220</b>	<b>295</b>	<b>315</b>	<b>334</b>	<b>357</b>	<b>384</b>	<b>410</b>	<b>437</b>	<b>464</b>	<b>491</b>
	CP Fixed Speed 5-1280 l/s	1	59	121	102	87	84	86	89	92	94	97
	CP Variable speed 5-1280 l/s	1	0	22	39	50	54	56	58	59	60	62
	CP Pistons 2-64 l/s	1	3	4	4	4	4	4	4	4	4	4
	<b>Total CP Standard Air Compressors</b>		<b>63</b>	<b>147</b>	<b>145</b>	<b>141</b>	<b>142</b>	<b>146</b>	<b>150</b>	<b>155</b>	<b>159</b>	<b>163</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>1733</b>	<b>2609</b>	<b>2793</b>	<b>2877</b>	<b>2917</b>	<b>2962</b>	<b>3027</b>	<b>3095</b>	<b>3168</b>	<b>3246</b>
	TRAFO Distribution	1	30	50	55	57	59	61	63	65	66	67
	TRAFO Industry oil	1	22	39	42	42	41	39	38	37	40	43
	TRAFO Industry dry	1	7	12	13	14	14	15	15	15	16	17
	TRAFO Power	1	86	133	149	165	181	197	213	228	245	262
	TRAFO DER oil	1	0	1	2	3	4	7	10	15	21	28
	TRAFO DER dry	1	0	5	9	14	21	34	53	79	112	149
	TRAFO Small	1	5	5	5	5	5	5	5	5	5	5
	<b>Total TRAFO Utility Transformers</b>		<b>151</b>	<b>246</b>	<b>274</b>	<b>299</b>	<b>326</b>	<b>358</b>	<b>397</b>	<b>445</b>	<b>505</b>	<b>571</b>
	<b>TOTAL ENERGY SECTOR</b>		<b>0</b>	<b>0</b>	<b>-4</b>	<b>-16</b>	<b>-30</b>	<b>-47</b>	<b>-68</b>	<b>-92</b>	<b>-115</b>	<b>-139</b>
	<i>(only improvement over BAU)</i>											
	Tyres C1, replacement for cars	0	439	321	259	265	256	249	240	231	224	217
	Tyres C1, OEM for cars	0	132	95	93	88	81	78	76	72	69	66
	<b>Tyres C1, total</b>		<b>572</b>	<b>416</b>	<b>352</b>	<b>353</b>	<b>337</b>	<b>327</b>	<b>316</b>	<b>303</b>	<b>293</b>	<b>283</b>
	Tyres C2, replacement for vans	0	128	109	96	106	107	113	111	106	102	98
	Tyres C2, OEM for vans	0	27	23	22	24	24	25	24	23	22	21
	<b>Tyres C2, total</b>		<b>155</b>	<b>132</b>	<b>117</b>	<b>130</b>	<b>131</b>	<b>137</b>	<b>135</b>	<b>129</b>	<b>124</b>	<b>119</b>
	Tyres C3, replacement for trucks/busses	0	204	147	126	163	171	187	190	187	185	183
	Tyres C3, OEM for trucks/busses	0	45	33	33	37	39	43	43	43	42	42
	<b>Tyres C3, total</b>		<b>250</b>	<b>180</b>	<b>158</b>	<b>200</b>	<b>210</b>	<b>229</b>	<b>233</b>	<b>230</b>	<b>227</b>	<b>224</b>
	<b>Tyres, total C1+C2+C3</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>TOTAL TRANSPORT SECTOR</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>ECO Primary Energy, Total, in TWh</b>		<b>9716</b>	<b>11272</b>	<b>10898</b>	<b>10271</b>	<b>9606</b>	<b>9247</b>	<b>9114</b>	<b>9110</b>	<b>9174</b>	<b>9260</b>
	ECO Primary Energy, Total, in PJ		34977	40580	39235	36977	34582	33289	32811	32797	33028	33335
	ECO Primary Energy, Total, in mtoe		835	969	937	883	826	795	784	783	789	796
	<b>ECO Primary Energy (summary ALL SECTORS)</b>		<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>		<b>981</b>	<b>1217</b>	<b>1157</b>	<b>1034</b>	<b>921</b>	<b>876</b>	<b>878</b>	<b>906</b>	<b>943</b>	<b>981</b>
	<b>SPACE HEATING</b>		<b>3760</b>	<b>3382</b>	<b>2959</b>	<b>2498</b>	<b>2130</b>	<b>1899</b>	<b>1770</b>	<b>1661</b>	<b>1556</b>	<b>1446</b>
	<b>SPACE COOLING</b>		<b>210</b>	<b>426</b>	<b>464</b>	<b>479</b>	<b>480</b>	<b>472</b>	<b>469</b>	<b>472</b>	<b>479</b>	<b>486</b>
	<b>VENTILATION (from electricity)</b>		<b>67</b>	<b>194</b>	<b>214</b>	<b>212</b>	<b>202</b>	<b>192</b>	<b>196</b>	<b>205</b>	<b>214</b>	<b>225</b>
1	<i>VENTILATION (from heat savings vs. BAU)</i> <i>(already included in NRG for space heating)</i>		<i>0</i>	<i>0</i>	<i>-35</i>	<i>-92</i>	<i>-136</i>	<i>-166</i>	<i>-166</i>	<i>-162</i>	<i>-159</i>	<i>-157</i>
	<b>LIGHTING (incl. SPL, ctrl &amp; sb)</b>		<b>690</b>	<b>1014</b>	<b>1008</b>	<b>938</b>	<b>833</b>	<b>740</b>	<b>711</b>	<b>731</b>	<b>779</b>	<b>845</b>
	<b>ELECTRONICS</b>		<b>201</b>	<b>602</b>	<b>619</b>	<b>582</b>	<b>542</b>	<b>549</b>	<b>536</b>	<b>538</b>	<b>550</b>	<b>563</b>
	<b>FOOD PRESERVATION</b>		<b>663</b>	<b>617</b>	<b>577</b>	<b>532</b>	<b>484</b>	<b>466</b>	<b>466</b>	<b>479</b>	<b>498</b>	<b>518</b>
	<b>COOKING</b>		<b>212</b>	<b>234</b>	<b>236</b>	<b>232</b>	<b>232</b>	<b>234</b>	<b>238</b>	<b>243</b>	<b>249</b>	<b>254</b>
	<b>CLEANING</b>		<b>222</b>	<b>250</b>	<b>249</b>	<b>221</b>	<b>217</b>	<b>211</b>	<b>209</b>	<b>209</b>	<b>209</b>	<b>208</b>
	<b>INDUSTRY COMPONENTS</b>		<b>1733</b>	<b>2609</b>	<b>2793</b>	<b>2877</b>	<b>2917</b>	<b>2962</b>	<b>3027</b>	<b>3095</b>	<b>3168</b>	<b>3246</b>
	<b>ENERGY SECTOR</b>		<b>0</b>	<b>0</b>	<b>-4</b>	<b>-16</b>	<b>-30</b>	<b>-47</b>	<b>-68</b>	<b>-92</b>	<b>-115</b>	<b>-139</b>
	<b>TRANSPORT SECTOR</b>		<b>977</b>	<b>728</b>	<b>628</b>	<b>683</b>	<b>678</b>	<b>693</b>	<b>684</b>	<b>663</b>	<b>645</b>	<b>627</b>
	<b>ECO Primary Energy, Total, in TWh</b>		<b>9716</b>	<b>11272</b>	<b>10898</b>	<b>10271</b>	<b>9606</b>	<b>9247</b>	<b>9114</b>	<b>9110</b>	<b>9174</b>	<b>9260</b>
	ECO Primary Energy, Total, in PJ		34977	40580	39235	36977	34582	33289	32811	32797	33028	33335
	ECO Primary Energy, Total, in mtoe		835	969	937	883	826	795	784	783	789	796
	For comparison: Eurostat Energy Balance ed. May 2018, Gross Inland Consumption (in mtoe)		1670	1765	1629							
	Share EIA products / Eurostat total		50%	55%	58%							





**Sector subdivision for ECO Primary Energy**

This subdivision uses the same sector definitions as used in Eurostat Energy Balances for Final Energy, plus the Energy sector. The Primary Energy per function and per sector presented here is the sum of the Final Energy consumed for that function in that sector and the share of the additional energy input required for the generation and distribution of that Final Energy. There is no comparable subdivision in Eurostat (see the FNRG-, ELEC- and FUEL- sheets for a comparison with Eurostat data).

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units  
 Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating  
 Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby  
 Transport Sector: see separate reporting below; not included in other sector totals  
 Energy Sector: see separate reporting below. The data considered here are Distribution Losses. As these losses are already considered when computing the Primary Energy for other sectors, only the decrease of the losses in the ECO scenario vs. the BAU scenario is reported. (reference for BAU = 0)

ECO Primary Energy (summary ENERGY SECTOR, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>TOTAL ENERGY SECTOR</b>										
(BAU taken as reference = 0)	0	0	-4	-16	-30	-47	-68	-92	-115	-139
ECO Primary Energy, Energy Sector, in TWh	0	0	-4	-16	-30	-47	-68	-92	-115	-139
ECO Primary Energy, Energy Sector, in PJ	0	0	-15	-57	-107	-169	-246	-330	-412	-502
ECO Primary Energy, Energy Sector, in mtoe	0	0	0	-1	-3	-4	-6	-8	-10	-12
ECO Primary Energy (summary INDUSTRY, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	35	45	43	39	35	33	33	34	36	37
SPACE HEATING	425	392	332	269	218	186	168	154	141	127
SPACE COOLING	55	96	104	107	106	103	102	102	103	105
VENTILATION	6	18	20	21	20	19	19	20	21	22
LIGHTING	98	150	155	158	143	126	122	125	133	144
ELECTRONICS	10	27	26	27	30	32	32	32	33	34
FOOD PRESERVATION	54	98	112	123	133	143	155	169	182	196
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	1	1	1	1	1	1	1	1	1	1
INDUSTRY COMPONENTS	1069	1574	1677	1725	1742	1760	1791	1824	1861	1900
ECO Primary Energy, Industry, in TWh	1752	2401	2469	2470	2429	2404	2424	2463	2511	2566
ECO Primary Energy, Industry, in PJ	6307	8643	8890	8891	8743	8654	8725	8865	9038	9237
ECO Primary Energy, Industry, in mtoe	151	206	212	212	209	207	208	212	216	221
ECO Primary Energy (summary TRANSPORT, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	165	126	111	129	133	141	142	138	135	132
TYRES for SERVICE-sector-related transport	329	250	218	251	255	269	268	261	255	249
TYRES for RESIDENTIAL-sector-related transport	457	332	282	282	270	261	253	243	235	227
TYRES for OTHER-sector-related transport	26	20	17	20	20	22	22	21	21	20
ECO Primary Energy, Transport, in TWh	977	728	628	683	678	693	684	663	645	627
ECO Primary Energy, Transport, in PJ	3516	2620	2261	2457	2441	2496	2463	2387	2321	2256
ECO Primary Energy, Transport, in mtoe	84	63	54	59	58	60	59	57	55	54



NRGECO

ECO Primary Energy (summary TERTIARY/SERVICES, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	302	373	354	317	282	268	269	277	289	300
SPACE HEATING	916	924	823	705	610	549	514	483	452	419
SPACE COOLING	136	281	306	315	313	307	303	304	308	312
VENTILATION	41	131	145	147	143	137	138	143	148	154
LIGHTING	378	618	637	650	599	529	508	525	563	616
ELECTRONICS	81	236	235	238	248	260	259	259	266	274
FOOD PRESERVATION	280	265	251	223	195	191	198	207	216	227
COOKING	27	26	25	24	23	22	21	21	21	21
CLEANING	14	19	19	18	17	18	18	18	18	19
INDUSTRY COMPONENTS	429	704	767	791	803	820	839	860	881	905
<b>ECO Primary Energy, Services, in TWh</b>	<b>2604</b>	<b>3577</b>	<b>3564</b>	<b>3429</b>	<b>3234</b>	<b>3100</b>	<b>3067</b>	<b>3097</b>	<b>3163</b>	<b>3247</b>
ECO Primary Energy, Services, in PJ	9373	12878	12830	12344	11643	11160	11041	11151	11388	11689
ECO Primary Energy, Services, in mtoe	224	308	306	295	278	267	264	266	272	279

ECO Primary Energy (summary RESIDENTIAL, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	635	787	748	668	595	566	567	585	609	634
SPACE HEATING	2297	1953	1708	1445	1237	1109	1037	978	921	862
SPACE COOLING	4	24	26	27	31	34	35	36	37	38
VENTILATION	20	42	45	41	36	33	35	39	42	45
LIGHTING	207	236	206	121	82	77	74	73	74	76
ELECTRONICS	109	334	353	313	260	252	240	241	246	250
FOOD PRESERVATION	317	240	200	170	140	115	95	84	79	73
COOKING	185	208	210	209	209	212	216	222	227	233
CLEANING	207	230	228	201	199	192	189	189	189	188
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO Primary Energy, Residential, in TWh</b>	<b>3981</b>	<b>4052</b>	<b>3724</b>	<b>3194</b>	<b>2789</b>	<b>2589</b>	<b>2489</b>	<b>2448</b>	<b>2425</b>	<b>2399</b>
ECO Primary Energy, Residential, in PJ	14330	14587	13405	11499	10040	9320	8961	8811	8729	8636
ECO Primary Energy, Residential, in mtoe	342	348	320	275	240	223	214	210	208	206

ECO Primary Energy (summary OTHER)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	10	12	12	10	9	9	9	9	9	10
SPACE HEATING	122	113	97	79	65	55	50	46	42	39
SPACE COOLING	16	26	28	29	29	29	29	29	30	31
VENTILATION	1	3	3	3	3	3	3	3	3	4
LIGHTING	7	10	10	10	9	8	8	8	9	9
ELECTRONICS	2	5	4	4	4	5	5	5	5	5
FOOD PRESERVATION	11	14	15	15	16	17	18	19	21	22
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	234	331	349	360	371	383	397	411	426	441
<b>ECO Primary Energy, Other sectors, in TWh</b>	<b>403</b>	<b>514</b>	<b>518</b>	<b>512</b>	<b>506</b>	<b>508</b>	<b>518</b>	<b>531</b>	<b>546</b>	<b>561</b>
ECO Primary Energy, Other sectors, in PJ	1451	1851	1863	1842	1822	1829	1865	1913	1964	2018
ECO Primary Energy, Other sectors, in mtoe	35	44	45	44	44	44	45	46	47	48

NRGECO

ECO Primary Energy (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		981	1217	1157	1034	921	876	878	906	943	981
	Residential	635	787	748	668	595	566	567	585	609	634
	Tertiary / Services	302	373	354	317	282	268	269	277	289	300
	Industry	35	45	43	39	35	33	33	34	36	37
	Other	10	12	12	10	9	9	9	9	9	10
<b>SPACE HEATING. All sectors, TWh</b>		3760	3382	2959	2498	2130	1899	1770	1661	1556	1446
	Residential	2297	1953	1708	1445	1237	1109	1037	978	921	862
	Tertiary / Services	916	924	823	705	610	549	514	483	452	419
	Industry	425	392	332	269	218	186	168	154	141	127
	Other	122	113	97	79	65	55	50	46	42	39
<b>SPACE COOLING. All sectors, TWh</b>		210	426	464	479	480	472	469	472	479	486
<b>&amp; HT PROCESS</b>	Residential	4	24	26	27	31	34	35	36	37	38
	Tertiary / Services	136	281	306	315	313	307	303	304	308	312
	Industry	55	96	104	107	106	103	102	102	103	105
	Other	16	26	28	29	29	29	29	29	30	31
<b>VENTILATION. All sectors, TWh</b>		67	194	214	212	202	192	196	205	214	225
	Residential	20	42	45	41	36	33	35	39	42	45
	Tertiary / Services	41	131	145	147	143	137	138	143	148	154
	Industry	6	18	20	21	20	19	19	20	21	22
	Other	1	3	3	3	3	3	3	3	3	4
<b>LIGHTING. All sectors, TWh</b>		690	1014	1008	938	833	740	711	731	779	845
	Residential	207	236	206	121	82	77	74	73	74	76
	Tertiary / Services	378	618	637	650	599	529	508	525	563	616
	Industry	98	150	155	158	143	126	122	125	133	144
	Other	7	10	10	10	9	8	8	8	9	9
<b>ELECTRONICS. All sectors, TWh</b>		201	602	619	582	542	549	536	538	550	563
	Residential	109	334	353	313	260	252	240	241	246	250
	Tertiary / Services	81	236	235	238	248	260	259	259	266	274
	Industry	10	27	26	27	30	32	32	32	33	34
	Other	2	5	4	4	4	5	5	5	5	5
<b>FOOD PRESERVE. All sectors, TWh</b>		663	617	577	532	484	466	466	479	498	518
	Residential	317	240	200	170	140	115	95	84	79	73
	Tertiary / Services	280	265	251	223	195	191	198	207	216	227
	Industry	54	98	112	123	133	143	155	169	182	196
	Other	11	14	15	15	16	17	18	19	21	22
<b>COOKING. All sectors, TWh</b>		212	234	236	232	232	234	238	243	249	254
	Residential	185	208	210	209	209	212	216	222	227	233
	Tertiary / Services	27	26	25	24	23	22	21	21	21	21
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>		222	250	249	221	217	211	209	209	209	208
	Residential	207	230	228	201	199	192	189	189	189	188
	Tertiary / Services	14	19	19	18	17	18	18	18	18	19
	Industry	1	1	1	1	1	1	1	1	1	1
	Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>		1733	2609	2793	2877	2917	2962	3027	3095	3168	3246
	Residential	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services	429	704	767	791	803	820	839	860	881	905
	Industry	1069	1574	1677	1725	1742	1760	1791	1824	1861	1900
	Other	234	331	349	360	371	383	397	411	426	441
<b>TYRES. Transport sector, TWh</b>		977	728	628	683	678	693	684	663	645	627
	Residential transport	457	332	282	282	270	261	253	243	235	227
	Tertiary / Services transport	329	250	218	251	255	269	268	261	255	249
	Industry transport	165	126	111	129	133	141	142	138	135	132
	Other transport	26	20	17	20	20	22	22	21	21	20
<b>ALL PRODUCTS. All sectors, TWh</b>		9716	11272	10903	10287	9636	9294	9183	9202	9289	9399
<b>(excl. Energy sector)</b>	Residential	3981	4052	3724	3194	2789	2589	2489	2448	2425	2399
	Tertiary / Services	2604	3577	3564	3429	3234	3100	3067	3097	3163	3247
	Industry	1752	2401	2469	2470	2429	2404	2424	2463	2511	2566
	Other	403	514	518	512	506	508	518	531	546	561
	Transport	977	728	628	683	678	693	684	663	645	627

NRGECO

ECO Primary Energy (summary FUNCTIONS, %)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>										
Residential	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
Tertiary / Services	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Industry	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>										
Residential	61%	58%	58%	58%	58%	58%	59%	59%	59%	60%
Tertiary / Services	24%	27%	28%	28%	29%	29%	29%	29%	29%	29%
Industry	11%	12%	11%	11%	10%	10%	9%	9%	9%	9%
Other	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>										
& HT PROCESS Residential	2%	6%	6%	6%	6%	7%	7%	8%	8%	8%
Tertiary / Services	65%	66%	66%	66%	65%	65%	65%	64%	64%	64%
Industry	26%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Other	8%	6%	6%	6%	6%	6%	6%	6%	6%	6%
<b>VENTILATION (from electricity).</b>										
Residential	29%	21%	21%	19%	18%	17%	18%	19%	20%	20%
Tertiary / Services	61%	68%	68%	69%	71%	71%	71%	70%	69%	69%
Industry	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%
Other	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
<b>LIGHTING.</b>										
Residential	30%	23%	20%	13%	10%	10%	10%	10%	10%	9%
Tertiary / Services	55%	61%	63%	69%	72%	71%	71%	72%	72%	73%
Industry	14%	15%	15%	17%	17%	17%	17%	17%	17%	17%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>										
Residential	54%	56%	57%	54%	48%	46%	45%	45%	45%	44%
Tertiary / Services	40%	39%	38%	41%	46%	47%	48%	48%	48%	49%
Industry	5%	5%	4%	5%	6%	6%	6%	6%	6%	6%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>										
Residential	48%	39%	35%	32%	29%	25%	20%	18%	16%	14%
Tertiary / Services	42%	43%	44%	42%	40%	41%	42%	43%	43%	44%
Industry	8%	16%	19%	23%	27%	31%	33%	35%	37%	38%
Other	2%	2%	3%	3%	3%	4%	4%	4%	4%	4%
<b>COOKING.</b>										
Residential	87%	89%	89%	90%	90%	91%	91%	91%	91%	92%
Tertiary / Services	13%	11%	11%	10%	10%	9%	9%	9%	9%	8%
Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>										
Residential	93%	92%	92%	91%	91%	91%	91%	91%	90%	90%
Tertiary / Services	6%	8%	8%	8%	8%	8%	9%	9%	9%	9%
Industry	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>										
Residential	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tertiary / Services	25%	27%	27%	28%	28%	28%	28%	28%	28%	28%
Industry	62%	60%	60%	60%	60%	59%	59%	59%	59%	59%
Other	14%	13%	12%	13%	13%	13%	13%	13%	13%	14%
<b>TYRES.</b>										
Residential transport	47%	46%	45%	41%	40%	38%	37%	37%	36%	36%
Tertiary / Services transport	34%	34%	35%	37%	38%	39%	39%	39%	40%	40%
Industry transport	17%	17%	18%	19%	20%	20%	21%	21%	21%	21%
Other transport	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>										
Residential	41%	36%	34%	31%	29%	28%	27%	27%	26%	26%
Tertiary / Services	27%	32%	33%	33%	34%	33%	33%	34%	34%	35%
Industry	18%	21%	23%	24%	25%	26%	26%	27%	27%	27%
Other	4%	5%	5%	5%	5%	5%	6%	6%	6%	6%
Transport	10%	6%	6%	7%	7%	7%	7%	7%	7%	7%

NRGSAVE

db	SAVED Primary Energy (BAU-ECO, in TWh primary)	elec	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.78	0	0	79	177	262	293	304	314	329	345
	<b>Total CH Central Heating combi, water heat</b>	0.02	0	0	21	74	129	173	205	233	263	294
	<b>TOTAL WATER HEATING</b>		0	0	100	251	392	466	508	547	592	639
	<i>CH non-electric</i>	0	0	47	262	502	688	840	898	911	885	834
	<i>CH electric resistance boiler, 1st estimate</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>CH heat pump, 1st estimate</i>	1	0	0	-5	-7	-20	-34	-48	-62	-75	-89
	<i>CH auxiliary electricity (incl. circulator), 1st estimate</i>	1	0	6	17	24	40	42	43	41	38	35
	<b>Total CH Central Heating boiler, space heat</b>		0	53	274	519	708	848	894	891	848	781
	SFB Wood Manual	0	0.0	0.0	1.1	3.9	5.2	5.1	4.0	2.8	2.2	1.8
	SFB Wood Direct Draft	0	0.0	0.0	0.4	1.5	3.3	4.6	5.3	6.3	7.7	9.6
	SFB Coal	0	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1
	SFB Pellets	0	0.0	0.0	0.2	0.7	1.6	2.3	2.6	2.8	3.1	3.4
	SFB Wood chips	0	0.0	0.0	0.3	1.2	2.0	2.6	2.9	3.0	3.2	3.4
	<b>Total Solid Fuel Boiler</b>		0	0	2	8	12	15	15	15	16	18
	CHAE-S (≤ 400 kW)	1	0.0	0.0	0.0	0.2	0.9	1.6	2.1	2.4	2.3	2.0
	CHAE-L (> 400 kW)	1	0.0	0.0	0.0	0.6	1.8	2.4	2.6	2.7	2.5	2.0
	CHWE-S (≤ 400 kW)	1	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.02	0.01	0.00
	CHWE-M (> 400 kW; ≤ 1500 kW)	1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0
	CHWE-L (> 1500 kW)	1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0
	CHF	0.05	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	HT PCH-AE-S	1	0.0	0.0	0.1	2.7	6.6	9.8	10.5	9.6	8.3	7.0
	HT PCH-AE-L	1	0.0	0.0	0.2	3.0	7.8	12.5	15.0	15.3	14.5	13.3
	HT PCH-WE-S	1	0.0	0.0	0.0	0.3	0.7	1.0	1.0	0.7	0.4	0.2
	HT PCH-WE-M	1	0.0	0.0	0.0	0.5	1.1	1.4	1.2	0.5	0.2	0.0
	HT PCH-WE-L	1	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.5	0.4
	AC rooftop	1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0
	AC splits	1	0.0	0.0	0.1	1.1	2.1	2.7	2.5	2.0	1.6	1.3
	AC VRF	1	0.0	0.0	0.0	0.4	1.1	2.1	2.7	2.9	2.8	2.5
	ACF	0.05	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	<b>SubTotal AHC central Air Cooling</b>		0	0	0	9	23	34	39	37	34	29
	AC rooftop (rev)	1	0.0	0.0	0.6	2.7	4.0	3.6	1.9	0.6	0.0	0.0
	AC splits (rev)	1	0.0	0.0	1.1	4.8	8.2	10.0	9.2	7.9	6.7	5.7
	AC VRF (rev)	1	0.0	0.0	0.5	2.4	5.7	9.8	12.1	12.6	12.3	11.4
	ACF (rev)	0.05	0.00	0.00	0.01	0.03	0.06	0.09	0.11	0.12	0.11	0.11
	AHF	0.05	0.0	0.0	2.6	10.8	19.0	24.0	23.4	20.9	18.3	16.0
	AHE	1	0.0	0.0	0.1	0.2	0.5	0.6	0.6	0.6	0.5	0.4
	<b>SubTotal AHC central Air Heating</b>		0	0	5	21	37	48	47	43	38	34
	<b>Total AHC central Air Heating &amp; Cooling</b>		0	0	5	30	60	82	86	80	71	62
	LH open fireplace	0	0.0	0.0	0.2	1.2	3.4	5.1	6.3	7.4	8.0	8.1
	LH closed fireplace/inset	0	0.0	0.0	0.4	2.3	5.7	8.5	10.4	11.9	12.8	12.7
	LH wood stove	0	0.0	0.0	0.3	1.5	3.5	5.1	6.1	7.0	7.5	7.5
	LH coal stove	0	0.0	0.0	0.1	0.4	0.8	0.9	0.9	0.9	0.9	0.7
	LH cooker	0	0.0	0.0	0.1	0.5	1.4	2.0	2.3	2.2	2.2	2.3
	LH SHR stove	0	0.0	0.0	0.2	0.7	1.4	1.9	2.2	2.5	2.7	2.8
	LH pellet stove	0	0.0	0.0	0.1	0.4	1.0	1.4	1.4	1.4	1.4	1.5
	LH open fire gas	0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4
	LH closed fire gas	0	0.0	0.0	0.1	0.6	1.6	2.3	2.8	3.1	3.1	3.0
	LH flueless fuel heater	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	1	0.0	0.0	2.1	8.6	12.4	12.6	12.2	12.1	12.0	12.1
	LH elec.convector	1	0.0	0.0	6.7	26.1	38.0	38.8	37.0	36.7	37.0	37.5
	LH elec.storage	1	0.0	0.0	0.6	2.5	4.1	5.0	5.0	4.9	4.8	4.8
	LH elec.underfloor	1	0.0	0.0	0.8	3.2	5.3	6.9	7.8	8.6	9.2	9.1
	LH luminous heaters	0	0.0	0.0	0.1	0.4	0.7	0.9	0.9	0.8	0.8	0.8
	LH tube heaters	0	0.0	0.0	0.2	0.9	1.5	2.0	2.1	2.0	1.9	1.8
	<b>LH total</b>		0	0	12	49	81	94	98	102	105	105
	RAC (cooling demand), all types <12 kW	1	0	0	4	10	15	17	18	18	19	20
	RAC (heating demand), reversible <12kW	1	0	0	6	16	26	30	31	30	29	28
	<b>Total RAC Room Air Conditioner</b>		0	0	10	26	41	47	48	48	48	48
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	0	2	18	28	31	33	33	31	29	27
	<b>TOTAL SPACE HEATING</b>		0	53	299	613	865	1035	1084	1081	1036	966
	<b>TOTAL SPACE COOLING</b>		0	0	4	19	38	51	56	56	53	49
	NRVU electricity	1	0	0	4	15	26	35	37	37	37	38
1	NRVU heat (negative=saving vs. natural ventilation)	0	0	0	20	66	111	148	152	147	141	134
	RVU Central Unidir. VU ≤125W/fan (1 fan)	1	0	0	3	9	14	18	19	21	22	24
	RVU Central Balanced VU ≤125W/fan (2 fans)	1	0	0	1	3	6	9	10	11	13	14
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	1	0	0	0	0	1	1	2	2	3	3
1	RVU Central Unidir., heat (negative=saving)	0	0	0	10	26	41	54	57	62	66	70
1	RVU Central Balanced, heat (negative=saving)	0	0	0	1	2	4	5	6	6	7	8
1	RVU Local Balanced, heat (negative=saving)	0	0	0	0	1	2	2	3	4	5	6
	<b>Total VU (electricity + (negative) heat saving vs. natural ventilation)</b>		0	0	40	121	205	274	287	290	293	295
	<b>TOTAL VENTILATION (from electricity)</b>		-	-	9	27	47	64	69	71	74	78
1	<b>TOTAL VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</b>		-	-	35	92	136	166	166	162	159	157

NRGSAVE

db	SAVED Primary Energy (BAU-ECO, in TWh primary)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050	
<i>LS, primary energy incl. control gear (BAU-ECO)</i>												
	LFL (T12,T8h,T8t,T5,other)	1	0	4	15	49	163	233	231	200	165	133
	HID (HPM, HPS, MH)	1	0	3	35	59	64	57	38	24	15	9
	CFLni (all shapes)	1	0	0	3	7	11	10	6	4	2	1
	CFLi (retrofit for GLS, HL)	1	0	-8	-9	4	23	27	20	13	8	5
	GLS (DLS & NDLS)	1	0	57	100	96	57	33	20	11	7	4
	HL (DLS & NDLS, LV & MV)	1	0	-12	-8	105	115	59	31	17	9	5
	LED replacing LFL (retrofit & luminaire)	1	0	0	-2	-17	-70	-91	-82	-61	-37	-16
	LED replacing HID (retrofit & luminaire)	1	0	0	-24	-34	-28	-15	-5	1	6	11
	LED replacing CFLni (retrofit & luminaire)	1	0	0	0	-2	-4	-3	-1	0	1	2
	LED replacing DLS (retrofit & luminaire)	1	0	0	-3	-7	-8	-5	-3	-2	-1	0
	LED replacing NDLS (retrofit & luminaire)	1	0	0	-4	-23	-30	-23	-15	-8	-3	0
	<i>Special Purpose Lamps (SPL)</i>	1	0	0	0	0	0	0	0	0	0	0
	<i>Lighting controls (ctrl) and standby (sb)</i>	1	0	0	0	0	0	0	0	0	0	0
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>0</b>	<b>45</b>	<b>102</b>	<b>237</b>	<b>291</b>	<b>283</b>	<b>240</b>	<b>199</b>	<b>171</b>	<b>153</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>0</b>	<b>45</b>	<b>102</b>	<b>237</b>	<b>291</b>	<b>283</b>	<b>240</b>	<b>199</b>	<b>171</b>	<b>153</b>
	DP TV on-mode, total all types	1	0.0	0.0	14.7	52.5	95.5	131.2	141.4	119.7	99.6	88.6
	DP TV standby, standard (NoNA)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP TV standby, total all types</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DP TV total on-mode + standby</b>		<b>0</b>	<b>0</b>	<b>15</b>	<b>53</b>	<b>95</b>	<b>131</b>	<b>141</b>	<b>120</b>	<b>100</b>	<b>89</b>
	DP Monitor on-mode	1	0.0	0.0	2.5	7.7	8.2	8.8	7.4	5.8	5.3	4.8
	DP Monitor standby	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>		<b>0</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>5</b>
	DP Signage on-mode	1	0.0	0.0	0.0	0.0	1.9	9.7	17.0	15.8	9.3	2.6
	DP Signage standby	1	0.0	0.0	0.0	0.0	0.3	1.4	2.5	2.4	1.4	0.4
	<b>DP Signage total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>11</b>	<b>19</b>	<b>18</b>	<b>11</b>	<b>3</b>
	<b>DP Electronic Displays, total on-mode</b>		<b>0</b>	<b>0</b>	<b>17</b>	<b>60</b>	<b>106</b>	<b>150</b>	<b>166</b>	<b>141</b>	<b>114</b>	<b>96</b>
	<b>DP Electronic Displays, total standby</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
	<b>DP Electronic Displays, total</b>		<b>0</b>	<b>0</b>	<b>17</b>	<b>60</b>	<b>106</b>	<b>151</b>	<b>168</b>	<b>144</b>	<b>116</b>	<b>96</b>
	SSTB	1	0.0	3.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	1	0.0	0.0	5.2	11.1	11.4	11.1	11.7	12.7	13.6	14.6
	<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>4</b>	<b>5</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
	VIDEO players/recorders	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	1	0.0	0.0	1.5	2.7	3.0	2.7	2.7	2.7	2.7	2.7
	<b>Total VIDEO</b>		<b>0.0</b>	<b>0.0</b>	<b>1.5</b>	<b>2.7</b>	<b>3.0</b>	<b>2.7</b>	<b>2.7</b>	<b>2.7</b>	<b>2.7</b>	<b>2.7</b>
<i>ES&amp;DS only, without effects on infrastructure</i>												
	ES tower 1-socket traditional	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 1-socket traditional	1	0	0	0	0.3	0.2	0.2	0.1	0.1	0.1	0.1
	ES rack 2-socket traditional	1	0	0	0	0.8	1.0	1.1	1.1	1.1	1.1	1.1
	ES rack 2-socket cloud	1	0	0	0	2.0	2.4	2.4	2.4	2.4	2.4	2.4
	ES rack 4-socket traditional	1	0	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	ES rack 4-socket cloud	1	0	0	0	0.3	0.5	0.5	0.5	0.5	0.5	0.5
	ES rack 2-socket resilient trad.	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket resilient cloud	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 4-socket resilient trad.	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	1	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 2-socket traditional	1	0	0	0	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	ES blade 2-socket cloud	1	0	0	0	0.7	0.9	1.0	1.0	1.0	1.0	1.0
	ES blade 4-socket traditional	1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 4-socket cloud	1	0	0	0	0.2	0.3	0.4	0.4	0.4	0.4	0.4
	<b>ES total traditional</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>ES total cloud</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<b>ES Enterprise Servers total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
	DS Online 2	1	0	0	0	0.3	0.8	1.1	1.2	1.2	1.2	1.2
	DS Online 3	1	0	0	0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
	DS Online 4	1	0	0	0	0.2	0.5	0.6	0.7	0.7	0.7	0.7
	<b>DS Data Storage products total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>ES + DS total (excl. infrastructure)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>
	PC Desktop	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Notebook	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Tablet/slate	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Thin client	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total PC, electricity</b>		<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	EP-Copier mono	1	0.0	1.4	1.2	0.5	0.3	0.2	0.1	0.0	0.0	0.0
	EP-Copier colour	1	0.0	0.1	1.4	2.5	3.0	3.3	3.5	3.8	4.1	4.4
	EP-printer mono	1	0.0	1.5	2.8	2.3	1.9	1.7	1.5	1.2	1.0	0.8
	EP-printer colour	1	0.0	0.2	3.0	4.4	5.3	6.2	7.1	8.0	8.9	9.8
	IJ SFD printer	1	0.0	0.7	0.7	0.5	0.3	0.3	0.2	0.2	0.1	0.1
	IJ MFD printer	1	0.0	1.4	2.9	3.3	3.6	3.9	4.3	4.6	4.9	5.2
	<b>Total imaging equipment, electricity</b>		<b>0</b>	<b>5</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>

NRGSAVE

db	SAVED Primary Energy (BAU-ECO, in TWh primary)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), on-mode hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	1	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, idle hours	1	0.0	0.0	0.2	0.5	0.6	0.6	0.5	0.3	0.1
	SB Home Phones (fixed), idle hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), idle hours	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total SB (networked) StandBy (rest)</b>		<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>1.3</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.3</b>
db	<i>EPS Active mode (electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	1	0.0	0.0	0.5	0.9	1.0	0.8	0.7	0.6	0.6
0.6	EPS 10–12 W	1	0.0	0.2	4.7	9.7	12.0	10.7	9.2	7.8	6.3
0.5	EPS 15–20 W	1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
1.0	EPS 20–30 W	1	0.0	0.0	0.4	0.7	0.7	0.6	0.5	0.4	0.3
0.8	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 30-65 W	1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.2	0.6	0.8	0.7	0.6	0.5	0.4
	<b>EPS, total for active mode</b>		<b>0</b>	<b>0</b>	<b>6</b>	<b>12</b>	<b>15</b>	<b>13</b>	<b>11</b>	<b>10</b>	<b>8</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	1	0.0	0.0	0.3	0.3	0.2	0.1	0.1	0.0	0.0
0.0	EPS 6–10 W	1	0.0	0.1	0.8	1.6	2.1	2.0	1.8	1.6	1.5
0.0	EPS 10–12 W	1	0.0	0.0	0.3	0.5	0.6	0.5	0.4	0.4	0.3
0.0	EPS 15–20 W	1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 20–30 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30-65 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>		<b>0.0</b>	<b>0.1</b>	<b>1.4</b>	<b>2.6</b>	<b>3.0</b>	<b>2.7</b>	<b>2.4</b>	<b>2.1</b>	<b>1.9</b>
	<b>EPS, overall total (active + no-load)</b>		<b>0</b>	<b>0</b>	<b>7</b>	<b>15</b>	<b>18</b>	<b>16</b>	<b>14</b>	<b>12</b>	<b>10</b>
	<b>EPS, double counted subtracted</b>		<b>0</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>5</b>
	UPS below 1.5 kVA	1	0.0	0.0	0.0	3.2	4.9	5.7	6.4	7.1	7.6
	UPS 1.5 to 5 kVA	1	0.0	0.0	0.0	6.6	17.3	21.3	24.3	27.0	29.3
	UPS 5 to 10 kVA	1	0.0	0.0	0.0	0.3	0.8	1.1	1.2	1.4	1.5
	UPS 10 to 200 kVA	1	0.0	0.0	0.0	1.0	3.1	5.4	6.2	7.0	7.7
	<b>Total UPS - Uninterrupted Power Supplies</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>26</b>	<b>34</b>	<b>38</b>	<b>42</b>	<b>46</b>
	<b>TOTAL ELECTRONICS</b>		<b>0</b>	<b>9</b>	<b>40</b>	<b>113</b>	<b>179</b>	<b>232</b>	<b>254</b>	<b>235</b>	<b>212</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>1</b>	<b>0</b>	<b>87</b>	<b>131</b>	<b>163</b>	<b>195</b>	<b>222</b>	<b>243</b>	<b>254</b>	<b>259</b>
	CF open vertical chilled multi deck (RVC2)	1	0.0	0.0	0.3	4.1	10.4	13.0	12.7	12.9	13.1
	CF open horizontal frozen island (RHF4)	1	0.0	0.0	0.0	0.3	0.8	0.9	0.9	0.9	0.9
	CF other supermarket display (non-BCs)	1	0.0	0.0	0.6	5.4	12.5	16.2	17.7	18.6	19.2
	CF Plug in one door beverage cooler	1	0.0	0.0	0.2	5.5	12.9	14.8	14.6	14.9	15.4
	CF Plug in horizontal ice cream freezer	1	0.0	0.0	0.0	0.1	0.3	0.4	0.3	0.3	0.3
	CF Spiral vending machine	1	0.0	0.0	0.1	0.6	1.3	1.8	1.9	1.9	2.0
	<b>Total CF Commercial Refrigeration</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>38</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>51</b>
	PF Storage cabinet Chilled Vertical (CV)	1	0.0	0.0	0.0	0.9	2.5	3.0	3.2	3.3	3.4
	PF Storage cabinet Frozen Vertical (FV)	1	0.0	0.0	0.0	1.1	3.0	3.6	3.8	3.9	4.1
	PF Storage cabinet Chilled Horizontal (CH)	1	0.0	0.0	0.0	0.7	1.9	2.3	2.4	2.5	2.6
	PF Storage cabinet Frozen Horizontal (FH)	1	0.0	0.0	0.0	0.5	1.2	1.5	1.5	1.6	1.7
	<b>PF Storage cabinets All types</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>
	PF Process Chiller AC MT S ≤ 300 kW	1	0.0	0.0	0.0	0.6	1.3	2.1	2.5	2.7	2.9
	PF Process Chiller AC MT L > 300 kW	1	0.0	0.0	0.0	0.5	1.2	1.9	2.3	2.5	2.7
	PF Process Chiller AC LT S ≤ 200 kW	1	0.0	0.0	0.0	0.5	1.2	1.9	2.2	2.4	2.6
	PF Process Chiller AC LT L > 200 kW	1	0.0	0.0	0.0	0.5	1.2	2.0	2.3	2.5	2.8
	PF Process Chiller WC MT S ≤ 300 kW	1	0.0	0.0	0.0	0.2	0.4	0.6	0.7	0.8	0.9
	PF Process Chiller WC MT L > 300 kW	1	0.0	0.0	0.0	0.2	0.5	0.8	0.9	1.0	1.1
	PF Process Chiller WC LT S ≤ 200 kW	1	0.0	0.0	0.0	0.2	0.4	0.7	0.8	0.9	1.0
	PF Process Chiller WC LT L > 200 kW	1	0.0	0.0	0.0	0.2	0.6	0.9	1.1	1.2	1.3
	<b>PF Process Chiller All MT&amp;LT</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>7</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>15</b>
	PF Condensing Unit MT S 0.2-1 kW	1	0.0	0.0	0.0	0.6	1.3	1.5	1.6	1.7	1.8
	PF Condensing Unit MT M 1-5 kW	1	0.0	0.0	0.0	1.1	2.4	2.6	2.8	3.1	3.3
	PF Condensing Unit MT L 5-20 kW	1	0.0	0.0	0.0	1.9	3.7	4.0	4.3	4.6	4.9
	PF Condensing Unit MT XL 20-50 kW	1	0.0	0.0	0.0	1.8	3.4	3.7	4.0	4.3	4.6
	PF Condensing Unit LT S 0.1-0.4 kW	1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
	PF Condensing Unit LT M 0.4-2 kW	1	0.0	0.0	0.0	0.4	0.8	0.8	0.9	0.9	1.0
	PF Condensing Unit LT L 2-8 kW	1	0.0	0.0	0.0	1.0	1.7	1.8	1.9	2.1	2.2
	PF Condensing Unit LT XL 8-20 kW	1	0.0	0.0	0.0	1.8	3.3	3.5	3.8	4.1	4.4
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>22</b>
	<b>PF Professional Refrigeration, Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>22</b>	<b>28</b>	<b>31</b>	<b>34</b>	<b>36</b>
	<b>TOTAL FOOD PRESERVATION</b>		<b>0</b>	<b>87</b>	<b>133</b>	<b>189</b>	<b>255</b>	<b>297</b>	<b>322</b>	<b>337</b>	<b>346</b>

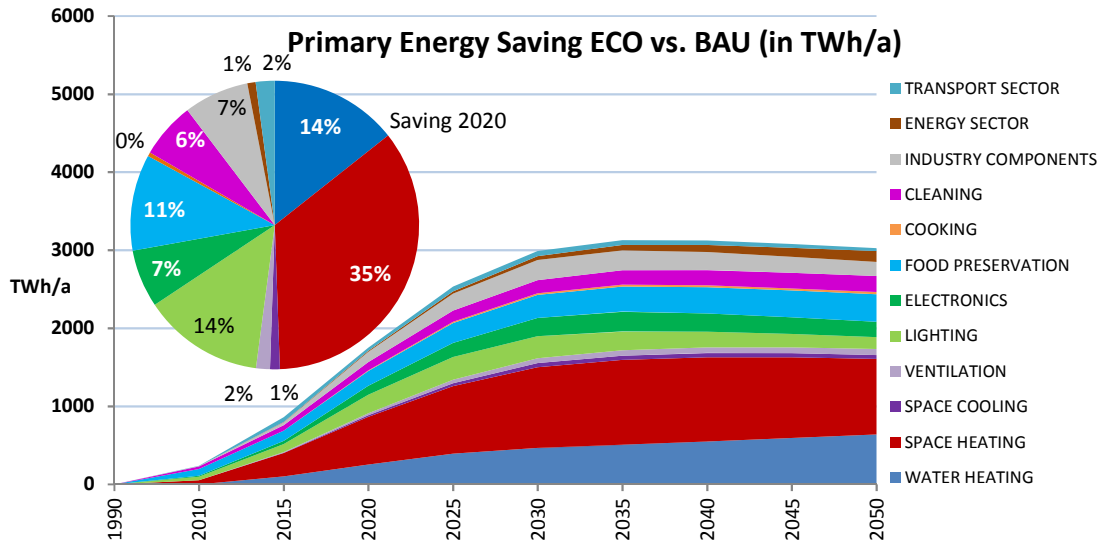
NRGSAVE

db	SAVED Primary Energy (BAU-ECO, in TWh primary)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	1	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.6	0.6
	CA El. Ovens	1	0.0	0.0	0.0	1.1	2.6	4.1	5.5	5.7	5.8
	CA Gas Hobs	0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.4	0.4
	CA Gas Ovens	0	0.0	0.0	0.0	0.3	0.8	1.2	1.6	1.6	1.6
	CA Range Hoods	1	0.0	0.0	0.2	1.7	4.8	8.3	10.7	11.8	12.7
	<b>Total CA Cooking Appliances</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>15</b>	<b>19</b>	<b>20</b>	<b>21</b>
	CM Dripfilter (glass)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (thermos)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Hard cap espresso	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Semi-auto espresso	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	1	0.0	0.0	0.8	2.6	2.5	2.5	2.5	2.5	2.5
	CM Dripfilter (thermos), standby/keep warm	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	1	0.0	0.0	0.2	0.8	0.9	1.0	1.1	1.1	1.2
	CM Hard cap espresso, standby/keep warm	1	0.0	0.0	0.1	0.5	0.7	0.7	0.7	0.7	0.7
	CM Semi-auto espresso, standby/keep warm	1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CM Fully-auto espresso, standby/keep warm	1	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
	<b>Total CM household Coffee Makers</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>
	<b>TOTAL COOKING</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>13</b>	<b>19</b>	<b>23</b>	<b>25</b>	<b>26</b>
	<b>Total WM household Washing Machine</b>	1	<b>0</b>	<b>24</b>	<b>35</b>	<b>40</b>	<b>42</b>	<b>42</b>	<b>39</b>	<b>34</b>	<b>29</b>
	<b>Total DW household Dishwasher</b>	1	<b>0</b>	<b>11</b>	<b>17</b>	<b>22</b>	<b>26</b>	<b>30</b>	<b>33</b>	<b>37</b>	<b>40</b>
	LD vented el.	1	0.0	0.0	0.3	0.9	1.3	1.4	1.5	1.5	1.5
	LD condens el.	1	0.0	0.0	1.9	7.9	15.6	20.4	22.3	23.3	24.2
	LD vented gas	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>9</b>	<b>17</b>	<b>22</b>	<b>24</b>	<b>25</b>	<b>26</b>
	VC dom	1	0	0	11	34	54	67	79	90	98
	VC nondom	1	0	0	1	5	7	7	8	8	9
	<b>Total VC Vacuum Cleaner</b>		<b>0</b>	<b>0</b>	<b>12</b>	<b>39</b>	<b>61</b>	<b>74</b>	<b>87</b>	<b>98</b>	<b>107</b>
	<b>TOTAL CLEANING</b>		<b>-</b>	<b>35</b>	<b>67</b>	<b>110</b>	<b>146</b>	<b>168</b>	<b>184</b>	<b>194</b>	<b>201</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	1	0	0	6	18	31	40	42	42	42
0.5	FAN Axial>300Pa	1	0	0	5	18	35	46	50	50	50
0.5	FAN Centr.FC	1	0	0	2	8	14	19	20	20	20
0.5	FAN Centr.BC-free	1	0	0	5	13	22	27	29	30	31
0.5	FAN Centr.BC	1	0	0	6	16	27	33	37	39	43
0.5	FAN Cross-flow	1	0	0	1	4	6	7	7	8	9
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>		<b>0</b>	<b>0</b>	<b>13</b>	<b>39</b>	<b>68</b>	<b>85</b>	<b>93</b>	<b>95</b>	<b>97</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	1	0	0	14	62	99	96	86	72	54
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	1	0	0	21	96	164	165	146	120	87
0.45	Medium (L) 3-ph 75-375 kW no VSD	1	0	1	38	147	247	306	257	175	93
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>		<b>0</b>	<b>2</b>	<b>74</b>	<b>305</b>	<b>509</b>	<b>567</b>	<b>488</b>	<b>366</b>	<b>234</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	0	0	-2	-24	-42	-39	-33	-25	-15
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	1	0	0	-10	-53	-90	-88	-75	-59	-39
0.45	Medium (L) 3-ph 75-375 kW with VSD	1	0	0	-22	-85	-141	-172	-138	-86	-36
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>		<b>0</b>	<b>0</b>	<b>-34</b>	<b>-162</b>	<b>-274</b>	<b>-299</b>	<b>-246</b>	<b>-171</b>	<b>-90</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>		<b>0</b>	<b>1</b>	<b>39</b>	<b>143</b>	<b>236</b>	<b>269</b>	<b>243</b>	<b>196</b>	<b>144</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	0	0	0	0.0	1.1	2.0	1.9	1.7	1.6
0.45	Small 1 ph 0.12-0.75 kW with VSD	1	0	0	0	0.0	0.2	0.3	0.3	0.3	0.3
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>1.3</b>	<b>2.4</b>	<b>2.2</b>	<b>2.0</b>	<b>1.9</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1	0	0	0	0.1	1.6	2.9	2.7	2.5	2.3
0.45	Small 3 ph 0.12-0.75 kW with VSD	1	0	0	0	0.0	0.3	0.6	0.6	0.6	0.6
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>1.9</b>	<b>3.5</b>	<b>3.4</b>	<b>3.1</b>	<b>2.9</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	1	0	0	0	0.1	1.0	1.8	2.3	2.4	1.8
0.45	Large 3-ph LV 375-1000kW with VSD	1	0	0	0	0.2	1.3	2.5	3.5	4.0	3.9
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.3</b>	<b>2.4</b>	<b>4.2</b>	<b>5.8</b>	<b>6.4</b>	<b>5.7</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.6	1.1	1.1	1.0	0.9
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.5	1.0	1.2	1.1	1.1
0.45	Explosion motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.4	0.8	1.2	1.3	1.2
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>1.4</b>	<b>2.9</b>	<b>3.4</b>	<b>3.4</b>	<b>3.2</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.4	0.8	0.7	0.7	0.6
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.3	0.7	0.8	0.8	0.7
0.45	Brake motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.2	0.4	0.6	0.6	0.6
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.9</b>	<b>1.8</b>	<b>2.1</b>	<b>2.1</b>	<b>1.9</b>

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db	SAVED Primary Energy (BAU-ECO, in TWh primary)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1
0.45	8-pole motors (L) 3-ph 75-375 kW	1	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	1	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>2.9</b>	<b>6.2</b>	<b>7.8</b>	<b>7.2</b>	<b>6.6</b>
	<b>Total MT Elec. Motors LV 0.12-1000 kW</b>		<b>0</b>	<b>1</b>	<b>22</b>	<b>79</b>	<b>136</b>	<b>159</b>	<b>147</b>	<b>121</b>	<b>92</b>
	<b>Total WP Water Pumps</b>	1	<b>0</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
	CP Fixed Speed 5-1280 l/s	1	0.0	0.0	0.4	1.5	2.6	2.7	2.5	2.3	2.1
	CP Variable speed 5-1280 l/s	1	0.0	0.0	0.1	0.5	1.1	1.3	1.1	0.9	0.6
	CP Pistons 2-64 l/s	1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	<b>Total CP Standard Air Compressors</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>		<b>0</b>	<b>1</b>	<b>39</b>	<b>128</b>	<b>218</b>	<b>260</b>	<b>256</b>	<b>232</b>	<b>205</b>
	TRAFO Distribution	1	0.0	0.0	1.4	5.2	9.2	13.5	18.2	23.2	28.4
	TRAFO Industry oil	1	0.0	0.0	1.8	6.6	11.7	17.3	23.2	27.7	29.6
	TRAFO Industry dry	1	0.0	0.0	0.3	1.2	2.1	3.1	4.2	5.3	6.2
	TRAFO Power	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TRAFO DER oil	1	0.0	0.0	0.2	0.8	1.9	3.6	6.3	9.9	14.0
	TRAFO DER dry	1	0.0	0.0	0.5	2.1	4.9	9.4	16.5	25.7	36.3
	TRAFO Small	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total TRAFO Utility Transformers</b>		<b>0</b>	<b>0</b>	<b>4</b>	<b>16</b>	<b>30</b>	<b>47</b>	<b>68</b>	<b>92</b>	<b>115</b>
	<b>TOTAL ENERGY SECTOR</b>		<b>0</b>	<b>0</b>	<b>4</b>	<b>16</b>	<b>30</b>	<b>47</b>	<b>68</b>	<b>92</b>	<b>115</b>
	Tyres C1, replacement for cars	0	0	3	40	25	34	34	32	27	22
	Tyres C1, OEM for cars	0	0	0	0	1	6	7	6	5	5
	<b>Tyres C1, total</b>		<b>0</b>	<b>3</b>	<b>40</b>	<b>26</b>	<b>40</b>	<b>41</b>	<b>38</b>	<b>33</b>	<b>26</b>
	Tyres C2, replacement for vans	0	0	1	9	4	9	10	9	8	6
	Tyres C2, OEM for vans	0	0	0	0	0	1	1	1	1	1
	<b>Tyres C2, total</b>		<b>0</b>	<b>1</b>	<b>9</b>	<b>4</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>7</b>
	Tyres C3, replacement for trucks/busses	0	0	1	12	7	10	12	13	12	12
	Tyres C3, OEM for trucks/busses	0	0	0	0	0	1	2	2	2	2
	<b>Tyres C3, total</b>		<b>0</b>	<b>1</b>	<b>12</b>	<b>7</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
	<b>Tyres, total C1+C2+C3</b>		<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>
	<b>TOTAL TRANSPORT SECTOR</b>		<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>
	<b>SAVED Primary Energy, Total, in TWh</b>		<b>0</b>	<b>236</b>	<b>859</b>	<b>1748</b>	<b>2535</b>	<b>2988</b>	<b>3128</b>	<b>3124</b>	<b>3077</b>
	SAVED Primary Energy, Total, in PJ		0	849	3091	6292	9126	10758	11261	11246	11076
	SAVED Primary Energy, Total, in mtoe		0	20	74	150	218	257	269	269	265
	<b>SAVED Primary Energy (BAU-ECO, All Sectors)</b>										
	<b>WATER HEATING</b>		<b>0</b>	<b>0</b>	<b>100</b>	<b>251</b>	<b>392</b>	<b>466</b>	<b>508</b>	<b>547</b>	<b>592</b>
	<b>SPACE HEATING</b>		<b>0</b>	<b>53</b>	<b>299</b>	<b>613</b>	<b>865</b>	<b>1035</b>	<b>1084</b>	<b>1081</b>	<b>1036</b>
	<b>SPACE COOLING</b>		<b>0</b>	<b>0</b>	<b>4</b>	<b>19</b>	<b>38</b>	<b>51</b>	<b>56</b>	<b>56</b>	<b>53</b>
	<b>VENTILATION (from electricity)</b>		<b>0</b>	<b>0</b>	<b>9</b>	<b>27</b>	<b>47</b>	<b>64</b>	<b>69</b>	<b>71</b>	<b>74</b>
1	<i>VENTILATION (from heat savings vs. BAU) (already included in NRG for space heating)</i>		<i>0</i>	<i>0</i>	<i>35</i>	<i>92</i>	<i>136</i>	<i>166</i>	<i>166</i>	<i>162</i>	<i>159</i>
	<b>LIGHTING (incl. SPL, ctrl, sb)</b>		<b>0</b>	<b>45</b>	<b>102</b>	<b>237</b>	<b>291</b>	<b>283</b>	<b>240</b>	<b>199</b>	<b>171</b>
	<b>ELECTRONICS</b>		<b>0</b>	<b>9</b>	<b>40</b>	<b>113</b>	<b>179</b>	<b>232</b>	<b>254</b>	<b>235</b>	<b>212</b>
	<b>FOOD PRESERVATION</b>		<b>0</b>	<b>87</b>	<b>133</b>	<b>189</b>	<b>255</b>	<b>297</b>	<b>322</b>	<b>337</b>	<b>346</b>
	<b>COOKING</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>13</b>	<b>19</b>	<b>23</b>	<b>25</b>	<b>26</b>
	<b>CLEANING</b>		<b>0</b>	<b>35</b>	<b>67</b>	<b>110</b>	<b>146</b>	<b>168</b>	<b>184</b>	<b>194</b>	<b>201</b>
	<b>INDUSTRY COMPONENTS</b>		<b>0</b>	<b>1</b>	<b>39</b>	<b>128</b>	<b>218</b>	<b>260</b>	<b>256</b>	<b>232</b>	<b>205</b>
	<b>ENERGY SECTOR</b>		<b>0</b>	<b>0</b>	<b>4</b>	<b>16</b>	<b>30</b>	<b>47</b>	<b>68</b>	<b>92</b>	<b>115</b>
	<b>TRANSPORT SECTOR</b>		<b>0</b>	<b>5</b>	<b>60</b>	<b>37</b>	<b>62</b>	<b>66</b>	<b>62</b>	<b>55</b>	<b>47</b>
	<b>SAVED Primary Energy, Total, in TWh</b>		<b>0</b>	<b>236</b>	<b>859</b>	<b>1748</b>	<b>2535</b>	<b>2988</b>	<b>3128</b>	<b>3124</b>	<b>3077</b>
	SAVED Primary Energy, Total, in PJ		0	849	3091	6292	9126	10758.3	11261.2	11245.6	11075.9
	SAVED Primary Energy, Total, in mtoe		0	20	74	150	218	257	269	269	265
	Saving in % versus BAU (from 1990=0)		0.0%	2.1%	7.3%	14.5%	20.9%	24.4%	25.6%	25.5%	25.1%
	Saving In % versus BAU (from 2010=0)		-2.4%	0.0%	5.3%	12.6%	18.9%	22.5%	23.6%	23.6%	22.7%





**Sector subdivision for SAVED Primary Energy**

This subdivision uses the same sector definitions as used in Eurostat Energy Balances for Final Energy, plus the Energy sector. The Primary Energy per function and per sector presented here is the sum of the Final Energy consumed for that function in that sector and the share of the additional energy input required for the generation and distribution of that Final Energy. There is no comparable subdivision in Eurostat (see the FNRG-, ELEC- and FUEL- sheets for a comparison with Eurostat data).

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units  
 Ventilation: reported data regard only electricity consumed by Ventilation Units; heat saving effects are included in Space Heating  
 Lighting: includes energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby  
 Transport Sector: see separate reporting below; not included in other sector totals  
 Energy Sector: see separate reporting below. The data considered here are Distribution Losses. As these losses are already considered when computing the Primary Energy for other sectors, only the decrease of the losses in the ECO scenario vs. the BAU scenario is reported. (reference for BAU = 0)

SAVED Primary Energy (summary ENERGY SECTOR, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>TOTAL ENERGY SECTOR</b>	0	0	4	16	30	47	68	92	115	139
SAVED Primary Energy, Energy Sector, in TWh	0	0	4	16	30	47	68	92	115	139
SAVED Primary Energy, Energy Sector, in PJ	0	0	15	57	107	169	246	330	412	502
SAVED Primary Energy, Energy Sector, in mtoe	0	0	0	1	3	4	6	8	10	12

SAVED Primary Energy (summary INDUSTRY, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	0	0	3	9	14	17	19	21	23	25
<b>SPACE HEATING</b>	0	6	35	71	100	120	125	124	117	108
<b>SPACE COOLING</b>	0	0	0	3	7	10	11	10	9	8
<b>VENTILATION</b>	0	0	0	2	3	4	4	4	4	5
<b>LIGHTING</b>	0	3	9	19	34	42	40	36	32	29
<b>ELECTRONICS</b>	0	0	1	3	4	6	7	7	7	6
<b>FOOD PRESERVATION</b>	0	1	1	5	9	13	15	16	18	19
<b>COOKING</b>	0	0	0	0	0	0	0	0	0	0
<b>CLEANING</b>	0	0	0	1	1	1	1	1	1	1
<b>INDUSTRY COMPONENTS</b>	0	1	20	68	117	138	131	113	93	74
SAVED Primary Energy, Industry, in TWh	0	12	71	180	289	352	354	333	304	275
SAVED Primary Energy, Industry, in PJ	0	41	254	648	1041	1267	1276	1199	1095	991
SAVED Primary Energy, Industry, in mtoe	0	1	6	15	25	30	30	29	26	24

SAVED Primary Energy (summary TRANSPORT, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
<b>TYRES for INDUSTRY-sector-related transport</b>	0	1	9	5	9	10	10	9	8	8
<b>TYRES for SERVICE-sector-related transport</b>	0	2	18	11	19	21	20	19	17	15
<b>TYRES for RESIDENTIAL-sector-related transport</b>	0	2	32	21	32	33	30	26	21	16
<b>TYRES for OTHER-sector-related transport</b>	0	0	1	1	1	2	2	1	1	1
SAVED Primary Energy, Transport, in TWh	0	5	60	37	62	66	62	55	47	39
SAVED Primary Energy, Transport, in PJ	0	19	218	134	222	238	224	200	170	142
SAVED Primary Energy, Transport, in mtoe	0	0	5	3	5	6	5	5	4	3

NRGSAVE

SAVED Primary Energy (TERTIARY/SERVICES, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	31	77	120	143	156	167	181	195
SPACE HEATING	0	13	78	165	235	281	293	290	277	257
SPACE COOLING	0	0	2	11	22	31	35	34	32	29
VENTILATION	0	0	4	13	22	30	32	32	32	32
LIGHTING	0	12	36	79	138	170	156	135	119	108
ELECTRONICS	0	3	11	34	57	77	89	90	85	79
FOOD PRESERVATION	0	5	9	32	64	77	80	83	85	88
COOKING	0	0	0	1	2	3	4	4	4	4
CLEANING	0	2	4	8	10	11	11	12	13	13
INDUSTRY COMPONENTS	0	0	15	47	81	99	102	99	95	92
<b>SAVED Primary Energy, Services, in TWh</b>	<b>0</b>	<b>36</b>	<b>189</b>	<b>466</b>	<b>752</b>	<b>922</b>	<b>958</b>	<b>945</b>	<b>922</b>	<b>899</b>
SAVED Primary Energy, Services, in PJ	0	128	681	1679	2706	3318	3450	3403	3319	3237
SAVED Primary Energy, Services, in mtoe	0	3	16	40	65	79	82	81	79	77

SAVED Primary Energy (summary RESIDENTIAL, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	65	162	253	301	328	353	382	412
SPACE HEATING	0	32	177	358	503	601	632	634	611	572
SPACE COOLING	0	0	2	4	7	8	8	9	9	9
VENTILATION	0	0	5	12	21	29	31	34	37	40
LIGHTING	0	29	56	137	116	68	42	27	19	15
ELECTRONICS	0	5	28	76	117	148	157	137	119	110
FOOD PRESERVATION	0	80	121	150	180	204	224	234	238	243
COOKING	0	0	1	7	11	16	20	21	22	22
CLEANING	0	34	63	101	135	157	171	180	187	191
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED Primary Energy, Residential, in TWh</b>	<b>0</b>	<b>180</b>	<b>517</b>	<b>1008</b>	<b>1343</b>	<b>1531</b>	<b>1613</b>	<b>1629</b>	<b>1624</b>	<b>1614</b>
SAVED Primary Energy, Residential, in PJ	0	648	1861	3629	4834	5512	5806	5865	5846	5809
SAVED Primary Energy, Residential, in mtoe	0	15	44	87	115	132	139	140	140	139

SAVED Primary Energy (summary OTHER, TWh)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	1	3	4	5	5	5	6	6
SPACE HEATING	0	2	9	19	27	32	34	33	31	29
SPACE COOLING	0	0	0	1	2	3	3	3	3	2
VENTILATION	0	0	0	0	1	1	1	1	1	1
LIGHTING	0	1	2	3	3	3	2	2	2	2
ELECTRONICS	0	0	0	0	1	1	1	1	1	1
FOOD PRESERVATION	0	1	1	2	3	3	4	4	4	4
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	4	12	20	23	22	20	17	15
<b>SAVED Primary Energy, Other sectors, in TWh</b>	<b>0</b>	<b>3</b>	<b>17</b>	<b>40</b>	<b>60</b>	<b>71</b>	<b>72</b>	<b>69</b>	<b>65</b>	<b>60</b>
SAVED Primary Energy, Other sectors, in PJ	0	12	62	144	215	255	259	249	234	217
SAVED Primary Energy, Other sectors, in mtoe	0	0	1	3	5	6	6	6	6	5

NRGSAVE

SAVED Primary Energy (summary FUNCTIONS, TWh)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>		0	0	100	251	392	466	508	547	592	639
	Residential	0	0	65	162	253	301	328	353	382	412
	Tertiary / Services	0	0	31	77	120	143	156	167	181	195
	Industry	0	0	3	9	14	17	19	21	23	25
	Other	0	0	1	3	4	5	5	5	6	6
<b>SPACE HEATING. All sectors, TWh</b>		0	53	299	613	865	1035	1084	1081	1036	966
	Residential	0	32	177	358	503	601	632	634	611	572
	Tertiary / Services	0	13	78	165	235	281	293	290	277	257
	Industry	0	6	35	71	100	120	125	124	117	108
	Other	0	2	9	19	27	32	34	33	31	29
<b>SPACE COOLING. All sectors, TWh</b>		0	0	4	19	38	51	56	56	53	49
<b>&amp; HT PROCESS</b>											
	Residential	0	0	2	4	7	8	8	9	9	9
	Tertiary / Services	0	0	2	11	22	31	35	34	32	29
	Industry	0	0	0	3	7	10	11	10	9	8
	Other	0	0	0	1	2	3	3	3	3	2
<b>VENTILATION. All sectors, TWh</b>		0	0	9	27	47	64	69	71	74	78
	Residential	0	0	5	12	21	29	31	34	37	40
	Tertiary / Services	0	0	4	13	22	30	32	32	32	32
	Industry	0	0	0	2	3	4	4	4	4	5
	Other	0	0	0	0	1	1	1	1	1	1
<b>LIGHTING. All sectors, TWh</b>		0	45	102	237	291	283	240	199	171	153
	Residential	0	29	56	137	116	68	42	27	19	15
	Tertiary / Services	0	12	36	79	138	170	156	135	119	108
	Industry	0	3	9	19	34	42	40	36	32	29
	Other	0	1	2	3	3	3	2	2	2	2
<b>ELECTRONICS. All sectors, TWh</b>		0	9	40	113	179	232	254	235	212	196
	Residential	0	5	28	76	117	148	157	137	119	110
	Tertiary / Services	0	3	11	34	57	77	89	90	85	79
	Industry	0	0	1	3	4	6	7	7	7	6
	Other	0	0	0	0	1	1	1	1	1	1
<b>FOOD PRESERVE. All sectors, TWh</b>		0	87	133	189	255	297	322	337	346	354
	Residential	0	80	121	150	180	204	224	234	238	243
	Tertiary / Services	0	5	9	32	64	77	80	83	85	88
	Industry	0	1	1	5	9	13	15	16	18	19
	Other	0	1	1	2	3	3	4	4	4	4
<b>COOKING. All sectors, TWh</b>		0	0	1	8	13	19	23	25	26	27
	Residential	0	0	1	7	11	16	20	21	22	22
	Tertiary / Services	0	0	0	1	2	3	4	4	4	4
	Industry	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>		0	35	67	110	146	168	184	194	201	206
	Residential	0	34	63	101	135	157	171	180	187	191
	Tertiary / Services	0	2	4	8	10	11	11	12	13	13
	Industry	0	0	0	1	1	1	1	1	1	1
	Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>		0	1	39	128	218	260	256	232	205	180
	Residential	0	0	0	0	0	0	0	0	0	0
	Tertiary / Services	0	0	15	47	81	99	102	99	95	92
	Industry	0	1	20	68	117	138	131	113	93	74
	Other	0	0	4	12	20	23	22	20	17	15
<b>TYRES. Transport sector, TWh</b>		0	5	60	37	62	66	62	55	47	39
	Residential transport	0	2	32	21	32	33	30	26	21	16
	Tertiary / Services transport	0	2	18	11	19	21	20	19	17	15
	Industry transport	0	1	9	5	9	10	10	9	8	8
	Other transport	0	0	1	1	1	2	2	1	1	1
<b>ALL PRODUCTS. All sectors, TWh</b>		0	236	854	1732	2505	2941	3060	3032	2962	2888
<b>(excl. Energy sector)</b>											
	Residential	0	180	517	1008	1343	1531	1613	1629	1624	1614
	Tertiary / Services	0	36	189	466	752	922	958	945	922	899
	Industry	0	12	71	180	289	352	354	333	304	275
	Other	0	3	17	40	60	71	72	69	65	60
	Transport	0	5	60	37	62	66	62	55	47	39

NRGSAVE

SAVED Primary Energy (summary FUNCTIONS, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential			65%	65%	65%	65%	65%	65%	65%	65%
	Tertiary / Services			31%	31%	31%	31%	31%	31%	31%	31%
	Industry			3%	4%	4%	4%	4%	4%	4%	4%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential		60%	59%	58%	58%	58%	58%	59%	59%	59%
	Tertiary / Services		25%	26%	27%	27%	27%	27%	27%	27%	27%
	Industry		12%	12%	12%	12%	12%	12%	11%	11%	11%
	Other		3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>											
<b>&amp; HT PROCESS</b>	Residential			40%	24%	18%	15%	15%	15%	17%	19%
	Tertiary / Services			51%	57%	60%	61%	61%	61%	61%	60%
	Industry			7%	15%	17%	19%	19%	18%	17%	17%
	Other			2%	4%	5%	5%	5%	5%	5%	5%
<b>VENTILATION.</b>											
	Residential			52%	46%	45%	45%	46%	48%	50%	52%
	Tertiary / Services			41%	47%	47%	47%	47%	44%	43%	42%
	Industry			6%	7%	7%	7%	6%	6%	6%	6%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>LIGHTING.</b>											
	Residential		64%	55%	58%	40%	24%	17%	14%	11%	9%
	Tertiary / Services		27%	35%	33%	47%	60%	65%	68%	69%	71%
	Industry		7%	9%	8%	12%	15%	17%	18%	19%	19%
	Other		1%	2%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
	Residential		60%	69%	67%	65%	64%	62%	58%	56%	56%
	Tertiary / Services		35%	28%	30%	32%	33%	35%	38%	40%	40%
	Industry		4%	3%	2%	2%	3%	3%	3%	3%	3%
	Other		1%	0%	0%	0%	0%	0%	0%	0%	0%
<b>FOOD PRESERVE.</b>											
	Residential		92%	91%	80%	70%	69%	69%	69%	69%	69%
	Tertiary / Services		6%	7%	17%	25%	26%	25%	25%	25%	25%
	Industry		1%	1%	2%	4%	4%	5%	5%	5%	5%
	Other		1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>COOKING.</b>											
	Residential			92%	89%	86%	85%	84%	84%	84%	84%
	Tertiary / Services			8%	11%	14%	15%	16%	16%	16%	16%
	Industry			0%	0%	0%	0%	0%	0%	0%	0%
	Other			0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
	Residential		96%	94%	92%	93%	93%	93%	93%	93%	93%
	Tertiary / Services		4%	5%	7%	7%	6%	6%	6%	6%	7%
	Industry		0%	0%	1%	1%	1%	1%	1%	1%	1%
	Other		0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
	Residential		0%	0%	0%	0%	0%	0%	0%	0%	0%
	Tertiary / Services		23%	39%	37%	37%	38%	40%	43%	46%	51%
	Industry		56%	51%	53%	54%	53%	51%	49%	45%	41%
	Other		21%	10%	10%	9%	9%	9%	8%	8%	8%
<b>TYRES.</b>											
	Residential transport			53%	56%	52%	50%	49%	47%	44%	41%
	Tertiary / Services transport			30%	28%	31%	32%	33%	33%	35%	37%
	Industry transport			15%	13%	15%	16%	16%	17%	18%	19%
	Other transport			2%	2%	2%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>											
	Residential		76%	60%	58%	54%	52%	53%	54%	55%	56%
	Tertiary / Services		15%	22%	27%	30%	31%	31%	31%	31%	31%
	Industry		5%	8%	10%	12%	12%	12%	11%	10%	10%
	Other		1%	2%	2%	2%	2%	2%	2%	2%	2%
	Transport		2%	7%	2%	2%	2%	2%	2%	2%	1%

# EMISSRATES

## Emission rates

### GWP (Global Warming Potential)

All greenhouse gas emissions in GWP-100, CO<sub>2</sub> equivalent

variable			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
GWPEl	electricity	kg CO <sub>2</sub> /kWh	0.500	0.410	0.395	0.380	0.360	0.340	0.320	0.300	0.280	0.260

### heating fuels

GWPGas	nat.gas	kg CO <sub>2</sub> /kWh	0.198
GWPOil	gas oil heating	kg CO <sub>2</sub> /kWh	0.270
GWPFossil	80/20 gas/oil	kg CO <sub>2</sub> /kWh	0.212
GWPwood	wood logs	kg CO <sub>2</sub> /kWh	0.0216
GWPpellets	pellets	kg CO <sub>2</sub> /kWh	0.040
GWPcoal	coal	kg CO <sub>2</sub> /kWh	0.3924
GWPwoodchip	wood chips	kg CO <sub>2</sub> /kWh	0.0144

### automotive fuels

GWPPetrol	petrol	kg CO <sub>2</sub> /kWh	0.264
GWPDiesel	diesel	kg CO <sub>2</sub> /kWh	0.267

### refrigerant (leakage & EoL not recovered loss)\*

variable	avg. refrigerant mix (source: prep. study or IA)	GWP kg CO <sub>2</sub> /kg	charge in kg	loss in %/a	loss EoL kg	total loss kg/a	kg CO <sub>2</sub> /a /unit	
GWPRAC [ca.3.5 kW]	avg. RAC (Lot 10)	kgCO <sub>2</sub> /a	1934	1.05	3.0%		69	
GWPCHAS [44 kW]	CHAS (Lot 21_6)	kgCO <sub>2</sub> /a	1922	27	3.9%		2029	
GWPCHAL [714 kW]	CHAL (Lot 21_6)	kgCO <sub>2</sub> /a	1423	100	3.9%		5564	
GWPCHWS [61 kW]	CHWS (Lot 21_6)	kgCO <sub>2</sub> /a	1783	15	3.9%		1046	
GWPCHWL [894 kW]	CHWL (Lot 21_6)	kgCO <sub>2</sub> /a	1423	180	3.9%		10015	
GWPCCroof [80 kW]	ACroof (Lot 21_6)	kgCO <sub>2</sub> /a	2025	20	7.0%		2835	
GWPCASplit [14 kW]	ACsplit (Lot 21_6)	kgCO <sub>2</sub> /a	2025	5.6	7.0%		794	
GWPCAVRF [50 kW]	AC VRF (Lot 21_6)	kgCO <sub>2</sub> /a	2025	25	7.0%		3544	
<b>LOT ENER 12 Commercial Refrigeration</b>								
GWPCF1	CF vertical chilled	kgCO <sub>2</sub> /a	2280	20	8.5%		3876	
GWPCF2	CF horizontal frozen	kgCO <sub>2</sub> /a	2280	20	8.5%		3876	
GWPCF3	CF beverage cooler	kgCO <sub>2</sub> /a	1300	0.318	4.5%		19	
GWPCF4	CF ice cream freezer	kgCO <sub>2</sub> /a	2550	0.22	4.5%		25	
GWPCF5	CF vending machine	kgCO <sub>2</sub> /a	1300	0.546	4.0%		28	
<b>Lot ENTR 01, PF Storage cabinets</b>								
GWPPFCV	Vertical Chilled	kgCO <sub>2</sub> /a	1430	0.5	1.0%	0.13	0.019	28
GWPPFFV	Vertical frozen	kgCO <sub>2</sub> /a	3922	0.7	1.0%	0.18	0.027	106
GWPPFCH	Counter chilled	kgCO <sub>2</sub> /a	1430	0.3	1.0%	0.08	0.012	17
GWPPFFH	Counter frozen	kgCO <sub>2</sub> /a	3922	0.3	1.0%	0.08	0.012	47
GWPPFAVG	average all types	kgCO <sub>2</sub> /a	2280	0.5	1.0%	0.13	0.019	44
<b>Process Chillers</b>								
GWPCACMTS	PTCH AC-mt-S	kgCO <sub>2</sub> /a	2280	65	1.0%	5	0.98	2242
GWPCACMTL	PTCH AC-mt-L	kgCO <sub>2</sub> /a	2280	140	1.0%	5	1.73	3952
GWPCACLTS	PTCH AC-lt-S	kgCO <sub>2</sub> /a	2280	60	1.0%	5	0.93	2128
GWPCACLTL	PTCH AC-lt-L	kgCO <sub>2</sub> /a	2280	200	1.0%	5	2.33	5320
GWPCWCMTS	PTCH WC-mt-S	kgCO <sub>2</sub> /a	2280	45	1.0%	5	0.78	1786
GWPCWCMTL	PTCH WC-mt-L	kgCO <sub>2</sub> /a	2280	80	1.0%	5	1.13	2584
GWPCWCULTS	PTCH WC-lt-S	kgCO <sub>2</sub> /a	2280	35	1.0%	5	0.68	1558
GWPCWCULTL	PTCH WC-lt-L	kgCO <sub>2</sub> /a	2280	100	1.0%	5	1.33	3040
GWPCHAVG	average all types	kgCO <sub>2</sub> /a	2280	78	1.0%	5	1.11	2538
<b>Condensing Units</b>								
GWPCUMTS	CU-mt [0.2 -1 kW]	kgCO <sub>2</sub> /a	2280	1	10%	0.2	0.13	285
GWPCUMTM	CU-mt [1 - 5 kW]	kgCO <sub>2</sub> /a	2280	3	10%	0.2	0.33	741
GWPCUMTL	CU-mt [5 - 20 kW]	kgCO <sub>2</sub> /a	2280	10	10%	0.2	1.03	2337
GWPCUMTXL	CU-mt [20-50 kW]	kgCO <sub>2</sub> /a	2280	25	10%	0.2	2.53	5757
GWPCULTS	CU-lt [0.1 -0.4 kW]	kgCO <sub>2</sub> /a	2280	1	10%	0.2	0.13	285
GWPCULTM	CU-lt [0.4 - 2kW]	kgCO <sub>2</sub> /a	2280	3	10%	0.2	0.33	741
GWPCULTL	CU-lt [2 - 8 kW]	kgCO <sub>2</sub> /a	2280	10	10%	0.2	1.03	2337
GWPCULTXL	CU-lt [8 - 20 kW]	kgCO <sub>2</sub> /a	2280	25	10%	0.2	2.53	5757
GWPCUAVG	average all types	kgCO <sub>2</sub> /a	2280	4.51	10%	0.2	0.48	1085

\*the main instrument for regulating F-gases is the F-gas directive, but --as some extra bonus is given for low GWP refrigerants in Ecodesign regulations-- this topic is included here. No differentiation is made between BAU and ECO scenario for this specific item. Note that it does not apply to household refrigeration appliances (low-GWP, negligible loss). For professional refrigeration CR 2015/1095 foresees a bonus for the use of refrigerants with GWP < 150 kg CO<sub>2</sub> eq/kg refrigerant for process chillers and for condensing units (not for storage cabinets) but the effects of this bonus could not be quantified in the IA. The topic will be further addressed during the review of the CR. GWP data presented in EIA are preliminary best estimates based on data from the IA-study. Refrigerant data are the same for the BAU and ECO scenario, no savings accounted.

# EMISSRATES

## NO<sub>x</sub>, CO, OGC and PM-emissions

### CH boilers (lot 1) & WH (Lot 2), fossil fuel fired\*, NO<sub>x</sub> emissions

			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
NO <sub>x</sub> BAU	BAU stock	mg/kWh NCV	190	190	190	190	190	190	190	190	190	190
	limits ED (sales)	mg/kWh NCV	190	190	133	75	75	75	75	75	75	75
NO <sub>x</sub> ECO	ECO stock	mg/kWh NCV	190	190	179	133	97	75	75	75	75	75

\*=ED regulations prescribes max. 56 (gas) and 120 (oil) mg/kWh GCV. At a 80/20 gas-oil share this translates into 75 mg/kWh NCV starting from 26.9.2018.

The IA report mentions currently an average of 175 mg/kWh NCV (190 mg/kWh NCV). Share of CHP and fossil-fuel fired heat pumps neglected.

### Solid Fuel Boilers (SFB, Lot 15), NO<sub>x</sub>, CO, OGC and PM emissions

CR 2015/1189 sets emissions limits for NO<sub>x</sub> (nitrogen oxides), CO (carbon monoxide), OGC (organic gaseous carbon) and PM (particulate matter). For NO<sub>x</sub> insufficient data were available in IA for a quantification of emissions in EIA and hence no NO<sub>x</sub> data are reported here for SFB. EIA data are based on the Impact Assessment report and underlying Excel files.

For each emission type, EIA computes (total emissions of the stock) = (average emission rate of the stock in g/GJ fuel input) \* (fuel consumption by the stock as reported on FUELBAU or FUELECO in TWh/a, but \*1000\*3600 to convert to GJ/a). This result in g/a is then divided by 1E9 to convert to kton/a.

The sheet EMISSRATES reports the (average emission rate of the stock in g/GJ fuel input). However, the original emission rates in the studies, and the limits set in the CR, are expressed in mg/m<sup>3</sup> flue gas. The conversion factor from mg/m<sup>3</sup> to g/GJ is not a simple constant, but depends on the energy efficiency, and thus differs per product and changes with the years. In addition, the converted emission rates are first obtained as averages for new sold products. In a next step, this has to be converted to average values for the installed stock of products (in the same way as is done for the energy efficiencies, see sheets EFN and EFS). The conversion of original sales-average emission rates in mg/m<sup>3</sup> to stock-average emission rates in g/GJ is not shown in this EIA file, but available on request in a separate file.

### Solid Fuel Boilers (SFB, Lot 15), CO emission rates

			CO-emission rates in g/GJ, average of stock									
			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>BAU</b>	mg/m <sup>3</sup> in 2010	sales average										
SFB Wood Manual	4000		7202	3992.8	3739	3628	3614	3598	3580	3567	3562	3562
SFB Wood Direct Draft	200		275	187	184	183	182	181	180	180	180	180
SFB Coal	200		351	226	214	207	205	204	202	202	201	201
SFB Pellets	350		381	316	309	306	305	304	302	302	301	301
SFB Wood chips	350		376	309	306	303	301	299	298	297	297	297

			CO-emission rates in g/GJ, average of stock									
			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECO</b>	mg/m <sup>3</sup> in 2020	limits from CR										
SFB Wood Manual	700		7202	3992.8	3739	3364	2875	2023	804	612	611	611
SFB Wood Direct Draft	500		275	187	184	183	181	179	177	176	175	175
SFB Coal	500		351	226	214	207	205	203	199	197	196	196
SFB Pellets	500		381	316	309	306	304	300	297	295	294	294
SFB Wood chips	500		376	309	306	303	301	299	298	297	297	297

### Solid Fuel Boilers (SFB, Lot 15), OGC emission rates

			OGC-emission rates in g/GJ, average of stock									
			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>BAU</b>	mg/m <sup>3</sup> in 2010	sales average										
SFB Wood Manual	350		630	349	327	317	316	315	313	312	312	312
SFB Wood Direct Draft	10		14	9	9	9	9	9	9	9	9	9
SFB Coal	10		18	11	11	10	10	10	10	10	10	10
SFB Pellets	50		54	45	44	44	44	43	43	43	43	43
SFB Wood chips	10		11	9	9	9	9	9	9	8	8	8

			OGC-emission rates in g/GJ, average of stock									
			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECO</b>	mg/m <sup>3</sup> in 2020	limits from CR										
SFB Wood Manual	30		630	349	327	292	245	162	44	26	26	26
SFB Wood Direct Draft	20		14	9	9	9	9	9	9	9	9	9
SFB Coal	20		18	11	11	10	10	10	10	10	10	10
SFB Pellets	20		54	45	44	38	31	26	20	17	17	17
SFB Wood chips	20		11	9	9	9	9	9	9	8	8	8

### Solid Fuel Boilers (SFB, Lot 15), PM emission rates

			PM-emission rates in g/GJ, average of stock									
			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>BAU</b>	mg/m <sup>3</sup> in 2010	sales average										
SFB Wood Manual	180		324	180	168	163	163	162	161	161	160	160
SFB Wood Direct Draft	50		69	47	46	46	46	45	45	45	45	45
SFB Coal	50		88	57	54	52	51	51	51	50	50	50
SFB Pellets	50		54	45	44	44	44	43	43	43	43	43
SFB Wood chips	50		54	44	44	43	43	43	43	42	42	42

			PM-emission rates in g/GJ, average of stock									
			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>ECO</b>	mg/m <sup>3</sup> in 2020	limits from CR										
SFB Wood Manual	60		324	180	168	154	136	105	60	52	52	52
SFB Wood Direct Draft	40		69	47	46	44	41	39	36	35	35	35
SFB Coal	40		88	57	54	52	50	47	41	40	39	39
SFB Pellets	40		54	45	44	42	39	37	35	34	34	34
SFB Wood chips	40		54	44	44	42	40	37	35	34	34	34

# EMISSRATES

## Local Space Heaters (LSH, Lot 20), NOx, CO, OGC and PM emissions

CR 2015/1185 (solid fuel LSH) sets emissions limits for NOx (nitrogen oxides), CO (carbon monoxide), OGC (organic gaseous carbon) and PM (particulate matter). CR 2015/1188 (liquid and gaseous fuel LSH) sets emissions limits for NOx. For NOx emissions limited data were available in the Impact Assessment report and underlying Excel sheet. Consequently NOx data are reported in EIA only for LSH using liquid or gaseous fuel and even these data are to be considered indicative only. EIA data are based on the Impact Assessment report and underlying Excel files.

As regards the computation method in EIA the same explanation applies as for Solid Fuel Boilers (see further above).

### Local Space Heaters (LSH, Lot 20), CO emission rates

BAU	mg/m3 in 2010 sales average	CO-emission rates in g/GJ, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fireplace	3600	3834	2751.2	2517	2301	2097	1902	1732	1601	1511	1459
LH closed fireplace/inset	3600	3747	2675	2451	2245	2056	1874	1717	1596	1509	1459
LH wood stove	3600	3866	2779	2534	2298	2081	1881	1717	1596	1509	1459
LH coal stove	3600	4605	3303	3011	2743	2503	2293	2105	1934	1792	1704
LH cooker	3600	3569	2518	2291	2077	1881	1697	1552	1468	1445	1445
LH SHR stove	3600	3191	2572	2411	2247	2086	1932	1810	1722	1659	1620
LH pellet stove	600	1072	546	396	251	151	98	87	87	87	87

ECO	mg/m3 in 2022 limits from CR	CO-emission rates in g/GJ, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fireplace	2000	3834	2751.2	2517	2244	1835	1472	1146	857	658	648
LH closed fireplace/inset	1500	3747	2675	2451	2184	1793	1476	1203	965	799	790
LH wood stove	1500	3866	2779	2534	2245	1833	1488	1205	965	799	790
LH coal stove	1500	4605	3303	3011	2698	2300	1956	1620	1250	937	920
LH cooker	1500	3569	2518	2291	1978	1452	1030	742	726	726	726
LH SHR stove	1500	3191	2572	2411	2185	1805	1497	1260	1069	935	928
LH pellet stove	300	1072	546	396	250	149	97	87	87	87	87

### Local Space Heaters (LSH, Lot 20), OGC emission rates

BAU	mg/m3 in 2010 sales average	OGC-emission rates in g/GJ, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fireplace	180	364	194	157	123	91	64	43	28	19	17
LH closed fireplace/inset	180	350	182	147	114	84	60	41	27	19	17
LH wood stove	180	369	198	159	123	88	61	41	27	19	17
LH coal stove	180	446	241	195	153	116	85	60	39	24	20
LH cooker	180	322	157	121	88	57	34	21	17	17	17
LH SHR stove	180	304	180	148	115	83	57	40	28	21	19
LH pellet stove	150	214	111	97	90	89	88	87	87	87	87

ECO	mg/m3 in 2022 limits from CR	OGC-emission rates in g/GJ, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fireplace	120	364	194	157	123	91	64	43	28	19	17
LH closed fireplace/inset	120	350	182	147	114	84	60	41	27	19	17
LH wood stove	120	369	198	159	123	88	61	41	27	19	17
LH coal stove	120	446	241	195	153	116	85	60	39	24	20
LH cooker	120	322	157	121	88	57	34	21	17	17	17
LH SHR stove	120	304	180	148	115	83	57	40	28	21	19
LH pellet stove	60	214	111	97	85	65	48	36	35	35	35

### Local Space Heaters (LSH, Lot 20), PM emission rates

BAU	mg/m3 in 2010 sales average	PM-emission rates in g/GJ, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fireplace	910	794	638	587	503	429	362	299	256	252	251
LH closed fireplace/inset	210	264	169	148	127	111	95	82	72	67	62
LH wood stove	210	274	178	156	132	113	96	82	72	67	62
LH coal stove	210	329	214	187	161	139	120	103	89	81	73
LH cooker	235	266	172	147	118	98	85	81	77	75	75
LH SHR stove	160	195	133	117	101	85	69	57	48	42	38
LH pellet stove	85	125	71	55	40	25	15	10	9	9	9

ECO	mg/m3 in 2022 limits from CR	PM-emission rates in g/GJ, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fireplace	50	794	638	587	490	369	256	147	57	18	16
LH closed fireplace/inset	40	264	169	148	123	93	69	48	31	22	21
LH wood stove	40	274	178	156	129	96	70	48	31	22	21
LH coal stove	40	329	214	187	158	125	98	71	44	26	25
LH cooker	40	266	172	147	111	68	37	20	19	19	19
LH SHR stove	40	195	133	117	98	74	55	42	32	25	25
LH pellet stove	20	125	71	55	40	25	15	10	9	9	9

### Local Space Heaters (LSH, Lot 20), NOx emission rates

BAU	mg/kWh in 2012 sales average	NOx-emission rates in mg/kWh, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fire gas	300	361	322	312	302	292	282	274	269	265	264
LH closed fire gas	200	263	223	213	203	193	183	174	168	165	164
LH luminous heaters	100	100	100	100	100	100	100	100	100	100	100
LH tube heaters	230	292	252	242	233	223	213	205	199	195	194

## EMISSRATES

ECO	mg/kWh in 2018 limits from CR	NOx-emission rates in mg/kWh, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LH open fire gas	130	361	322	312	266	218	176	138	130	130	130
LH closed fire gas	130	263	223	213	191	169	149	133	130	130	130
LH luminous heaters	200	100	100	100	100	100	100	100	100	100	100
LH tube heaters	200	292	252	242	229	218	208	199	196	195	194

### Air Heaters and Coolers (AHC, ENER Lot 21 / ENTR Lot 6), NOx emissions

The draft regulation (WD of 2015) sets emissions limits for NOx (nitrogen oxides) for warm air heaters, heat pumps, confort chillers, high temperature chillers and air conditioners working on gaseous or liquid fuels. The first proposed tier is in September 2018; for warm air heaters a second tier with lower emission limits is proposed for January 2021. EIA data are based on the Impact Assessment report and underlying Excel files. However, in the IA the same emission limits were used for the BAU and ECO scenarios, meaning that emission savings derive only from reduced fuel consumption. In EIA the (reduced) emission limits of the 2015 WD are used for the ECO scenario, leading to lower ECO-emissions and to higher emission savings than in the IA.

As regards the computation method in EIA the same explanation applies as for Solid Fuel Boilers (see further above).

BAU	mg/kWh in 2012 sales average	NOx-emission rates in mg/kWh, average of stock									
		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
CHF	900	900	900	900	900	900	900	900	900	900	900
ACF	900	900	900	900	900	900	900	900	900	900	900
ACF (rev)	900	900	900	900	900	900	900	900	900	900	900
AHF	275	275	275	275	275	275	275	275	275	275	275

ECO	mg/kWh in 2018 limits from WD	mg/kWh in 2021 limits from WD	NOx-emission rates in mg/kWh, average of stock									
			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
CHF	240	240	900	900	882	656	435	265	240	240	240	240
ACF	240	240	900	900	882	656	435	265	240	240	240	240
ACF (rev)	240	240	900	900	882	656	435	265	240	240	240	240
AHF	100	70	275	275	272	224	156	88	70	70	70	70

## NOISE

### Heat pump space heaters, heat pump combination heaters (Lot 1) and heat pump water heaters (Lot 2), max. sound power level (LWA) (from 26.9.2015)

max. dB(A)		
Rated heat output ≤ 6 kW	indoors	60
	outdoors	65
Rated heat output > 6 kW and ≤ 12 kW	indoors	65
	outdoors	70
Rated heat output > 12 kW and ≤ 30 kW	indoors	70
	outdoors	78
Rated heat output > 30 kW and ≤ 70 kW	indoors	80
	outdoors	88

### RAC, Lot 10 (applicable max. sound power levels, from 1.1.2013)

Rated capacity ≤ 6 kW	indoors	60
	outdoors	65
6 < Rated capacity ≤ 12 kW	indoors	65
	outdoors	70

### Vacuum cleaners, Lot 17 (from 1.9.2017)

Sound power level shall be less than or equal to 80 dB(A),

### Tyres: Rolling Noise requirements

(GSR, Regulation (EC) No 661/2009, Annex II, Part C)  
(maximum allowed noise level)

Tyre class	max dB(A)
C1A	70
C1B	71
C1C	71
C1D	72
C1E	74
C2 normal	72
C2 traction	73
C3 normal	73
C3 traction	75

For C1 snow tyres limits +1 dB(A)

For C2 traction snow tyres limits +2 dB(A)

For C3 and other C2 snow tyres limits +1 dB(A)



## EMISSBAU

db	BAU Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>see also other emissions at bottom of Table</i>										
	<b>Total WH dedicated Water Heater</b>	<b>146</b>	<b>140</b>	<b>138</b>	<b>136</b>	<b>132</b>	<b>127</b>	<b>123</b>	<b>121</b>	<b>122</b>	<b>122</b>
	<b>Total CH Central Heating combi, water heat</b>	<b>55</b>	<b>88</b>	<b>93</b>	<b>97</b>	<b>102</b>	<b>108</b>	<b>116</b>	<b>124</b>	<b>132</b>	<b>140</b>
	<b>TOTAL WATER HEATING</b>	<b>201</b>	<b>228</b>	<b>232</b>	<b>233</b>	<b>234</b>	<b>235</b>	<b>238</b>	<b>245</b>	<b>254</b>	<b>262</b>
	<b>Total CH Central Heating boiler, space heat</b>	<b>521</b>	<b>477</b>	<b>434</b>	<b>398</b>	<b>369</b>	<b>359</b>	<b>345</b>	<b>325</b>	<b>296</b>	<b>261</b>
	SFB Wood Manual	7.4	2.0	1.5	1.1	0.8	0.5	0.3	0.2	0.2	0.1
	SFB Wood Direct Draft	0.1	0.5	1.0	1.3	1.6	1.6	1.6	1.7	1.9	2.2
	SFB Coal	42.0	11.7	8.0	5.0	2.7	1.0	0.5	0.4	0.3	0.3
	SFB Pellets	0.0	0.4	0.7	0.9	1.1	1.2	1.2	1.2	1.3	1.4
	SFB Wood chips	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	<b>Total Solid Fuel Boiler</b>	<b>49</b>	<b>15</b>	<b>11</b>	<b>9</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	CHAE-S (≤ 400 kW)	2.5	6.8	7.8	8.4	8.5	8.7	8.9	9.1	9.3	9.5
	CHAE-L (> 400 kW)	3.2	6.5	7.0	7.1	6.7	6.0	5.4	4.9	4.5	4.2
	CHWE-S (≤ 400 kW)	0.2	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.7	1.5	1.6	1.6	1.5	1.4	1.2	1.1	1.0	1.0
	CHWE-L (> 1500 kW)	0.5	0.9	1.0	1.0	1.0	0.9	0.8	0.7	0.7	0.6
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	11.6	14.9	15.7	16.2	15.9	15.3	14.6	13.8	13.1	12.3
	HT PCH-AE-L	11.1	14.2	15.0	15.3	15.0	14.4	13.7	12.9	12.2	11.5
	HT PCH-WE-S	2.4	3.1	3.3	3.4	3.4	3.2	3.1	2.9	2.7	2.6
	HT PCH-WE-M	4.7	6.1	6.5	6.7	6.6	6.3	6.1	5.8	5.4	5.1
	HT PCH-WE-L	0.9	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.1	1.1
	AC rooftop	1.8	3.9	3.8	3.3	2.4	1.5	0.7	0.3	0.2	0.2
	AC splits	2.7	7.1	6.9	6.5	5.9	5.3	4.7	4.2	3.7	3.3
	AC VRF	0.0	2.6	3.8	5.5	6.8	8.5	10.0	11.2	12.2	13.0
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC central Air Cooling</b>	<b>42</b>	<b>70</b>	<b>74</b>	<b>77</b>	<b>76</b>	<b>73</b>	<b>71</b>	<b>69</b>	<b>67</b>	<b>65</b>
	AC rooftop (rev)	2.3	5.8	5.7	4.9	3.6	2.2	1.0	0.3	0.0	0.0
	AC splits (rev)	4.3	11.3	11.3	10.7	9.7	8.4	7.2	6.2	5.3	4.6
	AC VRF (rev)	0.0	4.4	6.4	8.7	10.6	12.6	14.0	14.5	14.5	14.1
	ACF (rev)	0	0	0	0	0	0	0	0	0	0
	AHF	48	35	30	26	23	20	18	16	14	12
	AHE	0.6	1.2	0.9	0.6	0.5	0.4	0.4	0.3	0.3	0.3
	<b>SubTotal AHC central Air Heating</b>	<b>55</b>	<b>58</b>	<b>54</b>	<b>51</b>	<b>47</b>	<b>44</b>	<b>40</b>	<b>37</b>	<b>34</b>	<b>31</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>	<b>97</b>	<b>128</b>	<b>129</b>	<b>128</b>	<b>123</b>	<b>117</b>	<b>111</b>	<b>106</b>	<b>101</b>	<b>96</b>
	LH open fireplace	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4
	LH closed fireplace/inset	0.4	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.4	1.4
	LH wood stove	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	LH coal stove	10.4	5.7	5.0	4.5	3.9	3.3	2.7	2.1	1.7	1.4
	LH cooker	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH SHR stove	0.4	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8
	LH pellet stove	0.0	0.3	0.4	0.6	0.6	0.7	0.7	0.7	0.7	0.7
	LH open fire gas	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH closed fire gas	2.7	2.5	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.2
	LH flueless fuel heater	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
	LH elec.portable	14.1	11.4	10.9	10.4	9.8	9.2	8.6	7.9	7.2	6.5
	LH elec.convector	58.2	47.3	45.3	43.0	40.4	38.1	35.7	32.9	29.9	27.1
	LH elec.storage	4.3	3.5	3.4	3.2	3.0	2.8	2.7	2.5	2.3	2.0
	LH elec.underfloor	8.0	6.7	6.4	6.1	5.8	5.4	5.1	4.7	4.3	4.0
	LH luminous heaters	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9
	LH tube heaters	2.5	2.5	2.5	2.5	2.4	2.3	2.2	2.1	2.1	2.0
	<b>LH total</b>	<b>104</b>	<b>84</b>	<b>81</b>	<b>77</b>	<b>73</b>	<b>69</b>	<b>65</b>	<b>60</b>	<b>55</b>	<b>51</b>
	RAC (cooling demand), all types <12 kW	1.4	9.3	10.9	12.5	14.6	15.6	15.7	15.5	15.2	14.8
	RAC (heating demand), reversible <12kW	1.1	10.8	14.6	18.3	21.7	22.1	21.0	19.6	18.1	16.7
	<b>Total RAC Room Air Conditioner</b>	<b>2</b>	<b>20</b>	<b>25</b>	<b>31</b>	<b>36</b>	<b>38</b>	<b>37</b>	<b>35</b>	<b>33</b>	<b>32</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	<b>8.1</b>	<b>8.6</b>	<b>8.5</b>	<b>8.4</b>	<b>8.2</b>	<b>8.1</b>	<b>7.7</b>	<b>6.9</b>	<b>6.1</b>	<b>5.3</b>
	<b>TOTAL SPACE HEATING</b>	<b>730</b>	<b>645</b>	<b>595</b>	<b>553</b>	<b>518</b>	<b>498</b>	<b>475</b>	<b>446</b>	<b>408</b>	<b>364</b>
	<b>TOTAL SPACE COOLING</b>	<b>44</b>	<b>79</b>	<b>85</b>	<b>89</b>	<b>90</b>	<b>89</b>	<b>87</b>	<b>84</b>	<b>82</b>	<b>80</b>
	NRVU electricity	9.5	25.0	27.3	28.3	27.6	26.4	25.3	24.3	23.4	22.6
1	NRVU heat (negative=saving vs. natural ventilation)	-29.0	-135.1	-160.9	-182.5	-200.2	-214.2	-228.5	-242.9	-257.6	-272.5
	RVU Central Unidir. VU ≤125W/fan (1 fan)	3.9	6.3	6.9	6.5	5.9	5.5	5.4	5.4	5.4	5.3
	RVU Central Balanced VU ≤125W/fan (2 fans)	0.0	0.4	0.8	1.4	2.0	2.4	2.6	2.7	2.8	2.8
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.7	0.8
1	RVU Central Unidir., heat (negative=saving )	-3.5	-6.8	-7.7	-7.6	-7.2	-7.2	-7.5	-8.0	-8.6	-9.1
1	RVU Central Balanced, heat (negative=saving )	-0.1	-1.8	-3.5	-6.1	-9.0	-11.6	-13.3	-14.8	-16.2	-17.6
1	RVU Local Balanced, heat (negative=saving )	0.0	-0.2	-0.5	-0.9	-1.5	-2.2	-2.9	-3.7	-4.4	-5.2
	<b>Total VU Ventilation Units</b>	<b>-19</b>	<b>-112</b>	<b>-137</b>	<b>-161</b>	<b>-182</b>	<b>-200</b>	<b>-218</b>	<b>-236</b>	<b>-254</b>	<b>-273</b>
	<b>TOTAL VENTILATION (from electricity)</b>	<b>13</b>	<b>32</b>	<b>35</b>	<b>36</b>	<b>36</b>	<b>35</b>	<b>34</b>	<b>33</b>	<b>32</b>	<b>32</b>
1	<i>TOTAL VENTILATION (from heat saving vs. BAU; already included in EMIS for space heating)</i>	-	-	-	-	-	-	-	-	-	-

EMISSBAU

db	BAU Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LFL (T12,T8h,T8t,T5,other)	45.3	56.4	65.0	70.3	65.9	53.4	39.4	28.9	21.1	15.4
	HID (HPM, HPS, MH)	16.9	28.8	28.9	28.2	22.7	14.4	7.3	3.7	1.9	1.0
	CFLni (all shapes)	1.2	3.9	4.2	4.1	3.5	2.3	1.2	0.6	0.3	0.2
	CFLi (retrofit for GLS, HL)	0.5	5.3	6.8	6.8	5.5	4.2	2.5	1.5	0.9	0.5
	GLS (DLS & NDLS)	44.9	30.0	21.1	14.7	8.2	4.5	2.5	1.4	0.7	0.4
	HL (DLS & NDLS, LV & MV)	3.8	17.5	22.0	25.0	16.9	8.1	4.0	2.0	1.0	0.6
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	0.4	3.4	9.9	18.6	26.5	32.6	37.6	41.8
	LED replacing HID (retrofit & luminaire)	0.0	0.0	0.2	2.7	7.5	12.5	16.1	18.3	20.1	21.7
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.0	0.1	0.5	1.0	1.3	1.5	1.7	1.8
	LED replacing DLS (retrofit & luminaire)	0.0	0.0	0.0	0.3	0.9	1.4	1.7	1.8	1.9	2.0
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	0.1	1.3	3.7	5.6	7.0	7.8	8.2	8.4
	<i>Special Purpose Lamps (SPL)</i>	20.0	24.8	20.8	17.0	13.2	10.3	9.7	9.1	8.5	7.9
	<i>Lighting controls (ctrl) and standby (sb)</i>	5.6	7.0	5.8	4.8	3.7	2.9	2.7	2.6	2.4	2.2
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>	<b>138</b>	<b>174</b>	<b>175</b>	<b>179</b>	<b>162</b>	<b>139</b>	<b>122</b>	<b>112</b>	<b>106</b>	<b>104</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>	<b>112</b>	<b>142</b>	<b>149</b>	<b>157</b>	<b>145</b>	<b>126</b>	<b>109</b>	<b>100</b>	<b>95</b>	<b>94</b>
	DP TV on-mode, total all types	14.4	30.7	33.5	33.6	28.8	30.7	28.7	25.2	22.9	21.8
	DP TV standby, standard (NoNA)	1.9	1.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	0.0	0.1	0.3	0.5	0.3	0.1	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	0.0	0.0	0.7	1.9	2.7	3.2	3.1	2.6	2.1	1.6
	<b>DP TV standby, total all types</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>
	<b>DP TV total on-mode + standby</b>	<b>16</b>	<b>32</b>	<b>35</b>	<b>36</b>	<b>32</b>	<b>34</b>	<b>32</b>	<b>28</b>	<b>25</b>	<b>23</b>
	DP Monitor on-mode	0.4	6.0	3.5	2.4	2.2	1.8	1.4	1.1	1.0	0.9
	DP Monitor standby	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>	<b>1</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
	DP Signage on-mode	0.0	0.4	3.5	7.7	8.8	8.0	7.0	6.3	5.6	5.1
	DP Signage standby	0.0	0.1	0.5	1.1	1.3	1.2	1.0	0.9	0.8	0.8
	<b>DP Signage total</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>6</b>
	<b>DP Electronic Displays, total on-mode</b>	<b>15</b>	<b>37</b>	<b>41</b>	<b>44</b>	<b>40</b>	<b>41</b>	<b>37</b>	<b>33</b>	<b>29</b>	<b>28</b>
	<b>DP Electronic Displays, total standby</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>2</b>
	<b>DP Electronic Displays, total</b>	<b>17</b>	<b>38</b>	<b>42</b>	<b>47</b>	<b>44</b>	<b>45</b>	<b>41</b>	<b>36</b>	<b>32</b>	<b>30</b>
	SSTB	0.0	1.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	0.0	2.9	6.8	7.3	7.1	6.5	6.4	6.5	6.6	6.5
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>
	VIDEO players/recorders	0.0	0.9	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	0.0	0.9	0.7	0.4	0.2	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	0.0	1.9	3.2	4.2	4.8	4.8	4.5	4.2	3.9	3.7
	<b>Total VIDEO</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>										
	ES tower 1-socket traditional	0.0	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1
	ES rack 1-socket traditional	0.1	1.3	0.9	0.8	0.7	0.8	0.7	0.7	0.6	0.6
	ES rack 2-socket traditional	0.4	6.0	3.1	1.8	2.0	2.2	2.2	2.1	1.9	1.8
	ES rack 2-socket cloud	0.0	3.4	5.0	5.4	5.9	6.6	6.7	6.3	5.9	5.5
	ES rack 4-socket traditional	0.0	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	ES rack 4-socket cloud	0.0	0.4	0.6	0.8	0.9	1.0	1.1	1.0	0.9	0.9
	ES rack 2-socket resilient trad.	0.0	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 2-socket resilient cloud	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	ES rack 4-socket resilient trad.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	0.0	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
	ES blade 2-socket traditional	0.3	2.8	1.4	0.8	0.9	1.0	1.0	1.0	0.9	0.8
	ES blade 2-socket cloud	0.0	1.5	2.2	2.6	2.9	3.2	3.3	3.1	2.9	2.7
	ES blade 4-socket traditional	0.0	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 4-socket cloud	0.0	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3
	<b>ES total traditional</b>	<b>1</b>	<b>12</b>	<b>7</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>
	<b>ES total cloud</b>	<b>0</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>10</b>
	<b>ES Enterprise Servers total</b>	<b>1</b>	<b>18</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>
	DS Online 2	0.2	2.7	3.4	4.5	5.4	6.1	6.0	5.6	5.3	4.9
	DS Online 3	0.0	0.4	0.5	0.6	0.8	0.9	0.8	0.8	0.7	0.7
	DS Online 4	0.1	1.5	1.9	2.5	3.0	3.3	3.3	3.1	2.9	2.7
	<b>DS Data Storage products total</b>	<b>0</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>8</b>
	<b>ES + DS total (excl. infrastructure)</b>	<b>1</b>	<b>22</b>	<b>21</b>	<b>21</b>	<b>24</b>	<b>27</b>	<b>27</b>	<b>25</b>	<b>23</b>	<b>22</b>
	PC Desktop	7.2	8.8	5.0	1.8	1.0	1.0	0.9	0.9	0.8	0.7
	PC Notebook	0.0	3.0	1.5	0.4	0.2	0.2	0.2	0.2	0.2	0.2
	PC Tablet/slate	0.0	0.0	0.7	0.6	0.5	0.6	0.6	0.6	0.6	0.6
	PC Thin client	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	0.0	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>Total PC, electricity</b>	<b>7</b>	<b>13</b>	<b>8</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	EP-Copier mono	5.2	0.5	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0
	EP-Copier colour	0.0	0.1	0.3	0.6	0.6	0.6	0.7	0.7	0.7	0.7
	EP-printer mono	4.7	1.1	0.9	0.6	0.5	0.4	0.4	0.3	0.2	0.2
	EP-printer colour	0.0	0.6	0.7	1.0	1.1	1.2	1.3	1.4	1.4	1.5
	IJ SFD printer	0.6	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
	IJ MFD printer	0.7	0.5	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	<b>Total imaging equipment, electricity</b>	<b>13</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
	<i>of which related to paper use</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>

EMISSBAU

db	BAU Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	0.0	1.7	1.9	2.1	2.0	1.9	1.7	1.4	1.1	0.7
	SB Home NAS, on-mode hours	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	SB Home Phones (fixed), on-mode hours	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0
	SB Office Phones (fixed), on-mode hours	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0
	SB Home Gateway, standby hours	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.1
	SB Home Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	0.0	1.7	2.9	4.2	4.1	3.9	3.4	2.9	2.2	1.4
	SB Home NAS, idle hours	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	SB Home Phones (fixed), idle hours	0.3	1.6	1.7	1.7	1.4	1.1	0.9	0.7	0.5	0.3
	SB Office Phones (fixed), idle hours	0.4	1.1	1.0	0.9	0.8	0.7	0.6	0.4	0.3	0.2
	<b>Total SB (networked) StandBy (rest)</b>	<b>1</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>9</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>3</b>
db	<i>EPS Active mode (for electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3
0.6	EPS 10–12 W	0.0	3.3	5.1	5.3	4.8	4.4	4.0	3.5	3.2	2.9
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 30–65 W	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.6	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 12–15 W	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2
	<b>EPS, total for active mode</b>	<b>0.1</b>	<b>5.1</b>	<b>6.9</b>	<b>6.8</b>	<b>6.2</b>	<b>5.6</b>	<b>5.1</b>	<b>4.6</b>	<b>4.1</b>	<b>3.8</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	0.0	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2
0.0	EPS 10–12 W	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
0.0	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>	<b>0.1</b>	<b>0.8</b>	<b>0.7</b>	<b>0.7</b>	<b>0.6</b>	<b>0.5</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>
	<b>EPS, overall total (active + no-load)</b>	<b>0.1</b>	<b>5.9</b>	<b>7.6</b>	<b>7.4</b>	<b>6.8</b>	<b>6.2</b>	<b>5.6</b>	<b>5.0</b>	<b>4.5</b>	<b>4.1</b>
	<b>EPS, double counted subtracted</b>	<b>0.1</b>	<b>3.1</b>	<b>3.8</b>	<b>3.8</b>	<b>3.4</b>	<b>3.1</b>	<b>2.8</b>	<b>2.5</b>	<b>2.2</b>	<b>2.0</b>
	UPS below 1.5 kVA	0.4	0.6	0.6	0.7	0.8	0.8	0.9	0.9	0.9	0.9
	UPS 1.5 to 5 kVA	1.3	2.4	2.5	2.6	3.0	3.3	3.5	3.7	3.7	3.7
	UPS 5 to 10 kVA	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
	UPS 10 to 200 kVA	0.9	1.7	1.8	1.7	1.8	2.0	2.1	2.3	2.3	2.3
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
	<b>TOTAL ELECTRONICS</b>	<b>42</b>	<b>102</b>	<b>106</b>	<b>107</b>	<b>106</b>	<b>108</b>	<b>103</b>	<b>95</b>	<b>87</b>	<b>81</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>69</b>	<b>57</b>	<b>55</b>	<b>53</b>	<b>50</b>	<b>47</b>	<b>44</b>	<b>41</b>	<b>39</b>	<b>36</b>
	CF open vertical chilled multi deck (RVC2)	10.2	9.3	8.8	8.2	7.8	7.6	7.4	7.2	7.1	7.0
	CF open horizontal frozen island (RHF4)	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
	CF other supermarket display (non-BCs)	23.9	24.2	24.7	24.8	25.0	25.4	25.7	26.1	26.4	26.7
	CF Plug in one door beverage cooler	9.3	7.5	6.8	6.1	5.7	5.4	5.2	5.0	4.8	4.7
	CF Plug in horizontal ice cream freezer	2.2	1.8	1.6	1.4	1.4	1.3	1.3	1.2	1.2	1.1
	CF Spiral vending machine	1.7	1.3	0.9	0.6	0.6	0.6	0.6	0.5	0.5	0.5
	<b>Total CF Commercial Refrigeration</b>	<b>48</b>	<b>45</b>	<b>44</b>	<b>42</b>	<b>41</b>	<b>41</b>	<b>41</b>	<b>41</b>	<b>41</b>	<b>41</b>
	o/w due to refrigerant leakage	14	17	19	19	20	21	21	22	23	23
	PF Storage cabinet Chilled Vertical (CV)	0.9	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
	PF Storage cabinet Frozen Vertical (FV)	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2
	PF Storage cabinet Chilled Horizontal (CH)	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7
	PF Storage cabinet Frozen Horizontal (FH)	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
	<b>PF Storage cabinets All types</b>	<b>3.2</b>	<b>3.6</b>	<b>3.7</b>	<b>3.7</b>	<b>3.6</b>	<b>3.6</b>	<b>3.6</b>	<b>3.5</b>	<b>3.4</b>	<b>3.3</b>
	PF Process Chiller AC MT S ≤ 300 kW	1.6	2.9	3.3	3.6	3.9	4.0	4.2	4.3	4.3	4.3
	PF Process Chiller AC MT L > 300 kW	1.6	2.8	3.2	3.5	3.7	3.8	4.0	4.0	4.1	4.1
	PF Process Chiller AC LT S ≤ 200 kW	1.6	2.9	3.3	3.6	3.9	4.0	4.1	4.2	4.3	4.3
	PF Process Chiller AC LT L > 200 kW	1.7	3.0	3.4	3.8	4.0	4.1	4.3	4.4	4.4	4.4
	PF Process Chiller WC MT S ≤ 300 kW	0.5	0.8	0.9	1.0	1.1	1.1	1.2	1.2	1.2	1.2
	PF Process Chiller WC MT L > 300 kW	0.7	1.2	1.3	1.5	1.6	1.6	1.7	1.7	1.7	1.7
	PF Process Chiller WC LT S ≤ 200 kW	0.6	1.0	1.2	1.3	1.4	1.4	1.5	1.5	1.5	1.5
	PF Process Chiller WC LT L > 200 kW	0.7	1.3	1.5	1.6	1.7	1.8	1.9	1.9	1.9	1.9
	<b>PF Process Chiller All MT&amp;LT</b>	<b>9</b>	<b>16</b>	<b>18</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>
	PF Condensing Unit MT S 0.2-1 kW	4.0	2.8	2.6	2.6	2.7	2.8	2.9	2.9	3.0	3.1
	PF Condensing Unit MT M 1-5 kW	9.5	6.4	6.0	6.0	6.2	6.4	6.5	6.7	6.8	6.9
	PF Condensing Unit MT L 5-20 kW	12.1	8.2	7.6	7.7	8.0	8.2	8.4	8.7	8.8	9.0
	PF Condensing Unit MT XL 20-50 kW	11.7	7.9	7.4	7.4	7.6	7.9	8.1	8.2	8.4	8.6
	PF Condensing Unit LT S 0.1-0.4 kW	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4
	PF Condensing Unit LT M 0.4-2 kW	1.9	1.3	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.5
	PF Condensing Unit LT L 2-8 kW	3.1	2.1	2.0	2.0	2.1	2.2	2.2	2.3	2.4	2.4
	PF Condensing Unit LT XL 8-20 kW	8.6	5.8	5.4	5.4	5.6	5.7	5.8	5.9	6.0	6.1
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>52</b>	<b>35</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>37</b>	<b>38</b>
	<b>PF Professional Refrigeration, Total</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>37</b>	<b>38</b>	<b>40</b>	<b>41</b>	<b>41</b>	<b>42</b>	<b>42</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>150</b>	<b>135</b>	<b>133</b>	<b>132</b>	<b>129</b>	<b>128</b>	<b>126</b>	<b>124</b>	<b>121</b>	<b>118</b>

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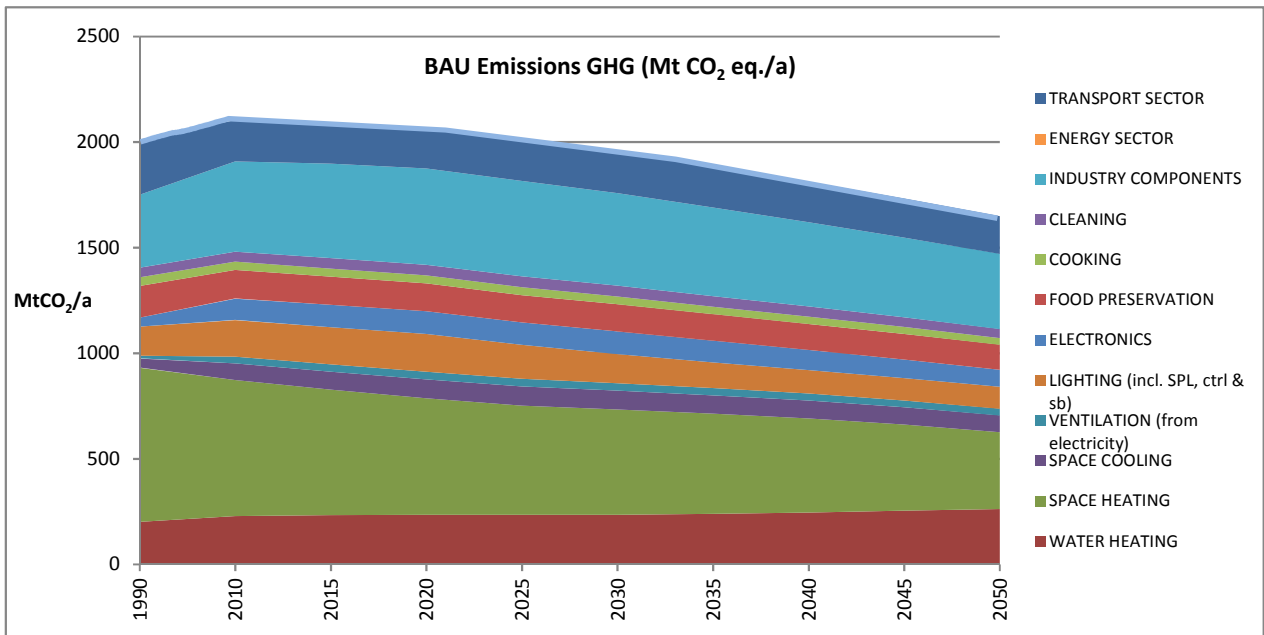
db	BAU Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	10.1	12.9	13.7	14.3	14.6	14.6	14.5	14.2	13.9	13.4
	CA El. Ovens	11.7	9.6	8.7	7.9	7.3	7.1	6.8	6.4	6.1	5.7
	CA Gas Hobs	7.0	5.8	5.5	5.3	5.1	4.8	4.6	4.3	4.1	3.9
	CA Gas Ovens	2.8	2.0	1.8	1.6	1.5	1.4	1.4	1.3	1.3	1.2
	CA Range Hoods	5.0	5.0	5.1	5.2	5.1	5.1	5.1	5.0	4.9	4.7
	<b>Total CA Cooking Appliances</b>	<b>37</b>	<b>35</b>	<b>35</b>	<b>34</b>	<b>34</b>	<b>33</b>	<b>32</b>	<b>31</b>	<b>30</b>	<b>29</b>
	CM Dripfilter (glass)	3.1	1.8	1.5	1.2	1.0	1.0	0.9	0.9	0.8	0.7
	CM Dripfilter (thermos)	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
	CM Dripfilter (full automatic)	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	CM Pad filter	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	CM Hard cap espresso	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	CM Semi-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	2.2	1.2	1.1	0.8	0.7	0.7	0.6	0.6	0.6	0.5
	CM Dripfilter (thermos), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	0.0	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	CM Hard cap espresso, standby/keep warm	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1
	CM Semi-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CM household Coffee Makers</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<b>TOTAL COOKING</b>	<b>42</b>	<b>40</b>	<b>39</b>	<b>38</b>	<b>37</b>	<b>36</b>	<b>35</b>	<b>34</b>	<b>33</b>	<b>32</b>
	<b>Total WM household Washing Machine</b>	<b>26</b>	<b>18</b>	<b>17</b>	<b>15</b>	<b>13</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>7</b>	<b>6</b>
	<b>Total DW household Dishwasher</b>	<b>6</b>	<b>9</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>12</b>
	LD vented el.	4	5	5	4	4	4	3	3	3	3
	LD condens el.	1	6	7	8	8	8	8	7	7	6
	LD vented gas	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>	<b>5</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>9</b>
	VC dom	5.1	6.9	8.9	8.9	12.2	13.2	13.9	14.1	13.8	13.1
	VC nondom	1.5	1.9	2.1	2.3	2.4	2.3	2.3	2.3	2.2	2.1
	<b>Total VC Vacuum Cleaner</b>	<b>7</b>	<b>9</b>	<b>11</b>	<b>11</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>15</b>
	<b>TOTAL CLEANING</b>	<b>44</b>	<b>47</b>	<b>50</b>	<b>50</b>	<b>52</b>	<b>52</b>	<b>50</b>	<b>48</b>	<b>46</b>	<b>43</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	9.6	21.7	24.5	26.3	27.4	27.4	26.2	24.5	22.9	21.3
0.5	FAN Axial>300Pa	16.4	39.7	43.8	44.6	44.1	42.6	40.4	37.8	35.3	32.8
0.5	FAN Centr.FC	4.1	7.0	8.2	8.8	9.1	9.1	8.7	8.1	7.6	7.1
0.5	FAN Centr.BC-free	10.7	18.2	20.8	22.0	22.9	23.6	23.5	22.7	21.6	20.4
0.5	FAN Centr.BC	11.1	20.5	23.7	25.0	26.1	27.1	27.5	27.6	28.0	28.2
0.5	FAN Cross-flow	0.7	1.0	1.1	1.3	1.4	1.4	1.4	1.4	1.5	1.5
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>26</b>	<b>54</b>	<b>61</b>	<b>64</b>	<b>65</b>	<b>66</b>	<b>64</b>	<b>61</b>	<b>58</b>	<b>56</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	55	57	58	57	54	50	45	40	35	30
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	82	88	90	89	83	76	68	60	51	42
0.45	Medium (L) 3-ph 75-375 kW no VSD	167	175	176	172	160	143	123	101	81	68
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>304</b>	<b>320</b>	<b>324</b>	<b>318</b>	<b>298</b>	<b>269</b>	<b>236</b>	<b>201</b>	<b>168</b>	<b>141</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	4	7	8	9	11	12	13	14	15	16
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	7	13	16	19	21	23	25	28	30	33
0.45	Medium (L) 3-ph 75-375 kW with VSD	19	39	46	55	63	70	77	85	90	92
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>29</b>	<b>59</b>	<b>70</b>	<b>83</b>	<b>94</b>	<b>105</b>	<b>116</b>	<b>127</b>	<b>136</b>	<b>140</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>333</b>	<b>379</b>	<b>394</b>	<b>402</b>	<b>392</b>	<b>374</b>	<b>352</b>	<b>328</b>	<b>304</b>	<b>281</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	4	4	5	4	4	4	4	3	3	3
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	6	6	6	6	6	6	5	5	5	4
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	1	1	1	1	1	1	1	1	1
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	85	85	80	72	64	57	53	49	46	42
0.45	Large 3-ph LV 375-1000kW with VSD	4	19	28	36	42	46	46	45	44	43
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>90</b>	<b>104</b>	<b>107</b>	<b>109</b>	<b>107</b>	<b>103</b>	<b>99</b>	<b>94</b>	<b>90</b>	<b>85</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	2	2	2	2	2	2	2	2	2	2
0.45	Explosion motors (M) 3-ph 7.5-75 kW	4	5	5	6	6	5	5	5	5	4
0.45	Explosion motors (L) 3-ph 75-375 kW	8	10	11	11	11	11	10	10	10	9
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>15</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>15</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	1	1	2	1	1	1	1	1	1
0.45	Brake motors (M) 3-ph 7.5-75 kW	3	3	4	4	4	4	3	3	3	3
0.45	Brake motors (L) 3-ph 75-375 kW	4	5	5	6	6	5	5	5	5	5
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>9</b>

## EMISSBAU

db	BAU Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	1	1	1	1	1	1	1	0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>23</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>27</b>	<b>26</b>	<b>25</b>	<b>23</b>	<b>22</b>	<b>21</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>264</b>	<b>301</b>	<b>313</b>	<b>319</b>	<b>312</b>	<b>299</b>	<b>283</b>	<b>265</b>	<b>248</b>	<b>231</b>
	<b>Total WP Water Pumps</b>	<b>44</b>	<b>49</b>	<b>50</b>	<b>52</b>	<b>53</b>	<b>54</b>	<b>54</b>	<b>54</b>	<b>53</b>	<b>53</b>
	CP Fixed Speed 5-1280 l/s	11.9	19.9	16.2	13.5	12.5	12.1	11.7	11.3	10.8	10.3
	CP Variable speed 5-1280 l/s	0.0	3.7	6.2	7.7	8.0	7.8	7.5	7.2	6.8	6.5
	CP Pistons 2-64 l/s	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4
	<b>Total CP Standard Air Compressors</b>	<b>13</b>	<b>24</b>	<b>23</b>	<b>22</b>	<b>21</b>	<b>20</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>347</b>	<b>428</b>	<b>447</b>	<b>457</b>	<b>451</b>	<b>438</b>	<b>420</b>	<b>399</b>	<b>378</b>	<b>356</b>
	TRAF0 Distribution	6.0	8.2	8.9	9.5	9.9	10.2	10.4	10.6	10.6	10.5
	TRAF0 Industry oil	4.5	6.4	6.9	7.3	7.6	7.7	7.8	7.8	7.8	7.7
	TRAF0 Industry dry	1.4	2.0	2.2	2.3	2.4	2.4	2.5	2.5	2.5	2.4
	TRAF0 Power	17.2	21.9	23.6	25.1	26.1	26.8	27.2	27.4	27.4	27.2
	TRAF0 DER oil	0.0	0.2	0.3	0.6	0.9	1.4	2.1	3.0	3.9	4.9
	TRAF0 DER dry	0.0	0.8	1.4	2.4	3.8	5.9	8.9	12.6	16.6	20.6
	TRAF0 Small	1.0	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5
	<b>Total TRAF0 Utility Transformers</b>	<b>30</b>	<b>40</b>	<b>44</b>	<b>48</b>	<b>51</b>	<b>55</b>	<b>60</b>	<b>64</b>	<b>69</b>	<b>74</b>
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<i>(Emissions due to fuel losses due to RRC)</i>										
	Tyres C1, replacement for cars	117	86	79	77	77	75	72	69	65	62
	Tyres C1, OEM for cars	35	25	25	24	23	23	22	21	20	19
	<b>Tyres C1, total</b>	<b>152</b>	<b>111</b>	<b>104</b>	<b>101</b>	<b>100</b>	<b>98</b>	<b>94</b>	<b>89</b>	<b>85</b>	<b>80</b>
	Tyres C2, replacement for vans	34	29	28	29	31	33	32	30	29	28
	Tyres C2, OEM for vans	7	6	6	6	7	7	7	6	6	6
	<b>Tyres C2, total</b>	<b>41</b>	<b>35</b>	<b>34</b>	<b>36</b>	<b>38</b>	<b>40</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>33</b>
	Tyres C3, replacement for trucks/busses	54	40	37	45	48	53	54	53	53	52
	Tyres C3, OEM for trucks/busses	12	9	9	10	11	12	12	12	12	12
	<b>Tyres C3, total</b>	<b>67</b>	<b>48</b>	<b>45</b>	<b>55</b>	<b>59</b>	<b>65</b>	<b>66</b>	<b>65</b>	<b>64</b>	<b>64</b>
	<b>Tyres, total C1+C2+C3</b>	<b>260</b>	<b>195</b>	<b>183</b>	<b>191</b>	<b>197</b>	<b>202</b>	<b>199</b>	<b>191</b>	<b>184</b>	<b>177</b>
	<b>TRANSPORT SECTOR</b>	<b>260</b>	<b>195</b>	<b>183</b>	<b>191</b>	<b>197</b>	<b>202</b>	<b>199</b>	<b>191</b>	<b>184</b>	<b>177</b>
	<b>GENERAL TOTAL (in Mt CO<sub>2</sub>)</b>	<b>2011</b>	<b>2104</b>	<b>2081</b>	<b>2066</b>	<b>2012</b>	<b>1960</b>	<b>1889</b>	<b>1811</b>	<b>1732</b>	<b>1648</b>
	<b>BAU Emissions GHG (summary table)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>201</b>	<b>228</b>	<b>232</b>	<b>233</b>	<b>234</b>	<b>235</b>	<b>238</b>	<b>245</b>	<b>254</b>	<b>262</b>
	<b>SPACE HEATING</b>	<b>730</b>	<b>645</b>	<b>595</b>	<b>553</b>	<b>518</b>	<b>498</b>	<b>475</b>	<b>446</b>	<b>408</b>	<b>364</b>
	<b>SPACE COOLING</b>	<b>44</b>	<b>79</b>	<b>85</b>	<b>89</b>	<b>90</b>	<b>89</b>	<b>87</b>	<b>84</b>	<b>82</b>	<b>80</b>
	<b>VENTILATION (from electricity)</b>	<b>13</b>	<b>32</b>	<b>35</b>	<b>36</b>	<b>36</b>	<b>35</b>	<b>34</b>	<b>33</b>	<b>32</b>	<b>32</b>
1	<i>VENTILATION (from heat saving vs. BAU; already included in EMIS for space heating)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<b>LIGHTING (incl. SPL, ctrl &amp; sb)</b>	<b>138</b>	<b>174</b>	<b>175</b>	<b>179</b>	<b>162</b>	<b>139</b>	<b>122</b>	<b>112</b>	<b>106</b>	<b>104</b>
	<b>ELECTRONICS</b>	<b>42</b>	<b>102</b>	<b>106</b>	<b>107</b>	<b>106</b>	<b>108</b>	<b>103</b>	<b>95</b>	<b>87</b>	<b>81</b>
	<b>FOOD PRESERVATION</b>	<b>150</b>	<b>135</b>	<b>133</b>	<b>132</b>	<b>129</b>	<b>128</b>	<b>126</b>	<b>124</b>	<b>121</b>	<b>118</b>
	<b>COOKING</b>	<b>42</b>	<b>40</b>	<b>39</b>	<b>38</b>	<b>37</b>	<b>36</b>	<b>35</b>	<b>34</b>	<b>33</b>	<b>32</b>
	<b>CLEANING</b>	<b>44</b>	<b>47</b>	<b>50</b>	<b>50</b>	<b>52</b>	<b>52</b>	<b>50</b>	<b>48</b>	<b>46</b>	<b>43</b>
	<b>INDUSTRY COMPONENTS</b>	<b>347</b>	<b>428</b>	<b>447</b>	<b>457</b>	<b>451</b>	<b>438</b>	<b>420</b>	<b>399</b>	<b>378</b>	<b>356</b>
	<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>	<b>260</b>	<b>195</b>	<b>183</b>	<b>191</b>	<b>197</b>	<b>202</b>	<b>199</b>	<b>191</b>	<b>184</b>	<b>177</b>
	<b>TOTAL in Mt CO<sub>2</sub></b>	<b>2011</b>	<b>2104</b>	<b>2081</b>	<b>2066</b>	<b>2012</b>	<b>1960</b>	<b>1889</b>	<b>1811</b>	<b>1732</b>	<b>1648</b>

Compare: The EU total emissions of greenhouse gases in 2007 amounts to 5054 Mt CO<sub>2</sub> equivalent (CO<sub>2</sub> 4187 + CH<sub>4</sub> 416 + N<sub>2</sub>O 374 + HFCs 63 + PFCs 4 + SF<sub>6</sub> 10). The above is around 36% of the EU GHG-total (1870/5054) and 45% of the combustion related CO<sub>2</sub>, in 2007.

Source: European Environmental Agency (EEA), Annual European Community greenhouse gas inventory 1990–2007 and inventory report 2009, Submission to the UNFCCC Secretariat, 2009. Total without LULUCF (Land-Use, Land-Use Change & Forestry)



**Sector subdivision for BAU GHG emissions**

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only emissions due to electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

Lighting: includes emissions due to energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Transport Sector: see separate reporting below; not included in other sector totals

Energy Sector: see separate reporting below. Only emissions due to Distribution Losses are considered. It is assumed that these losses are already considered in the GWP for electricity that is used when computing the emissions for other sectors. Consequently only the decrease in emissions due to the decrease of the losses in the ECO scenario vs. the BAU scenario is reported. (reference for BAU = 0)

BAU GHG emission (ENERGY SECTOR, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>TOTAL ENERGY SECTOR</b> (BAU taken as reference = 0)	0	0	0	0	0	0	0	0	0	0
BAU GHG emission, Energy Sector, MtCO2eq	0	0	0	0	0	0	0	0	0	0

BAU GHG emission (INDUSTRY, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	7	9	9	9	9	9	9	10	10	11
SPACE HEATING	89	79	72	65	60	57	54	51	46	41
SPACE & HT PROCESS COOLING	11	16	17	18	17	16	15	15	14	13
VENTILATION	1	3	3	3	3	3	3	3	3	3
LIGHTING	20	25	26	27	26	23	21	19	18	18
ELECTRONICS	2	5	4	5	5	5	5	5	5	4
FOOD PRESERVATION	11	17	18	20	21	22	22	23	23	23
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	214	258	268	273	268	258	246	233	219	205
BAU GHG emission, Industry, MtCO2eq	355	412	418	420	410	395	377	358	338	318

BAU GHG emission (TRANSPORT, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are emissions related to energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	44	34	32	36	38	40	40	39	38	37
TYRES for SERVICE-sector-related transport	88	67	63	70	73	77	77	75	72	70
TYRES for RESIDENTIAL-sector-related transport	121	89	83	80	80	78	75	71	68	64
TYRES for OTHER-sector-related transport	7	5	5	6	6	6	6	6	6	6
BAU GHG emission, Transport, MtCO2eq	260	195	183	191	197	202	199	191	184	177

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BAU GHG emission (TERTIARY/SERVICES, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	62	70	71	71	72	72	73	75	77	80
SPACE HEATING	187	182	171	162	153	148	142	133	122	109
SPACE & HT PROCESS COOLING	28	53	58	61	61	60	59	58	57	56
VENTILATION	8	22	23	24	24	23	22	21	20	19
LIGHTING	76	103	106	111	106	95	85	79	76	75
ELECTRONICS	17	40	40	42	45	47	46	43	40	38
FOOD PRESERVATION	73	64	62	60	60	60	59	60	60	59
COOKING	5	5	4	4	4	4	4	3	3	3
CLEANING	3	3	4	4	4	4	4	4	3	3
INDUSTRY COMPONENTS	86	116	124	127	127	125	121	115	109	104
<b>BAU GHG emission, Services, MtCO2eq</b>	<b>545</b>	<b>656</b>	<b>662</b>	<b>667</b>	<b>656</b>	<b>637</b>	<b>613</b>	<b>590</b>	<b>569</b>	<b>547</b>

BAU GHG emission (RESIDENTIAL, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	130	147	150	151	151	152	154	158	164	169
SPACE HEATING	428	361	332	307	286	276	263	248	226	201
SPACE & HT PROCESS COOLING	1	5	6	6	7	8	8	8	8	7
VENTILATION	4	7	8	8	8	8	9	9	9	9
LIGHTING	41	44	41	39	28	20	15	12	10	9
ELECTRONICS	22	56	61	59	55	55	51	46	41	38
FOOD PRESERVATION	63	52	51	49	46	43	41	38	35	33
COOKING	37	35	35	34	33	33	32	31	30	29
CLEANING	41	43	46	46	48	47	46	44	42	39
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>BAU GHG emission, Residential, MtCO2eq</b>	<b>769</b>	<b>751</b>	<b>728</b>	<b>699</b>	<b>663</b>	<b>641</b>	<b>619</b>	<b>594</b>	<b>566</b>	<b>535</b>

BAU GHG emission (OTHER sectors, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	2	2	2	2	2	2	2	2	3	3
SPACE HEATING	26	23	21	19	18	17	16	15	14	12
SPACE & HT PROCESS COOLING	3	4	5	5	5	4	4	4	4	4
VENTILATION	0	1	1	1	1	1	1	0	0	0
LIGHTING	1	2	2	2	2	1	1	1	1	1
ELECTRONICS	0	1	1	1	1	1	1	1	1	1
FOOD PRESERVATION	2	3	3	3	3	3	3	3	3	3
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	47	54	56	57	56	55	54	52	50	47
<b>BAU GHG emission, Other sectors, MtCO2eq</b>	<b>82</b>	<b>90</b>	<b>89</b>	<b>89</b>	<b>87</b>	<b>85</b>	<b>82</b>	<b>79</b>	<b>75</b>	<b>71</b>

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BAU GHG emissions (per FUNCTION, MTCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>	<b>201</b>	<b>228</b>	<b>232</b>	<b>233</b>	<b>234</b>	<b>235</b>	<b>238</b>	<b>245</b>	<b>254</b>	<b>262</b>
Residential	130	147	150	151	151	152	154	158	164	169
Tertiary / Services	62	70	71	71	72	72	73	75	77	80
Industry	7	9	9	9	9	9	9	10	10	11
Other	2	2	2	2	2	2	2	2	3	3
<b>SPACE HEATING. All sectors, TWh</b>	<b>730</b>	<b>645</b>	<b>595</b>	<b>553</b>	<b>518</b>	<b>498</b>	<b>475</b>	<b>446</b>	<b>408</b>	<b>364</b>
Residential	428	361	332	307	286	276	263	248	226	201
Tertiary / Services	187	182	171	162	153	148	142	133	122	109
Industry	89	79	72	65	60	57	54	51	46	41
Other	26	23	21	19	18	17	16	15	14	12
<b>SPACE COOLING. All sectors, TWh</b>	<b>44</b>	<b>79</b>	<b>85</b>	<b>89</b>	<b>90</b>	<b>89</b>	<b>87</b>	<b>84</b>	<b>82</b>	<b>80</b>
<b>&amp; HT PROCESS</b> Residential	1	5	6	6	7	8	8	8	8	7
Tertiary / Services	28	53	58	61	61	60	59	58	57	56
Industry	11	16	17	18	17	16	15	15	14	13
Other	3	4	5	5	5	4	4	4	4	4
<b>VENTILATION. All sectors, TWh</b>	<b>13</b>	<b>32</b>	<b>35</b>	<b>36</b>	<b>36</b>	<b>35</b>	<b>34</b>	<b>33</b>	<b>32</b>	<b>32</b>
Residential	4	7	8	8	8	8	9	9	9	9
Tertiary / Services	8	22	23	24	24	23	22	21	20	19
Industry	1	3	3	3	3	3	3	3	3	3
Other	0	1	1	1	1	1	1	0	0	0
<b>LIGHTING. All sectors, TWh</b>	<b>138</b>	<b>174</b>	<b>175</b>	<b>179</b>	<b>162</b>	<b>139</b>	<b>122</b>	<b>112</b>	<b>106</b>	<b>104</b>
Residential	41	44	41	39	28	20	15	12	10	9
Tertiary / Services	76	103	106	111	106	95	85	79	76	75
Industry	20	25	26	27	26	23	21	19	18	18
Other	1	2	2	2	2	1	1	1	1	1
<b>ELECTRONICS. All sectors, TWh</b>	<b>42</b>	<b>102</b>	<b>106</b>	<b>107</b>	<b>106</b>	<b>108</b>	<b>103</b>	<b>95</b>	<b>87</b>	<b>81</b>
Residential	22	56	61	59	55	55	51	46	41	38
Tertiary / Services	17	40	40	42	45	47	46	43	40	38
Industry	2	5	4	5	5	5	5	5	5	4
Other	0	1	1	1	1	1	1	1	1	1
<b>FOOD PRESERVE. All sectors, TWh</b>	<b>150</b>	<b>135</b>	<b>133</b>	<b>132</b>	<b>129</b>	<b>128</b>	<b>126</b>	<b>124</b>	<b>121</b>	<b>118</b>
Residential	63	52	51	49	46	43	41	38	35	33
Tertiary / Services	73	64	62	60	60	60	59	60	60	59
Industry	11	17	18	20	21	22	22	23	23	23
Other	2	3	3	3	3	3	3	3	3	3
<b>COOKING. All sectors, TWh</b>	<b>42</b>	<b>40</b>	<b>39</b>	<b>38</b>	<b>37</b>	<b>36</b>	<b>35</b>	<b>34</b>	<b>33</b>	<b>32</b>
Residential	37	35	35	34	33	33	32	31	30	29
Tertiary / Services	5	5	4	4	4	4	4	3	3	3
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>	<b>44</b>	<b>47</b>	<b>50</b>	<b>50</b>	<b>52</b>	<b>52</b>	<b>50</b>	<b>48</b>	<b>46</b>	<b>43</b>
Residential	41	43	46	46	48	47	46	44	42	39
Tertiary / Services	3	3	4	4	4	4	4	4	3	3
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>	<b>347</b>	<b>428</b>	<b>447</b>	<b>457</b>	<b>451</b>	<b>438</b>	<b>420</b>	<b>399</b>	<b>378</b>	<b>356</b>
Residential	0	0	0	0	0	0	0	0	0	0
Tertiary / Services	86	116	124	127	127	125	121	115	109	104
Industry	214	258	268	273	268	258	246	233	219	205
Other	47	54	56	57	56	55	54	52	50	47
<b>TYRES. Transport sector, TWh</b>	<b>260</b>	<b>195</b>	<b>183</b>	<b>191</b>	<b>197</b>	<b>202</b>	<b>199</b>	<b>191</b>	<b>184</b>	<b>177</b>
Residential transport	121	89	83	80	80	78	75	71	68	64
Tertiary / Services transport	88	67	63	70	73	77	77	75	72	70
Industry transport	44	34	32	36	38	40	40	39	38	37
Other transport	7	5	5	6	6	6	6	6	6	6
<b>ALL PRODUCTS. All sectors, TWh</b>	<b>2011</b>	<b>2104</b>	<b>2081</b>	<b>2066</b>	<b>2012</b>	<b>1960</b>	<b>1889</b>	<b>1811</b>	<b>1732</b>	<b>1648</b>
Residential	769	751	728	699	663	641	619	594	566	535
Tertiary / Services	545	656	662	667	656	637	613	590	569	547
Industry	355	412	418	420	410	395	377	358	338	318
Other	82	90	89	89	87	85	82	79	75	71
Transport	260	195	183	191	197	202	199	191	184	177



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BAU GHG emissions (per FUNCTION, %)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>										
Residential	65%	65%	65%	65%	65%	65%	65%	64%	64%	64%
Tertiary / Services	31%	31%	31%	31%	31%	31%	31%	30%	30%	30%
Industry	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>										
Residential	59%	56%	56%	55%	55%	55%	55%	56%	56%	55%
Tertiary / Services	26%	28%	29%	29%	30%	30%	30%	30%	30%	30%
Industry	12%	12%	12%	12%	12%	12%	11%	11%	11%	11%
Other	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>										
<b>&amp; HT PROCESS</b>										
Residential	2%	6%	7%	7%	8%	9%	9%	9%	9%	9%
Tertiary / Services	65%	67%	68%	68%	68%	68%	68%	69%	69%	70%
Industry	25%	21%	20%	20%	19%	18%	18%	17%	17%	16%
Other	7%	6%	5%	5%	5%	5%	5%	5%	5%	4%
<b>VENTILATION (from electricity).</b>										
Residential	29%	21%	22%	22%	23%	24%	25%	26%	28%	28%
Tertiary / Services	61%	68%	67%	67%	66%	65%	64%	63%	62%	62%
Industry	8%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Other	1%	2%	2%	2%	2%	2%	1%	1%	1%	1%
<b>LIGHTING.</b>										
Residential	30%	25%	24%	22%	18%	14%	12%	11%	10%	9%
Tertiary / Services	55%	59%	61%	62%	66%	68%	70%	71%	72%	73%
Industry	14%	14%	15%	15%	16%	16%	17%	17%	17%	17%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>										
Residential	53%	55%	57%	55%	52%	51%	50%	49%	47%	47%
Tertiary / Services	41%	39%	38%	40%	43%	43%	44%	46%	46%	47%
Industry	5%	5%	4%	4%	5%	5%	5%	5%	5%	5%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>										
Residential	42%	39%	38%	37%	36%	34%	32%	31%	29%	28%
Tertiary / Services	49%	47%	46%	46%	46%	47%	47%	48%	49%	50%
Industry	7%	12%	14%	15%	16%	17%	18%	19%	19%	20%
Other	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
<b>COOKING.</b>										
Residential	87%	89%	89%	89%	90%	90%	90%	90%	90%	90%
Tertiary / Services	13%	11%	11%	11%	10%	10%	10%	10%	10%	10%
Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>										
Residential	93%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Tertiary / Services	6%	7%	7%	8%	7%	7%	7%	8%	8%	8%
Industry	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>										
Residential	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tertiary / Services	25%	27%	28%	28%	28%	29%	29%	29%	29%	29%
Industry	62%	60%	60%	60%	59%	59%	59%	58%	58%	58%
Other	14%	13%	12%	12%	12%	13%	13%	13%	13%	13%
<b>TYRES.</b>										
Residential transport	47%	46%	45%	42%	41%	39%	38%	37%	37%	36%
Tertiary / Services transport	34%	34%	34%	36%	37%	38%	39%	39%	39%	40%
Industry transport	17%	17%	17%	19%	19%	20%	20%	21%	21%	21%
Other transport	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>										
Residential	38%	36%	35%	34%	33%	33%	33%	33%	33%	32%
Tertiary / Services	27%	31%	32%	32%	33%	33%	32%	33%	33%	33%
Industry	18%	20%	20%	20%	20%	20%	20%	20%	20%	19%
Other	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Transport	13%	9%	9%	9%	10%	10%	11%	11%	11%	11%

## EMISSBAU

### OTHER EMISSIONS

db	BAU direct emissions NO <sub>x</sub> (in kt NO <sub>x</sub> /a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	30	33	34	34	35	35	35	36	38	40
	<b>Total CH Central Heating combi, water heat</b>	48	77	82	86	90	96	102	109	117	124
	<b>Total CH Central Heating boiler, space heat</b>	420	381	344	315	292	284	275	260	237	208
	LH open fire gas	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH closed fire gas	3.6	2.8	2.7	2.5	2.3	2.2	2.0	1.9	1.9	1.8
	LH luminous heaters	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
	LH tube heaters	3.5	3.0	2.9	2.7	2.5	2.3	2.1	2.0	1.9	1.8
	<b>Local Space Heaters, total direct NO<sub>x</sub>-emission</b>	8	7	6	6	6	5	5	5	4	4
	CHF	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	ACF	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	ACF (rev)	0.0	0.2	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.7
	AHF	59	44	38	32	28	25	22	20	17	15
	<b>Air Heaters &amp; Coolers, total direct No<sub>x</sub> emission</b>	59	44	38	33	29	26	23	21	18	16
	<b>Total direct NO<sub>x</sub> BAU in kt NO<sub>x</sub></b>	566	543	504	474	451	446	440	431	415	393
	<b>Direct NO<sub>x</sub> BAU in kt SO<sub>2</sub> eq.(=0.7*NO<sub>x</sub>)</b>	396	380	353	332	316	312	308	301	290	275

Compare: The EU total emissions of acidifying agents in 2007 is 22 432 kt SO<sub>2</sub> equivalent (NO<sub>x</sub> 11 151 + SO<sub>2</sub> 7339 + NH<sub>3</sub> 3 876). The above is around 1.7% of that EU total. Note that Ecodesign and Energy Labelling affects NO<sub>x</sub> emissions also through energy saving for product groups without explicit direct NO<sub>x</sub> emission-limits and indirectly through electricity savings (NO<sub>x</sub> from power plants).

Source for EU-total: European Environmental Agency (EEA), National emissions reported to the Convention on Long-range Transboundary Air Pollution (LRTAP Convention), EU-27 (national territory), 2007.

NO<sub>x</sub> emission data are incomplete: insufficient data were available to quantify NO<sub>x</sub> emissions for Solid Fuel Boilers and for a part of the Local Space Heaters.

db	BAU direct CO-emissions (in kt/a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SFB Wood Manual	8939	1298	942	681	459	271	163	113	92	78
	SFB Wood Direct Draft	2	16	29	41	48	47	47	50	58	67
	SFB Coal	135	24	16	9	5	2	1	1	1	1
	SFB Pellets	0	11	18	25	31	34	34	34	35	37
	SFB Wood chips	0	16	19	22	20	19	20	21	22	24
	<b>Solid Fuel Boilers, total CO-emission</b>	9076	1365	1025	778	562	373	265	220	209	205
	LH open fireplace	189	180	175	167	156	143	130	120	112	108
	LH closed fireplace/inset	247	396	430	452	456	440	411	380	353	332
	LH wood stove	539	377	343	315	290	264	243	224	208	196
	LH coal stove	440	173	139	112	90	69	51	38	28	22
	LH cooker	85	98	101	104	104	98	90	83	80	78
	LH SHR stove	191	194	197	202	208	212	216	217	214	209
	LH pellet stove	0	15	16	13	9	6	6	6	6	5
	<b>Local Space Heaters, total CO-emission</b>	1689	1434	1401	1365	1312	1233	1146	1068	1000	951
	<b>Total direct CO-emissions, BAU, in kt/a</b>	10765	2799	2426	2143	1875	1606	1411	1288	1209	1156

Compare: the total CO-emissions for Europe (OECD-Europe+Central-Europe, excl. Turkey, covering all sectors of activity including transport) were 68500 kton in 1990 and 27500 kton in 2008. The 2799 kton found above for year 2010 are approximately 10% of this total. Source for data: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR), release version 4.2. [http://edgar.jrc.ec.europa.eu/datasets\\_list.php?v=42](http://edgar.jrc.ec.europa.eu/datasets_list.php?v=42)

db	BAU direct OGC-emissions (in kt/a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SFB Wood Manual	782	114	82	60	40	24	14	10	8	7
	SFB Wood Direct Draft	0	1	1	2	2	2	2	3	3	3
	SFB Coal	7	1	1	0	0	0	0	0	0	0
	SFB Pellets	0	2	3	4	4	5	5	5	5	5
	SFB Wood chips	0	0	1	1	1	1	1	1	1	1
	<b>Solid Fuel Boilers, total OGC-emission</b>	789	118	88	66	48	32	22	18	17	16
	LH open fireplace	18	13	11	9	7	5	3	2	1	1
	LH closed fireplace/inset	23	27	26	23	19	14	10	7	5	4
	LH wood stove	51	27	22	17	12	9	6	4	3	2
	LH coal stove	43	13	9	6	4	3	1	1	0	0
	LH cooker	8	6	5	4	3	2	1	1	1	1
	LH SHR stove	18	14	12	10	8	6	5	4	3	2
	LH pellet stove	0	3	4	5	5	6	6	6	6	5
	<b>Local Space Heaters, total OGC-emission</b>	161	102	89	74	59	44	32	23	18	16
	<b>Total direct OGC-emissions, BAU, in kt/a</b>	950	219	176	141	106	75	54	41	35	33

## EMISSBAU

No statistical reference values for total OGC (organic gaseous carbon) emissions in Europe could be found. However such statistics are available for NMVOC (non-methane volatile organic compound), which is the same as OGC but without the methane contribution.

Compare (1): the total NMVOC-emissions for Europe (OECD-Europe+Central-Europe, excl. Turkey, covering all sectors of activity including transport) were 23100 kton in 1990 and 12500 kton in 2008. The 219 kton found above for year 2010 are approximately 1.7% of this total. Source for data: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR), release version 4.2. [http://edgar.jrc.ec.europa.eu/datasets\\_list.php](http://edgar.jrc.ec.europa.eu/datasets_list.php)

Compare (2): the NMVOC-emissions from the domestic sector in 2005 are estimated in 1134 kton (8% of EU-total) Source for data: Janusz Cofala, Zbigniew Klimont, "Emissions from households and other small combustion sources and their reduction potential", TSAP Report #5 Version 1.0, IIASA, June 2012 (Service Contract on Monitoring and Assessment of Sectorial Implementation Actions (ENV.C.3/SER/2011/0009) )

db	BAU direct PM-emissions (in kt/a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SFB Wood Manual	402	58	42	31	21	12	7	5	4	3
	SFB Wood Direct Draft	1	4	7	10	12	12	12	13	14	17
	SFB Coal	34	6	4	2	1	0	0	0	0	0
	SFB Pellets	0	2	3	4	4	5	5	5	5	5
	SFB Wood chips	0	2	3	3	3	3	3	3	3	3
	<b>Solid Fuel Boilers, total PM-emission</b>	<b>437</b>	<b>72</b>	<b>59</b>	<b>50</b>	<b>41</b>	<b>32</b>	<b>27</b>	<b>26</b>	<b>27</b>	<b>29</b>
	LH open fireplace	39	42	41	36	32	27	22	19	19	19
	LH closed fireplace/inset	17	25	26	26	25	22	20	17	16	14
	LH wood stove	38	24	21	18	16	13	12	10	9	8
	LH coal stove	31	11	9	7	5	4	3	2	1	1
	LH cooker	6	7	7	6	5	5	5	4	4	4
	LH SHR stove	12	10	10	9	8	8	7	6	5	5
	LH pellet stove	0	2	2	2	1	1	1	1	1	1
	<b>Local Space Heaters, total PM-emission</b>	<b>144</b>	<b>121</b>	<b>115</b>	<b>104</b>	<b>93</b>	<b>80</b>	<b>68</b>	<b>59</b>	<b>55</b>	<b>52</b>
	<b>Total direct PM-emissions, BAU, in kt/a</b>	<b>581</b>	<b>193</b>	<b>174</b>	<b>154</b>	<b>134</b>	<b>112</b>	<b>95</b>	<b>85</b>	<b>82</b>	<b>81</b>

Compare (1): the total PM10-emissions for Europe (OECD-Europe+Central-Europe, excl. Turkey, covering all sectors of activity including transport) were 6990 kton in 1990 and 2750 kton in 2008. The 193 kton found above for year 2010 are approximately 7% of this total. Source for data: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR), release version 4.2. [http://edgar.jrc.ec.europa.eu/datasets\\_list.php](http://edgar.jrc.ec.europa.eu/datasets_list.php)

Compare (2): the PM-emissions from the domestic sector in 2005 are estimated in 616 kton PM2.5 (34% of EU-total) and 648 kton PM10 (25% of EU-total) Source for data: Janusz Cofala, Zbigniew Klimont, "Emissions from households and other small combustion sources and their reduction potential", TSAP Report #5 Version 1.0, IIASA, June 2012 (Service Contract on Monitoring and Assessment of Sectorial Implementation Actions (ENV.C.3/SER/2011/0009) )

db	BAU noise emissions by tyres (in dB(A))	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	Tyres C1, replacement for cars		71.2	71.1	71.0	71.0	71.0				
	Tyres C1, OEM for cars		71.2	71.1	71.0	71.0	71.0				
	Tyres C2, replacement for vans		72.5	72.4	72.3	72.3	72.3				
	Tyres C2, OEM for vans		72.5	72.4	72.3	72.3	72.3				
	Tyres C3, replacement for trucks/busses		72.0	71.9	71.8	71.8	71.8				
	Tyres C3, OEM for trucks/busses		72.0	71.9	71.8	71.8	71.8				

EMISSECO

db	ECO Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>see also other emissions at bottom of Table</i>										
	<b>Total WH dedicated Water Heater</b>	<b>146</b>	<b>140</b>	<b>125</b>	<b>107</b>	<b>90</b>	<b>82</b>	<b>78</b>	<b>77</b>	<b>78</b>	<b>78</b>
	<b>Total CH Central Heating combi, water heat</b>	<b>55</b>	<b>88</b>	<b>89</b>	<b>82</b>	<b>75</b>	<b>72</b>	<b>73</b>	<b>75</b>	<b>77</b>	<b>79</b>
	<b>TOTAL WATER HEATING</b>	<b>201</b>	<b>228</b>	<b>214</b>	<b>189</b>	<b>165</b>	<b>154</b>	<b>151</b>	<b>152</b>	<b>154</b>	<b>156</b>
	<b>Total CH Central Heating boiler, space heat</b>	<b>521</b>	<b>466</b>	<b>376</b>	<b>289</b>	<b>220</b>	<b>179</b>	<b>155</b>	<b>134</b>	<b>112</b>	<b>89</b>
	SFB Wood Manual	7.4	2.0	1.5	1.0	0.6	0.3	0.2	0.1	0.1	0.1
	SFB Wood Direct Draft	0.1	0.5	0.9	1.3	1.5	1.5	1.4	1.5	1.8	2.0
	SFB Coal	42.0	11.7	8.0	4.8	2.5	1.0	0.4	0.3	0.3	0.3
	SFB Pellets	0.0	0.4	0.6	0.9	1.0	1.1	1.1	1.1	1.2	1.2
	SFB Wood chips	0.0	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3
	<b>Total Solid Fuel Boiler</b>	<b>49</b>	<b>15</b>	<b>11</b>	<b>8</b>	<b>6</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>
	CHAE-S (≤ 400 kW)	2.5	6.8	7.8	8.4	8.4	8.5	8.6	8.8	9.1	9.3
	CHAE-L (> 400 kW)	3.2	6.5	7.0	7.0	6.4	5.7	5.1	4.6	4.2	3.9
	CHWE-S (≤ 400 kW)	0.2	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.7	1.5	1.6	1.6	1.5	1.3	1.2	1.1	1.0	1.0
	CHWE-L (> 1500 kW)	0.5	0.9	1.0	1.0	0.9	0.8	0.8	0.7	0.6	0.6
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	11.6	14.9	15.7	15.7	14.9	13.9	13.2	12.7	12.1	11.5
	HT PCH-AE-L	11.1	14.2	14.9	14.9	13.9	12.7	11.7	11.1	10.6	10.1
	HT PCH-WE-S	2.4	3.1	3.3	3.4	3.2	3.1	2.9	2.8	2.7	2.6
	HT PCH-WE-M	4.7	6.1	6.5	6.6	6.4	6.1	5.9	5.7	5.4	5.1
	HT PCH-WE-L	0.9	1.2	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0
	AC rooftop	1.8	3.9	3.7	3.2	2.4	1.5	0.7	0.3	0.2	0.2
	AC splits	2.7	7.1	6.9	6.3	5.6	4.9	4.4	3.9	3.5	3.2
	AC VRF	0.0	2.6	3.8	5.4	6.6	8.2	9.6	10.8	11.9	12.7
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC central Air Cooling</b>	<b>42</b>	<b>70</b>	<b>74</b>	<b>76</b>	<b>72</b>	<b>69</b>	<b>66</b>	<b>64</b>	<b>63</b>	<b>62</b>
	AC rooftop (rev)	2.3	5.8	5.6	4.5	3.1	1.7	0.7	0.2	0.0	0.0
	AC splits (rev)	4.3	11.3	11.2	10.0	8.5	7.1	6.1	5.3	4.6	4.0
	AC VRF (rev)	0.0	4.4	6.3	8.3	9.7	11.3	12.5	13.0	13.1	12.9
	ACF (rev)	0	0	0	0	0	0	0	0	0	0
	AHF	48	35	30	24	19	15	13	11	10	9
	AHE	0.6	1.2	0.9	0.5	0.4	0.4	0.3	0.3	0.2	0.2
	<b>SubTotal AHC central Air Heating</b>	<b>55</b>	<b>58</b>	<b>54</b>	<b>47</b>	<b>41</b>	<b>35</b>	<b>32</b>	<b>30</b>	<b>28</b>	<b>26</b>
	<b>Total AHC central Air Heating &amp; Cooling</b>	<b>97</b>	<b>128</b>	<b>128</b>	<b>123</b>	<b>113</b>	<b>104</b>	<b>98</b>	<b>94</b>	<b>91</b>	<b>88</b>
	LH open fireplace	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
	LH closed fireplace/inset	0.4	0.9	1.0	1.2	1.2	1.2	1.2	1.2	1.1	1.1
	LH wood stove	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6
	LH coal stove	10.4	5.7	5.0	4.3	3.6	2.9	2.3	1.8	1.4	1.1
	LH cooker	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH SHR stove	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7
	LH pellet stove	0.0	0.3	0.4	0.5	0.6	0.6	0.7	0.7	0.6	0.6
	LH open fire gas	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
	LH closed fire gas	2.7	2.5	2.5	2.3	2.1	1.9	1.8	1.7	1.6	1.6
	LH flueless fuel heater	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
	LH elec.portable	14.1	11.4	10.6	9.1	8.0	7.5	7.1	6.5	5.9	5.3
	LH elec.convector	58.2	47.3	44.3	39.1	35.0	32.8	31.0	28.5	25.8	23.2
	LH elec.storage	4.3	3.5	3.3	2.8	2.4	2.1	2.0	1.9	1.7	1.5
	LH elec.underfloor	8.0	6.7	6.3	5.6	5.0	4.5	4.1	3.7	3.3	3.0
	LH luminous heaters	1.1	1.1	1.1	1.0	0.9	0.8	0.8	0.7	0.7	0.7
	LH tube heaters	2.5	2.5	2.5	2.3	2.1	1.9	1.8	1.7	1.7	1.6
	<b>LH total</b>	<b>104</b>	<b>84</b>	<b>79</b>	<b>70</b>	<b>63</b>	<b>58</b>	<b>55</b>	<b>50</b>	<b>46</b>	<b>42</b>
	RAC (cooling demand), all types <12 kW	1.4	9.3	10.3	11.0	12.5	13.3	13.4	13.3	13.0	12.8
	RAC (heating demand), reversible <12kW	1.1	10.8	13.7	15.9	17.9	18.0	17.1	16.0	14.9	13.8
	<b>Total RAC Room Air Conditioner</b>	<b>2</b>	<b>20</b>	<b>24</b>	<b>27</b>	<b>30</b>	<b>31</b>	<b>31</b>	<b>29</b>	<b>28</b>	<b>27</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	<b>8.1</b>	<b>8.3</b>	<b>5.6</b>	<b>4.1</b>	<b>3.7</b>	<b>3.6</b>	<b>3.5</b>	<b>3.2</b>	<b>2.8</b>	<b>2.5</b>
	<b>TOTAL SPACE HEATING</b>	<b>730</b>	<b>634</b>	<b>534</b>	<b>430</b>	<b>348</b>	<b>295</b>	<b>263</b>	<b>234</b>	<b>205</b>	<b>174</b>
	<b>TOTAL SPACE COOLING</b>	<b>44</b>	<b>79</b>	<b>85</b>	<b>87</b>	<b>85</b>	<b>82</b>	<b>79</b>	<b>78</b>	<b>76</b>	<b>75</b>
	NRVU electricity	9.5	25.0	26.6	26.0	23.9	21.7	20.6	19.9	19.3	18.7
1	NRVU heat (negative=saving vs. natural ventilation)	-29.0	-135.1	-165.1	-196.5	-223.8	-245.7	-260.8	-274.1	-287.5	-300.9
	RVU Central Unidir. VU ≤125W/fan (1 fan)	3.9	6.3	6.3	5.2	3.8	3.0	2.9	2.9	2.9	2.9
	RVU Central Balanced VU ≤125W/fan (2 fans)	0.0	0.4	0.7	0.9	1.1	1.2	1.3	1.3	1.4	1.4
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5
1	RVU Central Unidir., heat (negative=saving )	-3.5	-6.8	-9.8	-13.0	-16.0	-18.7	-19.7	-21.1	-22.5	-24.0
1	RVU Central Balanced, heat (negative=saving )	-0.1	-1.8	-3.7	-6.6	-9.8	-12.7	-14.6	-16.1	-17.7	-19.2
1	RVU Local Balanced, heat (negative=saving )	0.0	-0.2	-0.5	-1.0	-1.8	-2.7	-3.6	-4.5	-5.5	-6.4
	<b>Total VU Ventilation Units</b>	<b>-19</b>	<b>-112</b>	<b>-145</b>	<b>-185</b>	<b>-222</b>	<b>-254</b>	<b>-274</b>	<b>-291</b>	<b>-309</b>	<b>-327</b>
	<b>TOTAL VENTILATION (from electricity)</b>	<b>13</b>	<b>32</b>	<b>34</b>	<b>32</b>	<b>29</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>24</b>	<b>23</b>
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in EMIS for space heating)</b>	<b>-</b>	<b>-</b>	<b>-7</b>	<b>-20</b>	<b>-29</b>	<b>-35</b>	<b>-35</b>	<b>-34</b>	<b>-34</b>	<b>-33</b>

EMISSECO

db	ECO Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LFL (T12,T8h,T8t,T5,other)	45.3	55.8	62.7	62.8	42.4	21.7	9.8	4.8	2.7	1.6
	HID (HPM, HPS, MH)	16.9	28.2	23.4	19.2	13.5	6.7	2.4	0.8	0.3	0.1
	CFLni (all shapes)	1.2	3.9	3.8	3.0	1.9	0.9	0.4	0.1	0.0	0.0
	CFLi (retrofit for GLS, HL)	0.5	6.5	8.2	6.2	2.1	0.5	0.0	0.0	0.0	0.0
	GLS (DLS & NDLS)	44.9	20.6	5.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	HL (DLS & NDLS, LV & MV)	3.8	19.4	23.2	9.1	0.4	0.0	0.0	0.0	0.0	0.0
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	0.7	6.0	20.0	30.9	37.0	39.9	41.7	43.4
	LED replacing HID (retrofit & luminaire)	0.0	0.0	4.0	7.9	11.6	14.6	16.6	18.2	19.5	20.6
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.1	0.5	1.0	1.3	1.4	1.5	1.6	1.6
	LED replacing DLS (retrofit & luminaire)	0.0	0.1	0.4	1.4	2.1	2.1	2.1	2.1	2.0	2.0
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	0.7	4.8	8.0	8.7	8.8	8.7	8.6	8.5
	Special Purpose Lamps (SPL)	20.0	24.8	20.8	17.0	13.2	10.3	9.7	9.1	8.5	7.9
	Lighting controls (ctrl) and standby (sb)	5.6	7.0	5.8	4.8	3.7	2.9	2.7	2.6	2.4	2.2
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>	<b>138</b>	<b>166</b>	<b>159</b>	<b>143</b>	<b>120</b>	<b>101</b>	<b>91</b>	<b>88</b>	<b>87</b>	<b>88</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>	<b>112</b>	<b>135</b>	<b>133</b>	<b>121</b>	<b>103</b>	<b>87</b>	<b>79</b>	<b>76</b>	<b>76</b>	<b>78</b>
	DP TV on-mode, total all types	14.4	30.7	31.2	25.6	15.1	12.9	10.6	10.8	11.7	12.5
	DP TV standby, standard (NoNA)	1.9	1.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	0.0	0.1	0.3	0.5	0.3	0.1	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	0.0	0.0	0.7	1.9	2.7	3.2	3.1	2.6	2.1	1.6
	<b>DP TV standby, total all types</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>
	<b>DP TV total on-mode + standby</b>	<b>16</b>	<b>32</b>	<b>32</b>	<b>28</b>	<b>18</b>	<b>16</b>	<b>14</b>	<b>13</b>	<b>14</b>	<b>14</b>
	DP Monitor on-mode	0.4	6.0	3.1	1.2	1.0	0.6	0.4	0.4	0.4	0.4
	DP Monitor standby	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>	<b>1</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	DP Signage on-mode	0.0	0.4	3.5	7.7	8.5	6.7	4.8	4.4	4.5	4.8
	DP Signage standby	0.0	0.1	0.5	1.1	1.3	1.0	0.7	0.7	0.7	0.7
	<b>DP Signage total</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>9</b>	<b>10</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>6</b>
	<b>DP Electronic Displays, total on-mode</b>	<b>15</b>	<b>37</b>	<b>38</b>	<b>34</b>	<b>25</b>	<b>20</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>18</b>
	<b>DP Electronic Displays, total standby</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>
	<b>DP Electronic Displays, total</b>	<b>17</b>	<b>38</b>	<b>40</b>	<b>38</b>	<b>29</b>	<b>24</b>	<b>20</b>	<b>19</b>	<b>19</b>	<b>20</b>
	SSTB	0.0	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	0.0	2.9	5.9	5.6	5.4	5.0	4.9	5.0	5.0	5.0
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
	VIDEO players/recorders	0.0	0.9	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	0.0	0.9	0.7	0.4	0.2	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	0.0	1.9	3.0	3.7	4.4	4.4	4.2	3.9	3.6	3.4
	<b>Total VIDEO</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>										
	ES tower 1-socket traditional	0.0	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1
	ES rack 1-socket traditional	0.1	1.3	0.9	0.7	0.7	0.7	0.7	0.7	0.6	0.6
	ES rack 2-socket traditional	0.4	6.0	3.1	1.7	1.8	2.0	2.1	2.0	1.8	1.7
	ES rack 2-socket cloud	0.0	3.4	5.0	5.1	5.6	6.3	6.4	6.0	5.6	5.2
	ES rack 4-socket traditional	0.0	0.6	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.2
	ES rack 4-socket cloud	0.0	0.4	0.6	0.8	0.9	1.0	1.0	0.9	0.9	0.8
	ES rack 2-socket resilient trad.	0.0	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 2-socket resilient cloud	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	ES rack 4-socket resilient trad.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	0.0	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	ES blade 2-socket traditional	0.3	2.8	1.4	0.8	0.9	1.0	1.0	0.9	0.9	0.8
	ES blade 2-socket cloud	0.0	1.5	2.2	2.5	2.8	3.1	3.2	3.0	2.8	2.6
	ES blade 4-socket traditional	0.0	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 4-socket cloud	0.0	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3
	<b>ES total traditional</b>	<b>1</b>	<b>12</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<b>ES total cloud</b>	<b>0</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>9</b>
	<b>ES Enterprise Servers total</b>	<b>1</b>	<b>18</b>	<b>15</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>
	DS Online 2	0.2	2.7	3.4	4.5	5.3	5.9	5.8	5.5	5.1	4.8
	DS Online 3	0.0	0.4	0.5	0.6	0.7	0.8	0.8	0.8	0.7	0.7
	DS Online 4	0.1	1.5	1.9	2.5	2.9	3.2	3.2	3.0	2.8	2.6
	<b>DS Data Storage products total</b>	<b>0</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>9</b>	<b>8</b>
	<b>ES + DS total (excl. infrastructure)</b>	<b>1</b>	<b>22</b>	<b>21</b>	<b>21</b>	<b>23</b>	<b>26</b>	<b>26</b>	<b>24</b>	<b>23</b>	<b>21</b>
	PC Desktop	7.2	8.8	5.0	1.8	1.0	1.0	0.9	0.9	0.8	0.7
	PC Notebook	0.0	3.0	1.5	0.4	0.2	0.2	0.2	0.2	0.2	0.2
	PC Tablet/slate	0.0	0.0	0.7	0.6	0.5	0.6	0.6	0.6	0.6	0.6
	PC Thin client	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	0.0	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>Total PC, electricity</b>	<b>7</b>	<b>13</b>	<b>8</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	EP-Copier mono	5.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EP-Copier colour	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	EP-printer mono	4.7	0.8	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1
	EP-printer colour	0.0	0.5	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5
	IJ SFD printer	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	IJ MFD printer	0.7	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>Total imaging equipment, electricity</b>	<b>13</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<i>of which related to paper use</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>

EMISSECO

db	ECO Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	0.0	1.7	1.9	2.1	2.0	1.9	1.7	1.4	1.1	0.7
	SB Home NAS, on-mode hours	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	SB Home Phones (fixed), on-mode hours	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0
	SB Office Phones (fixed), on-mode hours	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0
	SB Home Gateway, standby hours	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.1
	SB Home Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	0.0	1.7	2.9	4.0	4.1	3.9	3.4	2.9	2.2	1.4
	SB Home NAS, idle hours	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), idle hours	0.3	1.6	1.7	1.7	1.4	1.1	0.9	0.7	0.5	0.3
	SB Office Phones (fixed), idle hours	0.4	1.1	1.0	0.9	0.8	0.7	0.6	0.4	0.3	0.2
	<b>Total SB (networked) StandBy (rest)</b>	<b>1</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>3</b>
db	<i>EPS Active mode (for electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2
0.6	EPS 10–12 W	0.0	3.3	4.3	3.8	3.1	2.9	2.8	2.6	2.5	2.3
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.6	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 12–15 W	0.0	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2
	<b>EPS, total for active mode</b>	<b>0.1</b>	<b>5.1</b>	<b>5.9</b>	<b>4.9</b>	<b>4.1</b>	<b>3.9</b>	<b>3.7</b>	<b>3.5</b>	<b>3.3</b>	<b>3.1</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	0.0	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 10–12 W	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>	<b>0.1</b>	<b>0.7</b>	<b>0.5</b>	<b>0.3</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
	<b>EPS, overall total (active + no-load)</b>	<b>0.1</b>	<b>5.8</b>	<b>6.4</b>	<b>5.2</b>	<b>4.2</b>	<b>4.0</b>	<b>3.8</b>	<b>3.6</b>	<b>3.4</b>	<b>3.2</b>
	<b>EPS, double counted subtracted</b>	<b>0.1</b>	<b>3.0</b>	<b>3.2</b>	<b>2.5</b>	<b>2.0</b>	<b>1.9</b>	<b>1.8</b>	<b>1.7</b>	<b>1.6</b>	<b>1.5</b>
	UPS below 1.5 kVA	0.4	0.6	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1
	UPS 1.5 to 5 kVA	1.3	2.4	2.5	1.6	0.5	0.4	0.4	0.4	0.4	0.4
	UPS 5 to 10 kVA	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	UPS 10 to 200 kVA	0.9	1.7	1.8	1.6	1.3	1.2	1.3	1.4	1.5	1.4
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>TOTAL ELECTRONICS</b>	<b>42</b>	<b>100</b>	<b>99</b>	<b>90</b>	<b>79</b>	<b>76</b>	<b>70</b>	<b>66</b>	<b>63</b>	<b>60</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>69</b>	<b>43</b>	<b>34</b>	<b>28</b>	<b>22</b>	<b>17</b>	<b>13</b>	<b>11</b>	<b>10</b>	<b>8</b>
	CF open vertical chilled multi deck (RVC2)	10.2	9.3	8.7	7.6	6.3	5.8	5.8	5.7	5.7	5.6
	CF open horizontal frozen island (RHF4)	0.9	0.9	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.6
	CF other supermarket display (non-BCs)	23.9	24.2	24.6	24.0	23.2	23.2	23.5	23.8	24.3	24.7
	CF Plug in one door beverage cooler	9.3	7.5	6.7	5.2	3.9	3.4	3.3	3.2	3.1	3.0
	CF Plug in horizontal ice cream freezer	2.2	1.8	1.6	1.4	1.3	1.3	1.2	1.2	1.2	1.1
	CF Spiral vending machine	1.7	1.3	0.8	0.5	0.4	0.3	0.3	0.3	0.3	0.3
	<b>Total CF Commercial Refrigeration</b>	<b>48</b>	<b>45</b>	<b>43</b>	<b>40</b>	<b>36</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>
	o/w due to refrigerant leakage	14	17	19	19	20	21	21	22	23	23
	PF Storage cabinet Chilled Vertical (CV)	0.9	1.1	1.1	0.9	0.7	0.6	0.6	0.6	0.6	0.6
	PF Storage cabinet Frozen Vertical (FV)	1.1	1.3	1.3	1.1	0.8	0.8	0.8	0.8	0.7	0.7
	PF Storage cabinet Chilled Horizontal (CH)	0.7	0.8	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.4
	PF Storage cabinet Frozen Horizontal (FH)	0.4	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3
	<b>PF Storage cabinets All types</b>	<b>3.2</b>	<b>3.6</b>	<b>3.7</b>	<b>3.2</b>	<b>2.4</b>	<b>2.2</b>	<b>2.2</b>	<b>2.1</b>	<b>2.1</b>	<b>2.0</b>
	PF Process Chiller AC MT S ≤ 300 kW	1.6	2.9	3.3	3.6	3.7	3.7	3.8	3.9	4.0	4.0
	PF Process Chiller AC MT L > 300 kW	1.6	2.8	3.2	3.4	3.5	3.6	3.7	3.8	3.8	3.8
	PF Process Chiller AC LT S ≤ 200 kW	1.6	2.9	3.3	3.6	3.7	3.8	3.9	3.9	4.0	4.0
	PF Process Chiller AC LT L > 200 kW	1.7	3.0	3.4	3.7	3.8	3.9	4.0	4.1	4.1	4.1
	PF Process Chiller WC MT S ≤ 300 kW	0.5	0.8	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1
	PF Process Chiller WC MT L > 300 kW	0.7	1.2	1.3	1.5	1.5	1.5	1.6	1.6	1.6	1.6
	PF Process Chiller WC LT S ≤ 200 kW	0.6	1.0	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4
	PF Process Chiller WC LT L > 200 kW	0.7	1.3	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.8
	<b>PF Process Chiller All MT&amp;LT</b>	<b>9</b>	<b>16</b>	<b>18</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>22</b>
	PF Condensing Unit MT S 0.2-1 kW	4.0	2.8	2.6	2.5	2.5	2.6	2.7	2.7	2.8	2.9
	PF Condensing Unit MT M 1-5 kW	9.5	6.4	6.0	5.8	5.8	6.0	6.2	6.3	6.4	6.5
	PF Condensing Unit MT L 5-20 kW	12.1	8.2	7.6	7.5	7.4	7.7	7.9	8.1	8.3	8.5
	PF Condensing Unit MT XL 20-50 kW	11.7	7.9	7.4	7.2	7.2	7.4	7.6	7.7	7.9	8.0
	PF Condensing Unit LT S 0.1-0.4 kW	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
	PF Condensing Unit LT M 0.4-2 kW	1.9	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4
	PF Condensing Unit LT L 2-8 kW	3.1	2.1	2.0	1.9	1.9	1.9	2.0	2.0	2.1	2.2
	PF Condensing Unit LT XL 8-20 kW	8.6	5.8	5.4	5.1	5.1	5.2	5.3	5.4	5.5	5.6
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>52</b>	<b>35</b>	<b>32</b>	<b>32</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>35</b>
	<b>PF Professional Refrigeration, Total</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>37</b>	<b>38</b>	<b>38</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>150</b>	<b>121</b>	<b>112</b>	<b>103</b>	<b>93</b>	<b>87</b>	<b>84</b>	<b>83</b>	<b>82</b>	<b>82</b>

EMISSECO

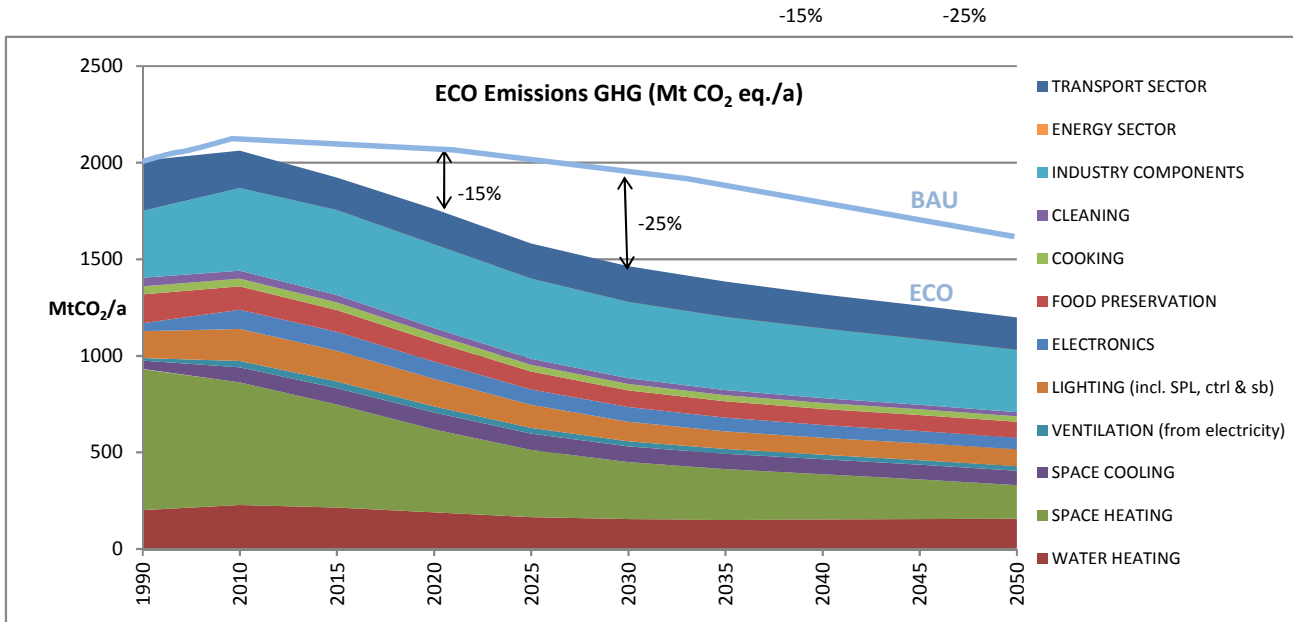
db	ECO Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	10.1	12.9	13.7	14.3	14.5	14.6	14.4	14.2	13.8	13.4
	CA El. Ovens	11.7	9.6	8.7	7.8	7.0	6.5	6.1	5.8	5.4	5.0
	CA Gas Hobs	7.0	5.8	5.5	5.3	5.0	4.7	4.5	4.2	4.0	3.8
	CA Gas Ovens	2.8	2.0	1.8	1.6	1.4	1.2	1.1	1.0	1.0	0.9
	CA Range Hoods	5.0	5.0	5.1	4.9	4.5	4.0	3.7	3.5	3.4	3.3
	<b>Total CA Cooking Appliances</b>	<b>37</b>	<b>35</b>	<b>35</b>	<b>34</b>	<b>32</b>	<b>31</b>	<b>30</b>	<b>29</b>	<b>28</b>	<b>26</b>
	CM Dripfilter (glass)	3.1	1.8	1.5	1.2	1.0	1.0	0.9	0.9	0.8	0.7
	CM Dripfilter (thermos)	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
	CM Dripfilter (full automatic)	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	CM Pad filter	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	CM Hard cap espresso	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	CM Semi-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	2.2	1.2	0.9	0.4	0.4	0.3	0.3	0.3	0.3	0.3
	CM Dripfilter (thermos), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Hard cap espresso, standby/keep warm	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Semi-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CM household Coffee Makers</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>TOTAL COOKING</b>	<b>42</b>	<b>40</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>34</b>	<b>32</b>	<b>31</b>	<b>30</b>	<b>29</b>
	<b>Total WM household Washing Machine</b>	<b>26</b>	<b>14</b>	<b>11</b>	<b>9</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>
	<b>Total DW household Dishwasher</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>8</b>
	LD vented el.	4	5	5	4	4	3	3	3	3	3
	LD condens el.	1	6	7	7	6	5	5	4	4	4
	LD vented gas	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>	<b>5</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>6</b>
	VC dom	5.1	6.9	7.2	3.8	4.5	4.1	3.7	3.3	2.9	2.4
	VC nondom	1.5	1.9	1.9	1.5	1.4	1.4	1.3	1.3	1.2	1.1
	<b>Total VC Vacuum Cleaner</b>	<b>7</b>	<b>9</b>	<b>9</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>
	<b>TOTAL CLEANING</b>	<b>44</b>	<b>41</b>	<b>39</b>	<b>34</b>	<b>31</b>	<b>29</b>	<b>27</b>	<b>25</b>	<b>23</b>	<b>22</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	9.6	21.7	23.6	23.6	22.9	22.0	20.7	19.4	18.2	16.9
0.5	FAN Axial>300Pa	16.4	39.7	43.0	41.8	39.0	36.4	34.0	31.9	29.8	27.6
0.5	FAN Centr.FC	4.1	7.0	7.9	7.6	7.0	6.5	6.1	5.7	5.4	5.0
0.5	FAN Centr.BC-free	10.7	18.2	20.1	20.0	19.7	19.9	19.8	19.1	18.2	17.2
0.5	FAN Centr.BC	11.1	20.5	22.7	22.5	22.2	22.5	22.8	22.9	23.2	23.4
0.5	FAN Cross-flow	0.7	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.5
	<b>Total FAN, industrial</b>	<b>26</b>	<b>54</b>	<b>59</b>	<b>58</b>	<b>56</b>	<b>54</b>	<b>52</b>	<b>50</b>	<b>48</b>	<b>45</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	55	57	56	48	40	37	34	32	29	27
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	82	88	86	74	60	54	50	46	41	38
0.45	Medium (L) 3-ph 75-375 kW no VSD	167	175	170	150	125	101	90	80	71	64
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>304</b>	<b>320</b>	<b>312</b>	<b>272</b>	<b>224</b>	<b>192</b>	<b>174</b>	<b>157</b>	<b>142</b>	<b>129</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	4	7	9	13	17	17	17	17	17	16
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	7	13	18	27	34	35	35	35	35	34
0.45	Medium (L) 3-ph 75-375 kW with VSD	19	39	50	68	83	94	95	95	94	92
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>29</b>	<b>59</b>	<b>76</b>	<b>108</b>	<b>134</b>	<b>146</b>	<b>147</b>	<b>147</b>	<b>146</b>	<b>142</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>333</b>	<b>379</b>	<b>388</b>	<b>380</b>	<b>358</b>	<b>337</b>	<b>321</b>	<b>304</b>	<b>287</b>	<b>271</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	4	4	5	4	4	4	3	3	3	3
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	6	6	6	6	6	5	5	5	4	4
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	1	1	1	1	1	1	1	1	1
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>5</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	85	85	80	72	64	57	53	49	46	42
0.45	Large 3-ph LV 375-1000kW with VSD	4	19	28	36	42	45	45	44	43	42
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>90</b>	<b>104</b>	<b>107</b>	<b>109</b>	<b>106</b>	<b>102</b>	<b>98</b>	<b>94</b>	<b>89</b>	<b>84</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	2	2	2	2	2	2	2	2	2	2
0.45	Explosion motors (M) 3-ph 7.5-75 kW	4	5	5	6	5	5	5	5	5	4
0.45	Explosion motors (L) 3-ph 75-375 kW	8	10	11	11	11	11	10	10	9	9
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>15</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>18</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>16</b>	<b>15</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	1	1	1	2	1	1	1	1	1	1
0.45	Brake motors (M) 3-ph 7.5-75 kW	3	3	4	4	4	3	3	3	3	3
0.45	Brake motors (L) 3-ph 75-375 kW	4	5	5	6	5	5	5	5	5	4
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>9</b>	<b>9</b>	<b>8</b>

## EMISSECO

db	ECO Emissions GHG (in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	1	1	1	1	1	1	1	0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>23</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>26</b>	<b>25</b>	<b>24</b>	<b>23</b>	<b>22</b>	<b>20</b>
	<b>Total MT Elec. Motors LV 0.12-1000 kW</b>	<b>264</b>	<b>301</b>	<b>310</b>	<b>307</b>	<b>292</b>	<b>277</b>	<b>264</b>	<b>251</b>	<b>238</b>	<b>224</b>
	<b>Total WP Water Pumps</b>	<b>44</b>	<b>48</b>	<b>50</b>	<b>51</b>	<b>51</b>	<b>52</b>	<b>53</b>	<b>52</b>	<b>52</b>	<b>51</b>
	CP Fixed Speed 5-1280 l/s	11.9	19.9	16.1	13.3	12.2	11.8	11.4	11.0	10.6	10.1
	CP Variable speed 5-1280 l/s	0.0	3.7	6.2	7.6	7.8	7.6	7.4	7.1	6.8	6.4
	CP Pistons 2-64 l/s	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4
	<b>Total CP Standard Air Compressors</b>	<b>13</b>	<b>24</b>	<b>23</b>	<b>21</b>	<b>20</b>	<b>20</b>	<b>19</b>	<b>19</b>	<b>18</b>	<b>17</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>347</b>	<b>428</b>	<b>441</b>	<b>437</b>	<b>420</b>	<b>403</b>	<b>387</b>	<b>371</b>	<b>355</b>	<b>338</b>
	TRAF0 Distribution	6.0	8.2	8.6	8.7	8.5	8.4	8.1	7.8	7.4	7.0
	TRAF0 Industry oil	4.5	6.4	6.6	6.3	5.9	5.4	4.8	4.5	4.5	4.5
	TRAF0 Industry dry	1.4	2.0	2.1	2.1	2.1	2.0	1.9	1.8	1.8	1.8
	TRAF0 Power	17.2	21.9	23.6	25.1	26.1	26.8	27.2	27.4	27.4	27.2
	TRAF0 DER oil	0.0	0.2	0.3	0.4	0.6	0.9	1.3	1.8	2.4	2.9
	TRAF0 DER dry	0.0	0.8	1.4	2.1	3.1	4.6	6.8	9.5	12.5	15.5
	TRAF0 Small	1.0	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5
	<b>Total TRAF0 Utility Transformers</b>	<b>30</b>	<b>40</b>	<b>43</b>	<b>45</b>	<b>47</b>	<b>49</b>	<b>51</b>	<b>53</b>	<b>57</b>	<b>59</b>
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>-2</b>	<b>-4</b>	<b>-6</b>	<b>-9</b>	<b>-11</b>	<b>-13</b>	<b>-14</b>
	<i>(Emissions due to fuel losses due to RRC)</i>										
	Tyres C1, replacement for cars	117	85	69	70	68	66	64	61	59	57
	Tyres C1, OEM for cars	35	25	25	23	21	21	20	19	18	18
	<b>Tyres C1, total</b>	<b>152</b>	<b>110</b>	<b>93</b>	<b>94</b>	<b>89</b>	<b>87</b>	<b>84</b>	<b>80</b>	<b>78</b>	<b>75</b>
	Tyres C2, replacement for vans	34	29	26	28	29	30	30	28	27	26
	Tyres C2, OEM for vans	7	6	6	6	6	7	6	6	6	6
	<b>Tyres C2, total</b>	<b>41</b>	<b>35</b>	<b>31</b>	<b>35</b>	<b>35</b>	<b>37</b>	<b>36</b>	<b>35</b>	<b>33</b>	<b>32</b>
	Tyres C3, replacement for trucks/busses	54	39	34	43	46	50	51	50	49	49
	Tyres C3, OEM for trucks/busses	12	9	9	10	10	11	12	11	11	11
	<b>Tyres C3, total</b>	<b>67</b>	<b>48</b>	<b>42</b>	<b>53</b>	<b>56</b>	<b>61</b>	<b>62</b>	<b>61</b>	<b>61</b>	<b>60</b>
	<b>Tyres, total C1+C2+C3</b>	<b>260</b>	<b>194</b>	<b>167</b>	<b>182</b>	<b>180</b>	<b>184</b>	<b>182</b>	<b>176</b>	<b>172</b>	<b>167</b>
	<b>TRANSPORT SECTOR</b>	<b>260</b>	<b>194</b>	<b>167</b>	<b>182</b>	<b>180</b>	<b>184</b>	<b>182</b>	<b>176</b>	<b>172</b>	<b>167</b>
	<b>GENERAL TOTAL (in Mt CO<sub>2</sub>)</b>	<b>2011</b>	<b>2062</b>	<b>1923</b>	<b>1760</b>	<b>1581</b>	<b>1464</b>	<b>1383</b>	<b>1318</b>	<b>1259</b>	<b>1199</b>
	<b>ECO Emissions GHG (summary table)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>201</b>	<b>228</b>	<b>214</b>	<b>189</b>	<b>165</b>	<b>154</b>	<b>151</b>	<b>152</b>	<b>154</b>	<b>156</b>
	<b>SPACE HEATING</b>	<b>730</b>	<b>634</b>	<b>534</b>	<b>430</b>	<b>348</b>	<b>295</b>	<b>263</b>	<b>234</b>	<b>205</b>	<b>174</b>
	<b>SPACE COOLING</b>	<b>44</b>	<b>79</b>	<b>85</b>	<b>87</b>	<b>85</b>	<b>82</b>	<b>79</b>	<b>78</b>	<b>76</b>	<b>75</b>
	<b>VENTILATION (from electricity)</b>	<b>13</b>	<b>32</b>	<b>34</b>	<b>32</b>	<b>29</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>24</b>	<b>23</b>
1	<i>VENTILATION (from heat saving vs. BAU; already included in EMIS for space heating)</i>	<i>0</i>	<i>0</i>	<i>-7</i>	<i>-20</i>	<i>-29</i>	<i>-35</i>	<i>-35</i>	<i>-34</i>	<i>-34</i>	<i>-33</i>
	<b>LIGHTING (incl. SPL, ctrl &amp; sb)</b>	<b>138</b>	<b>166</b>	<b>159</b>	<b>143</b>	<b>120</b>	<b>101</b>	<b>91</b>	<b>88</b>	<b>87</b>	<b>88</b>
	<b>ELECTRONICS</b>	<b>42</b>	<b>100</b>	<b>99</b>	<b>90</b>	<b>79</b>	<b>76</b>	<b>70</b>	<b>66</b>	<b>63</b>	<b>60</b>
	<b>FOOD PRESERVATION</b>	<b>150</b>	<b>121</b>	<b>112</b>	<b>103</b>	<b>93</b>	<b>87</b>	<b>84</b>	<b>83</b>	<b>82</b>	<b>82</b>
	<b>COOKING</b>	<b>42</b>	<b>40</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>34</b>	<b>32</b>	<b>31</b>	<b>30</b>	<b>29</b>
	<b>CLEANING</b>	<b>44</b>	<b>41</b>	<b>39</b>	<b>34</b>	<b>31</b>	<b>29</b>	<b>27</b>	<b>25</b>	<b>23</b>	<b>22</b>
	<b>INDUSTRY COMPONENTS</b>	<b>347</b>	<b>428</b>	<b>441</b>	<b>437</b>	<b>420</b>	<b>403</b>	<b>387</b>	<b>371</b>	<b>355</b>	<b>338</b>
	<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>-2</b>	<b>-4</b>	<b>-6</b>	<b>-9</b>	<b>-11</b>	<b>-13</b>	<b>-14</b>
	<b>TRANSPORT SECTOR</b>	<b>260</b>	<b>194</b>	<b>167</b>	<b>182</b>	<b>180</b>	<b>184</b>	<b>182</b>	<b>176</b>	<b>172</b>	<b>167</b>
	<b>TOTAL in Mt CO<sub>2</sub></b>	<b>2011</b>	<b>2062</b>	<b>1923</b>	<b>1760</b>	<b>1581</b>	<b>1464</b>	<b>1383</b>	<b>1318</b>	<b>1259</b>	<b>1199</b>
	For comparison: Total EU-28 GHG emissions, excluding LULUCF, in MtCO <sub>2</sub> eq, from 'Annual European Union greenhouse gas inventory 1990–2016, Table ES-6', European Environment Agency, 27 May 2018,	5650	4777	4319							



# EMISSECO



## Sector subdivision for ECO GHG emissions

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units

Ventilation: reported data regard only emissions due to electricity consumed by Ventilation Units; heat saving effects are included in Space Heating

Lighting: includes emissions due to energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby

Transport Sector: see separate reporting below; not included in other sector totals

Energy Sector: see separate reporting below. Only emissions due to Distribution Losses are considered. It is assumed that these losses are already considered in the GWP for electricity that is used when computing the emissions for other sectors. Consequently only the decrease in emissions due to the decrease of the losses in the ECO scenario vs. the BAU scenario is reported. (reference for BAU = 0)

ECO GHG emission (ENERGY SECTOR, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>TOTAL ENERGY SECTOR</b>										
(only difference vs. BAU)	0	0	-1	-2	-4	-6	-9	-11	-13	-14
ECO GHG emission, Energy Sector, MtCO2eq	0	0	-1	-2	-4	-6	-9	-11	-13	-14

ECO GHG emission (INDUSTRY, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	7	9	8	7	6	6	6	6	6	6
SPACE HEATING	89	78	64	51	40	33	28	25	22	18
SPACE & HT PROCESS COOLING	11	16	17	17	16	15	14	13	13	12
VENTILATION	1	3	3	3	3	3	2	2	2	2
LIGHTING	20	25	24	24	21	17	16	15	15	15
ELECTRONICS	2	5	4	4	4	5	4	4	4	4
FOOD PRESERVATION	11	17	18	19	20	20	20	21	21	21
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	214	258	265	262	251	239	229	219	208	198
ECO GHG emission, Industry, MtCO2eq	355	410	405	388	361	338	321	306	291	276

ECO GHG emission (TRANSPORT, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are emissions related to energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	44	34	29	35	35	38	38	37	36	35
TYRES for SERVICE-sector-related transport	88	67	58	67	68	72	72	70	68	66
TYRES for RESIDENTIAL-sector-related transport	121	88	75	75	72	69	67	64	62	60
TYRES for OTHER-sector-related transport	7	5	5	5	5	6	6	6	5	5
ECO GHG emission, Transport, MtCO2eq	260	194	167	182	180	184	182	176	172	167

## EMISSECO

ECO GHG emission (TERTIARY/SERVICES, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	62	70	65	58	50	47	46	46	47	48
SPACE HEATING	187	179	155	129	108	94	85	77	68	60
SPACE & HT PROCESS COOLING	28	53	57	59	58	56	55	54	53	53
VENTILATION	8	22	23	22	21	19	18	17	17	16
LIGHTING	76	101	101	99	86	72	65	63	63	64
ELECTRONICS	17	39	38	37	37	36	34	32	31	30
FOOD PRESERVATION	73	63	60	55	50	49	49	50	50	50
COOKING	5	5	4	4	4	3	3	3	3	3
CLEANING	3	3	3	3	3	2	2	2	2	2
INDUSTRY COMPONENTS	86	116	121	120	116	111	107	103	99	94
<b>ECO GHG emission, Services, MtCO2eq</b>	<b>545</b>	<b>650</b>	<b>628</b>	<b>586</b>	<b>531</b>	<b>490</b>	<b>464</b>	<b>447</b>	<b>433</b>	<b>418</b>

ECO GHG emission (RESIDENTIAL, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	130	147	138	122	106	99	97	98	100	101
SPACE HEATING	428	355	296	235	188	159	140	124	108	91
SPACE & HT PROCESS COOLING	1	5	5	6	6	7	7	7	7	7
VENTILATION	4	7	7	6	5	4	5	5	5	5
LIGHTING	41	39	33	18	12	10	9	9	8	8
ELECTRONICS	22	55	56	48	38	35	31	29	28	26
FOOD PRESERVATION	63	39	32	26	20	16	12	10	9	8
COOKING	37	35	34	33	32	30	29	28	27	26
CLEANING	41	38	36	31	29	26	24	23	21	20
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>ECO GHG emission, Residential, MtCO2eq</b>	<b>769</b>	<b>720</b>	<b>637</b>	<b>525</b>	<b>436</b>	<b>386</b>	<b>355</b>	<b>333</b>	<b>312</b>	<b>290</b>

ECO GHG emission (OTHER sectors, MtCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	2	2	2	2	2	2	2	2	2	2
SPACE HEATING	26	23	19	15	12	10	9	8	7	6
SPACE & HT PROCESS COOLING	3	4	5	5	4	4	4	4	3	3
VENTILATION	0	1	1	1	0	0	0	0	0	0
LIGHTING	1	2	2	1	1	1	1	1	1	1
ELECTRONICS	0	1	1	1	1	1	1	1	1	1
FOOD PRESERVATION	2	2	2	2	2	2	2	3	3	3
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	47	54	55	55	53	52	51	49	48	46
<b>ECO GHG emission, Other sectors, MtCO2eq</b>	<b>82</b>	<b>89</b>	<b>86</b>	<b>82</b>	<b>76</b>	<b>72</b>	<b>70</b>	<b>67</b>	<b>64</b>	<b>61</b>

EMISSECO

ECO GHG emissions (per FUNCTION, MTCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>	<b>201</b>	<b>228</b>	<b>214</b>	<b>189</b>	<b>165</b>	<b>154</b>	<b>151</b>	<b>152</b>	<b>154</b>	<b>156</b>
Residential	130	147	138	122	106	99	97	98	100	101
Tertiary / Services	62	70	65	58	50	47	46	46	47	48
Industry	7	9	8	7	6	6	6	6	6	6
Other	2	2	2	2	2	2	2	2	2	2
<b>SPACE HEATING. All sectors, TWh</b>	<b>730</b>	<b>634</b>	<b>534</b>	<b>430</b>	<b>348</b>	<b>295</b>	<b>263</b>	<b>234</b>	<b>205</b>	<b>174</b>
Residential	428	355	296	235	188	159	140	124	108	91
Tertiary / Services	187	179	155	129	108	94	85	77	68	60
Industry	89	78	64	51	40	33	28	25	22	18
Other	26	23	19	15	12	10	9	8	7	6
<b>SPACE COOLING. All sectors, TWh</b>	<b>44</b>	<b>79</b>	<b>85</b>	<b>87</b>	<b>85</b>	<b>82</b>	<b>79</b>	<b>78</b>	<b>76</b>	<b>75</b>
<b>&amp; HT PROCESS</b> Residential	1	5	5	6	6	7	7	7	7	7
Tertiary / Services	28	53	57	59	58	56	55	54	53	53
Industry	11	16	17	17	16	15	14	13	13	12
Other	3	4	5	5	4	4	4	4	3	3
<b>VENTILATION. All sectors, TWh</b>	<b>13</b>	<b>32</b>	<b>34</b>	<b>32</b>	<b>29</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>24</b>	<b>23</b>
Residential	4	7	7	6	5	4	5	5	5	5
Tertiary / Services	8	22	23	22	21	19	18	17	17	16
Industry	1	3	3	3	3	3	2	2	2	2
Other	0	1	1	1	0	0	0	0	0	0
<b>LIGHTING. All sectors, TWh</b>	<b>138</b>	<b>166</b>	<b>159</b>	<b>143</b>	<b>120</b>	<b>101</b>	<b>91</b>	<b>88</b>	<b>87</b>	<b>88</b>
Residential	41	39	33	18	12	10	9	9	8	8
Tertiary / Services	76	101	101	99	86	72	65	63	63	64
Industry	20	25	24	24	21	17	16	15	15	15
Other	1	2	2	1	1	1	1	1	1	1
<b>ELECTRONICS. All sectors, TWh</b>	<b>42</b>	<b>100</b>	<b>99</b>	<b>90</b>	<b>79</b>	<b>76</b>	<b>70</b>	<b>66</b>	<b>63</b>	<b>60</b>
Residential	22	55	56	48	38	35	31	29	28	26
Tertiary / Services	17	39	38	37	37	36	34	32	31	30
Industry	2	5	4	4	4	5	4	4	4	4
Other	0	1	1	1	1	1	1	1	1	1
<b>FOOD PRESERVE. All sectors, TWh</b>	<b>150</b>	<b>121</b>	<b>112</b>	<b>103</b>	<b>93</b>	<b>87</b>	<b>84</b>	<b>83</b>	<b>82</b>	<b>82</b>
Residential	63	39	32	26	20	16	12	10	9	8
Tertiary / Services	73	63	60	55	50	49	49	50	50	50
Industry	11	17	18	19	20	20	20	21	21	21
Other	2	2	2	2	2	2	2	3	3	3
<b>COOKING. All sectors, TWh</b>	<b>42</b>	<b>40</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>34</b>	<b>32</b>	<b>31</b>	<b>30</b>	<b>29</b>
Residential	37	35	34	33	32	30	29	28	27	26
Tertiary / Services	5	5	4	4	4	3	3	3	3	3
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>	<b>44</b>	<b>41</b>	<b>39</b>	<b>34</b>	<b>31</b>	<b>29</b>	<b>27</b>	<b>25</b>	<b>23</b>	<b>22</b>
Residential	41	38	36	31	29	26	24	23	21	20
Tertiary / Services	3	3	3	3	3	2	2	2	2	2
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>	<b>347</b>	<b>428</b>	<b>441</b>	<b>437</b>	<b>420</b>	<b>403</b>	<b>387</b>	<b>371</b>	<b>355</b>	<b>338</b>
Residential	0	0	0	0	0	0	0	0	0	0
Tertiary / Services	86	116	121	120	116	111	107	103	99	94
Industry	214	258	265	262	251	239	229	219	208	198
Other	47	54	55	55	53	52	51	49	48	46
<b>TYRES. Transport sector, TWh</b>	<b>260</b>	<b>194</b>	<b>167</b>	<b>182</b>	<b>180</b>	<b>184</b>	<b>182</b>	<b>176</b>	<b>172</b>	<b>167</b>
Residential transport	121	88	75	75	72	69	67	64	62	60
Tertiary / Services transport	88	67	58	67	68	72	72	70	68	66
Industry transport	44	34	29	35	35	38	38	37	36	35
Other transport	7	5	5	5	5	6	6	6	5	5
<b>ALL PRODUCTS. All sectors, TWh</b>	<b>2011</b>	<b>2062</b>	<b>1923</b>	<b>1760</b>	<b>1581</b>	<b>1464</b>	<b>1383</b>	<b>1318</b>	<b>1259</b>	<b>1199</b>
Residential	769	720	637	525	436	386	355	333	312	290
Tertiary / Services	545	650	628	586	531	490	464	447	433	418
Industry	355	410	405	388	361	338	321	306	291	276
Other	82	89	86	82	76	72	70	67	64	61
Transport	260	194	167	182	180	184	182	176	172	167

## EMISSECO

ECO GHG emissions (per FUNCTION, %)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>										
Residential	65%	65%	65%	65%	65%	65%	65%	65%	65%	64%
Tertiary / Services	31%	31%	31%	31%	31%	31%	31%	31%	31%	30%
Industry	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>										
Residential	59%	56%	55%	55%	54%	54%	53%	53%	53%	52%
Tertiary / Services	26%	28%	29%	30%	31%	32%	32%	33%	33%	34%
Industry	12%	12%	12%	12%	11%	11%	11%	11%	11%	10%
Other	4%	4%	4%	4%	4%	3%	3%	3%	3%	4%
<b>SPACE COOLING.</b>										
& HT PROCESS Residential	2%	6%	6%	7%	8%	8%	9%	9%	9%	9%
Tertiary / Services	65%	67%	68%	68%	68%	68%	69%	69%	70%	71%
Industry	25%	21%	20%	20%	19%	18%	18%	17%	17%	16%
Other	7%	6%	5%	5%	5%	5%	5%	5%	5%	4%
<b>VENTILATION (from electricity).</b>										
Residential	29%	21%	21%	19%	18%	17%	18%	19%	20%	20%
Tertiary / Services	61%	68%	68%	69%	71%	71%	71%	70%	69%	69%
Industry	8%	9%	9%	10%	10%	10%	10%	10%	10%	10%
Other	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
<b>LIGHTING.</b>										
Residential	30%	23%	20%	13%	10%	10%	10%	10%	10%	9%
Tertiary / Services	55%	61%	63%	69%	72%	71%	71%	72%	72%	73%
Industry	14%	15%	15%	17%	17%	17%	17%	17%	17%	17%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>										
Residential	53%	55%	57%	53%	48%	46%	44%	44%	44%	44%
Tertiary / Services	41%	39%	38%	41%	46%	48%	49%	49%	49%	49%
Industry	5%	5%	4%	5%	6%	6%	6%	6%	6%	6%
Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>FOOD PRESERVE.</b>										
Residential	42%	32%	28%	25%	22%	18%	14%	12%	11%	9%
Tertiary / Services	49%	52%	54%	54%	54%	56%	58%	60%	61%	62%
Industry	7%	14%	16%	19%	21%	23%	24%	25%	26%	26%
Other	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
<b>COOKING.</b>										
Residential	87%	89%	89%	89%	90%	90%	90%	91%	91%	91%
Tertiary / Services	13%	11%	11%	11%	10%	10%	10%	9%	9%	9%
Industry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>										
Residential	93%	92%	92%	91%	91%	91%	91%	91%	90%	90%
Tertiary / Services	6%	8%	8%	8%	8%	8%	9%	9%	9%	9%
Industry	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>										
Residential	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tertiary / Services	25%	27%	27%	28%	28%	28%	28%	28%	28%	28%
Industry	62%	60%	60%	60%	60%	59%	59%	59%	59%	59%
Other	14%	13%	12%	13%	13%	13%	13%	13%	13%	14%
<b>TYRES.</b>										
Residential transport	47%	46%	45%	41%	40%	38%	37%	36%	36%	36%
Tertiary / Services transport	34%	34%	35%	37%	38%	39%	39%	39%	40%	40%
Industry transport	17%	17%	18%	19%	20%	20%	21%	21%	21%	21%
Other transport	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>										
Residential	38%	35%	33%	30%	28%	26%	26%	25%	25%	24%
Tertiary / Services	27%	32%	33%	33%	34%	33%	34%	34%	34%	35%
Industry	18%	20%	21%	22%	23%	23%	23%	23%	23%	23%
Other	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%
Transport	13%	9%	9%	10%	11%	13%	13%	13%	14%	14%

EMISSECO

**OTHER EMISSIONS**

db	ECO direct emissions NO <sub>x</sub> (in kt NO <sub>x</sub> /a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	30	33	29	19	12	9	9	9	10	10
	<b>Total CH Central Heating combi, water heat</b>	48	77	74	50	33	25	25	26	27	27
	<b>Total CH Central Heating boiler, space heat</b>	420	372	277	153	82	49	41	34	27	20
	LH open fire gas	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1
	LH closed fire gas	3.6	2.8	2.6	2.2	1.8	1.4	1.2	1.1	1.1	1.0
	LH flueless fuel heater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH luminous heaters	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3
	LH tube heaters	3.5	3.0	2.8	2.5	2.1	1.8	1.7	1.6	1.5	1.5
	<b>Local Space Heaters, total NO<sub>x</sub>-emission</b>	8	7	6	5	4	4	3	3	3	3
	CHF	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	ACF	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	ACF (rev)	0.0	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2
	AHF	59	44	36	24	13	6	4	4	3	3
	<b>Air Heaters &amp; Coolers, total direct Nox emission</b>	59	44	37	25	14	6	4	4	3	3
	<b>Total direct NO<sub>x</sub> ECO in kt NO<sub>x</sub></b>	566	534	423	252	145	93	83	76	70	63
	<b>Direct NO<sub>x</sub> ECO in kt SO<sub>2</sub> eq.(=0.7*NO<sub>x</sub>)</b>	396	374	296	176	102	65	58	53	49	44
	<b>ECO direct CO-emissions (in kt/a)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	SFB Wood Manual	8939	1298	928	584	311	115	25	13	11	9
	SFB Wood Direct Draft	2	16	29	40	46	43	43	45	51	59
	SFB Coal	135	24	16	9	5	2	1	1	1	0
	SFB Pellets	0	11	18	25	29	31	31	30	31	33
	SFB Wood chips	0	16	19	20	18	16	17	18	19	20
	<b>Solid Fuel Boilers, total CO-emission</b>	<b>9076</b>	<b>1365</b>	<b>1009</b>	<b>678</b>	<b>408</b>	<b>207</b>	<b>116</b>	<b>107</b>	<b>113</b>	<b>121</b>
	LH open fireplace	189	180	173	152	114	84	60	41	30	29
	LH closed fireplace/inset	247	396	427	421	361	301	243	189	150	144
	LH wood stove	539	377	340	296	232	182	144	111	88	85
	LH coal stove	440	173	138	107	76	52	34	20	12	10
	LH cooker	85	98	101	95	73	52	37	35	34	33
	LH SHR stove	191	194	195	191	171	154	141	125	112	110
	LH pellet stove	0	15	16	12	8	6	5	5	5	5
	<b>Local Space Heaters, total CO-emission</b>	<b>1689</b>	<b>1434</b>	<b>1389</b>	<b>1276</b>	<b>1036</b>	<b>830</b>	<b>663</b>	<b>527</b>	<b>431</b>	<b>416</b>
	<b>Total direct CO-emissions, ECO, in kt/a</b>	<b>10765</b>	<b>2799</b>	<b>2399</b>	<b>1954</b>	<b>1444</b>	<b>1038</b>	<b>779</b>	<b>634</b>	<b>544</b>	<b>537</b>
	<b>ECO direct OGC-emissions (in kt/a)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	SFB Wood Manual	782	114	81	51	26	9	1	1	0	0
	SFB Wood Direct Draft	0	1	1	2	2	2	2	2	3	3
	SFB Coal	7	1	1	0	0	0	0	0	0	0
	SFB Pellets	0	2	3	3	3	3	2	2	2	2
	SFB Wood chips	0	0	1	1	1	0	0	1	1	1
	<b>Solid Fuel Boilers, total OGC-emission</b>	<b>789</b>	<b>118</b>	<b>87</b>	<b>57</b>	<b>32</b>	<b>15</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>6</b>
	LH open fireplace	18	13	11	8	6	4	2	1	1	1
	LH closed fireplace/inset	23	27	26	22	17	12	8	5	4	3
	LH wood stove	51	27	21	16	11	7	5	3	2	2
	LH coal stove	43	13	9	6	4	2	1	1	0	0
	LH cooker	8	6	5	4	3	2	1	1	1	1
	LH SHR stove	18	14	12	10	8	6	4	3	2	2
	LH pellet stove	0	3	4	4	4	3	2	2	2	2
	<b>Local Space Heaters, total OGC-emission</b>	<b>161</b>	<b>102</b>	<b>88</b>	<b>71</b>	<b>52</b>	<b>36</b>	<b>24</b>	<b>17</b>	<b>12</b>	<b>11</b>
	<b>Total direct OGC-emissions, ECO, in kt/a</b>	<b>950</b>	<b>219</b>	<b>174</b>	<b>128</b>	<b>84</b>	<b>51</b>	<b>30</b>	<b>22</b>	<b>18</b>	<b>17</b>
	<b>ECO direct PM-emissions (in kt/a)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	SFB Wood Manual	402	58	42	27	15	6	2	1	1	1
	SFB Wood Direct Draft	1	4	7	10	10	9	9	9	10	12
	SFB Coal	34	6	4	2	1	0	0	0	0	0
	SFB Pellets	0	2	3	3	4	4	4	3	4	4
	SFB Wood chips	0	2	3	3	2	2	2	2	2	2
	<b>Solid Fuel Boilers, total PM-emission</b>	<b>437</b>	<b>72</b>	<b>58</b>	<b>45</b>	<b>32</b>	<b>22</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>19</b>
	LH open fireplace	39	42	40	33	23	15	8	3	1	1
	LH closed fireplace/inset	17	25	26	24	19	14	10	6	4	4
	LH wood stove	38	24	21	17	12	9	6	4	2	2
	LH coal stove	31	11	9	6	4	3	1	1	0	0
	LH cooker	6	7	6	5	3	2	1	1	1	1
	LH SHR stove	12	10	9	9	7	6	5	4	3	3
	LH pellet stove	0	2	2	2	1	1	1	1	1	0
	<b>Local Space Heaters, total PM-emission</b>	<b>144</b>	<b>121</b>	<b>114</b>	<b>96</b>	<b>70</b>	<b>48</b>	<b>31</b>	<b>18</b>	<b>12</b>	<b>11</b>
	<b>Total direct PM-emissions, ECO, in kt/a</b>	<b>581</b>	<b>193</b>	<b>172</b>	<b>141</b>	<b>102</b>	<b>70</b>	<b>47</b>	<b>34</b>	<b>29</b>	<b>30</b>

## EMISSECO

<small>db</small> ECO noise emissions by tyres (in dB(A))	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Tyres C1, replacement for cars		70.8	70.8	70.4	70.2	70.1				
Tyres C1, OEM for cars		70.8	70.8	70.4	70.2	70.1				
Tyres C2, replacement for vans		71.9	72.0	71.7	71.7	71.7				
Tyres C2, OEM for vans		71.9	71.9	71.7	71.7	71.7				
Tyres C3, replacement for trucks/busses		71.8	71.7	71.3	71.2	71.0				
Tyres C3, OEM for trucks/busses		71.8	71.8	71.3	71.2	71.0				

EMISSAVE

db	Avoided Emissions GHG (BAU-ECO, in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<i>see also other emissions at bottom of Table</i>										
	<b>Total WH dedicated Water Heater</b>	0	0	13	29	42	45	45	44	44	44
	<b>Total CH Central Heating combi, water heat</b>	0	0	5	16	27	37	43	49	55	62
	<b>TOTAL WATER HEATING</b>	0	0	18	45	69	81	88	93	99	106
	<b>Total CH Central Heating boiler, space heat</b>	0	11	57	109	149	179	190	191	184	172
	SFB Wood Manual	0.00	0.00	0.02	0.08	0.11	0.11	0.09	0.06	0.05	0.04
	SFB Wood Direct Draft	0.00	0.00	0.01	0.03	0.07	0.10	0.11	0.14	0.17	0.21
	SFB Coal	0.00	0.00	0.07	0.13	0.13	0.09	0.07	0.06	0.05	0.05
	SFB Pellets	0.00	0.00	0.01	0.03	0.06	0.09	0.10	0.11	0.12	0.13
	SFB Wood chips	0.00	0.00	0.00	0.02	0.03	0.04	0.04	0.04	0.05	0.05
	<b>Total Solid Fuel Boiler</b>	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.4	0.4	0.5
	CHAE-S (≤ 400 kW)	0.00	0.00	0.00	0.04	0.13	0.22	0.27	0.29	0.26	0.20
	CHAE-L (> 400 kW)	0.00	0.00	0.00	0.09	0.26	0.32	0.34	0.33	0.29	0.21
	CHWE-S (≤ 400 kW)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00
	CHWE-L (> 1500 kW)	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00
	CHF	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01
	HT PCH-AE-S	0.00	0.00	0.02	0.41	0.95	1.33	1.35	1.15	0.93	0.72
	HT PCH-AE-L	0.00	0.00	0.02	0.46	1.12	1.70	1.92	1.83	1.63	1.39
	HT PCH-WE-S	0.00	0.00	0.00	0.05	0.10	0.14	0.12	0.08	0.05	0.02
	HT PCH-WE-M	0.00	0.00	0.00	0.07	0.16	0.20	0.15	0.07	0.02	0.00
	HT PCH-WE-L	0.00	0.00	0.00	0.02	0.05	0.07	0.08	0.07	0.06	0.04
	AC rooftop	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.00	0.00
	AC splits	0.00	0.00	0.01	0.16	0.30	0.37	0.32	0.24	0.18	0.13
	AC VRF	0.00	0.00	0.00	0.06	0.16	0.28	0.35	0.35	0.32	0.26
	ACF	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02
	<b>SubTotal AHC central Air Cooling</b>	0.0	0.0	0.1	1.4	3.3	4.7	5.0	4.5	3.8	3.0
	AC rooftop (rev)	0.00	0.00	0.10	0.40	0.57	0.49	0.25	0.07	0.00	0.00
	AC splits (rev)	0.00	0.00	0.18	0.73	1.18	1.36	1.17	0.94	0.75	0.59
	AC VRF (rev)	0.00	0.00	0.08	0.37	0.82	1.33	1.55	1.52	1.38	1.18
	ACF (rev)	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02
	AHF	0.00	0.00	0.55	2.27	3.97	5.00	4.88	4.34	3.80	3.31
	AHE	0.00	0.00	0.01	0.03	0.07	0.08	0.08	0.07	0.05	0.04
	<b>SubTotal AHC central Air Heating</b>	0.0	0.0	0.9	3.8	6.6	8.3	7.9	7.0	6.0	5.2
	<b>Total AHC central Air Heating &amp; Cooling</b>	0.0	0.0	1.0	5.2	9.9	13.0	12.9	11.4	9.8	8.2
	LH open fireplace	0.00	0.00	0.00	0.03	0.07	0.11	0.14	0.16	0.17	0.18
	LH closed fireplace/inset	0.00	0.00	0.01	0.05	0.12	0.18	0.22	0.26	0.28	0.27
	LH wood stove	0.00	0.00	0.01	0.03	0.08	0.11	0.13	0.15	0.16	0.16
	LH coal stove	0.00	0.00	0.04	0.15	0.30	0.37	0.37	0.37	0.34	0.28
	LH cooker	0.00	0.00	0.00	0.01	0.03	0.04	0.05	0.05	0.05	0.05
	LH SHR stove	0.00	0.00	0.00	0.01	0.03	0.04	0.05	0.05	0.06	0.06
	LH pellet stove	0.00	0.00	0.00	0.02	0.04	0.05	0.06	0.05	0.06	0.06
	LH open fire gas	0.00	0.00	0.00	0.01	0.04	0.06	0.07	0.08	0.08	0.08
	LH closed fire gas	0.00	0.00	0.02	0.12	0.31	0.46	0.56	0.61	0.61	0.60
	LH flueless fuel heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LH elec.portable	0.00	0.00	0.33	1.31	1.79	1.72	1.56	1.45	1.35	1.25
	LH elec.convector	0.00	0.00	1.05	3.97	5.48	5.28	4.74	4.41	4.15	3.90
	LH elec.storage	0.00	0.00	0.10	0.38	0.59	0.68	0.64	0.58	0.54	0.50
	LH elec.underfloor	0.00	0.00	0.13	0.48	0.76	0.94	1.00	1.03	1.03	0.95
	LH luminous heaters	0.00	0.00	0.02	0.09	0.16	0.20	0.19	0.18	0.17	0.17
	LH tube heaters	0.00	0.00	0.04	0.19	0.33	0.42	0.44	0.42	0.40	0.39
	<b>LH total</b>	0.0	0.0	1.8	6.9	10.1	10.7	10.2	9.9	9.4	8.9
	RAC (cooling demand), all types <12 kW	0.0	0.0	0.6	1.5	2.2	2.3	2.3	2.2	2.1	2.0
	RAC (heating demand), reversible <12kW	0.0	0.0	0.9	2.4	3.7	4.1	3.9	3.6	3.3	3.0
	<b>Total RAC Room Air Conditioner</b>	0	0	2	4	6	6	6	6	5	5
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	0	0	3	4	4	4	4	4	3	3
	<b>TOTAL SPACE HEATING</b>	0	11	61	123	170	203	213	212	203	189
	<b>TOTAL SPACE COOLING</b>	0	0	1	3	5	7	7	7	6	5
	NRVU electricity	0.0	0.0	0.7	2.2	3.7	4.8	4.8	4.4	4.1	3.9
1	NRVU heat (negative=saving vs. natural ventilation)	0.0	0.0	4.2	14.0	23.7	31.4	32.2	31.2	29.9	28.4
	RVU Central Unidir. VU ≤125W/fan (1 fan)	0.0	0.0	0.5	1.3	2.0	2.5	2.5	2.5	2.5	2.5
	RVU Central Balanced VU ≤125W/fan (2 fans)	0.0	0.0	0.2	0.5	0.9	1.2	1.3	1.4	1.4	1.4
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3
1	RVU Central Unidir., heat (negative=saving)	0.0	0.0	2.1	5.4	8.8	11.6	12.2	13.1	14.0	14.9
1	RVU Central Balanced, heat (negative=saving)	0.0	0.0	0.2	0.5	0.8	1.1	1.2	1.4	1.5	1.6
1	RVU Local Balanced, heat (negative=saving)	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.0	1.2
	<b>Total VU Ventilation Units</b>	0	0	8	24	40	53	55	55	55	54
	<b>TOTAL VENTILATION (from electricity)</b>	0	0	1	4	7	9	9	9	8	8
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in EMIS for space heating)</b>	0	0	7	20	29	35	35	34	34	33

EMISSAVE

db	Avoided Emissions GHG (BAU-ECO, in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LFL (T12,T8h,T8t,T5,other)	0.0	0.6	2.3	7.5	23.5	31.7	29.6	24.0	18.4	13.9
	HID (HPM, HPS, MH)	0.0	0.5	5.5	9.0	9.2	7.7	4.8	2.9	1.6	0.9
	CFLni (all shapes)	0.0	0.1	0.4	1.0	1.5	1.4	0.8	0.4	0.3	0.1
	CFLi (retrofit for GLS, HL)	0.0	-1.3	-1.4	0.6	3.4	3.6	2.5	1.5	0.9	0.5
	GLS (DLS & NDLS)	0.0	9.4	15.7	14.6	8.2	4.5	2.5	1.4	0.7	0.4
	HL (DLS & NDLS, LV & MV)	0.0	-1.9	-1.2	15.9	16.5	8.1	4.0	2.0	1.0	0.6
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	-0.3	-2.6	-10.1	-12.3	-10.5	-7.3	-4.1	-1.6
	LED replacing HID (retrofit & luminaire)	0.0	0.0	-3.8	-5.2	-4.1	-2.0	-0.6	0.1	0.7	1.1
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	-0.1	-0.4	-0.5	-0.3	-0.1	0.0	0.1	0.2
	LED replacing DLS (retrofit & luminaire)	0.0	-0.1	-0.4	-1.1	-1.2	-0.7	-0.4	-0.2	-0.1	0.0
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	-0.6	-3.4	-4.4	-3.1	-1.9	-1.0	-0.4	0.0
	Special Purpose Lamps (SPL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Lighting controls (ctrl) and standby (sb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>	<b>0</b>	<b>7</b>	<b>16</b>	<b>36</b>	<b>42</b>	<b>38</b>	<b>31</b>	<b>24</b>	<b>19</b>	<b>16</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>	<b>0</b>	<b>7</b>	<b>16</b>	<b>36</b>	<b>42</b>	<b>38</b>	<b>31</b>	<b>24</b>	<b>19</b>	<b>16</b>
	DP TV on-mode, total all types	0.0	0.0	2.3	8.0	13.8	17.8	18.1	14.4	11.2	9.2
	DP TV standby, standard (NoNA)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP TV standby, total all types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DP TV total on-mode + standby</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>14</b>	<b>18</b>	<b>18</b>	<b>14</b>	<b>11</b>	<b>9</b>
	DP Monitor on-mode	0.0	0.0	0.4	1.2	1.2	1.2	1.0	0.7	0.6	0.5
	DP Monitor standby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
	DP Signage on-mode	0.0	0.0	0.0	0.0	0.3	1.3	2.2	1.9	1.0	0.3
	DP Signage standby	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.0
	<b>DP Signage total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>
	<b>DP Electronic Displays, total on-mode</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>15</b>	<b>20</b>	<b>21</b>	<b>17</b>	<b>13</b>	<b>10</b>
	<b>DP Electronic Displays, total standby</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DP Electronic Displays, total</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>15</b>	<b>21</b>	<b>22</b>	<b>17</b>	<b>13</b>	<b>10</b>
	SSTB	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	0.0	0.0	0.8	1.7	1.6	1.5	1.5	1.5	1.5	1.5
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>
	VIDEO players/recorders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	0.0	0.0	0.2	0.4	0.4	0.4	0.3	0.3	0.3	0.3
	<b>Total VIDEO</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>										
	ES tower 1-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 1-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket traditional	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 2-socket cloud	0	0	0	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	ES rack 4-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket cloud	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 2-socket resilient trad.	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket resilient cloud	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient trad.	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 2-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 2-socket cloud	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 4-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 4-socket cloud	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>ES total traditional</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
	<b>ES total cloud</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
	<b>ES Enterprise Servers total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.7</b>
	DS Online 2	0	0	0	0.0	0.1	0.1	0.2	0.1	0.1	0.1
	DS Online 3	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DS Online 4	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	<b>DS Data Storage products total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>
	<b>ES + DS total (excl. infrastructure)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.8</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.0</b>	<b>1.0</b>	<b>0.9</b>
	PC Desktop	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Notebook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Tablet/slate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Thin client	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total PC, electricity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	EP-Copier mono	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	EP-Copier colour	0.0	0.0	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.5
	EP-printer mono	0.0	0.2	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1
	EP-printer colour	0.0	0.0	0.5	0.7	0.8	0.8	0.9	1.0	1.0	1.0
	IJ SFD printer	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	IJ MFD printer	0.0	0.2	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5
	<b>Total imaging equipment, electricity</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<i>of which related to paper use</i>	<i>0.0</i>	<i>0.0</i>	<i>0.2</i>	<i>0.2</i>	<i>0.3</i>	<i>0.3</i>	<i>0.3</i>	<i>0.3</i>	<i>0.3</i>	<i>0.3</i>



EMISSAVE

db	Avoided Emissions GHG (BAU-ECO, in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, idle hours	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0
	SB Home Phones (fixed), idle hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), idle hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total SB (networked) StandBy (rest)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
db	<i>EPS Active mode (for electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.6	EPS 10–12 W	0.0	0.0	0.7	1.5	1.7	1.4	1.2	0.9	0.7	0.6
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0
	<b>EPS, total for active mode</b>	<b>0.0</b>	<b>0.0</b>	<b>0.9</b>	<b>1.8</b>	<b>2.1</b>	<b>1.8</b>	<b>1.5</b>	<b>1.2</b>	<b>0.9</b>	<b>0.7</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.1
0.0	EPS 10–12 W	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
0.0	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>
	<b>EPS, overall total (active + no-load)</b>	<b>0.0</b>	<b>0.1</b>	<b>1.2</b>	<b>2.2</b>	<b>2.6</b>	<b>2.2</b>	<b>1.8</b>	<b>1.4</b>	<b>1.1</b>	<b>0.9</b>
	<b>EPS, double counted subtracted</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.2</b>	<b>1.4</b>	<b>1.2</b>	<b>1.0</b>	<b>0.8</b>	<b>0.6</b>	<b>0.5</b>
	UPS below 1.5 kVA	0.0	0.0	0.0	0.5	0.7	0.8	0.8	0.8	0.9	0.8
	UPS 1.5 to 5 kVA	0.0	0.0	0.0	1.0	2.5	2.9	3.1	3.2	3.3	3.2
	UPS 5 to 10 kVA	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
	UPS 10 to 200 kVA	0.0	0.0	0.0	0.1	0.4	0.7	0.8	0.8	0.9	0.9
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
	<b>TOTAL ELECTRONICS</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>17</b>	<b>26</b>	<b>32</b>	<b>33</b>	<b>28</b>	<b>24</b>	<b>21</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>0</b>	<b>14</b>	<b>21</b>	<b>25</b>	<b>28</b>	<b>30</b>	<b>31</b>	<b>30</b>	<b>29</b>	<b>27</b>
	CF open vertical chilled multi deck (RVC2)	0	0	0.1	0.6	1.5	1.8	1.6	1.5	1.4	1.4
	CF open horizontal frozen island (RHF4)	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CF other supermarket display (non-BCs)	0	0	0.1	0.8	1.8	2.2	2.3	2.2	2.2	2.1
	CF Plug in one door beverage cooler	0	0	0.0	0.8	1.9	2.0	1.9	1.8	1.7	1.7
	CF Plug in horizontal ice cream freezer	0	0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
	CF Spiral vending machine	0	0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	<b>Total CF Commercial Refrigeration</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>
	PF Storage cabinet Chilled Vertical (CV)	0	0	0	0.1	0.4	0.4	0.4	0.4	0.4	0.4
	PF Storage cabinet Frozen Vertical (FV)	0	0	0	0.2	0.4	0.5	0.5	0.5	0.5	0.4
	PF Storage cabinet Chilled Horizontal (CH)	0	0	0	0.1	0.3	0.3	0.3	0.3	0.3	0.3
	PF Storage cabinet Frozen Horizontal (FH)	0	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	<b>PF Storage cabinets All types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.5</b>	<b>1.2</b>	<b>1.4</b>	<b>1.4</b>	<b>1.3</b>	<b>1.3</b>	<b>1.3</b>
	PF Process Chiller AC MT S ≤ 300 kW	0	0	0	0.1	0.2	0.3	0.3	0.3	0.3	0.3
	PF Process Chiller AC MT L > 300 kW	0	0	0	0.1	0.2	0.3	0.3	0.3	0.3	0.3
	PF Process Chiller AC LT S ≤ 200 kW	0	0	0	0.1	0.2	0.3	0.3	0.3	0.3	0.3
	PF Process Chiller AC LT L > 200 kW	0	0	0	0.1	0.2	0.3	0.3	0.3	0.3	0.3
	PF Process Chiller WC MT S ≤ 300 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller WC MT L > 300 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller WC LT S ≤ 200 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller WC LT L > 200 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.4</b>	<b>1.0</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>	<b>1.7</b>
	PF Condensing Unit MT S 0.2-1 kW	0	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	PF Condensing Unit MT M 1-5 kW	0	0	0	0.2	0.4	0.4	0.4	0.4	0.4	0.4
	PF Condensing Unit MT L 5-20 kW	0	0	0	0.3	0.5	0.5	0.5	0.6	0.6	0.6
	PF Condensing Unit MT XL 20-50 kW	0	0	0	0.3	0.5	0.5	0.5	0.5	0.5	0.5
	PF Condensing Unit LT S 0.1-0.4 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PF Condensing Unit LT M 0.4-2 kW	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Condensing Unit LT L 2-8 kW	0	0	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PF Condensing Unit LT XL 8-20 kW	0	0	0	0.3	0.5	0.5	0.5	0.5	0.5	0.5
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.3</b>	<b>2.4</b>	<b>2.4</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.4</b>	<b>3.2</b>	<b>3.9</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>0</b>	<b>14</b>	<b>21</b>	<b>29</b>	<b>37</b>	<b>40</b>	<b>41</b>	<b>40</b>	<b>39</b>	<b>37</b>

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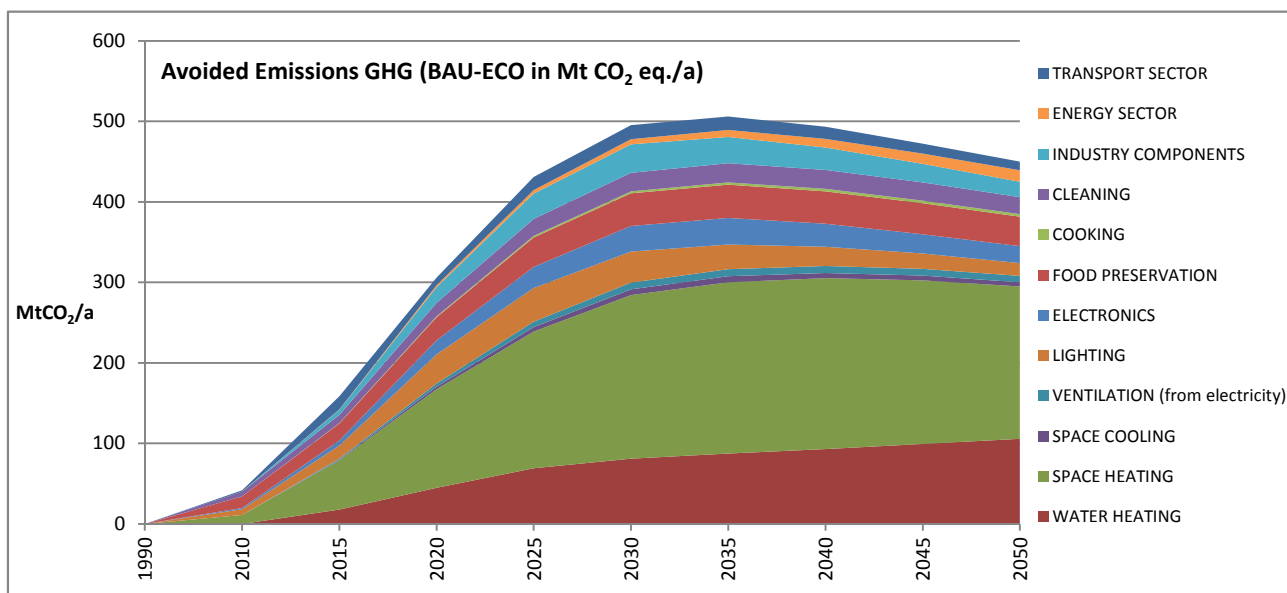
db	Avoided Emissions GHG (BAU-ECO, in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	CA El. Ovens	0.0	0.0	0.0	0.2	0.4	0.6	0.7	0.7	0.6	0.6
	CA Gas Hobs	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CA Gas Ovens	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3
	CA Range Hoods	0.0	0.0	0.0	0.3	0.7	1.1	1.4	1.4	1.4	1.4
	<b>Total CA Cooking Appliances</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>
	CM Dripfilter (glass)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (thermos)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Hard cap espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Semi-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	0.0	0.0	0.1	0.4	0.4	0.3	0.3	0.3	0.3	0.3
	CM Dripfilter (thermos), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Hard cap espresso, standby/keep warm	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Semi-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CM household Coffee Makers</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>
	<b>TOTAL COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<b>Total WM household Washing Machine</b>	<b>0</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>
	<b>Total DW household Dishwasher</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>
	LD vented el.	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	LD condens el.	0.0	0.0	0.3	1.2	2.2	2.8	2.9	2.8	2.7	2.6
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	VC dom	0.0	0.0	1.7	5.1	7.8	9.1	10.2	10.8	11.0	10.7
	VC nondom	0.0	0.0	0.2	0.8	1.0	1.0	1.0	1.0	1.0	1.0
	<b>Total VC Vacuum Cleaner</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>12</b>
	<b>TOTAL CLEANING</b>	<b>-</b>	<b>6</b>	<b>11</b>	<b>17</b>	<b>21</b>	<b>23</b>	<b>24</b>	<b>23</b>	<b>23</b>	<b>21</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	0.0	0.0	0.9	2.7	4.5	5.4	5.4	5.1	4.8	4.4
0.5	FAN Axial>300Pa	0.0	0.0	0.9	2.8	5.0	6.2	6.4	6.0	5.6	5.2
0.5	FAN Centr.FC	0.0	0.0	0.3	1.2	2.1	2.5	2.5	2.4	2.2	2.1
0.5	FAN Centr.BC-free	0.0	0.0	0.8	2.0	3.2	3.7	3.7	3.6	3.4	3.2
0.5	FAN Centr.BC	0.0	0.0	1.0	2.5	3.9	4.6	4.7	4.7	4.8	4.8
0.5	FAN Cross-flow	0.0	0.0	0.2	0.6	0.8	0.9	0.9	0.9	1.0	1.0
	<b>Total FAN, industrial</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>11</b>	<b>10</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0.0	0.1	2.3	9.4	14.3	13.1	10.9	8.6	6.1	3.5
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	0.0	0.1	3.3	14.7	23.6	22.5	18.7	14.4	9.7	4.7
0.45	Medium (L) 3-ph 75-375 kW no VSD	0.0	0.1	6.0	22.3	35.5	41.6	32.9	21.0	10.4	3.6
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>46</b>	<b>73</b>	<b>77</b>	<b>63</b>	<b>44</b>	<b>26</b>	<b>12</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0.0	0.0	-0.4	-3.6	-6.1	-5.3	-4.2	-3.0	-1.7	-0.4
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	0.0	0.0	-1.7	-8.1	-13.0	-11.9	-9.6	-7.1	-4.3	-1.4
0.45	Medium (L) 3-ph 75-375 kW with VSD	0.0	-0.1	-3.4	-13.0	-20.3	-23.5	-17.7	-10.4	-4.0	0.0
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>0</b>	<b>0</b>	<b>-5</b>	<b>-25</b>	<b>-39</b>	<b>-41</b>	<b>-31</b>	<b>-20</b>	<b>-10</b>	<b>-2</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>22</b>	<b>34</b>	<b>37</b>	<b>31</b>	<b>24</b>	<b>16</b>	<b>10</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0	0	0	0.0	0.2	0.3	0.2	0.2	0.2	0.1
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0	0	0	0.0	0.2	0.4	0.3	0.3	0.3	0.2
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.3</b>	<b>0.5</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	0	0	0	0.0	0.1	0.2	0.3	0.3	0.2	0.2
0.45	Large 3-ph LV 375-1000kW with VSD	0	0	0	0.0	0.2	0.3	0.5	0.5	0.4	0.4
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.3</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.6</b>	<b>0.6</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Explosion motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.1	0.1	0.2	0.1	0.1	0.1
0.45	Explosion motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.1	0.1	0.1	0.2	0.1	0.1
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Brake motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	Brake motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>

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db	Avoided Emissions GHG (BAU-ECO, in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.4</b>	<b>0.8</b>	<b>1.0</b>	<b>0.9</b>	<b>0.7</b>	<b>0.6</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>12</b>	<b>20</b>	<b>22</b>	<b>19</b>	<b>15</b>	<b>10</b>	<b>7</b>
	including double counted amounts	-	0	6	22	36	39	34	26	19	12
	<b>Total WP Water Pumps</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	CP Fixed Speed 5-1280 l/s	0.00	0.00	0.06	0.23	0.37	0.37	0.32	0.28	0.23	0.19
	CP Variable speed 5-1280 l/s	0.00	0.00	0.02	0.08	0.16	0.18	0.15	0.11	0.07	0.04
	CP Pistons 2-64 l/s	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01	0.01
	<b>Total CP Standard Air Compressors</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.3</b>	<b>0.5</b>	<b>0.6</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>19</b>	<b>31</b>	<b>35</b>	<b>33</b>	<b>28</b>	<b>23</b>	<b>19</b>
	TRAFO Distribution	0.0	0.0	0.2	0.8	1.3	1.8	2.3	2.8	3.2	3.5
	TRAFO Industry oil	0.0	0.0	0.3	1.0	1.7	2.3	3.0	3.3	3.3	3.3
	TRAFO Industry dry	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7
	TRAFO Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TRAFO DER oil	0.0	0.0	0.0	0.1	0.3	0.5	0.8	1.2	1.6	1.9
	TRAFO DER dry	0.0	0.0	0.1	0.3	0.7	1.3	2.1	3.1	4.1	5.0
	TRAFO Small	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total TRAFO Utility Transformers</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>14</b>
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>14</b>
	<i>(Emissions due to fuel losses due to RRC)</i>										
	Tyres C1, replacement for cars	0.0	0.8	10.6	6.7	8.9	9.1	8.4	7.3	5.7	4.3
	Tyres C1, OEM for cars	0.0	0.0	0.0	0.2	1.6	1.9	1.6	1.4	1.2	1.0
	<b>Tyres C1, total</b>	<b>0</b>	<b>1</b>	<b>11</b>	<b>7</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>7</b>	<b>5</b>
	Tyres C2, replacement for vans	0.0	0.3	2.4	1.1	2.5	2.6	2.4	2.1	1.7	1.4
	Tyres C2, OEM for vans	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.2	0.2	0.2
	<b>Tyres C2, total</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>
	Tyres C3, replacement for trucks/busses	0.0	0.3	3.1	1.7	2.7	3.3	3.4	3.3	3.2	3.2
	Tyres C3, OEM for trucks/busses	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.5	0.5	0.5
	<b>Tyres C3, total</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<b>Tyres, total C1+C2+C3</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>10</b>	<b>16</b>	<b>18</b>	<b>17</b>	<b>15</b>	<b>13</b>	<b>10</b>
	<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>10</b>	<b>16</b>	<b>18</b>	<b>17</b>	<b>15</b>	<b>13</b>	<b>10</b>
	<b>Avoided GENERAL TOTAL (GHG in Mt CO<sub>2</sub>)</b>	<b>0</b>	<b>42</b>	<b>158</b>	<b>306</b>	<b>431</b>	<b>496</b>	<b>506</b>	<b>493</b>	<b>472</b>	<b>450</b>

	Avoided Emissions GHG (BAU-ECO, in MtCO <sub>2</sub> eq./a)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WATER HEATING</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>45</b>	<b>69</b>	<b>81</b>	<b>88</b>	<b>93</b>	<b>99</b>	<b>106</b>
	<b>SPACE HEATING</b>	<b>0</b>	<b>11</b>	<b>61</b>	<b>123</b>	<b>170</b>	<b>203</b>	<b>213</b>	<b>212</b>	<b>203</b>	<b>189</b>
	<b>SPACE COOLING</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>5</b>
	<b>VENTILATION (from electricity)</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>7</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>8</b>	<b>8</b>
1	<i>VENTILATION (from heat saving vs. BAU; already included in EMIS for space heating)</i>	<i>0</i>	<i>0</i>	<i>7</i>	<i>20</i>	<i>29</i>	<i>35</i>	<i>35</i>	<i>34</i>	<i>34</i>	<i>33</i>
	<b>LIGHTING</b>	<b>0</b>	<b>7</b>	<b>16</b>	<b>36</b>	<b>42</b>	<b>38</b>	<b>31</b>	<b>24</b>	<b>19</b>	<b>16</b>
	<b>ELECTRONICS</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>17</b>	<b>26</b>	<b>32</b>	<b>33</b>	<b>28</b>	<b>24</b>	<b>21</b>
	<b>FOOD PRESERVATION</b>	<b>0</b>	<b>14</b>	<b>21</b>	<b>29</b>	<b>37</b>	<b>40</b>	<b>41</b>	<b>40</b>	<b>39</b>	<b>37</b>
	<b>COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<b>CLEANING</b>	<b>0</b>	<b>6</b>	<b>11</b>	<b>17</b>	<b>21</b>	<b>23</b>	<b>24</b>	<b>23</b>	<b>23</b>	<b>21</b>
	<b>INDUSTRY COMPONENTS</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>19</b>	<b>31</b>	<b>35</b>	<b>33</b>	<b>28</b>	<b>23</b>	<b>19</b>
	<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>14</b>
	<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>10</b>	<b>16</b>	<b>18</b>	<b>17</b>	<b>15</b>	<b>13</b>	<b>10</b>
	<b>TOTAL in Mt CO<sub>2</sub></b>	<b>0</b>	<b>42</b>	<b>158</b>	<b>306</b>	<b>431</b>	<b>496</b>	<b>506</b>	<b>493</b>	<b>472</b>	<b>450</b>
	Saving in % versus BAU (from 1990=0)	0.0%	2.0%	7.6%	14.8%	21.4%	25.3%	26.8%	27.2%	27.3%	27.3%
	Saving In % versus BAU (from 2010=0)	-2.1%	0.0%	5.6%	12.8%	19.3%	23.2%	24.6%	24.9%	24.9%	24.8%



**Sector subdivision for SAVED GHG emissions**

Space Heating: includes effects of heat load reduction due to heat savings by Ventilation Units  
 Ventilation: reported data regard only emissions due to electricity consumed by Ventilation Units; heat saving effects are included in Space Heating  
 Lighting: includes emissions due to energy consumption by control gears, and includes estimate for Special Purpose Lamps, controls and standby  
 Transport Sector: see separate reporting below; not included in other sector totals  
 Energy Sector: see separate reporting below. Only emissions due to Distribution Losses are considered. It is assumed that these losses are already considered in the GWP for electricity that is used when computing the emissions for other sectors. Consequently only the decrease in emissions due to the decrease of the losses in the ECO scenario vs. the BAU scenario is reported. (reference for BAU = 0)

SAVED GHG emission (ENERGY SECTOR, MtCO <sub>2</sub> eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>TOTAL ENERGY SECTOR</b>	0	0	1	2	4	6	9	11	13	14
SAVED GHG emission, Energy Sector, MtCO <sub>2</sub> eq	0	0	1	2	4	6	9	11	13	14

SAVED GHG emission (INDUSTRY, MtCO <sub>2</sub> eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	1	2	3	3	3	4	4	4
SPACE HEATING	0	1	7	15	20	25	26	26	24	23
SPACE & HT PROCESS COOLING	0	0	0	0	1	1	1	1	1	1
VENTILATION	0	0	0	0	0	1	1	1	0	0
LIGHTING	0	1	1	3	5	6	5	4	4	3
ELECTRONICS	0	0	0	0	1	1	1	1	1	1
FOOD PRESERVATION	0	0	0	1	1	2	2	2	2	2
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	3	10	17	19	17	14	10	8
SAVED GHG emission, Industry, MtCO <sub>2</sub> eq	0	2	13	31	48	57	56	52	47	42

SAVED GHG emission (TRANSPORT, MtCO <sub>2</sub> eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
(EIA values are emissions related to energy losses due to the rolling resistance of C1-, C2- and C3-type tyres)										
TYRES for INDUSTRY-sector-related transport	0	0	2	1	2	3	3	2	2	2
TYRES for SERVICE-sector-related transport	0	0	5	3	5	6	5	5	4	4
TYRES for RESIDENTIAL-sector-related transport	0	1	8	6	8	9	8	7	6	4
TYRES for OTHER-sector-related transport	0	0	0	0	0	0	0	0	0	0
SAVED GHG emission, Transport, MtCO <sub>2</sub> eq	0	1	16	10	16	18	17	15	13	10

EMISSAVE

SAVED GHG emission (TERTIARY/SERVICES, MtCO <sub>2e</sub> )	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	5	14	21	25	27	28	30	32
SPACE HEATING	0	3	16	33	46	55	57	56	53	50
SPACE & HT PROCESS COOLING	0	0	0	2	3	4	4	4	4	3
VENTILATION	0	0	1	2	3	4	4	4	4	3
LIGHTING	0	2	6	12	20	23	20	16	13	11
ELECTRONICS	0	1	2	5	8	11	12	11	10	8
FOOD PRESERVATION	0	1	1	5	9	10	10	10	10	9
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	1	1	1	1	1	1	1	1
INDUSTRY COMPONENTS	0	0	2	7	12	14	13	12	11	10
<b>SAVED GHG emission, Services, MtCO<sub>2e</sub></b>	<b>0</b>	<b>6</b>	<b>34</b>	<b>81</b>	<b>124</b>	<b>147</b>	<b>149</b>	<b>143</b>	<b>136</b>	<b>129</b>

SAVED GHG emission (RESIDENTIAL, MtCO <sub>2e</sub> )	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	12	29	45	52	57	60	64	68
SPACE HEATING	0	7	36	71	98	117	123	123	119	111
SPACE & HT PROCESS COOLING	0	0	0	1	1	1	1	1	1	1
VENTILATION	0	0	1	2	3	4	4	4	4	4
LIGHTING	0	5	9	21	17	9	5	3	2	2
ELECTRONICS	0	1	4	12	17	20	20	17	13	12
FOOD PRESERVATION	0	13	19	23	26	28	29	28	27	25
COOKING	0	0	0	1	2	2	3	3	3	2
CLEANING	0	6	10	15	20	21	22	22	21	20
INDUSTRY COMPONENTS	0	0	0	0	0	0	0	0	0	0
<b>SAVED GHG emission, Residential, MtCO<sub>2e</sub></b>	<b>0</b>	<b>31</b>	<b>91</b>	<b>175</b>	<b>227</b>	<b>255</b>	<b>263</b>	<b>261</b>	<b>254</b>	<b>245</b>

SAVED GHG emission (OTHER sectors, MtCO <sub>2e</sub> )	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	0	0	1	1	1	1	1	1
SPACE HEATING	0	0	2	4	6	7	7	7	7	6
SPACE & HT PROCESS COOLING	0	0	0	0	0	0	0	0	0	0
VENTILATION	0	0	0	0	0	0	0	0	0	0
LIGHTING	0	0	0	0	0	0	0	0	0	0
ELECTRONICS	0	0	0	0	0	0	0	0	0	0
FOOD PRESERVATION	0	0	0	0	0	0	0	0	0	0
COOKING	0	0	0	0	0	0	0	0	0	0
CLEANING	0	0	0	0	0	0	0	0	0	0
INDUSTRY COMPONENTS	0	0	1	2	3	3	3	2	2	2
<b>SAVED GHG emission, Other sectors, MtCO<sub>2e</sub></b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>7</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>10</b>

EMISSAVE

SAVED GHG emissions (per FUNCTION, MTCO2eq)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING. All sectors, TWh</b>	0	0	18	45	69	81	88	93	99	106
Residential	0	0	12	29	45	52	57	60	64	68
Tertiary / Services	0	0	5	14	21	25	27	28	30	32
Industry	0	0	1	2	3	3	3	4	4	4
Other	0	0	0	0	1	1	1	1	1	1
<b>SPACE HEATING. All sectors, TWh</b>	0	11	61	123	170	203	213	212	203	189
Residential	0	7	36	71	98	117	123	123	119	111
Tertiary / Services	0	3	16	33	46	55	57	56	53	50
Industry	0	1	7	15	20	25	26	26	24	23
Other	0	0	2	4	6	7	7	7	7	6
<b>SPACE COOLING. All sectors, TWh</b>	0	0	1	3	5	7	7	7	6	5
<b>&amp; HT PROCESS</b>										
Residential	0	0	0	1	1	1	1	1	1	1
Tertiary / Services	0	0	0	2	3	4	4	4	4	3
Industry	0	0	0	0	1	1	1	1	1	1
Other	0	0	0	0	0	0	0	0	0	0
<b>VENTILATION. All sectors, TWh</b>	0	0	1	4	7	9	9	9	8	8
Residential	0	0	1	2	3	4	4	4	4	4
Tertiary / Services	0	0	1	2	3	4	4	4	4	3
Industry	0	0	0	0	0	1	1	1	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>LIGHTING. All sectors, TWh</b>	0	7	16	36	42	38	31	24	19	16
Residential	0	5	9	21	17	9	5	3	2	2
Tertiary / Services	0	2	6	12	20	23	20	16	13	11
Industry	0	1	1	3	5	6	5	4	4	3
Other	0	0	0	0	0	0	0	0	0	0
<b>ELECTRONICS. All sectors, TWh</b>	0	2	7	17	26	32	33	28	24	21
Residential	0	1	4	12	17	20	20	17	13	12
Tertiary / Services	0	1	2	5	8	11	12	11	10	8
Industry	0	0	0	0	1	1	1	1	1	1
Other	0	0	0	0	0	0	0	0	0	0
<b>FOOD PRESERVE. All sectors, TWh</b>	0	14	21	29	37	40	41	40	39	37
Residential	0	13	19	23	26	28	29	28	27	25
Tertiary / Services	0	1	1	5	9	10	10	10	10	9
Industry	0	0	0	1	1	2	2	2	2	2
Other	0	0	0	0	0	0	0	0	0	0
<b>COOKING. All sectors, TWh</b>	0	0	0	1	2	3	3	3	3	3
Residential	0	0	0	1	2	2	3	3	3	2
Tertiary / Services	0	0	0	0	0	0	0	0	0	0
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>CLEANING. All sectors, TWh</b>	0	6	11	17	21	23	24	23	23	21
Residential	0	6	10	15	20	21	22	22	21	20
Tertiary / Services	0	0	1	1	1	1	1	1	1	1
Industry	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
<b>INDUSTRY COMP. All sectors, TWh</b>	0	0	6	19	31	35	33	28	23	19
Residential	0	0	0	0	0	0	0	0	0	0
Tertiary / Services	0	0	2	7	12	14	13	12	11	10
Industry	0	0	3	10	17	19	17	14	10	8
Other	0	0	1	2	3	3	3	2	2	2
<b>TYRES. Transport sector, TWh</b>	0	1	16	10	16	18	17	15	13	10
Residential transport	0	1	8	6	8	9	8	7	6	4
Tertiary / Services transport	0	0	5	3	5	6	5	5	4	4
Industry transport	0	0	2	1	2	3	3	2	2	2
Other transport	0	0	0	0	0	0	0	0	0	0
<b>ALL PRODUCTS. All sectors, TWh</b>	0	42	158	306	431	496	506	493	472	450
Residential	0	31	91	175	227	255	263	261	254	245
Tertiary / Services	0	6	34	81	124	147	149	143	136	129
Industry	0	2	13	31	48	57	56	52	47	42
Other	0	1	3	7	10	12	12	12	11	10
Transport	0	1	16	10	16	18	17	15	13	10

## EMISSAVE

SAVED GHG emissions (per FUNCTION, %)		1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING.</b>											
	Residential			65%	65%	65%	65%	65%	64%	64%	64%
	Tertiary / Services			31%	31%	31%	31%	31%	30%	30%	30%
	Industry			4%	4%	4%	4%	4%	4%	4%	4%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>SPACE HEATING.</b>											
	Residential		60%	59%	58%	58%	58%	58%	58%	58%	59%
	Tertiary / Services		25%	26%	27%	27%	27%	27%	27%	26%	26%
	Industry		12%	12%	12%	12%	12%	12%	12%	12%	12%
	Other		3%	3%	3%	3%	3%	3%	3%	3%	3%
<b>SPACE COOLING.</b>											
& HT PROCESS	Residential		45%	40%	24%	18%	15%	15%	15%	17%	19%
	Tertiary / Services		49%	51%	57%	60%	61%	61%	61%	61%	60%
	Industry		5%	7%	15%	17%	19%	19%	18%	17%	17%
	Other		1%	2%	4%	5%	5%	5%	5%	5%	5%
<b>VENTILATION (from electricity).</b>											
	Residential			52%	46%	45%	45%	46%	48%	50%	52%
	Tertiary / Services			41%	47%	47%	47%	47%	44%	43%	42%
	Industry			6%	7%	7%	7%	6%	6%	6%	6%
	Other			1%	1%	1%	1%	1%	1%	1%	1%
<b>LIGHTING.</b>											
	Residential		64%	55%	58%	40%	24%	17%	14%	11%	9%
	Tertiary / Services		27%	35%	33%	47%	60%	65%	68%	69%	71%
	Industry		7%	9%	8%	12%	15%	17%	18%	19%	19%
	Other		1%	2%	1%	1%	1%	1%	1%	1%	1%
<b>ELECTRONICS.</b>											
	Residential	90%	59%	68%	66%	65%	64%	61%	58%	56%	55%
	Tertiary / Services	9%	36%	29%	31%	32%	33%	35%	38%	40%	41%
	Industry	1%	4%	3%	3%	2%	3%	3%	3%	3%	3%
	Other	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
<b>FOOD PRESERVE.</b>											
	Residential		92%	91%	80%	70%	69%	69%	69%	69%	69%
	Tertiary / Services		6%	7%	17%	25%	26%	25%	25%	25%	25%
	Industry		1%	1%	2%	4%	4%	5%	5%	5%	5%
	Other		1%	1%	1%	1%	1%	1%	1%	1%	1%
<b>COOKING.</b>											
	Residential			92%	89%	86%	85%	84%	84%	84%	84%
	Tertiary / Services			8%	11%	14%	15%	16%	16%	16%	16%
	Industry			0%	0%	0%	0%	0%	0%	0%	0%
	Other			0%	0%	0%	0%	0%	0%	0%	0%
<b>CLEANING.</b>											
	Residential		96%	94%	92%	93%	93%	93%	93%	93%	93%
	Tertiary / Services		4%	5%	7%	7%	6%	6%	6%	6%	7%
	Industry		0%	0%	1%	1%	1%	1%	1%	1%	1%
	Other		0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>INDUSTRY COMP.</b>											
	Residential		0%	0%	0%	0%	0%	0%	0%	0%	0%
	Tertiary / Services		23%	39%	37%	37%	38%	40%	43%	46%	51%
	Industry		56%	51%	53%	54%	53%	51%	49%	45%	41%
	Other		21%	10%	10%	9%	9%	9%	8%	8%	8%
<b>TYRES.</b>											
	Residential transport			53%	56%	52%	50%	49%	47%	44%	40%
	Tertiary / Services transport			30%	28%	31%	32%	33%	34%	35%	37%
	Industry transport			15%	13%	15%	16%	16%	17%	18%	19%
	Other transport			2%	2%	2%	3%	3%	3%	3%	3%
<b>ALL PRODUCTS.</b>											
	Residential	90%	74%	58%	57%	53%	52%	52%	53%	54%	54%
	Tertiary / Services	9%	15%	22%	26%	29%	30%	29%	29%	29%	29%
	Industry	1%	5%	8%	10%	11%	11%	11%	11%	10%	9%
	Other	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%
	Transport	0%	3%	10%	3%	4%	4%	3%	3%	3%	2%

EMISSSAVE

**OTHER EMISSIONS**

<b>Avoided direct emissions NO<sub>x</sub> (BAU-ECO, in kt NO<sub>x</sub>/a)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Total WH dedicated Water Heater	0	0	5	16	23	26	26	27	28	30
Total CH Central Heating combi, water heat	0	0	8	35	57	71	77	83	90	97
Total CH Central Heating boiler, space heat	0	9	66	162	210	235	234	226	210	188
LH open fire gas	0	0	0	0.1	0.1	0.2	0.2	0.2	0.2	0.2
LH closed fire gas	0	0	0	0.3	0.6	0.7	0.9	0.8	0.8	0.8
LH flueless fuel heater	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LH luminous heaters	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
LH tube heaters	0	0	0	0.2	0.4	0.5	0.5	0.4	0.4	0.4
<b>Local Space Heaters, avoided NO<sub>x</sub>-emission</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.6</b>	<b>1.1</b>	<b>1.5</b>	<b>1.6</b>	<b>1.5</b>	<b>1.4</b>	<b>1.4</b>
CHF	0	0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
ACF	0	0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
ACF (rev)	0	0	0.0	0.1	0.3	0.4	0.5	0.5	0.5	0.5
AHF	0	0	1.0	8.3	15.1	19.0	18.0	16.0	14.1	12.4
<b>Air Heaters &amp; Coolers, avoided NO<sub>x</sub> emission</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>9</b>	<b>16</b>	<b>20</b>	<b>19</b>	<b>17</b>	<b>15</b>	<b>13</b>
<b>Direct NO<sub>x</sub> Avoided (BAU-ECO) in kt NO<sub>x</sub></b>	<b>0</b>	<b>9</b>	<b>80</b>	<b>213</b>	<b>290</b>	<b>333</b>	<b>338</b>	<b>338</b>	<b>330</b>	<b>316</b>
<b>Direct NO<sub>x</sub> Avoided (BAU-ECO) in kt SO<sub>2</sub> eq.</b>	<b>0</b>	<b>6</b>	<b>56</b>	<b>149</b>	<b>203</b>	<b>233</b>	<b>237</b>	<b>236</b>	<b>231</b>	<b>222</b>
<b>Avoided direct CO-emissions (BAU-ECO in kt/a)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
SFB Wood Manual	0	0	14	96	148	156	138	100	81	68
SFB Wood Direct Draft	0	0	0	1	2	3	4	5	6	8
SFB Coal	0	0	0	0	0	0	0	0	0	0
SFB Pellets	0	0	0	1	2	3	3	4	4	5
SFB Wood chips	0	0	0	1	2	3	3	3	3	4
<b>Solid Fuel Boilers, total avoided CO-emission</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>100</b>	<b>154</b>	<b>165</b>	<b>149</b>	<b>112</b>	<b>95</b>	<b>84</b>
LH open fireplace	0	0	2	14	42	59	70	78	82	79
LH closed fireplace/inset	0	0	4	30	95	139	168	192	203	188
LH wood stove	0	0	3	19	57	82	99	113	120	111
LH coal stove	0	0	1	6	14	17	17	18	16	13
LH cooker	0	0	1	9	31	46	53	48	46	45
LH SHR stove	0	0	2	11	37	58	76	92	102	99
LH pellet stove	0	0	0	0	1	1	0	0	0	0
<b>Local Space Heaters, total avoided CO-emission</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>90</b>	<b>277</b>	<b>402</b>	<b>483</b>	<b>541</b>	<b>569</b>	<b>535</b>
<b>Total avoided direct CO-emissions, BAU-ECO, in kt/a</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>189</b>	<b>431</b>	<b>568</b>	<b>632</b>	<b>653</b>	<b>665</b>	<b>619</b>
<b>Avoided direct OGC-emissions (BAU-ECO in kt/a)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
SFB Wood Manual	0	0	1	9	14	15	13	9	8	6
SFB Wood Direct Draft	0	0	0	0	0	0	0	0	0	0
SFB Coal	0	0	0	0	0	0	0	0	0	0
SFB Pellets	0	0	0	1	1	2	3	3	3	3
SFB Wood chips	0	0	0	0	0	0	0	0	0	0
<b>Solid Fuel Boilers, total OGC-emission</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>15</b>	<b>17</b>	<b>16</b>	<b>13</b>	<b>11</b>	<b>10</b>
LH open fireplace	0	0	0	1	1	1	1	1	1	0
LH closed fireplace/inset	0	0	0	1	2	2	2	1	1	1
LH wood stove	0	0	0	1	1	1	1	1	1	0
LH coal stove	0	0	0	0	0	0	0	0	0	0
LH cooker	0	0	0	0	0	0	0	0	0	0
LH SHR stove	0	0	0	0	0	0	0	0	0	0
LH pellet stove	0	0	0	0	2	3	4	4	4	3
<b>Local Space Heaters, total OGC-emission</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>6</b>
<b>Total avoided direct OGC-emissions, BAU-ECO, in kt/</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>13</b>	<b>22</b>	<b>25</b>	<b>24</b>	<b>20</b>	<b>17</b>	<b>16</b>
<b>Avoided direct PM-emissions (BAU-ECO in kt/a)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
SFB Wood Manual	0	0	1	4	6	6	5	4	3	3
SFB Wood Direct Draft	0	0	0	1	2	2	3	4	4	5
SFB Coal	0	0	0	0	0	0	0	0	0	0
SFB Pellets	0	0	0	0	1	1	1	1	1	2
SFB Wood chips	0	0	0	0	1	1	1	1	1	1
<b>Solid Fuel Boilers, total PM-emission</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>10</b>
LH open fireplace	0	0	0	3	9	13	15	16	18	18
LH closed fireplace/inset	0	0	0	2	6	8	10	11	12	10
LH wood stove	0	0	0	1	4	5	6	7	7	6
LH coal stove	0	0	0	0	1	1	1	1	1	1
LH cooker	0	0	0	1	2	3	4	3	3	3
LH SHR stove	0	0	0	0	1	2	2	2	2	2
LH pellet stove	0	0	0	0	0	0	0	0	0	0
<b>Local Space Heaters, total PM-emission</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>23</b>	<b>32</b>	<b>37</b>	<b>41</b>	<b>43</b>	<b>40</b>
<b>Total avoided direct PM-emissions, BAU-ECO, in kt/a</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>13</b>	<b>32</b>	<b>43</b>	<b>48</b>	<b>51</b>	<b>53</b>	<b>50</b>



## EMISSSAVE

db <b>Avoided noise emissions by tyres (in dB(A))</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Tyres C1, replacement for cars		0.35	0.28	0.63	0.78	0.92				
Tyres C1, OEM for cars		0.35	0.27	0.63	0.78	0.92				
Tyres C2, replacement for vans		0.54	0.36	0.55	0.58	0.62				
Tyres C2, OEM for vans		0.54	0.45	0.55	0.58	0.62				
Tyres C3, replacement for trucks/busses		0.19	0.17	0.47	0.62	0.76				
Tyres C3, OEM for trucks/busses		0.19	0.10	0.47	0.62	0.76				

PRICE

UNIT PRICE (in 2015-euros)	var	BC price €	BC EF	mid price €	mid EF	BAT price €	BAT EF	BC-mid slope €/EF	mid-BAT slope €/EF	PriceDec %
factor to convert 2010-euro to 2015-euro	1.08									
WH dedicated Water Heater	%	€ 537	31%	€ 956	47%	€ 2373	102%	€ct/% 2572	€ct/% 2572	0.7%
CH Central Heating combi, water heat [24 kW]	%	€ 1073	46%	€ 2970	93%	€ 4691	135%	€ct/% 4081	€ct/% 4081	0.6%
CH Central Heating boiler, space heat [24 kW]	%	€ 4191	68%	€ 5894	84%	€ 13409	128%	€ct/% 10500	€ct/% 17380	0.7%
SFB Wood Manual [18 kW]	%	€ 4860	51%	€ 8430	63%	€ 10063	75%	€ct/% 29384	€ct/% 13439	0.7%
SFB Wood Direct Draft [20 kW]	%	€ 7019	73%	€ 7570	74%	€ 8425	75%	€ct/% 47854	€ct/% 74345	0.8%
SFB Coal [25 kW]	%	€ 5940	67%	€ 5940	70%	€ 5940	72%	€ct/% 0	€ct/% 0	0.7%
SFB Pellets [25 kW]	%	€ 8639	73%	€ 9397	76%	€ 10060	78%	€ct/% 30295	€ct/% 26551	0.8%
SFB Wood chips [160 kW]	%	€ 36177	73%	€ 40940	75%	€ 42207	77%	€ct/% 238166	€ct/% 63310	0.9%
Air Cooling:		€	%	€	%	€	%	€ct/%	€ct/%	
CHAE-S (≤ 400 kW)	%	€ 18685	136%	€ 19501	161%	€ 20352	186%	€ct/% 3262	€ct/% 3405	1.0%
CHAE-L (> 400 kW)	%	€ 45476	140%	€ 49216	180%	€ 53264	219%	€ct/% 9469	€ct/% 10248	1.0%
CHWE-S (≤ 400 kW)	%	€ 15097	186%	€ 15680	216%	€ 16285	245%	€ct/% 1976	€ct/% 2052	1.0%
CHWE-M (> 400 kW; ≤ 1500 kW)	%	€ 66552	217%	€ 74646	288%	€ 83725	358%	€ct/% 11481	€ct/% 12877	1.0%
CHWE-L (> 1500 kW)	%	€ 119156	217%	€ 133648	288%	€ 149902	358%	€ct/% 20556	€ct/% 23056	1.0%
CHF	%	€ 16305	103%	€ 18830	139%	€ 21747	175%	€ct/% 7015	€ct/% 8101	1.0%
HT PCH-AE-S	%	€ 20422	470%	€ 22281	598%	€ 24310	725%	€ct/% 1459	€ct/% 1592	1.0%
HT PCH-AE-L	%	€ 51689	510%	€ 58050	655%	€ 65193	800%	€ct/% 4387	€ct/% 4927	1.0%
HT PCH-WE-S	%	€ 17298	730%	€ 18660	878%	€ 20128	1025%	€ct/% 923	€ct/% 996	1.0%
HT PCH-WE-M	%	€ 81307	850%	€ 92617	1050%	€ 105500	1250%	€ct/% 5655	€ct/% 6442	1.0%
HT PCH-WE-L	%	€ 173373	850%	€ 200731	1075%	€ 232406	1300%	€ct/% 12159	€ct/% 14078	1.0%
AC rooftop	%	€ 20736	120%	€ 21034	153%	€ 21336	185%	€ct/% 917	€ct/% 930	1.0%
AC splits	%	€ 3547	156%	€ 3959	214%	€ 4420	272%	€ct/% 711	€ct/% 794	1.0%
AC VRF	%	€ 33230	165%	€ 33988	191%	€ 34764	217%	€ct/% 2917	€ct/% 2984	1.0%
ACF	%	€ 16305	103%	€ 18830	139%	€ 21747	175%	€ct/% 7015	€ct/% 8101	1.0%
Air Heating:		€	%	€	%	€	%	€ct/%	€ct/%	
AC rooftop (rev)	%	€ 20543	99%	€ 20812	128%	€ 21085	158%	€ct/% 908	€ct/% 920	1.0%
AC splits (rev)	%	€ 3294	117%	€ 3570	160%	€ 3870	202%	€ct/% 651	€ct/% 705	1.0%
AC VRF (rev)	%	€ 32230	130%	€ 32712	147%	€ 33201	164%	€ct/% 2818	€ct/% 2861	1.0%
ACF (rev)	%	€ 18093	129%	€ 19836	152%	€ 21747	175%	€ct/% 7581	€ct/% 8311	1.0%
AHF	%	€ 5590	63%	€ 6524	74%	€ 7614	84%	€ct/% 9068	€ct/% 10583	1.0%
AHE	%	€ 540	30%	€ 540	34%	€ 540	38%	€ct/% 0	€ct/% 0	1.0%
LH open fireplace [8 kW]	%	€ 2862	30%	€ 4074	45%	€ 5982	60%	€ct/% 7998	€ct/% 12600	0.7%
LH closed fireplace/inset [8 kW]	%	€ 2934	69%	€ 3280	75%	€ 3680	80%	€ct/% 6454	€ct/% 7477	0.7%
LH wood stove [8 kW]	%	€ 2719	69%	€ 3064	75%	€ 3464	80%	€ct/% 6454	€ct/% 7477	0.8%
LH coal stove [8 kW]	%	€ 1992	69%	€ 2223	75%	€ 2489	80%	€ct/% 4303	€ct/% 4985	0.7%
LH cooker [10 kW]	%	€ 3075	64%	€ 3684	72%	€ 4438	80%	€ct/% 7778	€ct/% 9646	0.8%
LH SHR stove [8 kW]	%	€ 8591	80%	€ 8797	83%	€ 9016	85%	€ct/% 8234	€ct/% 8765	0.4%
LH pellet stove [8 kW]	%	€ 3638	85%	€ 3753	88%	€ 3873	90%	€ct/% 4733	€ct/% 4909	0.9%
LH open fire gas, NCV [4.2 kW]	%	€ 925	42%	€ 1063	61%	€ 1231	80%	€ct/% 722	€ct/% 875	0.7%
LH closed fire gas, NCV [4.2 kW]	%	€ 887	64%	€ 937	72%	€ 991	80%	€ct/% 641	€ct/% 694	0.7%
LH flueless fuel heater, NCV [1.5 kW]	%	€ 294	100%	€ 294	100%	€ 294	100%	€ct/% 0	€ct/% 0	1.0%
LH elec.portable [1 kW]	%	€ 29	74%	€ 31	87%	€ 32	100%	€ct/% 12	€ct/% 13	1.0%
LH elec.convector [1 kW]	%	€ 167	74%	€ 173	87%	€ 178	100%	€ct/% 41	€ct/% 43	0.8%
LH elec.storage [2.75 kW]	%	€ 618	74%	€ 739	87%	€ 889	100%	€ct/% 944	€ct/% 1160	0.9%
LH elec.underfloor [0.62 kW]	%	€ 412	74%	€ 438	87%	€ 468	100%	€ct/% 206	€ct/% 228	0.6%
LH luminous heaters [20 kW]	%	€ 1396	81%	€ 1718	90%	€ 2133	99%	€ct/% 3691	€ct/% 4748	0.8%
LH tube heaters [30 kW]	%	€ 1387	71%	€ 1815	83%	€ 2408	95%	€ct/% 3565	€ct/% 4933	0.8%
RAC cooling [nom. avg. 3.8 kW]	%	€ 1808	301%	€ 2114	474%	€ 2284	531%	€ct/% 177	€ct/% 297	0.5%
RAC heating (reversible)	%	€ 1808	262%	€ 2114	366%	€ 2284	400%	€ct/% 295	€ct/% 499	0.5%
CIRC Circulator pumps <2.5 kW (efficiency, incl. ctrl)		€ 228	100%	€ 303	215%	€ 315	232%	€ct/% 66	€ct/% 66	1.0%
NRVU avg (sales wt.)	kWh	139915	74951	144419	45424	151512.5	36382	€/kWh 0.153	€/kWh 0.785	0.4%
RVU Central Unidir. VU (1 fan)	kWh	1365	4980	1831	4139	2,298	3299	€/kWh 0.55	€/kWh 0.55	0.6%
RVU Central Balanced VU (2 fans)	kWh	4617	1897	5186	1422	5,756	947	€/kWh 1.20	€/kWh 1.20	0.7%
RVU Local Balanced VU (2 fans)	kWh	1315	2209	1440	1515	1,565	820	€/kWh 0.18	€/kWh 0.18	0.9%
LFL (T12,T8h,T8t,T5,other)										
HID (HPM, HPS, MH)										
CFLni (all shapes)										
CFLi (retrofit for GLS, HL)										
GLS (DLS & NDLS)										
HL (DLS & NDLS, LV & MV)										
LED replacing LFL (retrofit & luminaire)										
LED replacing HID (retrofit & luminaire)										
LED replacing CFLni (retrofit & luminaire)										
LED replacing DLS (retrofit & luminaire)										
LED replacing NDLS (retrofit & luminaire)										

For light sources, PRICEBAU and PRICECO are taken as fixed values from the MELISA model, computed as total EU acquisition costs divided by total EU sales units.

For basic LED purchase cost vs. time curves, see sheets PRICEBAU and PRICECO.

PRICE

UNIT PRICE (in 2015-euros)	var	BC	BC	mid	mid	BAT	BAT	BC-mid	mid-BAT	PriceDec
		price €	EF	price €	EF	price €	EF	slope €/EF	slope €/EF	
DP TV avg. all types		For Electronic Displays there is no relation between efficiency and price.								
DP Monitor		Direct input of annual prices used, same for BAU and ECO								
DP Signage										
SSTB	kWh	54	19	56	17	64	4	0.65	0.65	1%
CSTB	kWh	162	88	199	31	207	18	0.65	0.65	1%
		€								
VIDEO players/recorders		108								1.0%
VIDEO projectors		1404								1.0%
VIDEO game consoles		389								1.0%
ES tower 1-socket traditional		1200								
ES rack 1-socket traditional		1000								
ES rack 2-socket traditional		3000								
ES rack 2-socket cloud		4000								
ES rack 4-socket traditional		28000								
ES rack 4-socket cloud		33000								
ES rack 2-socket resilient trad.		35000								
ES rack 2-socket resilient cloud		36000								
ES rack 4-socket resilient trad.		37000								
ES rack 4-socket resilient cloud		38000								
ES blade 1-socket traditional		350								
ES blade 2-socket traditional		3000								
ES blade 2-socket cloud		4000								
ES blade 4-socket traditional		6000								
ES blade 4-socket cloud		7000								
DS Online 2		20000								
DS Online 3		50000								
DS Online 4		160000								
PC Desktop		540								1.0%
PC Notebook		756								1.0%
PC Tablet/slate		486								1.0%
PC Thin client		432								1.0%
PC Workstation		2700								1.0%
		€								
EP-Copier mono		1620								1.0%
EP-Copier colour		2700								1.0%
EP-printer mono		216								1.0%
EP-printer colour		540								1.0%
IJ SFD printer		108								1.0%
IJ MFD printer		162								1.0%
paper (2.5 euro/kg paper (6.25 euro/pack)		€								
SB Home Gateway, on-mode power		216								1.0%
SB Home NAS, on-mode power		216								1.0%
SB Home Phones (fixed), on-mode power		108								1.0%
SB Office Phones (fixed), on-mode power		108								1.0%
		€	%	€	%	€	%	€/%	€/%	
EPS ≤ 6W, low-V	%	3.85	66.3%	5.22	73.6%	5.72	74.1%	0.19	0.99	0.5%
EPS 6–10 W	%	7.95	72.1%	8.36	81.9%	9.05	84.3%	0.04	0.29	0.5%
EPS 10–12 W	%	11.87	73.6%	12.51	83.0%	13.10	85.9%	0.07	0.20	0.5%
EPS 15–20 W	%	8.31	76.9%	9.49	85.0%	9.92	85.9%	0.14	0.48	0.5%
EPS 20–30 W	%	13.94	81.0%	16.03	86.9%	17.02	88.5%	0.35	0.62	0.5%
EPS 30–65 W, multiple-V	%	18.52	83.0%	18.52	83.1%	25.86	85.8%	0.00	2.72	0.5%
EPS 30-65 W	%	26.51	85.5%	27.69	88.0%	31.99	90.2%	0.47	1.95	0.5%
EPS 65–120 W	%	29.33	85.0%	30.54	88.0%	34.86	90.2%	0.40	1.96	0.5%
EPS 65–120 W, multiple-V	%	39.65	86.0%	39.65	86.1%	47.36	87.3%	0.00	6.42	0.5%
EPS 12–15 W	%	13.72	75.4%	14.15	84.1%	14.15	84.2%	0.05	0.00	0.5%
UPS below 1.5 kVA	%	194	88.1%	194	93.5%	194	98.9%	0	0	1.0%
UPS 1.5 to 5 kVA	%	1027	89.8%	1027	94.2%	1027	98.7%	0	0	1.0%
UPS 5 to 10 kVA	%	4325	92.3%	4325	93.6%	4325	94.9%	0	0	1.0%
UPS 10 to 200 kVA	%	32419	92.7%	32419	94.4%	32419	96.1%	0	0	1.0%
		€	kWh/a	€	kWh/a	€	kWh/a	€/kWh/a	€/kWh/a	
RF for BAU, and for ECO until 2015 *	kWh	455	430	526	242	763	76	0.38	1.43	1%
RF for ECO from 2016 onwards *	kWh	571	213	702	119	991	81	1.39	7.62	1%
		€	BC EEI	€	MID EEI	€	BAT EEI	€/EEI	€/EEI	
CF open vertical chilled multi deck (RVC2)	EEI	4158	78	5268	58	6378	39	58	58	1.0%
CF open horizontal frozen island (RHF4)	EEI	4752	77	5083	60	5415	44	20	20	1.0%
CF other supermarket display (non-BCs)	EEI	2573	78	2836	65	3098	53	22	22	1.0%
CF Plug in one door beverage cooler	EEI	896	80	1009	62	1122	44	6	6	1.0%
CF Plug in horizontal ice cream freezer	EEI	864	79	885	74	905	68	4	4	1.0%
CF Spiral vending machine	EEI	3780	81	4040	63	4300	45	14	14	1.0%

PRICE

UNIT PRICE (in 2015-euros)	var	BC	BC	mid	mid	BAT	BAT	BC-mid	mid-BAT	PriceDec
		price €	EF	price €	EF	price €	EF	slope €/EF	slope €/EF	
PF Storage cabinet Chilled Vertical (CV)	EEl	1577	96	1734	73	1892	57	6.7	9.9	1%
PF Storage cabinet Frozen Vertical (FV)	EEl	1862	91	2048	75	2234	53	11.4	8.5	1%
PF Storage cabinet Chilled Horizontal (CH)	EEl	756	109	832	72	907	65	2.1	11.2	1%
PF Storage cabinet Frozen Horizontal (FH)	EEl	1296	106	1425	86	1555	61	6.5	5.1	1%
<b>PF Storage cabinets All types</b>	<b>EEl</b>	<b>1441</b>	<b>98</b>	<b>1586</b>	<b>74</b>	<b>1730</b>	<b>58</b>	<b>6.0</b>	<b>8.9</b>	<b>1%</b>
PF Process Chiller AC MT S ≤ 300 kW	SEPR	30238	2.70	31145	2.76	34773	2.93	15119	21344	1%
PF Process Chiller AC MT L > 300 kW	SEPR	97192	3.00	98164	3.03	106911	3.24	32397	41654	1%
PF Process Chiller AC LT S ≤ 200 kW	SEPR	33477	1.59	34482	1.60	38499	1.71	100431.97	36521	1%
PF Process Chiller AC LT L > 200 kW	SEPR	101512	1.70	102527	1.71	111663	1.83	101511.88	76134	1%
PF Process Chiller WC MT S ≤ 300 kW	SEPR	45356	3.60	46717	3.69	52160	3.91	15119	24740	1%
PF Process Chiller WC MT L > 300 kW	SEPR	145788	3.90	147246	3.91	160367	4.20	145788.34	45245	1%
PF Process Chiller WC LT S ≤ 200 kW	SEPR	50216	2.00	51722	2.02	57748	2.16	75323.974	43042	1%
PF Process Chiller WC LT L > 200 kW	SEPR	152268	2.25	153790	2.27	167495	2.43	76134	85651	1%
<b>PF Process Chiller All MT&amp;LT</b>	<b>SEPR</b>	<b>55472</b>	<b>2.41</b>	<b>56559</b>	<b>2.44</b>	<b>62349.3</b>	<b>2.61</b>	<b>38908</b>	<b>35070</b>	<b>1%</b>
PF Condensing Unit MT S 0.2-1 kW	COP	540	1.42	551	1.43	621	1.57	1080	501	1%
PF Condensing Unit MT M 1-5 kW	COP	1944	1.64	1983	1.66	2216	1.76	1944	2333	1%
PF Condensing Unit MT L 5-20 kW	SEPR	3996	2.64	4076	2.73	4715	2.88	888	4262	1%
PF Condensing Unit MT XL 20-50 kW	SEPR	9179	2.71	9363	2.81	10832	2.94	1836	11298	1%
PF Condensing Unit LT S 0.1-0.4 kW	COP	648	0.80	648	0.85	745	0.87	0	4860	1%
PF Condensing Unit LT M 0.4-2 kW	COP	864	0.95	864	1.04	985	1.07	0	4032	1%
PF Condensing Unit LT L 2-8 kW	SEPR	4644	1.46	4644	1.68	5479	1.72	0	20896	1%
PF Condensing Unit LT XL 8-20 kW	SEPR	8099	1.61	8099	1.73	9557	1.78	0	29158	1%
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>comb</b>	<b>1982</b>	<b>2.05</b>	<b>2013</b>	<b>2.14</b>	<b>2310</b>	<b>2.24</b>	<b>357</b>	<b>2769</b>	<b>1%</b>
		€	eff	€	eff	€	eff	€/eff	€/eff	
COOK El. Hobs, Wh/ltr	Wh	157	205	462	190	927	174	20.4	29.0	1%
COOK El. Ovens, kWh/a	kWh	564	107	661	88.15	725	69	5.15	3.35	1%
COOK Gas Hobs, % efficiency NCV	%	275	58%	349	64%	469	73%	1353	1256	1%
COOK Gas Ovens, kWh prim, NCV	kWh	286	231	406	190	567	145	2.95	3.55	1%
COOK Range Hoods, kWh elec	kWh	229	130	279	120	316	110	5.04	3.66	1%
		€ kWh/a		€ kWh/a		€ kWh/a		€/kWh/a	€/kWh/a	
COFFEE Dripfilter (glass)	kWh	22	93	27	74	32	55	0.28	0.28	1%
COFFEE Dripfilter (thermos)	kWh	32	48	32	48	32	48	0.00	0.00	1%
COFFEE Dripfilter (full automatic)	kWh	108	49	108	49	108	49	0.00	0.00	1%
COFFEE Pad filter	kWh	87	37	87	30	87	27	0.00	0.00	1%
COFFEE Hard cap espresso	kWh	168	37	168	30	168	27	0.00	0.00	1%
COFFEE Semi-auto espresso	kWh	111	37	111	30	111	27	0.00	0.00	1%
COFFEE Fully-auto espresso	kWh	643	37	643	30	643	27	0.00	0.00	1%
		€ kWh/a		€ kWh/a		€ kWh/a		€/kWh/a	€/kWh/a	
WM Household Washing Machine	kWh	484	207	584	130	680	87	1.30	2.24	1%
		€ kWh/a		€ kWh/a		€ kWh/a		€/kWh/a	€/kWh/a	
DW Household Dishwasher	kWh	584	269	704	224.5	824	180	2.69	2.69	1%
		€ kWh/a		€ kWh/a		€ kWh/a		€/kWh/a	€/kWh/a	
LD Household Laundry Drier vented el.	kWh	432	432	459	403	486	374	0.94	0.94	1%
LD Household Laundry Drier condens el.	kWh	598	447	731	339	864	231	1.23	1.23	1%
LD Household Laundry Drier vented gas	kWh	810	452	810	452	810	452	0.00	0.00	1%
		€ W		€ W		€ W		€/W	€/W	
VC dom. Vacuum Cleaner	W	238	1739	265	1000	300	650	0.037	0.102	1%
VC nondom Vacuum Cleaner	W	648	1293	713	1000	799	650	0.221	0.247	1%
		€ %		€ %		€ %		€ct/%	€ct/%	
FAN Axial<300Pa [247 W flow out]	%	270	31%	349	35%	428	40%	1730	1730	0.9%
FAN Axial>300Pa [489 W fluid-dyn out]	%	351	37%	386	42%	422	47%	712	712	0.9%
FAN Centr.FC [141 W flow out]	%	432	32%	549	37%	666	42%	2359	2359	0.9%
FAN Centr.BC-free [2120 W flow out]	%	832	56%	1012	63%	1193	70%	2654	2654	0.9%
FAN Centr.BC [2052 W flow out]	%	1782	54%	2377	60%	2971	67%	8951	8951	0.9%
FAN Cross-flow [31 W flow out]	%	351	7%	446	9%	540	10%	6944	6944	0.9%
		BC €	Eff	IE2 €	Eff	IE4 €	Eff	€ct/%	€ct/%	
Medium (S) 3-ph 0.75-7.5 kW no VSD	%	130	71.8%	184	81.4%	267	87.2%	562	1434	1%
Medium (M) 3-ph 7.5-75 kW no VSD	%	514	86.5%	734	89.8%	955	93.5%	6676	5954	1%
Medium (L) 3-ph 75-375 kW no VSD	%	4725	92.7%	6749	94.5%	8099	96.3%	112491	74994	1%
Medium (S) 3-ph 0.75-7.5 kW with VSD		(not used: price in year directly computed as motor price + VSD price)								
Medium (M) 3-ph 7.5-75 kW with VSD		(see VSD price information near bottom of sheet)								
Medium (L) 3-ph 75-375 kW with VSD										
Small 1 ph 0.12-0.75 kW no VSD	%	36	62.4%	54	66.0%	90	77.3%	500	319	1%
Small 1 ph 0.12-0.75 kW with VSD		(not used: price in year directly computed as motor price + VSD price)								
Small 3 ph 0.12-0.75 kW no VSD	%	73	62.4%	97	66.0%	146	77.3%	675	430	1%
Small 3 ph 0.12-0.75 kW with VSD		(not used: price in year directly computed as motor price + VSD price)								
Large 3-ph LV 375-1000 kW no VSD	%	20032	93.5%	28618	95.1%	37203	96.8%	536582	505018	1%
Large 3-ph LV 375-1000kW with VSD		(not used: price in year directly computed as motor price + VSD price)								

PRICE

UNIT PRICE (in 2015-euros)	var	BC		mid		BAT		BC-mid	mid-BAT	PriceDec
		price €	EF	price €	EF	price €	EF	slope €/EF	slope €/EF	
Explosion motors (S) 3-ph 0.75-7.5 kW	%	194	71.8%	275	81.4%	400	87.2%	844	2151	1%
Explosion motors (M) 3-ph 7.5-75 kW	%	771	86.5%	1102	89.8%	1432	93.5%	10014	8931	1%
Explosion motors (L) 3-ph 75-375 kW	%	7087	92.7%	10124	94.5%	12149	96.3%	168737	112491	1%
Prices for explosion- and brake-motors are 1.5* normal motor prices										
Brake motors (S) 3-ph 0.75-7.5 kW	%	194	71.8%	275	81.4%	400	87.2%	844	2151	1%
Brake motors (M) 3-ph 7.5-75 kW	%	771	86.5%	1102	89.8%	1432	93.5%	10014	8931	1%
Brake motors (L) 3-ph 75-375 kW	%	7087	92.7%	10124	94.5%	12149	96.3%	168737	112491	1%
Prices for 8-pole taken 1.6 times prices for 4-pole										
8-pole motors (S) 3-ph 0.75-7.5 kW	%	207	63.8%	294	73.4%	427	79.2%	900	2294	1%
8-pole motors (M) 3-ph 7.5-75 kW	%	822	83.5%	1175	86.8%	1527	90.5%	10681	9527	1%
8-pole motors (L) 3-ph 75-375 kW	%	7559	90.7%	10799	92.5%	12959	94.3%	179986	119990	1%
Prices for 1-phase taken 1.1 times prices for 3-phase										
1-phase motors >0.75 kW (no VSD)	%	143	71.8%	202	81.4%	293	87.2%	619	1577	1%
WP Water pumps (load) [%]	%	1545	66.5%	1549	68.6%	1595	69.7%	154	4221	0.7%
CP Fixed Speed 5-1280 l/s	%	8365	63.2%	9613	66.9%	9867	75.1%	33901	3088	0%
CP Variable speed 5-1280 l/s	%	18636	64.6%	20568	68.1%	23917	74.3%	54526	53951	0%
CP Pistons 2-64 l/s	%	1788	46.8%	3332	52.1%	6078	62.0%	28994	27588	0%
		€ kWh/a		€ kWh/a		€ kWh/a		€/kWh/a	€/kWh/a	
TRAFO Distribution, kWh/a	kWh	8345	7859	9326	6457	10308	5056	0.70	0.70	0%
TRAFO Industry oil	kWh	14395	27168	18210	21400	22025	15631	0.66	0.66	0%
TRAFO Industry dry	kWh	36070	39727	42417	34178	48764	28629	1.14	1.14	0%
TRAFO Power	kWh	980066	724886	980066	724886	980066	724886	0.00	0.00	0%
TRAFO DER oil	kWh	24042	59094	32216	47304	40391	35515	0.69	0.69	0%
TRAFO DER dry	kWh	37141	62415	42899	54762	48656	47109	0.75	0.75	0%
TRAFO Small	kWh	1519	2523	1519	2523	1519	2523	0.00	0.00	0%
Tyres C1, replacement for cars		not used for tyres:								
Tyres C1, OEM for cars		direct input of unit prices for each year								
Tyres C2, replacement for vans		(because prices also depend on wet grip)								
Tyres C2, OEM for vans										
Tyres C3, replacement for trucks/busses										
Tyres C3, OEM for trucks/busses										

VSD price information for calculation of prices for motor+VSD

	var	BC: IE0V-level		MID: IE1V-level		BAT: IE3V-level		€/W	€/W	Dec
		€	loss [W]	€	loss [W]	€	loss [W]			
VSD - Very Small 0.12 - 0.75 kW 1-phase	W	292	148	324	118	389	59	-1.10	-1.10	1%
VSD - Very Small 0.12 - 0.75 kW 3-phase	W	292	148	324	118	389	59	-1.10	-1.10	1%
VSD - Small 0.75 - 7.5 kW 3-phase	W	408	204	454	163	544	82	-1.11	-1.11	1%
VSD - Medium 7.5 - 75kW 3-phase	W	1647	980	1830	784	2197	392	-0.93	-0.93	1%
VSD - Large 75 - 375kW 3-phase	W	7756	6978	8618	5582	10341	2791	-0.62	-0.62	1%
VSD - Very Large 375 - 1,000kW 3-phase	W	60055	34714	66728	27771	80073	13886	-0.96	-0.96	1%

\* RF: the two rows represent the same efficiency-price curve, but different parts of it. The data in the first row is from the 2009 studies, while the data in the second row is from the 2018 studies. Awaiting further reflection on how to handle price data from review studies in EIA, the solution with two datasets has been used. Applying the first set to BAU and to ECO until 2015, and the second set to ECO from 2016 onwards, is the best solution, compatible with previous EIA data and taking into account the new data.

## PRICE2

UNIT PRICE SPLIT (in euro 2015)	unit	kit	install	ErP	maint	share	avg VAT	split-up materials price by party				
	split up (price=100%)					€/a	VAT20%	tariff	VAT	retail	whole	industry
WH dedicated Water Heater	unit	kit	install		maint/a							
	0.67	excl.	0.33		48	65%	13%	0.12	0.15	0.17	0.56	
CH Central Heating combi, water heat [24 kW]	unit	kit	install		maint/a							
	0.64	excl.	0.36		36	64%	13%	0.11	0.15	0.16	0.58	
CH Central Heating boiler, space heat [24 kW]	unit	kit	install	tank	maint/a							
	0.65	excl.	0.35	excl.	215	60%	12%	0.11	0.15	0.16	0.58	
SFB Wood Manual [18 kW]	unit	kit	install	store	maint/a							
	0.67	excl.	0.33	excl.	52	90%	18%	0.15	0.03	0.03	0.79	
SFB Wood Direct Draft [20 kW]	unit	kit	install		maint/a							
	0.77	excl.	0.23		52	90%	18%	0.15	0.03	0.03	0.79	
SFB Coal [25 kW]	unit	kit	install		maint/a							
	0.73	excl.	0.27		46	90%	18%	0.15	0.03	0.03	0.79	
SFB Pellets [25 kW]	unit	kit	install		maint/a							
	0.75	excl.	0.25		46	70%	14%	0.12	0.03	0.03	0.81	
SFB Wood chips [160 kW]	unit	kit	install		maint/a							
	0.90	excl.	0.10		59	0%	0%	0.00	0.04	0.04	0.93	
Cooling:	unit	kit	install	cooler	maint/a							
CHAE-S (≤ 400 kW)	0.60	0.14	0.27		815	5%	1%	0.01	0.10	0.10	0.79	
CHAE-L (> 400 kW)	0.60	0.14	0.27		2013	0%	0%	0.00	0.10	0.10	0.80	
CHWE-S (≤ 400 kW)	0.43	0.10	0.19	0.28	680	5%	1%	0.01	0.10	0.10	0.79	
CHWE-M (> 400 kW; ≤ 1500 kW)	0.31	0.10	0.19	0.40	3171	0%	0%	0.00	0.10	0.10	0.80	
CHWE-L (> 1500 kW)	0.28	0.06	0.13	0.53	4756	0%	0%	0.00	0.10	0.10	0.80	
CHF	0.60	0.14	0.27		3110	5%	1%	0.01	0.10	0.10	0.79	
HT PCH-AE-S	0.60	0.14	0.27		1087	0%	0%	0.00	0.10	0.10	0.80	
HT PCH-AE-L	0.60	0.14	0.27		3355	0%	0%	0.00	0.10	0.10	0.80	
HT PCH-WE-S	0.60	0.14	0.27		907	0%	0%	0.00	0.10	0.10	0.80	
HT PCH-WE-M	0.71	0.10	0.19		5284	0%	0%	0.00	0.10	0.10	0.80	
HT PCH-WE-L	0.81	0.06	0.13		5945	0%	0%	0.00	0.10	0.10	0.80	
AC rooftop	0.56	0.02	0.42		929	0%	0%	0.00	0.10	0.10	0.80	
AC splits	0.66	0.04	0.30		230	5%	1%	0.01	0.10	0.10	0.79	
AC VRF	0.54	0.09	0.38		1555	1%	0%	0.00	0.10	0.10	0.80	
ACF	0.60	0.14	0.27		1087	3%	1%	0.01	0.10	0.10	0.79	
Heating:												
AC rooftop (rev)	0.56	0.02	0.42		929	0%	0%	0.00	0.10	0.10	0.80	
AC splits (rev)	0.66	0.04	0.30		230	5%	1%	0.01	0.10	0.10	0.79	
AC VRF (rev)	0.54	0.09	0.38		1555	1%	0%	0.00	0.10	0.10	0.80	
ACF (rev)	0.59	0.14	0.27		1087	3%	1%	0.01	0.10	0.10	0.79	
AHF	0.60	0.00	0.40		68	2%	0%	0.00	0.10	0.10	0.80	
AHE	0.86	0.00	0.14		22	2%	0%	0.00	0.10	0.10	0.80	
LH open fireplace [8 kW]	unit	kit	install	store	maint/a							
	0.74	excl.	0.26	excl.	18.1	90%	18%	0.17	0.11	0.09	0.63	
LH closed fireplace/inset [8 kW]	unit	kit	install		maint/a							
	0.74	excl.	0.26		20.2	90%	18%	0.17	0.11	0.09	0.63	
LH wood stove [8 kW]	unit	kit	install		maint/a							
	0.80	excl.	0.20		17.4	90%	18%	0.17	0.11	0.09	0.63	
LH coal stove [8 kW]	unit	kit	install		maint/a							
	0.73	excl.	0.27		17.4	90%	18%	0.17	0.11	0.09	0.63	
LH cooker [10 kW]	unit	kit	install		maint/a							
	0.82	excl.	0.18		61.3	90%	18%	0.17	0.11	0.09	0.63	
LH SHR stove [8 kW]	unit	kit	install		maint/a							
	0.37	excl.	0.63		16.4	90%	18%	0.17	0.11	0.09	0.63	
LH pellet stove [8 kW]	unit	kit	install		maint/a							
	0.85	excl.	0.15		35.6	90%	18%	0.17	0.11	0.09	0.63	
LH open fire gas, NCV [4.2 kW]	unit	kit	install		maint/a							
	0.71	excl.	0.29		23.2	90%	18%	0.17	0.11	0.09	0.63	
LH closed fire gas, NCV [4.2 kW]	unit	kit	install		maint/a							
	0.70	excl.	0.30		23.2	90%	18%	0.17	0.11	0.09	0.63	
LH flueless fuel heater, NCV [1.5 kW]	unit	kit	install		maint/a							
	1.00	excl.	0.00		0.0	90%	18%	0.17	0.11	0.09	0.63	
LH elec.portable [1 kW]	unit	kit	install		maint/a							
	1.00	excl.	0.00		0.0	66%	13%	0.17	0.11	0.09	0.63	
LH elec.convactor [1 kW]	unit	kit	install		maint/a							
	0.81	excl.	0.19		0.0	66%	13%	0.17	0.11	0.09	0.63	
LH elec.storage [2.75 kW]	unit	kit	install		maint/a							
	0.86	excl.	0.14		0.0	66%	13%	0.17	0.11	0.09	0.63	
LH elec.underfloor [0.62 kW]	unit	kit	install		maint/a							
	0.59	excl.	0.41		0.0	66%	13%	0.17	0.11	0.09	0.63	
LH luminous heaters [20 kW]	unit	kit	install		maint/a							
	0.81	excl.	0.19		109.4	0%	0%	0.00	0.10	0.10	0.80	
LH tube heaters [30 kW]	unit	kit	install		maint/a							
	0.81	excl.	0.19		82.1	0%	0%	0.00	0.10	0.10	0.80	
RAC cooling [nom. avg. 3.8 kW]	unit	kit	install+kit		maint €/a							
	0.51		0.49		21.5983	45%	9%	0.08	0.15	0.17	0.60	
RAC heating (reversible)	unit	kit	install+kit		maint €/a							
	0.51		0.49		21.5983	45%	9%	0.08	0.15	0.17	0.60	
CIRC Circulator pumps <2.5 kW (incl. ctrl)	unit	kit	install		maint/a							
	1.00	excl.	0.00		0	60%	12%	0.11	0.06	0.15	0.68	
NRVU avg (sales wt.)	unit	kit	install		maint/a							
	0.08	0.34	0.57		421	0%	0%	0.00	0.10	0.10	0.80	
RVU Central Unidir. VU (1 fan)	unit	kit	install		maint/a							
	0.22	0.39	0.38		10	100%	20%	0.17	0.17	0.16	0.50	
RVU Central Balanced VU (2 fans)	unit	kit	install		maint/a							
	0.51	0.15	0.35		52	100%	20%	0.17	0.17	0.16	0.50	
RVU Local Balanced VU (2 fans)	unit	kit	install		maint/a							
	0.86	0.07	0.08		22	100%	20%	0.17	0.17	0.16	0.50	
LFL (T12,T8h,T8t,T5,other)	unit	kit	install		maint/a							
	0.59	excl.	0.41		0.39	6%	1.3%	0.01	0.10	0.10	0.79	
HID (HPM, HPS, MH)	unit	kit	install		maint/a							
	0.74	excl.	0.26		6.17	0%	0.0%	0.00	0.10	0.10	0.80	
CFLni (all shapes)	unit	kit	install		maint/a							
	0.52	excl.	0.48		1.76	30%	6.0%	0.06	0.23	0.28	0.43	
CFLi (retrofit for GLS, HL)	unit	kit	install		maint/a							
	0.87	excl.	0.13		0.37	60%	12.0%	0.11	0.23	0.26	0.41	
GLS (DLS & NDLS)	unit	kit	install		maint/a							
	0.70	excl.	0.30		0.19	80%	16.0%	0.14	0.23	0.24	0.39	
HL (DLS & NDLS, LV & MV)	unit	kit	install		maint/a							
	0.87	excl.	0.13		0.31	70%	14.1%	0.12	0.23	0.25	0.40	
LED replacing LFL (retrofit & luminaire)	unit	kit	install		maint/a							
	0.95	excl.	0.05		0.33	13%	2.5%	0.02	0.10	0.10	0.78	
LED replacing HID (retrofit & luminaire)	unit	kit	install		maint/a							
	0.98	excl.	0.02		6.17	0%	0.0%	0.00	0.10	0.10	0.80	
LED replacing CFLni (retrofit & luminaire)	unit	kit	install		maint/a							
	0.81	excl.	0.19		2.34	22%	4.5%	0.04	0.09	0.10	0.76	
LED replacing DLS (retrofit & luminaire)	unit	kit	install		maint/a							
	0.96	excl.	0.04		0.31	63%	12.6%	0.11	0.08	0.10	0.71	
LED replacing NDLS (retrofit & luminaire)	unit	kit	install		maint/a							
	0.98	excl.	0.02		0.17	75%	15.0%	0.13	0.08	0.10	0.69	
DP TV, standard (NoNA)	unit	kit	install		maint/a							
	1.00	excl.	0.00			90%	18%	0.15	0.40	0.05	0.40	
DP TV, LoNA	unit	kit	install		maint/a							
	1.00	excl.	0.00			90%	18%	0.15	0.40	0.05	0.40	
DP TV, HiNA ('Smart')	unit	kit	install		maint/a							
	1.00	excl.	0.00			90%	18%	0.15	0.40	0.05	0.40	
DP TV all types	unit	kit	install		maint/a							
	1.00	excl.	0.00		0.89	90%	18%	0.15	0.40	0.05	0.40	
DP Monitor	unit	kit	install		maint/a							
	1.00	excl.	0.00		0.89	49%	10%	0.09	0.26	0.15	0.50	
DP Signage	unit	kit	install		maint/a							
	1.00	excl.	0.00		0.89	0%	0%	0.00	0.20	0.25	0.55	

PRICE2

UNIT PRICE SPLIT (in euro 2015)	unit	kit	install	ErP	maint €/a	share VAT20%	avg VAT tariff	split-up materials price by party			
								split up (price=100%)			
SSTB	1.00		0.00		0	90%	18%	0.15	0.05	0.25	0.55
CSTB	1.00		0.00		0	90%	18%	0.15	0.05	0.25	0.55
VIDEO players/recorders	1.00		0.00		0	90%	18%	0.15	0.40	0.05	0.40
VIDEO projectors	1.00		0.00		0	3%	1%	0.01	0.10	0.30	0.59
VIDEO game consoles	1.00		0.00		0	100%	20%	0.17	0.39	0.05	0.39
ES tower 1-socket traditional	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 1-socket traditional	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 2-socket traditional	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 2-socket cloud	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 4-socket traditional	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 4-socket cloud	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 2-socket resilient trad.	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 2-socket resilient cloud	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 4-socket resilient trad.	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES rack 4-socket resilient cloud	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES blade 1-socket traditional	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES blade 2-socket traditional	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES blade 2-socket cloud	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES blade 4-socket traditional	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
ES blade 4-socket cloud	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
DS Online 2	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
DS Online 3	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
DS Online 4	1.00		0.00		0	0%	0%	0.00	0.00	0.00	1.00
PC Desktop	1.00		0.00		0	66%	13%	0.12	0.43	0.05	0.40
PC Notebook	1.00		0.00		0	66%	13%	0.12	0.43	0.05	0.40
PC Tablet/slate	1.00		0.00		0	90%	18%	0.15	0.40	0.05	0.40
PC Thin client	1.00		0.00		0	0%	0%	0.00	0.20	0.25	0.55
PC Workstation	1.00		0.00		0	0%	0%	0.00	0.20	0.23	0.57
EP-Copier mono	1.00		0.00		0	4%	1%	0.01	0.20	0.10	0.69
EP-Copier colour	1.00		0.00		0	4%	1%	0.01	0.20	0.10	0.69
EP-printer mono	1.00		0.00		0	5%	1%	0.01	0.20	0.10	0.69
EP-printer colour	1.00		0.00		0	5%	1%	0.01	0.20	0.10	0.69
IJ SFD printer	1.00		0.00		0	94%	19%	0.16	0.40	0.03	0.41
IJ MFD printer	1.00		0.00		0	94%	19%	0.16	0.40	0.03	0.41
paper (2.5 euro/kg paper (6.25 euro/pack)	1.00		0.00								
SB Home Gateway	1.00		0.00		0	100%	20%	0.17	0.10	0.25	0.48
SB Home NAS	1.00		0.00		0	100%	20%	0.17	0.05	0.25	0.53
SB Home Phones (fixed)	1.00		0.00		0	100%	20%	0.17	0.40	0.03	0.40
SB Office Phones (fixed)	1.00		0.00		0	0%	0%	0.00	0.30	0.20	0.50
EPS ≤ 6W, low-V	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 6–10 W	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 10–12 W	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 15–20 W	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 20–30 W	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 30–65 W, multiple-V	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 30-65 W	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 65–120 W	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 65–120 W, multiple-V	1.00		0.00		0	75%	15%	0.13		0.15	0.50
EPS 12–15 W	1.00		0.00		0	75%	15%	0.13		0.15	0.50
UPS below 1.5 kVA	1.00		0.00		0	10%	0%	0.00	0.40	0.10	0.50
UPS 1.5 to 5 kVA	0.68		0.32		33	5%	0%	0.00	0.35	0.00	0.65
UPS 5 to 10 kVA	0.87		0.13		123	0%	0%	0.00	0.35	0.00	0.65
UPS 10 to 200 kVA	0.96		0.04		4134	0%	0%	0.00	0.35	0.00	0.65
RF Household refrigerator and freezer	1.00		0.00		0	92%	18%	0.16	0.40	0.03	0.41
	unit		install+kit		maint						
CF open vertical chilled multi deck (RVC2)	0.92		0.08		259	0%	0%	0.00	0.00	0.30	0.70
CF open horizontal frozen island (RHF4)	0.92		0.08		281	0%	0%	0.00	0.00	0.30	0.70
CF other supermarket display (non-BCs)	0.88		0.12		216	0%	0%	0.00	0.00	0.30	0.70
CF Plug in one door beverage cooler	1.00		0.00		30	0%	0%	0.00	0.00	0.30	0.70
CF Plug in horizontal ice cream freezer	1.00		0.00		23	0%	0%	0.00	0.00	0.30	0.70
CF Spiral vending machine	1.00		0.00		51	0%	0%	0.00	0.00	0.30	0.70
PF Storage cabinet Chilled Vertical (CV)	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Storage cabinet Frozen Vertical (FV)	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Storage cabinet Chilled Horizontal (CH)	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Storage cabinet Frozen Horizontal (FH)	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
<b>PF Storage cabinets All types</b>	<b>1.00</b>		<b>0.00</b>		<b>0</b>	<b>0%</b>	<b>0%</b>	<b>0.00</b>	<b>0.10</b>	<b>0.20</b>	<b>0.70</b>
PF Process Chiller AC MT S ≤ 300 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Process Chiller AC MT L > 300 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Process Chiller AC LT S ≤ 200 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Process Chiller AC LT L > 200 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Process Chiller WC MT S ≤ 300 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Process Chiller WC MT L > 300 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Process Chiller WC LT S ≤ 200 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Process Chiller WC LT L > 200 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
<b>PF Process Chiller All MT&amp;LT</b>	<b>1.00</b>		<b>0.00</b>		<b>0</b>	<b>0%</b>	<b>0%</b>	<b>0.00</b>	<b>0.10</b>	<b>0.20</b>	<b>0.70</b>

PRICE2

UNIT PRICE SPLIT (in euro 2015)	unit split up (price=100%)	kit	install	ErP	maint €/a	share VAT20%	avg VAT tariff	split-up materials price by party			
								VAT	retail	whole	industry
PF Condensing Unit MT S 0.2-1 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Condensing Unit MT M 1-5 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Condensing Unit MT L 5-20 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Condensing Unit MT XL 20-50 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Condensing Unit LT S 0.1-0.4 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Condensing Unit LT M 0.4-2 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Condensing Unit LT L 2-8 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
PF Condensing Unit LT XL 8-20 kW	1.00		0.00		0	0%	0%	0.00	0.10	0.20	0.70
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1.00</b>		<b>0.00</b>		<b>0</b>	<b>0%</b>	<b>0%</b>	<b>0.00</b>	<b>0.10</b>	<b>0.20</b>	<b>0.70</b>
COOK El. Hobs, Wh/ltr	1.00		0.00		0	100%	20%	0.17	0.40	0.03	0.40
COOK El. Ovens, kWh/a	1.00		0.00		0	80%	16%	0.14	0.40	0.03	0.43
COOK Gas Hobs, % efficiency NCV	1.00		0.00		0	80%	16%	0.14	0.40	0.03	0.43
COOK Gas Ovens, kWh prim, NCV	1.00		0.00		0	90%	18%	0.15	0.40	0.03	0.42
COOK Range Hoods, kWh elec	1.00		0.00		0	80%	16%	0.14	0.40	0.03	0.43
COFFEE Dripfilter (glass)	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
COFFEE Dripfilter (thermos)	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
COFFEE Dripfilter (full automatic)	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
COFFEE Pad filter	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
COFFEE Hard cap espresso	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
COFFEE Semi-auto espresso	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
COFFEE Fully-auto espresso	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
WM Household Washing Machine	1.00		0.00		0	97%	19%	0.16	0.40	0.03	0.41
DW Household Dishwasher	1.00		0.00		0	93%	19%	0.16	0.40	0.03	0.41
LD Household Laundry Drier vented el.	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
LD Household Laundry Drier condens el.	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
LD Household Laundry Drier vented gas	1.00		0.00		0	95%	19%	0.16	0.40	0.03	0.41
VC dom. Vacuum Cleaner	1.00		0.00		0	100%	20%	0.17	0.40	0.03	0.40
VC nondom Vacuum Cleaner	1.00		0.00		0	0%	0%	0.00	0.15	0.20	0.65
FAN Axial<300Pa [247 W flow out]	0.90		0.10		6	0%	0%	0.00	0.10	0.23	0.67
FAN Axial>300Pa [489 W fluid-dyn out]	0.92		0.08		9	0%	0%	0.00	0.10	0.23	0.67
FAN Centr.FC [141 W flow out]	0.94		0.06		11	0%	0%	0.00	0.10	0.23	0.67
FAN Centr.BC-free [2120 W flow out]	0.91		0.09		20	0%	0%	0.00	0.10	0.23	0.67
FAN Centr.BC [2052 W flow out]	0.91		0.09		36	0%	0%	0.00	0.10	0.23	0.67
FAN Cross-flow [31 W flow out]	0.92		0.08		9	0%	0%	0.00	0.10	0.23	0.67
Medium (S) 3-ph 0.75-7.5 kW no VSD	0.79		0.21		0	0%	0%	0.00	0.10	0.23	0.67
Medium (M) 3-ph 7.5-75 kW no VSD	0.88		0.12		69	0%	0%	0.00	0.10	0.23	0.67
Medium (L) 3-ph 75-375 kW no VSD	0.96		0.04		381	0%	0%	0.00	0.10	0.23	0.67
Medium (S) 3-ph 0.75-7.5 kW with VSD	0.70		0.30		0	0%	0%	0.00	0.10	0.23	0.67
Medium (M) 3-ph 7.5-75 kW with VSD	0.73		0.27		89	0%	0%	0.00	0.10	0.23	0.67
Medium (L) 3-ph 75-375 kW with VSD	0.80		0.20		499	0%	0%	0.00	0.10	0.23	0.67
Small 1 ph 0.12-0.75 kW no VSD	0.80		0.20		0	0%	0%	0.00	0.10	0.23	0.67
Small 1 ph 0.12-0.75 kW with VSD	0.69		0.31		0	0%	0%	0.00	0.10	0.23	0.67
Small 3 ph 0.12-0.75 kW no VSD	0.78		0.22		0	0%	0%	0.00	0.10	0.23	0.67
Small 3 ph 0.12-0.75 kW with VSD	0.69		0.31		0	0%	0%	0.00	0.10	0.23	0.67
Large 3-ph LV 375-1000 kW no VSD	0.94		0.06		1269.98	0%	0%	0.00	0.10	0.23	0.67
Large 3-ph LV 375-1000kW with VSD	0.76		0.24		1388	0%	0%	0.00	0.10	0.23	0.67
Explosion motors (S) 3-ph 0.75-7.5 kW	0.79		0.21		0	0%	0%	0.00	0.10	0.23	0.67
Explosion motors (M) 3-ph 7.5-75 kW	0.88		0.12		69	0%	0%	0.00	0.10	0.23	0.67
Explosion motors (L) 3-ph 75-375 kW	0.96		0.04		381	0%	0%	0.00	0.10	0.23	0.67
Brake motors (S) 3-ph 0.75-7.5 kW	0.79		0.21		0	0%	0%	0.00	0.10	0.23	0.67
Brake motors (M) 3-ph 7.5-75 kW	0.88		0.12		69	0%	0%	0.00	0.10	0.23	0.67
Brake motors (L) 3-ph 75-375 kW	0.96		0.04		381	0%	0%	0.00	0.10	0.23	0.67
8-pole motors (S) 3-ph 0.75-7.5 kW	0.87		0.13		0	0%	0%	0.00	0.10	0.23	0.67
8-pole motors (M) 3-ph 7.5-75 kW	0.93		0.07		69	0%	0%	0.00	0.10	0.23	0.67
8-pole motors (L) 3-ph 75-375 kW	0.98		0.03		381	0%	0%	0.00	0.10	0.23	0.67
1-phase motors >0.75 kW (no VSD)	0.81		0.19		0	0%	0%	0.00	0.10	0.23	0.67
WP Water pumps (load) [%]	0.69		0.31		89	0%	0%	0.00	0.10	0.23	0.67
CP Fixed Speed 5-1280 l/s	0.96		0.04		1273	0%	0%	0.00	0.00	0.00	1.00
CP Variable speed 5-1280 l/s	0.96		0.04		1893	0%	0%	0.00	0.00	0.00	1.00
CP Pistons 2-64 l/s	0.94		0.06		229	0%	0%	0.00	0.00	0.00	1.00



PRICE2

UNIT PRICE SPLIT (in euro 2015)	unit	kit	install	ErP	maint €/a	share VAT20%	avg VAT tariff	split-up materials price by party			
								split up (price=100%)			
TRAF0 Distribution, kWh/a	1.00		0.00		0	0%	0%	0.00	0.10	0.10	0.80
TRAF0 Industry oil	1.00		0.00		0	0%	0%	0.00	0.10	0.10	0.80
TRAF0 Industry dry	1.00		0.00		0	0%	0%	0.00	0.10	0.10	0.80
TRAF0 Power	1.00		0.00		0	0%	0%	0.00	0.10	0.10	0.80
TRAF0 DER oil	1.00		0.00		0	0%	0%	0.00	0.10	0.10	0.80
TRAF0 DER dry	1.00		0.00		0	0%	0%	0.00	0.10	0.10	0.80
TRAF0 Small	1.00		0.00		0	0%	0%	0.00	0.10	0.10	0.80
Tyres C1, replacement for cars	1.00		0.00		0	80%	16%	0.14	0.32	0.11	0.43
Tyres C1, OEM for cars	1.00		0.00		0	80%	16%	0.14	0.32	0.11	0.43
Tyres C2, replacement for vans	1.00		0.00		0	0%	0%	0.00	0.38	0.13	0.50
Tyres C2, OEM for vans	1.00		0.00		0	0%	0%	0.00	0.38	0.13	0.50
Tyres C3, replacement for trucks/busses	1.00		0.00		0	0%	0%	0.00	0.38	0.13	0.50
Tyres C3, OEM for trucks/busses	1.00		0.00		0	0%	0%	0.00	0.38	0.13	0.50
<i>VSD price information for calculation of prices for motor+VSD</i>											
VSD - Very Small 0.12 - 0.75 kW 1-phase	0.67		0.33		0	0%	0%	0.00	0.10	0.23	0.67
VSD - Very Small 0.12 - 0.75 kW 3-phase	0.67		0.33		0	0%	0%	0.00	0.10	0.23	0.67
VSD - Small 0.75 - 7.5 kW 3-phase	0.67		0.33		0	0%	0%	0.00	0.10	0.23	0.67
VSD - Medium 7.5 - 75kW 3-phase	0.67		0.33		19	0%	0%	0.00	0.10	0.23	0.67
VSD - Large 75 - 375kW 3-phase	0.67		0.33		118	0%	0%	0.00	0.10	0.23	0.67
VSD - Very Large 375 - 1,000kW 3-phase	0.68		0.32		118	0%	0%	0.00	0.10	0.23	0.67

PRICEBAU

UNIT PRICE BAU (in euro 2015, incl VAT & Install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WH dedicated Water Heater	537	589	570	600	652	644	623	603	583	564
CH Central Heating combi, water heat [24 kW]	1073	1117	1125	1172	1135	1099	1073	1073	1073	1073
CH Central Heating boiler, space heat [24 kW]	4191	4191	4191	4191	4191	4191	4191	4191	4191	4191
SFB Wood Manual [18 kW]	4860	4860	5067	5264	5452	5631	5801	5963	6116	6262
SFB Wood Direct Draft [20 kW]	7019	7019	7178	7490	7832	8023	7721	7431	7152	7019
SFB Coal [25 kW]	5940	5940	5940	5940	5940	5940	5940	5940	5940	5940
SFB Pellets [25 kW]	8639	8639	8644	8641	8639	8639	8639	8639	8639	8639
SFB Wood chips [160 kW]	36177	36177	36269	36301	36177	36177	36177	36177	36177	36177
Cooling:										
CHAE-S (≤ 400 kW)	18685	18692	18685	18685	18685	18685	18685	18685	18685	18685
CHAE-L (> 400 kW)	45476	45495	45476	45476	45476	45476	45476	45476	45476	45476
CHWE-S (≤ 400 kW)	15097	15097	15097	15097	15097	15097	15097	15097	15097	15097
CHWE-M (> 400 kW; ≤ 1500 kW)	66552	66598	66552	66552	66552	66552	66552	66552	66552	66552
CHWE-L (> 1500 kW)	119156	119238	119156	119156	119156	119156	119156	119156	119156	119156
CHF	16305	16305	16305	16305	16305	16305	16305	16305	16305	16305
HT PCH-AE-S	20422	20422	20422	20422	20422	20422	20422	20422	20422	20422
HT PCH-AE-L	51689	51689	51689	51689	51689	51689	51689	51689	51689	51689
HT PCH-WE-S	17298	17298	17298	17298	17298	17298	17298	17298	17298	17298
HT PCH-WE-M	81307	81307	81307	81307	81307	81307	81307	81307	81307	81307
HT PCH-WE-L	173373	173373	173373	173373	173373	173373	173373	173373	173373	173373
AC rooftop	20736	20736	20736	20736	20736	20736	20736	20736	20736	20736
AC splits	3547	3547	3547	3547	3547	3547	3547	3547	3547	3547
AC VRF	33230	33230	33230	33230	33230	33230	33230	33230	33230	33230
ACF	16305	16305	16305	16305	16305	16305	16305	16305	16305	16305
Heating:										
AC rooftop (rev)	20543	20543	20543	20543	20543	20543	20543	20543	20543	20543
AC splits (rev)	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294
AC VRF (rev)	32230	32230	32230	32230	32230	32230	32230	32230	32230	32230
ACF (rev)	18093	18093	18093	18093	18093	18093	18093	18093	18093	18093
AHF	5590	5590	5590	5590	5590	5590	5590	5590	5590	5590
AHE	540	540	540	540	540	540	540	540	540	540
LH open fireplace [8 kW]	2862	2862	2862	2862	2862	2862	2862	2862	2862	2862
LH closed fireplace/inset [8 kW]	2934	2934	2934	2934	2934	2934	2934	2934	2934	2934
LH wood stove [8 kW]	2719	2719	2719	2719	2719	2719	2719	2719	2719	2719
LH coal stove [8 kW]	1992	1992	1992	1992	1992	1992	1992	1992	1992	1992
LH cooker [10 kW]	3075	3075	3075	3075	3075	3075	3075	3075	3075	3075
LH SHR stove [8 kW]	8591	8591	8591	8591	8591	8591	8591	8591	8591	8591
LH pellet stove [8 kW]	3638	3638	3638	3638	3638	3638	3638	3638	3638	3638
LH open fire gas, NCV [4.2 kW]	925	925	925	925	925	925	925	925	925	925
LH closed fire gas, NCV [4.2 kW]	887	887	887	887	887	887	887	887	887	887
LH flueless fuel heater, NCV [1.5 kW]	294	294	294	294	294	294	294	294	294	294
LH elec.portable [1 kW]	29	29	29	29	29	29	29	29	29	29
LH elec.convector [1 kW]	167	167	167	167	167	167	167	167	167	167
LH elec.storage [2.75 kW]	618	618	618	618	618	618	618	618	618	618
LH elec.underfloor [0.62 kW]	412	412	412	412	412	412	412	412	412	412
LH luminous heaters [20 kW]	1396	1396	1396	1396	1396	1396	1396	1396	1396	1396
LH tube heaters [30 kW]	1387	1387	1387	1387	1387	1387	1387	1387	1387	1387
RAC cooling [nom. avg. 3.8 kW]	1808	1890	1905	1898	1873	1833	1808	1808	1808	1808
RAC heating (reversible)	1808	1892	1907	1902	1879	1839	1808	1808	1808	1808
CIRC Circulator pumps <2.5 kW (efficiency, incl. ctrl)	228	229	228	228	228	228	228	228	228	228
NRVU avg (sales wt.)	139915	140881	139915	139915	139915	139915	139915	139915	139915	139915
RVU Central Unidir. VU (1 fan)	1561	1561	1514	1468	1424	1381	1365	1365	1365	1365
RVU Central Balanced VU (2 fans)	4697	4697	4617	4617	4617	4617	4617	4617	4617	4617
RVU Local Balanced VU (2 fans)	1315	1315	1315	1315	1315	1315	1315	1315	1315	1315
<i>LS, prices for light source and control gear, excl. additional luminaire costs</i>										
LFL (T12,T8h,T8t,T5,other)	14	14	14	14	14	14	14	14	14	14
HID (HPM, HPS, MH)	32	35	36	36	36	36	36	36	36	36
CFLni (all shapes)	9	9	9	9	9	9	8	7	7	6
CFLi (retrofit for GLS, HL)	6	6	6	6	6	6	6	6	6	6
GLS (DLS & NDLS)	1	1	1	1	1	1	1	1	1	1
HL (DLS & NDLS, LV & MV)	4	4	4	4	4	4	4	4	4	4
LED replacing LFL (retrofit & luminaire)	177	106	59	34	27	27	27	27	28	28
LED replacing HID (retrofit & luminaire)	583	404	251	137	110	111	112	113	113	113
LED replacing CFLni (retrofit & luminaire)		28	16	11	10	9	10	10	10	10
LED replacing DLS (retrofit & luminaire)		22	21	7	5	4	4	4	4	4
LED replacing NDLS (retrofit & luminaire)		37	25	8	5	4	4	4	4	4
DP TV all types	800	450	450	450	450	450	450	450	450	450
DP Monitor	200	170	170	170	170	170	170	170	170	170
DP Signage	1600	900	900	900	900	900	900	900	900	900
SSTB	54	54	54	54	54	54	54	54	54	54
CSTB	162	162	162	162	162	162	162	162	162	162
VIDEO players/recorders	108	108	108	108	108	108	108	108	108	108
VIDEO projectors	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404
VIDEO game consoles	389	389	389	389	389	389	389	389	389	389

PRICEBAU

UNIT PRICE BAU (in euro 2015, incl VAT & Install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
ES tower 1-socket traditional	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
ES rack 1-socket traditional	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
ES rack 2-socket traditional	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
ES rack 2-socket cloud	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
ES rack 4-socket traditional	28000	28000	28000	28000	28000	28000	28000	28000	28000	28000
ES rack 4-socket cloud	33000	33000	33000	33000	33000	33000	33000	33000	33000	33000
ES rack 2-socket resilient trad.	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
ES rack 2-socket resilient cloud	36000	36000	36000	36000	36000	36000	36000	36000	36000	36000
ES rack 4-socket resilient trad.	37000	37000	37000	37000	37000	37000	37000	37000	37000	37000
ES rack 4-socket resilient cloud	38000	38000	38000	38000	38000	38000	38000	38000	38000	38000
ES blade 1-socket traditional	350	350	350	350	350	350	350	350	350	350
ES blade 2-socket traditional	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
ES blade 2-socket cloud	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
ES blade 4-socket traditional	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
ES blade 4-socket cloud	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
DS Online 2	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
DS Online 3	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000
DS Online 4	160000	160000	160000	160000	160000	160000	160000	160000	160000	160000
PC Desktop	540	540	540	540	540	540	540	540	540	540
PC Notebook	756	756	756	756	756	756	756	756	756	756
PC Tablet/slate	486	486	486	486	486	486	486	486	486	486
PC Thin client	432	432	432	432	432	432	432	432	432	432
PC Workstation	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700
EP-Copier mono	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620
EP-Copier colour	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700
EP-printer mono	216	216	216	216	216	216	216	216	216	216
EP-printer colour	540	540	540	540	540	540	540	540	540	540
IJ SFD printer	108	108	108	108	108	108	108	108	108	108
IJ MFD printer	162	162	162	162	162	162	162	162	162	162
SB Home Gateway	216	216	216	216	216	216	216	216	216	216
SB Home NAS	216	216	216	216	216	216	216	216	216	216
SB Home Phones (fixed)	108	108	108	108	108	108	108	108	108	108
SB Office Phones (fixed)	108	108	108	108	108	108	108	108	108	108
EPS ≤ 6W, low-V	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
EPS 6-10 W	7.95	7.95	7.95	7.95	7.95	7.95	7.95	7.95	7.95	7.95
EPS 10-12 W	11.87	11.87	11.87	11.87	11.87	11.87	11.87	11.87	11.87	11.87
EPS 15-20 W	8.31	8.31	8.31	8.31	8.31	8.31	8.31	8.31	8.31	8.31
EPS 20-30 W	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94	13.94
EPS 30-65 W, multiple-V	18.52	18.52	18.52	18.52	18.52	18.52	18.52	18.52	18.52	18.52
EPS 30-65 W	26.51	26.51	26.51	26.51	26.51	26.51	26.51	26.51	26.51	26.51
EPS 65-120 W	29.33	29.33	29.33	29.33	29.33	29.33	29.33	29.33	29.33	29.33
EPS 65-120 W, multiple-V	39.65	39.65	39.65	39.65	39.65	39.65	39.65	39.65	39.65	39.65
EPS 12-15 W	13.72	13.72	13.72	13.72	13.72	13.72	13.72	13.72	13.72	13.72
UPS below 1.5 kVA	194	194	194	194	194	194	194	194	194	194
UPS 1.5 to 5 kVA	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027
UPS 5 to 10 kVA	4325	4325	4325	4325	4325	4325	4325	4325	4325	4325
UPS 10 to 200 kVA	32419	32419	32419	32419	32419	32419	32419	32419	32419	32419
RF Household refrigerator and freezer	455	455	455	455	455	455	455	455	455	455
CF open vertical chilled multi deck (RCV2)	4158	4158	4158	4158	4158	4158	4158	4158	4158	4158
CF open horizontal frozen island (RHF4)	4752	4752	4752	4752	4752	4752	4752	4752	4752	4752
CF other supermarket display (non-BCs)	2573	2573	2573	2573	2573	2573	2573	2573	2573	2573
CF Plug in one door beverage cooler	896	896	896	896	896	896	896	896	896	896
CF Plug in horizontal ice cream freezer	864	864	864	864	864	864	864	864	864	864
CF Spiral vending machine	3780	3780	3780	3780	3780	3780	3780	3780	3780	3780
PF Storage cabinet Chilled Vertical (CV)	1577	1577	1577	1577	1577	1577	1577	1577	1577	1577
PF Storage cabinet Frozen Vertical (FV)	1862	1862	1862	1862	1862	1862	1862	1862	1862	1862
PF Storage cabinet Chilled Horizontal (CH)	756	756	756	756	756	756	756	756	756	756
PF Storage cabinet Frozen Horizontal (FH)	1296	1296	1296	1296	1296	1296	1296	1296	1296	1296
<b>PF Storage cabinets All types</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>
PF Process Chiller AC MT S ≤ 300 kW	30238	30238	30238	30238	30238	30238	30238	30238	30238	30238
PF Process Chiller AC MT L > 300 kW	97192	97192	97192	97192	97192	97192	97192	97192	97192	97192
PF Process Chiller AC LT S ≤ 200 kW	33477	33477	33477	33477	33477	33477	33477	33477	33477	33477
PF Process Chiller AC LT L > 200 kW	101512	101512	101512	101512	101512	101512	101512	101512	101512	101512
PF Process Chiller WC MT S ≤ 300 kW	45356	45356	45356	45356	45356	45356	45356	45356	45356	45356
PF Process Chiller WC MT L > 300 kW	145788	145788	145788	145788	145788	145788	145788	145788	145788	145788
PF Process Chiller WC LT S ≤ 200 kW	50216	50216	50216	50216	50216	50216	50216	50216	50216	50216
PF Process Chiller WC LT L > 200 kW	152268	152268	152268	152268	152268	152268	152268	152268	152268	152268
<b>PF Process Chiller All MT&amp;LT</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>
PF Condensing Unit MT S 0.2-1 kW	540	540	540	540	540	540	540	540	540	540
PF Condensing Unit MT M 1-5 kW	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
PF Condensing Unit MT L 5-20 kW	3996	3996	3996	3996	3996	3996	3996	3996	3996	3996
PF Condensing Unit MT XL 20-50 kW	9179	9179	9179	9179	9179	9179	9179	9179	9179	9179
PF Condensing Unit LT S 0.1-0.4 kW	648	648	648	648	648	648	648	648	648	648
PF Condensing Unit LT M 0.4-2 kW	864	864	864	864	864	864	864	864	864	864
PF Condensing Unit LT L 2-8 kW	4644	4644	4644	4644	4644	4644	4644	4644	4644	4644
PF Condensing Unit LT XL 8-20 kW	8099	8099	8099	8099	8099	8099	8099	8099	8099	8099
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>
COOK El. Hobs, Wh/Itr	380	546	538	537	535	532	527	522	516	510
COOK El. Ovens, kWh/a	564	616	622	594	567	564	564	564	564	564
COOK Gas Hobs, % efficiency NCV	300	308	295	283	275	275	275	275	275	275
COOK Gas Ovens, kWh prim, NCV	286	371	375	367	360	354	347	340	334	326
COOK Range Hoods, kWh elec	229	229	229	229	229	229	229	229	229	229

PRICEBAU

UNIT PRICE BAU (in euro 2015, incl VAT & Install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
COFFEE Dripfilter (glass)	22	22	22	22	22	22	22	22	22	22
COFFEE Dripfilter (thermos)	32	32	32	32	32	32	32	32	32	32
COFFEE Dripfilter (full automatic)	108	108	108	108	108	108	108	108	108	108
COFFEE Pad filter	87	87	87	87	87	87	87	87	87	87
COFFEE Hard cap espresso	168	168	168	168	168	168	168	168	168	168
COFFEE Semi-auto espresso	111	111	111	111	111	111	111	111	111	111
COFFEE Fully-auto espresso	643	643	643	643	643	643	643	643	643	643
WM Household Washing Machine	484	484	484	484	484	484	484	484	484	484
DW Household Dishwasher	584	584	584	584	584	584	584	584	584	584
LD Household Laundry Drier vented el.	460	432	432	432	432	432	432	432	432	432
LD Household Laundry Drier condens el.	605	598	598	598	598	598	598	598	598	598
LD Household Laundry Drier vented gas	810	810	810	810	810	810	810	810	810	810
VC dom. Vacuum Cleaner	255	238	238	238	238	238	238	238	238	238
VC nondom Vacuum Cleaner	730	648	648	648	648	648	648	648	648	648
FAN Axial<300Pa [247 W flow out]	270	270	270	270	270	270	270	270	270	270
FAN Axial>300Pa [489 W fluid-dyn out]	351	351	351	351	351	351	351	351	351	351
FAN Centr.FC [141 W flow out]	432	432	432	432	432	432	432	432	432	432
FAN Centr.BC-free [2120 W flow out]	832	832	832	832	832	832	832	832	832	832
FAN Centr.BC [2052 W flow out]	1782	1782	1782	1782	1782	1782	1782	1782	1782	1782
FAN Cross-flow [31 W flow out]	351	351	351	351	351	351	351	351	351	351
Medium (S) 3-ph 0.75-7.5 kW no VSD	130	153	148	145	141	138	134	130	130	130
Medium (M) 3-ph 7.5-75 kW no VSD	514	608	593	581	569	556	543	531	518	514
Medium (L) 3-ph 75-375 kW no VSD	4725	5587	5451	5339	5225	5110	4993	4876	4759	4725
Medium (S) 3-ph 0.75-7.5 kW with VSD	538	620	604	583	562	546	542	539	538	538
Medium (M) 3-ph 7.5-75 kW with VSD	2161	2495	2430	2347	2267	2203	2191	2178	2165	2161
Medium (L) 3-ph 75-375 kW with VSD	12481	14470	14099	13654	13220	12866	12749	12632	12515	12481
Small 1 ph 0.12-0.75 kW no VSD	36	50	51	51	51	50	49	49	48	48
Small 1 ph 0.12-0.75 kW with VSD	328	363	354	343	342	342	341	340	340	339
Small 3 ph 0.12-0.75 kW no VSD	73	92	92	91	89	87	86	84	82	81
Small 3 ph 0.12-0.75 kW with VSD	365	405	395	383	381	379	377	376	374	372
Large 3-ph LV 375-1000 kW no VSD	20032	24626	24947	25183	25302	25314	24556	23813	23084	22371
Large 3-ph LV 375-1000kW with VSD	80087	88258	86341	85239	85357	85370	84611	83868	83139	82426
Explosion motors (S) 3-ph 0.75-7.5 kW	194	229	223	217	212	206	201	196	194	194
Explosion motors (M) 3-ph 7.5-75 kW	771	912	889	871	853	834	815	796	777	771
Explosion motors (L) 3-ph 75-375 kW	7087	8380	8176	8008	7838	7665	7490	7314	7138	7087
Brake motors (S) 3-ph 0.75-7.5 kW	194	229	223	217	212	206	201	196	194	194
Brake motors (M) 3-ph 7.5-75 kW	771	912	889	871	853	834	815	796	777	771
Brake motors (L) 3-ph 75-375 kW	7087	8380	8176	8008	7838	7665	7490	7314	7138	7087
8-pole motors (S) 3-ph 0.75-7.5 kW	207	244	238	232	226	220	214	209	207	207
8-pole motors (M) 3-ph 7.5-75 kW	822	973	949	929	910	890	870	849	829	822
8-pole motors (L) 3-ph 75-375 kW	7559	8939	8721	8542	8360	8176	7989	7802	7614	7559
1-phase motors >0.75 kW (no VSD)	143	168	163	159	155	151	147	143	143	143
WP Water pumps (load) [%]	1545	1545	1545	1545	1545	1545	1545	1545	1545	1545
CP Fixed Speed 5-1280 l/s	8365	8365	8483	8648	8774	8874	8969	9063	9158	9254
CP Variable speed 5-1280 l/s	18636	18781	18636	18828	19067	19233	19389	19546	19703	19861
CP Pistons 2-64 l/s	1788	1863	1989	2090	2172	2238	2302	2366	2430	2494
TRAF0 Distribution, kWh/a	8345	8345	8345	8345	8345	8345	8345	8345	8345	8345
TRAF0 Industry oil	14395	14395	14395	14395	14395	14395	14395	14395	14395	14395
TRAF0 Industry dry	36070	36070	36070	36070	36070	36070	36070	36070	36070	36070
TRAF0 Power	980066	980066	980066	980066	980066	980066	980066	980066	980066	980066
TRAF0 DER oil	24042	24042	24042	24042	24042	24042	24042	24042	24042	24042
TRAF0 DER dry	37141	37141	37141	37141	37141	37141	37141	37141	37141	37141
TRAF0 Small	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519
Tyres C1, replacement for cars	66	73	83	85	87	89	89	89	89	89
Tyres C1, OEM for cars	66	73	83	85	87	89	89	89	89	89
Tyres C2, replacement for vans	89	93	96	97	98	99	99	99	99	99
Tyres C2, OEM for vans	89	93	96	97	98	99	99	99	99	99
Tyres C3, replacement for trucks/busses	304	304	328	374	387	399	399	399	399	399
Tyres C3, OEM for trucks/busses	304	304	328	374	387	399	399	399	399	399
<i>LS, BAU, Basic LED price curves from MELISA in euros/klm (see LoadNotes for corresponding efficiency curves)</i>										
replacing LFL, HID, CFLni in non-res. (High-End)		56.0	30.0	17.5	9.2	7.1	7.0	7.0	7.0	7.0
other NDLS LED light sources (Low-End)		56.0	30.0	9.4	5.6	4.2	4.0	4.0	4.0	4.0
other DLS LED light sources (Low-End)		70.0	37.5	11.8	7.0	5.3	5.0	5.0	5.0	5.0
<i>VSD price information for calculation of prices for motor+VSD</i>										
VSD - Very Small 0.12 - 0.75 kW 1-phase	292	313	303	292	292	292	292	292	292	292
VSD - Very Small 0.12 - 0.75 kW 3-phase	292	313	303	292	292	292	292	292	292	292
VSD - Small 0.75 - 7.5 kW 3-phase	408	468	455	438	421	408	408	408	408	408
VSD - Medium 7.5 - 75kW 3-phase	1647	1887	1837	1766	1698	1647	1647	1647	1647	1647
VSD - Large 75 - 375kW 3-phase	7756	8883	8648	8316	7995	7756	7756	7756	7756	7756
VSD - Very Large 375 - 1,000kW 3-phase	60055	63632	61394	60055	60055	60055	60055	60055	60055	60055

PRICECO

UNIT PRICE ECO (in euro 2015, incl VAT & Install	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WH dedicated Water Heater	537	589	925	1042	1174	1136	1099	1063	1028	994
CH Central Heating combi, water heat [24 kW]	1073	1117	1595	2123	2176	2224	2266	2304	2337	2365
CH Central Heating boiler, space heat [24 kW]	4191	4348	7161	8637	9869	10344	10905	11464	12021	12576
SFB Wood Manual [18 kW]	4860	4860	6806	9378	9437	9128	8830	8541	8262	7992
SFB Wood Direct Draft [20 kW]	7019	7019	7199	7597	9299	8950	8613	8290	7978	7678
SFB Coal [25 kW]	5940	5940	5940	5940	5940	5940	5940	5940	5940	5940
SFB Pellets [25 kW]	8639	8639	8644	8641	8994	8664	8639	8639	8639	8639
SFB Wood chips [160 kW]	36177	36177	37917	38607	36923	36177	36177	36177	36177	36177
Cooling:										
CHAE-S (≤ 400 kW)	18685	18692	18685	18685	18685	18685	18685	18685	18685	18685
CHAE-L (> 400 kW)	45476	45495	45476	45476	45476	45476	45476	45476	45476	45476
CHWE-S (≤ 400 kW)	15097	15097	15097	15097	15097	15097	15097	15097	15097	15097
CHWE-M (> 400 kW; ≤ 1500 kW)	66552	66598	66552	66552	66552	66552	66552	66552	66552	66552
CHWE-L (> 1500 kW)	119156	119238	119156	119156	119156	119156	119156	119156	119156	119156
CHF	16305	16305	16515	18856	18313	17590	16826	16305	16305	16305
HT PCH-AE-S	20422	20422	20422	20422	20422	20422	20422	20422	20422	20422
HT PCH-AE-L	51689	51689	51689	51689	51689	51689	51689	51689	51689	51689
HT PCH-WE-S	17298	17298	17298	17298	17298	17298	17298	17298	17298	17298
HT PCH-WE-M	81307	81307	81307	81307	81307	81307	81307	81307	81307	81307
HT PCH-WE-L	173373	173373	173373	173373	173373	173373	173373	173373	173373	173373
AC rooftop	20736	20736	20736	20736	20736	20736	20736	20736	20736	20736
AC splits	3547	3547	3547	3547	3547	3547	3547	3547	3547	3547
AC VRF	33230	33230	33230	33230	33230	33230	33230	33230	33230	33230
ACF	16305	16305	16515	18856	18468	17922	17142	16398	16305	16305
Heating:										
AC rooftop (rev)	20543	20543	20543	20543	20543	20543	20543	20543	20543	20543
AC splits (rev)	3294	3294	3294	3294	3294	3294	3294	3294	3294	3294
AC VRF (rev)	32230	32230	32230	32230	32230	32230	32230	32230	32230	32230
ACF (rev)	18093	18093	18093	18093	18093	18093	18093	18093	18093	18093
AHF	5590	5590	5590	6127	6174	6067	5801	5590	5590	5590
AHE	540	540	540	540	540	540	540	540	540	540
LH open fireplace [8 kW]	2862	2862	2862	3529	3892	3752	3617	3487	3361	3240
LH closed fireplace/inset [8 kW]	2934	2934	2934	3487	3695	3561	3431	3307	3187	3071
LH wood stove [8 kW]	2719	2719	2719	3267	3471	3335	3205	3079	2959	2843
LH coal stove [8 kW]	1992	1992	1992	2361	2500	2411	2325	2242	2162	2085
LH cooker [10 kW]	3075	3075	3075	3377	3498	3357	3222	3092	3075	3075
LH SHR stove [8 kW]	8591	8591	8591	8640	8611	8591	8591	8591	8591	8591
LH pellet stove [8 kW]	3638	3638	3638	3640	3638	3638	3638	3638	3638	3638
LH open fire gas, NCV [4.2 kW]	925	925	925	968	990	955	925	925	925	925
LH closed fire gas, NCV [4.2 kW]	887	887	887	929	943	911	887	887	887	887
LH flueless fuel heater, NCV [1.5 kW]	294	294	294	294	294	294	294	294	294	294
LH elec.portable [1 kW]	29	29	29	29	29	29	29	29	29	29
LH elec.convactor [1 kW]	167	167	167	167	167	167	167	167	167	167
LH elec.storage [2.75 kW]	618	618	695	776	743	712	682	654	626	618
LH elec.underfloor [0.62 kW]	412	412	421	430	418	412	412	412	412	412
LH luminous heaters [20 kW]	1396	1396	1435	1737	1668	1603	1540	1479	1421	1396
LH tube heaters [30 kW]	1387	1387	1406	1608	1545	1484	1426	1387	1387	1387
RAC cooling [nom. avg. 3.8 kW]	1808	1890	2061	2102	2102	2064	2012	1962	1913	1865
RAC heating (reversible)	1808	1892	2059	2104	2098	2061	2010	1959	1910	1862
CIRC Circulator pumps <2.5 kW (efficiency, incl. ctrl)	228	248	297	284	271	258	245	234	228	228
NRVU avg (sales wt.)	139915	140881	140420	139915	139915	139915	139915	139915	139915	139915
RVU Central Unidir. VU (1 fan)	1561	1561	2634	2554	2476	2401	2329	2258	2190	2123
RVU Central Balanced VU (2 fans)	4697	4697	5699	5517	5340	5169	5003	4842	4687	4617
RVU Local Balanced VU (2 fans)	1315	1315	1315	1315	1315	1315	1315	1315	1315	1315
<i>LS, prices for light source and control gear, excl. additional luminaire costs</i>										
LFL (T12,T8h,T8t,T5,other)	14	14	14	14	14	14	14	13	13	14
HID (HPM, HPS, MH)	32	35	36	36	36	36	36	36	36	36
CFLni (all shapes)	9	9	9	9	9	8	7	6	6	5
CFLi (retrofit for GLS, HL)	6	6	6	6	6	6	6	6	6	6
GLS (DLS & NDLS)	1	1	1	1	1	1	1	1	1	1
HL (DLS & NDLS, LV & MV)	4	4	4	4	3	3	3	3	3	3
LED replacing LFL (retrofit & luminaire)		152	86	48	35	31	30	31	31	31
LED replacing HID (retrofit & luminaire)		501	288	186	138	126	128	129	129	129
LED replacing CFLni (retrofit & luminaire)			22	13	11	10	11	11	11	11
LED replacing DLS (retrofit & luminaire)		31	13	6	7	6	6	6	6	6
LED replacing NDLS (retrofit & luminaire)		39	15	6	6	5	6	6	6	6
DP TV all types	800	450	450	450	450	450	450	450	450	450
DP Monitor	200	170	170	170	170	170	170	170	170	170
DP Signage	1600	900	900	900	900	900	900	900	900	900
SSTB	54	54	54	54	54	54	54	54	54	54
CSTB	162	162	167	162	162	162	162	162	162	162
VIDEO players/recorders	108	108	108	108	108	108	108	108	108	108
VIDEO projectors	1404	1404	1404	1404	1404	1404	1404	1404	1404	1404
VIDEO game consoles	389	389	389	389	389	389	389	389	389	389

PRICECO

UNIT PRICE ECO (in euro 2015, incl VAT & Install	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
ES tower 1-socket traditional	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
ES rack 1-socket traditional	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
ES rack 2-socket traditional	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
ES rack 2-socket cloud	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
ES rack 4-socket traditional	28000	28000	28000	28000	28000	28000	28000	28000	28000	28000
ES rack 4-socket cloud	33000	33000	33000	33000	33000	33000	33000	33000	33000	33000
ES rack 2-socket resilient trad.	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000
ES rack 2-socket resilient cloud	36000	36000	36000	36000	36000	36000	36000	36000	36000	36000
ES rack 4-socket resilient trad.	37000	37000	37000	37000	37000	37000	37000	37000	37000	37000
ES rack 4-socket resilient cloud	38000	38000	38000	38000	38000	38000	38000	38000	38000	38000
ES blade 1-socket traditional	350	350	350	350	350	350	350	350	350	350
ES blade 2-socket traditional	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
ES blade 2-socket cloud	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
ES blade 4-socket traditional	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
ES blade 4-socket cloud	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
DS Online 2	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
DS Online 3	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000
DS Online 4	160000	160000	160000	160000	160000	160000	160000	160000	160000	160000
PC Desktop	540	540	540	540	540	540	540	540	540	540
PC Notebook	756	756	756	756	756	756	756	756	756	756
PC Tablet/slate	486	486	486	486	486	486	486	486	486	486
PC Thin client	432	432	432	432	432	432	432	432	432	432
PC Workstation	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700
EP-Copier mono	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620
EP-Copier colour	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700
EP-printer mono	216	216	216	216	216	216	216	216	216	216
EP-printer colour	540	540	540	540	540	540	540	540	540	540
IJ SFD printer	108	108	108	108	108	108	108	108	108	108
IJ MFD printer	162	162	162	162	162	162	162	162	162	162
paper (2.5 euro/kg paper (6.25 euro/pack)										
SB Home Gateway, on-mode power	216	216	216	216	216	216	216	216	216	216
SB Home NAS, on-mode power	216	216	216	216	216	216	216	216	216	216
SB Home Phones (fixed), on-mode power	108	108	108	108	108	108	108	108	108	108
SB Office Phones (fixed), on-mode power	108	108	108	108	108	108	108	108	108	108
EPS ≤ 6W, low-V	3.85	3.95	4.47	4.97	4.90	4.82	4.70	4.59	4.48	4.37
EPS 6–10 W	7.95	7.98	7.97	7.95	7.95	7.95	7.95	7.95	7.95	7.95
EPS 10–12 W	11.87	11.91	11.89	11.90	11.87	11.87	11.87	11.87	11.87	11.87
EPS 15–20 W	8.31	8.38	8.56	9.02	8.81	8.63	8.42	8.31	8.31	8.31
EPS 20–30 W	13.94	14.16	15.09	15.47	15.10	14.74	14.37	14.02	13.94	13.94
EPS 30–65 W, multiple-V	18.52	18.52	18.52	18.52	18.52	18.52	18.52	18.52	18.52	18.52
EPS 30-65 W	26.51	26.73	27.39	27.30	26.65	26.51	26.51	26.51	26.51	26.51
EPS 65–120 W	29.33	29.48	29.60	30.02	29.33	29.33	29.33	29.33	29.33	29.33
EPS 65–120 W, multiple-V	39.65	39.65	39.65	39.65	39.65	39.65	39.65	39.65	39.65	39.65
EPS 12–15 W	13.72	13.74	13.72	13.72	13.72	13.72	13.72	13.72	13.72	13.72
UPS below 1.5 kVA	194	194	194	194	194	194	194	194	194	194
UPS 1.5 to 5 kVA	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027
UPS 5 to 10 kVA	4325	4325	4325	4325	4325	4325	4325	4325	4325	4325
UPS 10 to 200 kVA	32419	32419	32419	32419	32419	32419	32419	32419	32419	32419
RF Household refrigerator and freezer	455	522	556	571	642	608	656	666	674	680
CF open vertical chilled multi deck (RCV2)	4158	4158	4373	5545	5494	5227	4973	4732	4502	4284
CF open horizontal frozen island (RHF4)	4752	4752	4752	4902	4752	4752	4752	4752	4752	4752
CF other supermarket display (non-BCs)	2573	2573	2590	2751	2643	2573	2573	2573	2573	2573
CF Plug in one door beverage cooler	896	896	896	982	967	920	896	896	896	896
CF Plug in horizontal ice cream freezer	864	864	864	864	864	864	864	864	864	864
CF Spiral vending machine	3780	3780	3803	3828	3780	3780	3780	3780	3780	3780
PF Storage cabinet Chilled Vertical (CV)	1577	1577	1577	1713	1630	1577	1577	1577	1577	1577
PF Storage cabinet Frozen Vertical (FV)	1862	1862	1862	2023	1924	1862	1862	1862	1862	1862
PF Storage cabinet Chilled Horizontal (CH)	756	756	756	821	781	756	756	756	756	756
PF Storage cabinet Frozen Horizontal (FH)	1296	1296	1296	1408	1339	1296	1296	1296	1296	1296
<b>PF Storage cabinets All types</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1566</b>	<b>1490</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>	<b>1441</b>
PF Process Chiller AC MT S ≤ 300 kW	30238	30238	30238	31480	30238	30238	30238	30238	30238	30238
PF Process Chiller AC MT L > 300 kW	97192	97192	97192	97192	97192	97192	97192	97192	97192	97192
PF Process Chiller AC LT S ≤ 200 kW	33477	33477	33477	34853	33477	33477	33477	33477	33477	33477
PF Process Chiller AC LT L > 200 kW	101512	101512	101512	101512	101512	101512	101512	101512	101512	101512
PF Process Chiller WC MT S ≤ 300 kW	45356	45356	45356	47220	45356	45356	45356	45356	45356	45356
PF Process Chiller WC MT L > 300 kW	145788	145788	145788	145788	145788	145788	145788	145788	145788	145788
PF Process Chiller WC LT S ≤ 200 kW	50216	50216	50216	52279	50216	50216	50216	50216	50216	50216
PF Process Chiller WC LT L > 200 kW	152268	152268	152268	152268	152268	152268	152268	152268	152268	152268
<b>PF Process Chiller All MT&amp;LT</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>56437</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>	<b>55472</b>
PF Condensing Unit MT S 0.2-1 kW	540	540	540	562	540	540	540	540	540	540
PF Condensing Unit MT M 1-5 kW	1944	1944	1944	2006	1944	1944	1944	1944	1944	1944
PF Condensing Unit MT L 5-20 kW	3996	3996	3996	4268	4061	3996	3996	3996	3996	3996
PF Condensing Unit MT XL 20-50 kW	9179	9179	9179	9806	9330	9179	9179	9179	9179	9179
PF Condensing Unit LT S 0.1-0.4 kW	648	648	648	675	648	648	648	648	648	648
PF Condensing Unit LT M 0.4-2 kW	864	864	864	892	864	864	864	864	864	864
PF Condensing Unit LT L 2-8 kW	4644	4644	4644	4961	4720	4644	4644	4644	4644	4644
PF Condensing Unit LT XL 8-20 kW	8099	8099	8099	8652	8232	8099	8099	8099	8099	8099
<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>2094</b>	<b>1996</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>	<b>1982</b>
COOK El. Hobs, Wh/ltr	380	546	538	560	556	552	547	541	534	526
COOK El. Ovens, kWh/a	564	616	630	624	595	568	564	564	564	564
COOK Gas Hobs, % efficiency NCV	300	308	295	299	286	275	275	275	275	275
COOK Gas Ovens, kWh prim, NCV	286	371	397	506	493	481	468	455	443	430
COOK Range Hoods, kWh elec	229	229	229	285	316	303	291	279	267	257

PRICEECO

UNIT PRICE ECO (in euro 2015, incl VAT & Install	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
COFFEE Dripfilter (glass)	22	22	24	24	23	22	22	22	22	22
COFFEE Dripfilter (thermos)	32	32	32	32	32	32	32	32	32	32
COFFEE Dripfilter (full automatic)	108	108	108	108	108	108	108	108	108	108
COFFEE Pad filter	87	87	87	87	87	87	87	87	87	87
COFFEE Hard cap espresso	168	168	168	168	168	168	168	168	168	168
COFFEE Semi-auto espresso	111	111	111	111	111	111	111	111	111	111
COFFEE Fully-auto espresso	643	643	643	643	643	643	643	643	643	643
WM Household Washing Machine	484	584	603	619	610	580	552	525	500	484
DW Household Dishwasher	584	776	776	760	740	721	701	682	663	644
LD Household Laundry Drier vented el.	460	432	432	432	432	432	432	432	432	432
LD Household Laundry Drier condens el.	605	598	650	689	687	668	647	626	605	598
LD Household Laundry Drier vented gas	810	810	810	810	810	810	810	810	810	810
VC dom. Vacuum Cleaner	255	238	245	244	238	238	238	238	238	238
VC nondom Vacuum Cleaner	730	648	663	666	648	648	648	648	648	648
FAN Axial<300Pa [247 W flow out]	270	270	336	375	358	343	328	313	300	286
FAN Axial>300Pa [489 W fluid-dyn out]	351	351	351	365	351	351	351	351	351	351
FAN Centr.FC [141 W flow out]	432	432	557	680	649	619	591	564	538	514
FAN Centr.BC-free [2120 W flow out]	832	832	1016	1017	972	929	888	849	832	832
FAN Centr.BC [2052 W flow out]	1782	1782	2489	2534	2422	2315	2213	2115	2021	1932
FAN Cross-flow [31 W flow out]	351	351	1007	1189	1136	1085	1036	990	945	903
Medium (S) 3-ph 0.75-7.5 kW no VSD	130	155	170	193	196	189	181	174	167	161
Medium (M) 3-ph 7.5-75 kW no VSD	514	616	689	730	725	697	668	639	612	586
Medium (L) 3-ph 75-375 kW no VSD	4725	5666	6338	6568	6459	6187	5913	5651	5401	5161
Medium (S) 3-ph 0.75-7.5 kW with VSD	538	622	626	633	630	605	590	583	576	569
Medium (M) 3-ph 7.5-75 kW with VSD	2161	2503	2526	2505	2480	2377	2315	2287	2260	2234
Medium (L) 3-ph 75-375 kW with VSD	12481	14549	14986	14925	14718	14095	13669	13407	13157	12917
Small 1 ph 0.12-0.75 kW no VSD	36	50	51	53	65	63	61	59	57	55
Small 1 ph 0.12-0.75 kW with VSD	328	363	354	352	374	358	353	351	349	347
Small 3 ph 0.12-0.75 kW no VSD	73	92	92	94	109	105	101	98	94	91
Small 3 ph 0.12-0.75 kW with VSD	365	405	395	393	418	400	393	389	386	382
Large 3-ph LV 375-1000 kW no VSD	20032	24626	24947	26822	28648	27457	26313	25216	24164	23154
Large 3-ph LV 375-1000kW with VSD	80087	88258	86341	86877	88703	87512	86368	85271	84219	83209
Explosion motors (S) 3-ph 0.75-7.5 kW	194	229	223	223	289	282	271	260	250	240
Explosion motors (M) 3-ph 7.5-75 kW	771	912	889	907	1077	1041	999	957	916	877
Explosion motors (L) 3-ph 75-375 kW	7087	8380	8176	8402	9619	9256	8854	8462	8087	7728
Brake motors (S) 3-ph 0.75-7.5 kW	194	229	223	223	289	282	271	260	250	240
Brake motors (M) 3-ph 7.5-75 kW	771	912	889	907	1077	1041	999	957	916	877
Brake motors (L) 3-ph 75-375 kW	7087	8380	8176	8402	9619	9256	8854	8462	8087	7728
8-pole motors (S) 3-ph 0.75-7.5 kW	207	244	238	238	340	330	321	312	304	295
8-pole motors (M) 3-ph 7.5-75 kW	822	973	949	948	1162	1116	1072	1029	988	949
8-pole motors (L) 3-ph 75-375 kW	7559	8939	8721	8636	10561	10141	9737	9348	8974	8614
1-phase motors >0.75 kW (no VSD)	143	168	163	161	175	172	169	165	162	158
WP Water pumps (load) [%]	1545	1546	1545	1545	1545	1545	1545	1545	1545	1545
CP Fixed Speed 5-1280 l/s	8365	8365	8884	9371	9466	9494	9519	9545	9571	9577
CP Variable speed 5-1280 l/s	18636	18781	18777	19727	19939	19929	19919	19909	19900	19890
CP Pistons 2-64 l/s	1788	1863	2274	2650	2711	2709	2708	2707	2705	2704
TRAF0 Distribution, kWh/a	8345	8345	10308	10308	10308	10308	10308	10308	10308	10308
TRAF0 Industry oil	14395	14395	22025	22025	22025	22025	22025	22025	22025	22025
TRAF0 Industry dry	36070	36070	48764	48764	48764	48764	48764	48764	48764	48764
TRAF0 Power	980066	980066	980066	980066	980066	980066	980066	980066	980066	980066
TRAF0 DER oil	24042	24042	40391	40391	40391	40391	40391	40391	40391	40391
TRAF0 DER dry	37141	37141	48656	48656	48656	48656	48656	48656	48656	48656
TRAF0 Small	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519
Tyres C1, replacement for cars	66	76	96	104	106	107	107	107	107	107
Tyres C1, OEM for cars	66	73	83	101	106	107	107	107	107	107
Tyres C2, replacement for vans	89	93	100	112	117	119	119	119	119	119
Tyres C2, OEM for vans	89	93	96	101	115	119	119	119	119	119
Tyres C3, replacement for trucks/busses	304	304	477	496	514	517	517	517	517	517
Tyres C3, OEM for trucks/busses	304	304	328	389	514	517	517	517	517	517
<i>LS, ECO, Basic LED price curves from MELISA in euros/klm (see LoadNotes for corresponding efficiency curves)</i>										
replacing LFL, HID, CFLni in non-residential sector (High-End)		48.0	24.0	13.0	9.1	8.0	8.0	8.0	8.0	8.0
other NDLS LED light sources (Low-End)		48.0	20.0	7.3	7.2	6.2	6.2	6.2	6.2	6.2
other DLS LED light sources (Low-End)		60.0	25.0	9.1	9.4	7.9	7.9	7.9	7.9	7.9
<i>VSD price information for calculation of prices for motor+VSD</i>										
VSD - Very Small 0.12 - 0.75 kW 1-phase	292	313	303	299	309	295	292	292	292	292
VSD - Very Small 0.12 - 0.75 kW 3-phase	292	313	303	299	309	295	292	292	292	292
VSD - Small 0.75 - 7.5 kW 3-phase	408	468	455	440	435	416	408	408	408	408
VSD - Medium 7.5 - 75kW 3-phase	1647	1887	1837	1775	1754	1680	1647	1647	1647	1647
VSD - Large 75 - 375kW 3-phase	7756	8883	8648	8357	8259	7908	7756	7756	7756	7756
VSD - Very Large 375 - 1,000kW 3-phase	60055	63632	61394	60055	60055	60055	60055	60055	60055	60055

ACQBAU

db	BAU Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	5	6	6	7	8	8	8	7	7	7
	<b>Total CH Central Heating combi, water heat</b>	4	7	7	8	8	9	9	9	10	10
	<b>TOTAL WATER HEATING</b>	9	13	14	15	16	16	16	17	17	18
	<b>Total CH Central Heating boiler, space heat</b>	20	29	31	33	37	40	43	46	50	53
	SFB Wood Manual	1.1	0.7	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1
	SFB Wood Direct Draft	0.0	1.6	1.6	1.7	1.6	2.0	2.4	2.8	3.2	3.9
	SFB Coal	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Pellets	0.0	0.4	0.6	0.6	0.6	0.7	0.8	0.8	0.9	1.0
	SFB Wood chips	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4
	<b>Total Solid Fuel Boiler</b>	2	3	3	3	3	3	4	4	5	5
	CHAE-S (< 400 kW)	0.4	1.7	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2
	CHAE-L (> 400 kW)	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	CHWE-S (< 400 kW)	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
	CHWE-L (> 1500 kW)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	HT PCH-AE-L	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
	HT PCH-WE-S	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	HT PCH-WE-M	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-WE-L	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	AC rooftop	0.2	0.7	0.7	0.6	0.3	0.1	0.1	0.1	0.1	0.1
	AC splits	0.3	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9
	AC VRF	0.0	3.0	3.9	5.7	7.3	8.8	10.2	11.5	12.6	13.4
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Cooling</b>	2	8	9	11	13	14	16	18	19	20
	AC rooftop (rev)	0.1	0.5	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.0
	AC splits (rev)	0.2	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6
	AC VRF (rev)	0.0	2.6	3.2	4.9	5.9	6.8	7.6	8.1	8.5	8.6
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AHF	0.7	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3
	AHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Heating (rev double)</b>	1	4	5	6	7	8	9	9	9	10
	<b>Total AHC Heating &amp; Cooling</b>	2	9	10	12	13	15	16	18	19	20
	LH open fireplace	1.5	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	LH closed fireplace/inset	0.9	2.5	2.8	3.1	3.1	3.2	3.2	3.2	3.2	3.2
	LH wood stove	0.9	1.1	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.4
	LH coal stove	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
	LH cooker	0.8	1.5	1.9	2.2	2.2	2.3	2.3	2.3	2.3	2.3
	LH SHR stove	1.9	2.6	3.2	3.8	4.3	4.7	4.8	4.8	4.8	4.8
	LH pellet stove	0.0	0.8	1.1	1.3	1.4	1.5	1.5	1.5	1.5	1.5
	LH open fire gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	LH closed fire gas	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4
	LH flueless fuel heater	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	LH elec.portable	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH elec.convectector	1.6	1.9	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.2
	LH elec.storage	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH elec.underfloor	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	LH luminous heaters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH tube heaters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>LH total</b>	9.1	14.5	16.1	17.8	18.5	19.3	19.4	19.4	19.4	19.4
	RAC (cooling demand), all types <12 kW	1	5	7	9	10	10	10	10	10	11
	RAC (heating demand), reversible <12kW	0	4	6	8	9	9	9	9	9	9
	<b>Total RAC Room Air Conditioner</b>	1	9	14	17	19	19	19	19	20	20
	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	2	2	2	2	2	2	2	2	2
	<b>TOTAL SPACE HEATING (incl. rev AC)</b>	32	55	62	69	74	79	84	88	92	97
	<b>TOTAL SPACE COOLING</b>	2	13	17	20	23	24	26	28	29	31
	NRVU Ventilation units	32	75	79	83	88	92	97	101	106	111
	RVU Central Unidir.	2	4	3	3	3	3	3	4	4	4
	RVU Central Balanced VU ≤125W/fan (2 fans)	0	1	3	4	4	5	5	6	6	7
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0	0	0	0	1	1	1	1	1	1
	<b>Total VU Ventilation Units</b>	34	80	85	90	95	101	106	112	117	122
	<b>TOTAL VENTILATION (electricity)</b>	34	80	85	90	95	101	106	112	117	122



ACQBAU

db	BAU Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LFL (T12,T8h,T8t,T5,other)		3.8	5.5	5.0	3.8	2.6	1.9	1.6	1.2	0.9	0.7
HID (HPM, HPS, MH)		0.5	1.4	1.3	0.9	0.7	0.4	0.2	0.1	0.0	0.0
CFLni (all shapes)		0.2	0.8	0.7	0.7	0.5	0.3	0.1	0.1	0.0	0.0
CFLi (retrofit for GLS, HL)		0.2	2.0	1.3	1.5	0.9	0.7	0.4	0.3	0.2	0.1
GLS (DLS & NDLS)		2.1	1.7	1.4	1.0	0.6	0.3	0.2	0.1	0.1	0.0
HL (DLS & NDLS, LV & MV)		0.3	2.5	3.0	3.1	1.9	1.0	0.5	0.3	0.2	0.1
LED replacing LFL (retrofit & luminaire)		0.0	0.0	0.6	2.2	3.3	4.7	5.1	5.9	7.1	8.4
LED replacing HID (retrofit & luminaire)		0.0	0.0	0.2	1.1	1.3	1.7	2.0	2.4	2.8	3.2
LED replacing CFLni (retrofit & luminaire)		0.0	0.0	0.0	0.2	0.4	0.5	0.6	0.7	0.8	0.8
LED replacing DLS (retrofit & luminaire)		0.0	0.0	0.1	0.5	0.6	0.4	0.3	0.2	0.2	0.2
LED replacing NDLS (retrofit & luminaire)		0.0	0.1	0.4	2.6	2.2	1.6	1.3	1.1	0.9	0.9
SUBTOTAL non-LED (excl. SPL, ctrl, sb)		7.1	13.9	12.7	10.9	7.2	4.6	3.0	2.0	1.4	1.0
SUBTOTAL LED		0.0	0.1	1.3	6.6	7.8	8.8	9.3	10.3	11.8	13.5
<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>		<b>7.1</b>	<b>13.9</b>	<b>14.0</b>	<b>17.5</b>	<b>15.0</b>	<b>13.4</b>	<b>12.2</b>	<b>12.3</b>	<b>13.2</b>	<b>14.5</b>
DP TV, standard (NoNA)		20.8	25.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DP TV, LoNA		0.0	4.0	9.5	5.9	0.0	0.0	0.0	0.0	0.0	0.0
DP TV, HiNA ('Smart')		0.0	4.0	9.3	17.6	27.0	31.1	31.5	31.5	31.5	31.5
<b>DP TV all types</b>		<b>21</b>	<b>33</b>	<b>19</b>	<b>23</b>	<b>27</b>	<b>31</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>
DP Monitor		2.0	4.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
DP Signage		0.0	0.4	1.6	3.6	2.7	2.7	2.7	2.7	2.7	2.7
<b>DP Electronic Displays, total</b>		<b>23</b>	<b>38</b>	<b>23</b>	<b>29</b>	<b>32</b>	<b>36</b>	<b>37</b>	<b>37</b>	<b>37</b>	<b>37</b>
SSTB		0.0	1.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CSTB		0.0	5.4	6.6	7.1	7.2	7.0	7.7	8.3	8.9	9.5
<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0.0</b>	<b>6.9</b>	<b>7.0</b>	<b>7.1</b>	<b>7.2</b>	<b>7.0</b>	<b>7.7</b>	<b>8.3</b>	<b>8.9</b>	<b>9.5</b>
VIDEO players/recorders		0.0	3.8	3.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO projectors		0.0	2.9	2.5	1.0	0.4	0.0	0.0	0.0	0.0	0.0
VIDEO game consoles		0.0	6.9	5.8	4.5	5.3	5.3	5.3	5.3	5.3	5.3
<b>Total VIDEO</b>		<b>0.0</b>	<b>13.7</b>	<b>11.6</b>	<b>5.9</b>	<b>5.7</b>	<b>5.3</b>	<b>5.3</b>	<b>5.3</b>	<b>5.3</b>	<b>5.3</b>
ES tower 1-socket traditional		0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ES rack 1-socket traditional		0.0	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
ES rack 2-socket traditional		0.2	3.2	1.5	1.8	2.2	2.6	2.6	2.6	2.6	2.6
ES rack 2-socket cloud		0.0	3.1	4.6	5.6	6.8	8.3	8.3	8.3	8.3	8.3
ES rack 4-socket traditional		0.1	1.7	0.7	0.9	1.1	1.3	1.3	1.3	1.3	1.3
ES rack 4-socket cloud		0.0	1.4	2.0	2.4	2.9	3.6	3.6	3.6	3.6	3.6
ES rack 2-socket resilient trad.		0.0	0.6	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.5
ES rack 2-socket resilient cloud		0.0	0.5	0.7	0.8	1.0	1.3	1.3	1.3	1.3	1.3
ES rack 4-socket resilient trad.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient cloud		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 1-socket traditional		0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 2-socket traditional		0.2	1.0	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8
ES blade 2-socket cloud		0.0	1.0	1.4	1.7	2.1	2.6	2.6	2.6	2.6	2.6
ES blade 4-socket traditional		0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 4-socket cloud		0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>ES total traditional</b>		<b>0.6</b>	<b>7.6</b>	<b>3.9</b>	<b>4.5</b>	<b>5.3</b>	<b>6.3</b>	<b>6.3</b>	<b>6.3</b>	<b>6.3</b>	<b>6.3</b>
<b>ES total cloud</b>		<b>0.0</b>	<b>6.0</b>	<b>8.9</b>	<b>10.8</b>	<b>13.1</b>	<b>16.0</b>	<b>16.0</b>	<b>16.0</b>	<b>16.0</b>	<b>16.0</b>
<b>ES Enterprise Servers total</b>		<b>0.6</b>	<b>13.7</b>	<b>12.7</b>	<b>15.3</b>	<b>18.4</b>	<b>22.2</b>	<b>22.2</b>	<b>22.2</b>	<b>22.2</b>	<b>22.2</b>
DS Online 2		0.3	6.1	5.7	6.2	6.8	7.5	7.5	7.5	7.5	7.5
DS Online 3		0.5	9.5	6.8	7.4	8.2	9.0	9.0	9.0	9.0	9.0
DS Online 4		0.3	6.3	5.7	6.2	6.8	7.6	7.6	7.6	7.6	7.6
<b>DS Data Storage products total</b>		<b>1.0</b>	<b>21.9</b>	<b>18.1</b>	<b>19.8</b>	<b>21.9</b>	<b>24.1</b>	<b>24.1</b>	<b>24.1</b>	<b>24.1</b>	<b>24.1</b>
<b>ES + DS total</b>		<b>1.6</b>	<b>35.5</b>	<b>30.9</b>	<b>35.1</b>	<b>40.3</b>	<b>46.4</b>	<b>46.4</b>	<b>46.4</b>	<b>46.4</b>	<b>46.4</b>
PC Desktop		3.6	12.0	9.0	8.1	8.1	8.1	8.1	8.1	8.1	8.1
PC Notebook		0.4	27.3	12.5	11.8	11.8	11.8	11.8	11.8	11.8	11.8
PC Tablet/slate		0.0	1.9	29.3	47.6	61.5	73.3	76.9	80.6	84.2	87.9
PC Thin client		0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PC Workstation		0.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
<b>Total PC, electricity</b>		<b>4.2</b>	<b>43.9</b>	<b>53.5</b>	<b>70.2</b>	<b>84.1</b>	<b>95.9</b>	<b>99.5</b>	<b>103.2</b>	<b>106.9</b>	<b>110.5</b>
EP-Copier mono		3.8	1.5	0.9	0.4	0.3	0.2	0.1	0.0	0.0	0.0
EP-Copier colour		0.0	0.5	2.2	3.3	3.8	4.1	4.5	4.8	5.2	5.5
EP-printer mono		0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2
EP-printer colour		0.0	0.7	1.0	1.4	1.7	2.0	2.2	2.5	2.8	3.0
IJ SFD printer		0.7	1.0	0.7	0.5	0.4	0.3	0.3	0.2	0.1	0.1
IJ MFD printer		0.8	2.6	3.6	4.2	4.6	5.0	5.4	5.8	6.2	6.6
<b>Total imaging equipment, electricity</b>		<b>6.0</b>	<b>7.1</b>	<b>9.1</b>	<b>10.3</b>	<b>11.1</b>	<b>12.0</b>	<b>12.8</b>	<b>13.6</b>	<b>14.5</b>	<b>15.4</b>
SB Home Gateway		0.0	6.7	8.6	10.5	12.5	14.4	16.3	18.3	20.2	22.1
SB Home NAS		0.0	0.6	1.0	1.5	1.9	2.3	2.8	3.2	3.6	4.1
SB Home Phones (fixed)		0.5	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2
SB Office Phones (fixed)		0.6	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.8
<b>Total SB (networked) StandBy (rest)</b>		<b>1.1</b>	<b>11</b>	<b>14</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>29</b>	<b>31</b>

ACQBAU

db	BAU Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.0	EPS ≤ 6W, low-V	0.0	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.1	1.8	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.4
0.6	EPS 10–12 W	0.0	1.4	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9
0.5	EPS 15–20 W	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 20–30 W	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
1.0	EPS 30–65 W	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	1.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 12–15 W	0.0	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	<b>EPS, total</b>	<b>0.2</b>	<b>5.0</b>	<b>4.9</b>	<b>4.9</b>	<b>5.0</b>	<b>5.1</b>	<b>5.1</b>	<b>5.2</b>	<b>5.3</b>	<b>5.4</b>
	<b>EPS, double counted subtracted</b>	<b>0.1</b>	<b>2.7</b>	<b>2.7</b>	<b>2.8</b>	<b>2.8</b>	<b>2.9</b>	<b>2.9</b>	<b>2.9</b>	<b>3.0</b>	<b>3.0</b>
	UPS below 1.5 kVA	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5
	UPS 1.5 to 5 kVA	0.2	0.4	0.4	0.5	0.6	0.7	0.8	0.9	0.9	1.0
	UPS 5 to 10 kVA	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
	UPS 10 to 200 kVA	0.2	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>0.6</b>	<b>1.1</b>	<b>1.2</b>	<b>1.5</b>	<b>1.7</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.7</b>
	<b>TOTAL ELECTRONICS</b>	<b>37</b>	<b>160</b>	<b>153</b>	<b>179</b>	<b>204</b>	<b>229</b>	<b>237</b>	<b>245</b>	<b>253</b>	<b>261</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>8.0</b>	<b>8.7</b>	<b>8.9</b>	<b>9.0</b>	<b>9.1</b>	<b>9.3</b>	<b>9.4</b>	<b>9.5</b>	<b>9.7</b>	<b>9.8</b>
	CF open vertical chilled multi deck (RVC2)	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	CF open horizontal frozen island (RHF4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CF other supermarket display (non-BCs)	0.8	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3
	CF Plug in one door beverage cooler	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9
	CF Plug in horizontal ice cream freezer	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	CF Spiral vending machine	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	<b>Total CF Commercial Refrigeration</b>	<b>2.4</b>	<b>2.7</b>	<b>2.7</b>	<b>2.8</b>	<b>2.9</b>	<b>3.0</b>	<b>3.1</b>	<b>3.2</b>	<b>3.3</b>	<b>3.4</b>
	PF Storage cabinet Chilled Vertical (CV)	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4
	PF Storage cabinet Frozen Vertical (FV)	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PF Storage cabinet Chilled Horizontal (CH)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Storage cabinet Frozen Horizontal (FH)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	<b>PF Storage cabinets All types</b>	<b>0.4</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller AC MT L > 300 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller AC LT S ≤ 200 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller AC LT L > 200 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller WC MT S ≤ 300 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	PF Process Chiller WC MT L > 300 kW	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller WC LT S ≤ 200 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	PF Process Chiller WC LT L > 200 kW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0.2</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>
	PF Condensing Unit MT S 0.2-1 kW	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PF Condensing Unit MT M 1-5 kW	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5
	PF Condensing Unit MT L 5-20 kW	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
	PF Condensing Unit MT XL 20-50 kW	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	PF Condensing Unit LT S 0.1-0.4 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PF Condensing Unit LT M 0.4-2 kW	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Condensing Unit LT L 2-8 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	PF Condensing Unit LT XL 8-20 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1.6</b>	<b>1.3</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.2</b>
	<b>PF Professional Refrigeration, Total</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.2</b>	<b>2.4</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>16</b>
	CA El. Hobs	2.5	5.7	6.1	6.6	6.9	7.3	7.6	7.9	8.1	8.4
	CA El. Ovens	5.5	6.5	6.8	7.4	7.2	7.2	7.3	7.4	7.5	7.6
	CA Gas Hobs	2.2	1.9	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1
	CA Gas Ovens	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6
	CA Range Hoods	1.3	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4
	<b>Total CA Cooking Appliances</b>	<b>12</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>
	COFFEE Dripfilter (glass)	0.40	0.28	0.23	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	COFFEE Dripfilter (thermos)	0.08	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.13
	COFFEE Dripfilter (full automatic)	0.00	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
	COFFEE Pad filter	0.00	0.46	0.50	0.55	0.59	0.63	0.68	0.72	0.76	0.80
	COFFEE Hard cap espresso	0.06	0.24	0.52	0.77	0.81	0.81	0.81	0.81	0.81	0.81
	COFFEE Semi-auto espresso	0.06	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.04
	COFFEE Fully-auto espresso	0.37	0.42	0.49	0.56	0.63	0.69	0.76	0.83	0.90	0.96
	<b>Total CM household Coffee Makers</b>	<b>1.0</b>	<b>1.8</b>	<b>2.2</b>	<b>2.5</b>	<b>2.7</b>	<b>2.8</b>	<b>2.9</b>	<b>3.1</b>	<b>3.2</b>	<b>3.3</b>
	<b>TOTAL COOKING</b>	<b>13</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>23</b>	<b>23</b>
	<b>Total WM household Washing Machine</b>	<b>4.4</b>	<b>6.4</b>	<b>6.4</b>	<b>6.9</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>	<b>6.6</b>
	<b>Total DW household Dishwasher</b>	<b>1.9</b>	<b>4.1</b>	<b>4.8</b>	<b>5.4</b>	<b>6.1</b>	<b>6.7</b>	<b>7.4</b>	<b>8.0</b>	<b>8.7</b>	<b>9.4</b>

ACQBAU

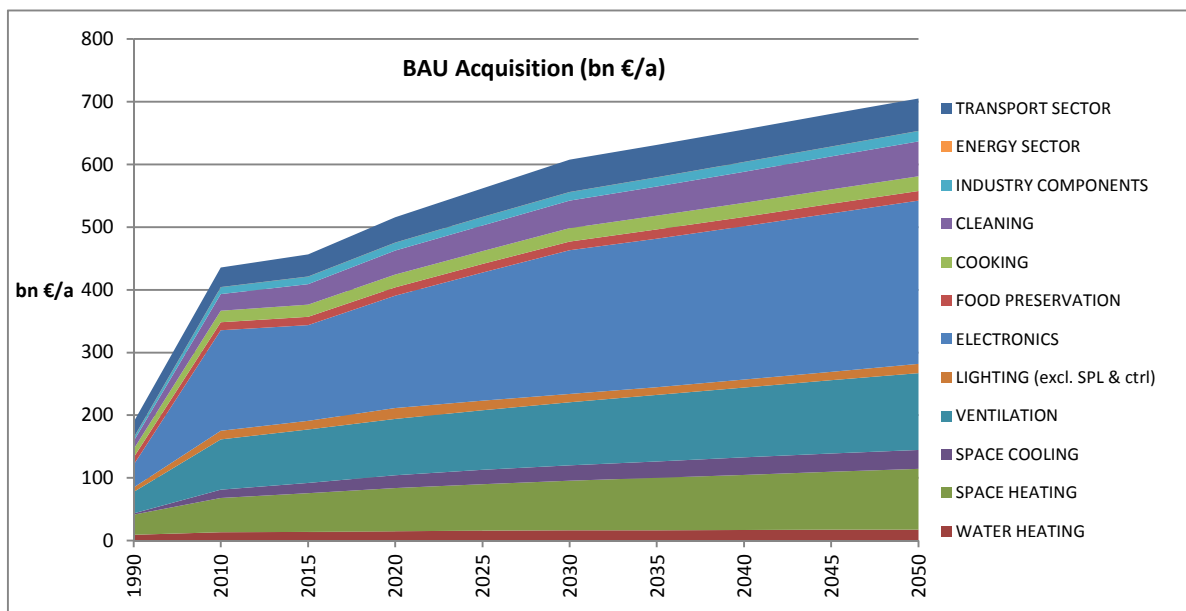
db	BAU Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LD vented el.	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	LD condens el.	0.5	1.9	2.2	2.5	2.5	2.6	2.6	2.6	2.6	2.6
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>1.4</b>	<b>2.8</b>	<b>3.1</b>	<b>3.3</b>	<b>3.3</b>	<b>3.4</b>	<b>3.4</b>	<b>3.4</b>	<b>3.4</b>	<b>3.4</b>
	VC dom	4.3	12.6	17.7	21.5	23.8	26.0	28.3	30.5	32.7	35.0
	VC nondom	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2
	<b>Total VC Vacuum Cleaner</b>	<b>5.1</b>	<b>13.5</b>	<b>18.6</b>	<b>22.5</b>	<b>24.7</b>	<b>27.0</b>	<b>29.3</b>	<b>31.6</b>	<b>33.9</b>	<b>36.2</b>
	<b>TOTAL CLEANING</b>	<b>13</b>	<b>27</b>	<b>33</b>	<b>38</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>50</b>	<b>53</b>	<b>56</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	0.4	1.4	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
0.5	FAN Axial>300Pa	0.6	2.0	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2
0.5	FAN Centr.FC	0.4	0.9	1.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
0.5	FAN Centr.BC-free	0.2	0.5	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8
0.5	FAN Centr.BC	0.5	1.2	1.4	1.6	1.8	1.8	2.0	2.1	2.3	2.5
0.5	FAN Cross-flow	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>1.1</b>	<b>3.1</b>	<b>3.5</b>	<b>3.9</b>	<b>4.0</b>	<b>4.0</b>	<b>4.1</b>	<b>4.2</b>	<b>4.4</b>	<b>4.5</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0.7	1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.7
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	0.4	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3
0.45	Medium (L) 3-ph 75-375 kW no VSD	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>1.3</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>1.9</b>	<b>1.7</b>	<b>1.6</b>	<b>1.4</b>	<b>1.3</b>	<b>1.2</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0.3	0.9	1.0	1.2	1.4	1.5	1.8	2.1	2.5	2.9
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	0.2	0.6	0.7	0.9	1.0	1.1	1.3	1.5	1.8	2.0
0.45	Medium (L) 3-ph 75-375 kW with VSD	0.1	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.1
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>0.7</b>	<b>1.9</b>	<b>2.3</b>	<b>2.6</b>	<b>3.0</b>	<b>3.4</b>	<b>4.0</b>	<b>4.7</b>	<b>5.3</b>	<b>5.9</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>1.9</b>	<b>3.9</b>	<b>4.3</b>	<b>4.6</b>	<b>4.8</b>	<b>5.1</b>	<b>5.6</b>	<b>6.1</b>	<b>6.6</b>	<b>7.2</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0.4	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
0.45	Small 1 ph 0.12-0.75 kW with VSD	0.1	0.6	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.2
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0.5</b>	<b>1.4</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>	<b>1.8</b>	<b>1.8</b>	<b>1.9</b>	<b>1.9</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
0.45	Small 3 ph 0.12-0.75 kW with VSD	0.0	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0.3</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Large 3-ph LV 375-1000kW with VSD	0.1	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>0.2</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Explosion motors (M) 3-ph 7.5-75 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Explosion motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Brake motors (M) 3-ph 7.5-75 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Brake motors (L) 3-ph 75-375 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0.9</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>	<b>1.7</b>	<b>1.7</b>	<b>1.7</b>	<b>1.7</b>	<b>1.8</b>	<b>1.8</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>2.2</b>	<b>4.7</b>	<b>5.1</b>	<b>5.4</b>	<b>5.5</b>	<b>5.8</b>	<b>6.1</b>	<b>6.4</b>	<b>6.8</b>	<b>7.2</b>
	<b>Total WP Water Pumps</b>	<b>1.9</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.7</b>	<b>3.9</b>	<b>4.1</b>	<b>4.3</b>
	CP Fixed Speed 5-1280 l/s	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
	CP Variable speed 5-1280 l/s	0.0	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	CP Pistons 2-64 l/s	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
	<b>Total CP Standard Air Compressors</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>5.7</b>	<b>11.0</b>	<b>12.1</b>	<b>13.0</b>	<b>13.6</b>	<b>14.1</b>	<b>14.7</b>	<b>15.4</b>	<b>16.2</b>	<b>16.9</b>
	TRAFO Distribution	0.5	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.3	1.4
	TRAFO Industry oil	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7
	TRAFO Industry dry	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
	TRAFO Power	2.0	3.3	3.5	3.8	4.1	4.4	4.7	5.0	5.3	5.6
	TRAFO DER oil	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.5
	TRAFO DER dry	0.0	0.1	0.2	0.4	0.6	1.1	1.6	2.1	2.6	3.1
	TRAFO Small	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>Total TRAFO Utility Transformers</b>	<b>3.0</b>	<b>4.9</b>	<b>5.4</b>	<b>5.9</b>	<b>6.6</b>	<b>7.6</b>	<b>8.6</b>	<b>9.6</b>	<b>10.7</b>	<b>11.7</b>
	<b>TOTAL ENERGY SECTOR (costs already assumed to be in electricity rates: use BAU=0 as reference)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## ACQBAU

db	BAU Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	Tyres C1, replacement for cars	14	18	20	23	26	29	29	29	29	29
	Tyres C1, OEM for cars	4	5	6	7	8	9	9	9	9	9
	<b>Tyres C1, total</b>	<b>18</b>	<b>24</b>	<b>27</b>	<b>30</b>	<b>34</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>	<b>38</b>
	Tyres C2, replacement for vans	2	3	3	3	3	4	4	4	4	4
	Tyres C2, OEM for vans	0	0	1	1	1	1	1	1	1	1
	<b>Tyres C2, total</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	Tyres C3, replacement for trucks/busses	4	4	4	5	6	7	7	7	7	7
	Tyres C3, OEM for trucks/busses	1	1	1	2	2	2	2	2	2	2
	<b>Tyres C3, total</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>
	<b>Tyres, total C1+C2+C3</b>	<b>25</b>	<b>31</b>	<b>35</b>	<b>40</b>	<b>46</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>
	<b>TRANSPORT SECTOR</b>	<b>25</b>	<b>31</b>	<b>35</b>	<b>40</b>	<b>46</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>
	<b>GENERAL TOTAL (in bn euros)</b>	<b>189</b>	<b>435</b>	<b>456</b>	<b>516</b>	<b>562</b>	<b>608</b>	<b>631</b>	<b>656</b>	<b>680</b>	<b>705</b>

db	BAU Acquisition (summary table)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WATER HEATING</b>	<b>9</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>17</b>	<b>18</b>
	<b>SPACE HEATING</b>	<b>32</b>	<b>55</b>	<b>62</b>	<b>69</b>	<b>74</b>	<b>79</b>	<b>84</b>	<b>88</b>	<b>92</b>	<b>97</b>
	<b>SPACE COOLING</b>	<b>2</b>	<b>13</b>	<b>17</b>	<b>20</b>	<b>23</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>29</b>	<b>31</b>
	<b>VENTILATION</b>	<b>34</b>	<b>80</b>	<b>85</b>	<b>90</b>	<b>95</b>	<b>101</b>	<b>106</b>	<b>112</b>	<b>117</b>	<b>122</b>
	<b>LIGHTING (excl. SPL &amp; ctrl)</b>	<b>7</b>	<b>14</b>	<b>14</b>	<b>18</b>	<b>15</b>	<b>13</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>14</b>
	<b>ELECTRONICS</b>	<b>37</b>	<b>160</b>	<b>153</b>	<b>179</b>	<b>204</b>	<b>229</b>	<b>237</b>	<b>245</b>	<b>253</b>	<b>261</b>
	<b>FOOD PRESERVATION</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>16</b>
	<b>COOKING</b>	<b>13</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>23</b>	<b>23</b>
	<b>CLEANING</b>	<b>12.7</b>	<b>26.8</b>	<b>32.8</b>	<b>38.0</b>	<b>40.7</b>	<b>43.7</b>	<b>46.7</b>	<b>49.6</b>	<b>52.6</b>	<b>55.6</b>
	<b>INDUSTRY COMPONENTS</b>	<b>6</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>16</b>	<b>17</b>
	<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>	<b>25</b>	<b>31</b>	<b>35</b>	<b>40</b>	<b>46</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>	<b>52</b>
	<b>TOTAL in bn euros</b>	<b>189</b>	<b>435</b>	<b>456</b>	<b>516</b>	<b>562</b>	<b>608</b>	<b>631</b>	<b>656</b>	<b>680</b>	<b>705</b>

(in bn euros 2015, incl VAT & install)



### Acquisition costs for VSDs only (without motor)

VSD - Very Small 0.12 - 0.75 kW 1-phase	0.1	0.5	0.7	0.7	0.7	0.8	0.8	0.9	0.9	1.0
VSD - Very Small 0.12 - 0.75 kW 3-phase	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4
VSD - Small 0.75 - 7.5 kW 3-phase	0.2	0.7	0.8	0.9	1.0	1.2	1.4	1.6	1.9	2.2
VSD - Medium 7.5 - 75kW 3-phase	0.2	0.5	0.6	0.6	0.7	0.8	1.0	1.1	1.3	1.5
VSD - Large 75 - 375kW 3-phase	0.1	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7
VSD - Very Large 375 - 1,000kW 3-phase	0.0	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5
<b>Total Acquisition for VSDs only (BAU)</b>	<b>0.6</b>	<b>2.3</b>	<b>2.8</b>	<b>3.2</b>	<b>3.5</b>	<b>3.9</b>	<b>4.4</b>	<b>5.0</b>	<b>5.6</b>	<b>6.2</b>

ACQECO

db	ECO Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	5	6	10	12	14	13	13	13	13	13
	<b>Total CH Central Heating combi, water heat</b>	4	7	10	15	16	17	19	20	21	23
	<b>TOTAL WATER HEATING</b>	9	13	21	27	30	31	32	33	34	35
	<b>Total CH Central Heating boiler, space heat</b>	20	30	53	69	86	98	112	127	142	159
	SFB Wood Manual	1	1	1	0	0	0	0	0	0	0
	SFB Wood Direct Draft	0	2	2	2	2	2	3	3	4	4
	SFB Coal	0	0	0	0	0	0	0	0	0	0
	SFB Pellets	0	0	1	1	1	1	1	1	1	1
	SFB Wood chips	0	0	0	0	0	0	0	0	0	0
	<b>Total Solid Fuel Boiler</b>	2	3	3	3	3	3	4	4	5	6
	CHAE-S (< 400 kW)	0.4	1.7	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2
	CHAE-L (> 400 kW)	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	CHWE-S (< 400 kW)	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
	CHWE-L (> 1500 kW)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	HT PCH-AE-L	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
	HT PCH-WE-S	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	HT PCH-WE-M	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-WE-L	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	AC rooftop	0.2	0.7	0.7	0.6	0.3	0.1	0.1	0.1	0.1	0.1
	AC splits	0.3	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9
	AC VRF	0.0	3.0	3.9	5.7	7.3	8.8	10.2	11.5	12.6	13.4
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Cooling</b>	2	8	9	11	13	14	16	18	19	20
	AC rooftop (rev)	0.1	0.5	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.0
	AC splits (rev)	0.2	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6
	AC VRF (rev)	0.0	2.6	3.2	4.9	5.9	6.8	7.6	8.1	8.5	8.6
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AHF	0.7	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3
	AHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Heating (rev double)</b>	1	4	5	7	7	8	9	9	9	10
	<b>Total AHC Heating &amp; Cooling</b>	2	9	10	12	13	15	16	18	19	20
	LH open fireplace	1.5	2.2	2.2	2.7	3.0	2.8	2.7	2.6	2.5	2.4
	LH closed fireplace/inset	0.9	2.5	2.8	3.7	3.9	3.8	3.7	3.6	3.4	3.3
	LH wood stove	0.9	1.1	1.2	1.6	1.7	1.7	1.6	1.6	1.5	1.4
	LH coal stove	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
	LH cooker	0.8	1.5	1.9	2.4	2.6	2.5	2.4	2.3	2.3	2.3
	LH SHR stove	1.9	2.6	3.2	3.9	4.3	4.7	4.8	4.8	4.8	4.8
	LH pellet stove	0.0	0.8	1.1	1.3	1.4	1.5	1.5	1.5	1.5	1.5
	LH open fire gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	LH closed fire gas	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	LH flueless fuel heater	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	LH elec.portable	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH elec.convvector	1.6	1.9	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.2
	LH elec.storage	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2
	LH elec.underfloor	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	LH luminous heaters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH tube heaters	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>LH total</b>	9.1	14.5	16.2	19.6	20.9	21.2	20.9	20.5	20.2	19.9
	RAC (cooling demand), all types <12 kW	1	5	8	10	11	11	11	11	11	11
	RAC (heating demand), reversible <12kW	0	4	7	9	10	10	10	10	10	10
	<b>Total RAC Room Air Conditioner</b>	1	9	15	19	21	21	21	21	21	21
	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	1	2	3	3	3	2	2	2	2	2
	<b>TOTAL SPACE HEATING (incl. rev AC)</b>	32	56	85	107	127	141	156	171	187	204
	<b>TOTAL SPACE COOLING</b>	2	13	17	21	24	26	27	29	30	31
	NRVU Ventilation units	32	75	79	83	88	92	97	101	106	111
	RVU Central Unidir.	2	4	5	5	5	5	6	6	6	6
	RVU Central Balanced VU ≤125W/fan (2 fans)	0	1	4	5	5	5	6	6	6	7
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0	0	0	0	1	1	1	1	1	1
	<b>Total VU Ventilation Units</b>	34	80	88	93	98	104	109	114	119	125
	<b>TOTAL VENTILATION (electricity)</b>	34	80	88	93	98	104	109	114	119	125

ACQECO

db	ECO Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LFL (T12,T8h,T8t,T5,other)	3.8	5.5	4.0	2.9	0.9	0.5	0.3	0.2	0.1	0.1
	HID (HPM, HPS, MH)	0.5	1.4	1.0	0.6	0.4	0.1	0.0	0.0	0.0	0.0
	CFLni (all shapes)	0.2	0.8	0.6	0.4	0.2	0.1	0.0	0.0	0.0	0.0
	CFLi (retrofit for GLS, HL)	0.2	2.7	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0
	GLS (DLS & NDLS)	2.1	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HL (DLS & NDLS, LV & MV)	0.3	2.8	3.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	1.1	3.8	7.1	6.8	6.5	7.3	8.7	10.0
	LED replacing HID (retrofit & luminaire)	0.0	0.0	1.8	1.2	1.8	2.1	2.5	2.8	3.2	3.7
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.9
	LED replacing DLS (retrofit & luminaire)	0.0	0.2	1.2	0.8	0.7	0.2	0.2	0.2	0.2	0.2
	LED replacing NDLS (retrofit & luminaire)	0.0	0.1	3.8	5.8	2.6	1.5	0.8	0.8	0.9	1.0
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	7.1	14.1	9.8	5.2	1.5	0.7	0.3	0.2	0.1	0.1
	SUBTOTAL LED	0.0	0.3	8.1	12.1	12.7	11.2	10.7	12.0	13.9	15.9
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>7.1</b>	<b>14.4</b>	<b>17.9</b>	<b>17.2</b>	<b>14.2</b>	<b>12.0</b>	<b>11.0</b>	<b>12.2</b>	<b>14.1</b>	<b>15.9</b>
	DP TV, standard (NoNA)	20.8	25.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV, LoNA	0.0	4.0	9.5	5.9	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV, HiNA ('Smart')	0.0	4.0	9.3	17.6	27.0	31.1	31.5	31.5	31.5	31.5
	<b>DP TV all types</b>	<b>21</b>	<b>33</b>	<b>19</b>	<b>23</b>	<b>27</b>	<b>31</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>
	DP Monitor	2.0	4.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	DP Signage	0.0	0.4	1.6	3.6	2.7	2.7	2.7	2.7	2.7	2.7
	<b>DP Electronic Displays, total</b>	<b>23</b>	<b>38</b>	<b>23</b>	<b>29</b>	<b>32</b>	<b>36</b>	<b>37</b>	<b>37</b>	<b>37</b>	<b>37</b>
	SSTB	0.0	1.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	0.0	5.4	6.8	7.1	7.2	7.0	7.7	8.3	8.9	9.5
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0.0</b>	<b>6.9</b>	<b>7.2</b>	<b>7.1</b>	<b>7.2</b>	<b>7.0</b>	<b>7.7</b>	<b>8.3</b>	<b>8.9</b>	<b>9.5</b>
	VIDEO players/recorders	0.0	3.8	3.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	0.0	2.9	2.5	1.0	0.4	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	0.0	6.9	5.8	4.5	5.3	5.3	5.3	5.3	5.3	5.3
	<b>Total VIDEO</b>	<b>0.0</b>	<b>13.7</b>	<b>11.6</b>	<b>5.9</b>	<b>5.7</b>	<b>5.3</b>	<b>5.3</b>	<b>5.3</b>	<b>5.3</b>	<b>5.3</b>
	ES tower 1-socket traditional	0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	ES rack 1-socket traditional	0.0	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	ES rack 2-socket traditional	0.2	3.2	1.5	1.8	2.2	2.6	2.6	2.6	2.6	2.6
	ES rack 2-socket cloud	0.0	3.1	4.6	5.6	6.8	8.3	8.3	8.3	8.3	8.3
	ES rack 4-socket traditional	0.1	1.7	0.7	0.9	1.1	1.3	1.3	1.3	1.3	1.3
	ES rack 4-socket cloud	0.0	1.4	2.0	2.4	2.9	3.6	3.6	3.6	3.6	3.6
	ES rack 2-socket resilient trad.	0.0	0.6	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.5
	ES rack 2-socket resilient cloud	0.0	0.5	0.7	0.8	1.0	1.3	1.3	1.3	1.3	1.3
	ES rack 4-socket resilient trad.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 1-socket traditional	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 2-socket traditional	0.2	1.0	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8
	ES blade 2-socket cloud	0.0	1.0	1.4	1.7	2.1	2.6	2.6	2.6	2.6	2.6
	ES blade 4-socket traditional	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 4-socket cloud	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>ES total traditional</b>	<b>0.6</b>	<b>7.6</b>	<b>3.9</b>	<b>4.5</b>	<b>5.3</b>	<b>6.3</b>	<b>6.3</b>	<b>6.3</b>	<b>6.3</b>	<b>6.3</b>
	<b>ES total cloud</b>	<b>0.0</b>	<b>6.0</b>	<b>8.9</b>	<b>10.8</b>	<b>13.1</b>	<b>16.0</b>	<b>16.0</b>	<b>16.0</b>	<b>16.0</b>	<b>16.0</b>
	<b>ES Enterprise Servers total</b>	<b>0.6</b>	<b>13.7</b>	<b>12.7</b>	<b>15.3</b>	<b>18.4</b>	<b>22.2</b>	<b>22.2</b>	<b>22.2</b>	<b>22.2</b>	<b>22.2</b>
	DS Online 2	0.3	6.1	5.7	6.2	6.8	7.5	7.5	7.5	7.5	7.5
	DS Online 3	0.5	9.5	6.8	7.4	8.2	9.0	9.0	9.0	9.0	9.0
	DS Online 4	0.3	6.3	5.7	6.2	6.8	7.6	7.6	7.6	7.6	7.6
	<b>DS Data Storage products total</b>	<b>1.0</b>	<b>21.9</b>	<b>18.1</b>	<b>19.8</b>	<b>21.9</b>	<b>24.1</b>	<b>24.1</b>	<b>24.1</b>	<b>24.1</b>	<b>24.1</b>
	<b>ES + DS total</b>	<b>1.6</b>	<b>35.5</b>	<b>30.9</b>	<b>35.1</b>	<b>40.3</b>	<b>46.4</b>	<b>46.4</b>	<b>46.4</b>	<b>46.4</b>	<b>46.4</b>
	PC Desktop	3.6	12.0	9.0	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	PC Notebook	0.4	27.3	12.5	11.8	11.8	11.8	11.8	11.8	11.8	11.8
	PC Tablet/slate	0.0	1.9	29.3	47.6	61.5	73.3	76.9	80.6	84.2	87.9
	PC Thin client	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	PC Workstation	0.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	<b>Total PC, electricity</b>	<b>4.2</b>	<b>43.9</b>	<b>53.5</b>	<b>70.2</b>	<b>84.1</b>	<b>95.9</b>	<b>99.5</b>	<b>103.2</b>	<b>106.9</b>	<b>110.5</b>
	EP-Copier mono	3.8	1.5	0.9	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	EP-Copier colour	0.0	0.5	2.2	3.3	3.8	4.1	4.5	4.8	5.2	5.5
	EP-printer mono	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2
	EP-printer colour	0.0	0.7	1.0	1.4	1.7	2.0	2.2	2.5	2.8	3.0
	IJ SFD printer	0.7	1.0	0.7	0.5	0.4	0.3	0.3	0.2	0.1	0.1
	IJ MFD printer	0.8	2.6	3.6	4.2	4.6	5.0	5.4	5.8	6.2	6.6
	<b>Total imaging equipment, electricity</b>	<b>6.0</b>	<b>7.1</b>	<b>9.1</b>	<b>10.3</b>	<b>11.1</b>	<b>12.0</b>	<b>12.8</b>	<b>13.6</b>	<b>14.5</b>	<b>15.4</b>
	SB Home Gateway	0.0	6.7	8.6	10.5	12.5	14.4	16.3	18.3	20.2	22.1
	SB Home NAS	0.0	0.6	1.0	1.5	1.9	2.3	2.8	3.2	3.6	4.1
	SB Home Phones (fixed)	0.5	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	SB Office Phones (fixed)	0.6	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.8
	<b>Total SB (networked) StandBy (rest)</b>	<b>1.1</b>	<b>11</b>	<b>14</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>29</b>	<b>31</b>

ACQECO

db	ECO Acquisition (in bn euros2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.0	EPS ≤ 6W, low-V	0.0	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.1	1.8	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.4
0.6	EPS 10–12 W	0.0	1.5	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9
0.5	EPS 15–20 W	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 20–30 W	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	1.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 12–15 W	0.0	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	<b>EPS, total</b>	<b>0.2</b>	<b>5.0</b>	<b>4.9</b>	<b>5.0</b>	<b>5.1</b>	<b>5.1</b>	<b>5.1</b>	<b>5.2</b>	<b>5.3</b>	<b>5.4</b>
	<b>EPS, double counted subtracted</b>	<b>0.1</b>	<b>2.8</b>	<b>2.8</b>	<b>2.8</b>	<b>2.8</b>	<b>2.9</b>	<b>2.9</b>	<b>2.9</b>	<b>3.0</b>	<b>3.0</b>
	UPS below 1.5 kVA	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5
	UPS 1.5 to 5 kVA	0.2	0.4	0.4	0.5	0.6	0.7	0.8	0.9	0.9	1.0
	UPS 5 to 10 kVA	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
	UPS 10 to 200 kVA	0.2	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>0.6</b>	<b>1.1</b>	<b>1.2</b>	<b>1.5</b>	<b>1.7</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.7</b>
	<b>TOTAL ELECTRONICS</b>	<b>37</b>	<b>160</b>	<b>153</b>	<b>179</b>	<b>204</b>	<b>229</b>	<b>237</b>	<b>245</b>	<b>253</b>	<b>261</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>8.0</b>	<b>10.0</b>	<b>10.8</b>	<b>11.3</b>	<b>12.9</b>	<b>12.4</b>	<b>13.6</b>	<b>14.0</b>	<b>14.4</b>	<b>14.7</b>
	CF open vertical chilled multi deck (RVC2)	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4
	CF open horizontal frozen island (RHF4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CF other supermarket display (non-BCs)	0.8	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.3
	CF Plug in one door beverage cooler	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9
	CF Plug in horizontal ice cream freezer	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	CF Spiral vending machine	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	<b>Total CF Commercial Refrigeration</b>	<b>2.4</b>	<b>2.7</b>	<b>2.7</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1</b>	<b>3.2</b>	<b>3.2</b>	<b>3.3</b>	<b>3.4</b>
	PF Storage cabinet Chilled Vertical (CV)	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4
	PF Storage cabinet Frozen Vertical (FV)	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PF Storage cabinet Chilled Horizontal (CH)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Storage cabinet Frozen Horizontal (FH)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>PF Storage cabinets All types</b>	<b>0.4</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller AC MT L > 300 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller AC LT S ≤ 200 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller AC LT L > 200 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller WC MT S ≤ 300 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	PF Process Chiller WC MT L > 300 kW	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PF Process Chiller WC LT S ≤ 200 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	PF Process Chiller WC LT L > 200 kW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0.2</b>	<b>0.4</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>
	PF Condensing Unit MT S 0.2-1 kW	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PF Condensing Unit MT M 1-5 kW	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5
	PF Condensing Unit MT L 5-20 kW	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5
	PF Condensing Unit MT XL 20-50 kW	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	PF Condensing Unit LT S 0.1-0.4 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PF Condensing Unit LT M 0.4-2 kW	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Condensing Unit LT L 2-8 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	PF Condensing Unit LT XL 8-20 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1.6</b>	<b>1.3</b>	<b>1.3</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.2</b>
	<b>PF Professional Refrigeration, Total</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.2</b>	<b>2.4</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>18</b>	<b>17</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>
	CA El. Hobs	2.5	5.7	6.1	6.8	7.2	7.5	7.8	8.1	8.4	8.6
	CA El. Ovens	5.5	6.5	6.9	7.8	7.5	7.3	7.3	7.4	7.5	7.6
	CA Gas Hobs	2.2	1.9	1.7	1.7	1.5	1.4	1.3	1.3	1.2	1.1
	CA Gas Ovens	0.8	0.8	0.8	1.0	1.0	0.9	0.9	0.9	0.8	0.8
	CA Range Hoods	1.3	1.6	1.7	2.2	2.6	2.6	2.6	2.6	2.6	2.6
	<b>Total CA Cooking Appliances</b>	<b>12</b>	<b>16</b>	<b>17</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>21</b>
	COFFEE Dripfilter (glass)	0.40	0.28	0.26	0.22	0.20	0.19	0.19	0.19	0.19	0.19
	COFFEE Dripfilter (thermos)	0.08	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.13
	COFFEE Dripfilter (full automatic)	0.00	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
	COFFEE Pad filter	0.00	0.46	0.50	0.55	0.59	0.63	0.68	0.72	0.76	0.80
	COFFEE Hard cap espresso	0.06	0.24	0.52	0.77	0.81	0.81	0.81	0.81	0.81	0.81
	COFFEE Semi-auto espresso	0.06	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.04
	COFFEE Fully-auto espresso	0.37	0.42	0.49	0.56	0.63	0.69	0.76	0.83	0.90	0.96
	<b>Total CM household Coffee Makers</b>	<b>1.0</b>	<b>1.8</b>	<b>2.2</b>	<b>2.5</b>	<b>2.7</b>	<b>2.8</b>	<b>2.9</b>	<b>3.1</b>	<b>3.2</b>	<b>3.3</b>
	<b>TOTAL COOKING</b>	<b>13</b>	<b>18</b>	<b>19</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>24</b>	<b>24</b>
	<b>Total WM household Washing Machine</b>	<b>4.4</b>	<b>7.7</b>	<b>7.9</b>	<b>8.8</b>	<b>8.3</b>	<b>7.9</b>	<b>7.5</b>	<b>7.1</b>	<b>6.8</b>	<b>6.6</b>
	<b>Total DW household Dishwasher</b>	<b>1.9</b>	<b>5.5</b>	<b>6.3</b>	<b>7.1</b>	<b>7.7</b>	<b>8.3</b>	<b>8.9</b>	<b>9.4</b>	<b>9.9</b>	<b>10.3</b>

ACQECO

db	ECO Acquisition (in bn euros2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LD vented el.	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	LD condens el.	0.5	1.9	2.4	2.9	2.9	2.9	2.8	2.7	2.6	2.6
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>1.4</b>	<b>2.8</b>	<b>3.3</b>	<b>3.6</b>	<b>3.7</b>	<b>3.7</b>	<b>3.6</b>	<b>3.5</b>	<b>3.4</b>	<b>3.4</b>
	VC dom	4.3	12.6	18.3	22.1	23.8	26.0	28.3	30.5	32.7	35.0
	VC nondom	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2
	<b>Total VC Vacuum Cleaner</b>	<b>5.1</b>	<b>13.5</b>	<b>19.2</b>	<b>23.1</b>	<b>24.7</b>	<b>27.0</b>	<b>29.3</b>	<b>31.6</b>	<b>33.9</b>	<b>36.2</b>
	<b>TOTAL CLEANING</b>	<b>13</b>	<b>29</b>	<b>37</b>	<b>43</b>	<b>44</b>	<b>47</b>	<b>49</b>	<b>52</b>	<b>54</b>	<b>57</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	0.4	1.4	2.0	2.6	2.4	2.3	2.2	2.1	2.0	2.0
0.5	FAN Axial>300Pa	0.6	2.0	2.1	2.3	2.2	2.2	2.2	2.2	2.2	2.2
0.5	FAN Centr.FC	0.4	0.9	1.3	1.9	1.8	1.7	1.6	1.5	1.5	1.4
0.5	FAN Centr.BC-free	0.2	0.5	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8
0.5	FAN Centr.BC	0.5	1.2	2.0	2.2	2.4	2.3	2.4	2.5	2.6	2.7
0.5	FAN Cross-flow	0.1	0.2	0.6	0.8	0.9	0.8	0.9	0.9	0.9	1.0
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>1.1</b>	<b>3.1</b>	<b>4.4</b>	<b>5.3</b>	<b>5.3</b>	<b>5.1</b>	<b>5.1</b>	<b>5.1</b>	<b>5.1</b>	<b>5.0</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0.7	1.1	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	0.4	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
0.45	Medium (L) 3-ph 75-375 kW no VSD	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>1.3</b>	<b>2.0</b>	<b>2.0</b>	<b>1.9</b>	<b>1.9</b>	<b>1.8</b>	<b>1.7</b>	<b>1.6</b>	<b>1.5</b>	<b>1.4</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0.3	0.9	1.4	2.3	2.5	2.5	2.6	2.8	2.9	3.1
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	0.2	0.6	1.2	1.6	1.7	1.7	1.8	1.9	2.0	2.0
0.45	Medium (L) 3-ph 75-375 kW with VSD	0.1	0.4	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.1
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>0.7</b>	<b>1.9</b>	<b>3.3</b>	<b>4.8</b>	<b>5.1</b>	<b>5.3</b>	<b>5.5</b>	<b>5.8</b>	<b>6.0</b>	<b>6.2</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>1.9</b>	<b>4.0</b>	<b>5.3</b>	<b>6.7</b>	<b>7.0</b>	<b>7.0</b>	<b>7.2</b>	<b>7.3</b>	<b>7.5</b>	<b>7.7</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0.4	0.8	0.8	0.9	1.1	1.0	1.0	1.0	0.9	0.9
0.45	Small 1 ph 0.12-0.75 kW with VSD	0.1	0.6	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.2
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0.5</b>	<b>1.4</b>	<b>1.6</b>	<b>1.7</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.1</b>	<b>2.1</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0.2	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4
0.45	Small 3 ph 0.12-0.75 kW with VSD	0.0	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0.3</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Large 3-ph LV 375-1000kW with VSD	0.1	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>0.2</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Explosion motors (M) 3-ph 7.5-75 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Explosion motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Brake motors (M) 3-ph 7.5-75 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Brake motors (L) 3-ph 75-375 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0.9</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>2.2</b>	<b>4.7</b>	<b>5.7</b>	<b>6.6</b>	<b>7.2</b>	<b>7.2</b>	<b>7.3</b>	<b>7.4</b>	<b>7.6</b>	<b>7.7</b>
	<b>Total WP Water Pumps</b>	<b>1.9</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.7</b>	<b>3.9</b>	<b>4.1</b>	<b>4.3</b>
	CP Fixed Speed 5-1280 l/s	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5
	CP Variable speed 5-1280 l/s	0.0	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	CP Pistons 2-64 l/s	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	<b>Total CP Standard Air Compressors</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>5.7</b>	<b>11.1</b>	<b>13.6</b>	<b>15.7</b>	<b>16.5</b>	<b>16.7</b>	<b>17.0</b>	<b>17.4</b>	<b>17.7</b>	<b>18.1</b>
	TRAFO Distribution	0.5	0.8	1.1	1.1	1.2	1.3	1.4	1.5	1.6	1.7
	TRAFO Industry oil	0.3	0.4	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1
	TRAFO Industry dry	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5
	TRAFO Power	2.0	3.3	3.5	3.8	4.1	4.4	4.7	5.0	5.3	5.6
	TRAFO DER oil	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8
	TRAFO DER dry	0.0	0.1	0.3	0.5	0.8	1.4	2.1	2.7	3.4	4.1
	TRAFO Small	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>Total TRAFO Utility Transformers</b>	<b>3.0</b>	<b>4.9</b>	<b>6.0</b>	<b>6.7</b>	<b>7.5</b>	<b>8.6</b>	<b>9.9</b>	<b>11.2</b>	<b>12.5</b>	<b>13.8</b>
	<b>TOTAL ENERGY SECTOR</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>0.7</b>	<b>0.9</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.9</b>	<b>2.1</b>
	<b>(only improvement over BAU)</b>										

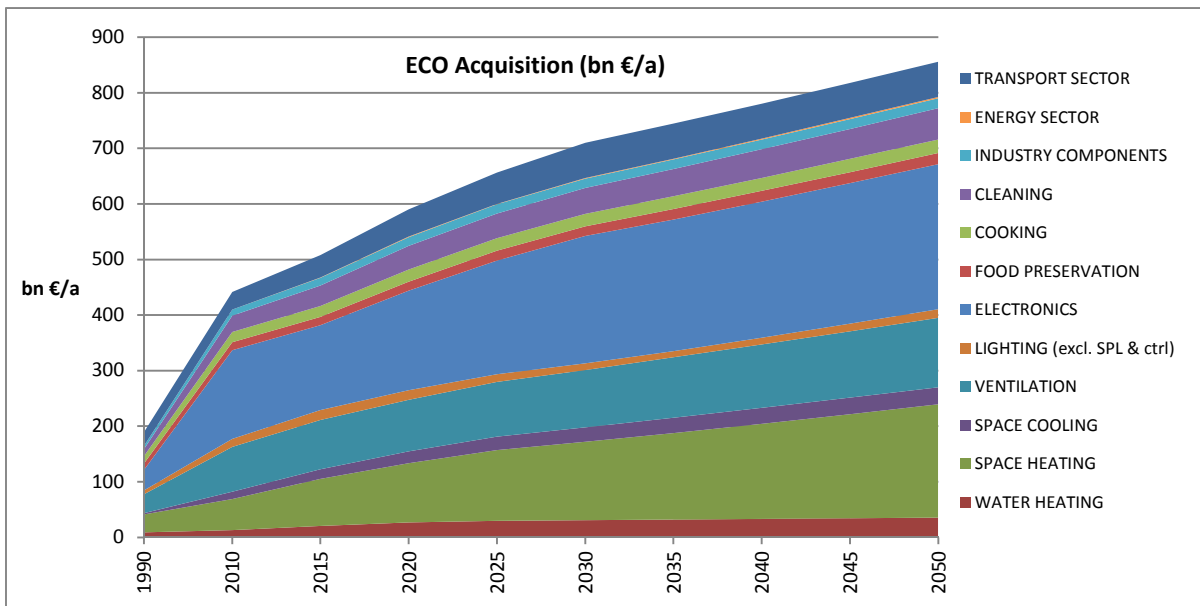


## ACQECO

db ECO Acquisition (in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Tyres C1, replacement for cars	14	19	23	28	32	35	35	35	35	35
Tyres C1, OEM for cars	4	5	6	8	10	11	11	11	11	11
<b>Tyres C1, total</b>	<b>18</b>	<b>25</b>	<b>30</b>	<b>36</b>	<b>41</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>
Tyres C2, replacement for vans	2	3	3	3	4	4	4	4	4	4
Tyres C2, OEM for vans	0	0	1	1	1	1	1	1	1	1
<b>Tyres C2, total</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
Tyres C3, replacement for trucks/busses	4	4	6	7	8	9	9	9	9	9
Tyres C3, OEM for trucks/busses	1	1	1	2	2	3	3	3	3	3
<b>Tyres C3, total</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>9</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>
<b>Tyres, total C1+C2+C3</b>	<b>25</b>	<b>32</b>	<b>40</b>	<b>49</b>	<b>56</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>63</b>
<b>TRANSPORT SECTOR</b>	<b>25</b>	<b>32</b>	<b>40</b>	<b>49</b>	<b>56</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>63</b>
<b>GENERAL TOTAL (in bn euros)</b>	<b>189</b>	<b>442</b>	<b>508</b>	<b>590</b>	<b>656</b>	<b>710</b>	<b>744</b>	<b>780</b>	<b>818</b>	<b>855</b>

db ECO Acquisition (summary table)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	<b>9</b>	<b>13</b>	<b>21</b>	<b>27</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>
<b>SPACE HEATING</b>	<b>32</b>	<b>56</b>	<b>85</b>	<b>107</b>	<b>127</b>	<b>141</b>	<b>156</b>	<b>171</b>	<b>187</b>	<b>204</b>
<b>SPACE COOLING</b>	<b>2</b>	<b>13</b>	<b>17</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>27</b>	<b>29</b>	<b>30</b>	<b>31</b>
<b>VENTILATION</b>	<b>34</b>	<b>80</b>	<b>88</b>	<b>93</b>	<b>98</b>	<b>104</b>	<b>109</b>	<b>114</b>	<b>119</b>	<b>125</b>
<b>LIGHTING (excl. SPL &amp; ctrl)</b>	<b>7</b>	<b>14</b>	<b>18</b>	<b>17</b>	<b>14</b>	<b>12</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>16</b>
<b>ELECTRONICS</b>	<b>37</b>	<b>160</b>	<b>153</b>	<b>179</b>	<b>204</b>	<b>229</b>	<b>237</b>	<b>245</b>	<b>253</b>	<b>261</b>
<b>FOOD PRESERVATION</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>18</b>	<b>17</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>
<b>COOKING</b>	<b>13</b>	<b>18</b>	<b>19</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>24</b>	<b>24</b>
<b>CLEANING</b>	<b>12.7</b>	<b>29.4</b>	<b>36.7</b>	<b>42.6</b>	<b>44.4</b>	<b>46.9</b>	<b>49.3</b>	<b>51.6</b>	<b>54.0</b>	<b>56.5</b>
<b>INDUSTRY COMPONENTS</b>	<b>6</b>	<b>11</b>	<b>14</b>	<b>16</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>18</b>
<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>TRANSPORT SECTOR</b>	<b>25</b>	<b>32</b>	<b>40</b>	<b>49</b>	<b>56</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>63</b>
<b>TOTAL in bn euros</b>	<b>189</b>	<b>442</b>	<b>508</b>	<b>590</b>	<b>656</b>	<b>710</b>	<b>744</b>	<b>780</b>	<b>818</b>	<b>855</b>

(in bn euros 2015, incl VAT & install)



### Acquisition costs for VSDs only (without motor)

VSD - Very Small 0.12 - 0.75 kW 1-phase	0.1	0.5	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0
VSD - Very Small 0.12 - 0.75 kW 3-phase	0.0	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4
VSD - Small 0.75 - 7.5 kW 3-phase	0.2	0.7	1.0	1.6	1.7	1.7	1.8	1.9	2.1	2.2
VSD - Medium 7.5 - 75kW 3-phase	0.2	0.5	0.9	1.1	1.2	1.2	1.3	1.3	1.4	1.5
VSD - Large 75 - 375kW 3-phase	0.1	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.7	0.7
VSD - Very Large 375 - 1,000kW 3-phase	0.0	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5
<b>Total Acquisition for VSDs only (ECO)</b>	<b>0.6</b>	<b>2.4</b>	<b>3.5</b>	<b>4.5</b>	<b>4.8</b>	<b>5.0</b>	<b>5.2</b>	<b>5.6</b>	<b>5.9</b>	<b>6.3</b>

ACQADD

db	ADDED Acquisition (ECO-BAU, in bn euros 2015, incl VAT & install)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0.0	0.0	4.0	5.0	6.1	5.8	5.8	5.7	5.6	5.5
	<b>Total CH Central Heating combi, water heat</b>	0.0	0.0	3.1	6.6	7.7	8.8	9.9	10.7	11.6	12.4
	<b>TOTAL WATER HEATING</b>	0.0	0.0	7.0	11.6	13.8	14.6	15.6	16.4	17.2	17.9
	<b>Total CH Central Heating boiler, space heat</b>	0.0	1.1	22.2	35.3	49.6	58.5	69.1	80.5	92.7	105.9
	SFB Wood Manual	0.00	0.00	0.15	0.21	0.11	0.09	0.07	0.05	0.04	0.03
	SFB Wood Direct Draft	0.00	0.00	0.00	0.02	0.30	0.23	0.27	0.32	0.37	0.36
	SFB Coal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SFB Pellets	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
	SFB Wood chips	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	<b>Total Solid Fuel Boiler</b>	0.0	0.0	0.2	0.2	0.4	0.3	0.3	0.4	0.4	0.4
	<b>Total AHC Heating &amp; Cooling</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH open fireplace	0.00	0.00	0.00	0.51	0.78	0.67	0.57	0.47	0.38	0.28
	LH closed fireplace/inset	0.00	0.00	0.00	0.58	0.81	0.68	0.54	0.40	0.27	0.15
	LH wood stove	0.00	0.00	0.00	0.27	0.37	0.31	0.24	0.18	0.12	0.06
	LH coal stove	0.00	0.00	0.00	0.04	0.04	0.02	0.02	0.01	0.01	0.00
	LH cooker	0.00	0.00	0.00	0.21	0.31	0.21	0.11	0.01	0.00	0.00
	LH SHR stove	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00
	LH pellet stove	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LH open fire gas	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	LH closed fire gas	0.00	0.00	0.00	0.02	0.02	0.01	0.00	0.00	0.00	0.00
	LH flueless fuel heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LH elec.portable	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LH elec.convector	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LH elec.storage	0.00	0.00	0.03	0.06	0.05	0.04	0.03	0.01	0.00	0.00
	LH elec.underfloor	0.00	0.00	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00
	LH luminous heaters	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	LH tube heaters	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	<b>LH total</b>	0.0	0.0	0.0	1.7	2.4	1.9	1.5	1.1	0.8	0.5
	RAC (cooling demand), all types <12 kW	0.0	0.0	0.6	1.0	1.2	1.2	1.1	0.9	0.6	0.3
	RAC (heating demand), reversible <12kW	0.0	0.0	0.5	0.9	1.0	1.1	1.0	0.8	0.5	0.3
	<b>Total RAC Room Air Conditioner</b>	0.0	0.0	1.1	1.8	2.2	2.3	2.2	1.7	1.1	0.6
	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	0.0	0.1	0.6	0.5	0.4	0.3	0.2	0.0	0.0	0.0
	<b>TOTAL SPACE HEATING (incl. rev AC)</b>	0.0	1.1	22.9	38.2	53.5	61.9	71.9	82.7	94.5	107.0
	<b>TOTAL SPACE COOLING</b>	0.0	0.0	0.6	1.0	1.2	1.2	1.1	0.9	0.6	0.3
	NRVU Ventilation units	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RVU Central Unidir.	0.0	0.0	2.3	2.1	2.2	2.3	2.3	2.3	2.3	2.2
	RVU Central Balanced VU ≤125W/fan (2 fans)	0.0	0.0	0.7	0.7	0.7	0.6	0.4	0.3	0.1	0.0
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total VU Ventilation Units</b>	0.0	0.0	3.3	2.8	2.9	2.9	2.8	2.6	2.4	2.2
	<b>TOTAL VENTILATION</b>	0.0	0.0	3.3	2.8	2.9	2.9	2.8	2.6	2.4	2.2
	LFL (T12,T8h,T8t,T5,other)	0.0	0.0	-1.0	-0.8	-1.7	-1.4	-1.3	-1.0	-0.8	-0.7
	HID (HPM, HPS, MH)	0.0	0.0	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	0.0	0.0
	CFLni (all shapes)	0.0	0.0	-0.1	-0.2	-0.3	-0.2	-0.1	-0.1	0.0	0.0
	CFLi (retrofit for GLS, HL)	0.0	0.7	-0.4	-1.1	-0.9	-0.7	-0.4	-0.3	-0.2	-0.1
	GLS (DLS & NDLS)	0.0	-0.8	-1.3	-1.0	-0.6	-0.3	-0.2	-0.1	-0.1	0.0
	HL (DLS & NDLS, LV & MV)	0.0	0.3	0.2	-2.4	-1.9	-1.0	-0.5	-0.3	-0.2	-0.1
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	0.5	1.6	3.8	2.1	1.4	1.4	1.6	1.6
	LED replacing HID (retrofit & luminaire)	0.0	0.0	1.6	0.1	0.5	0.5	0.5	0.5	0.5	0.5
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1
	LED replacing DLS (retrofit & luminaire)	0.0	0.2	1.0	0.3	0.1	-0.2	-0.1	0.0	0.0	0.0
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	3.4	3.2	0.3	-0.1	-0.5	-0.2	0.0	0.1
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	0.0	0.3	-2.9	-5.8	-5.7	-3.8	-2.6	-1.8	-1.3	-0.9
	SUBTOTAL LED	0.0	0.2	6.7	5.5	4.9	2.4	1.4	1.7	2.1	2.4
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	0.0	0.5	3.8	-0.3	-0.8	-1.4	-1.2	-0.2	0.8	1.4
	<b>DP Electronic Displays, total</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total VIDEO</b>	0	0	0	0	0	0	0	0	0	0
	<b>ES + DS total</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total PC, electricity</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total imaging equipment, electricity</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total SB (networked) StandBy (rest)</b>	0	0	0	0	0	0	0	0	0	0
	<b>EPS, double counted subtracted</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total UPS - Uninterrupted Power Supplies</b>	0	0	0	0	0	0	0	0	0	0
	<b>TOTAL ELECTRONICS</b>	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total RF household Refrigerators &amp; Freezers</b>	0.0	1.3	2.0	2.3	3.8	3.1	4.2	4.4	4.7	4.9

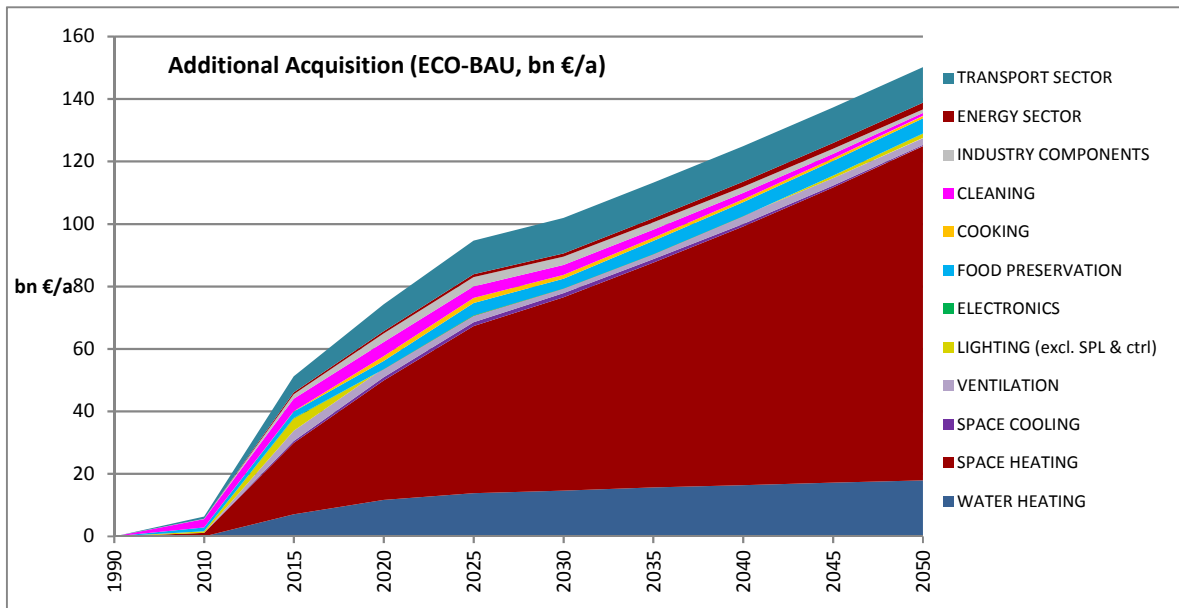
ACQADD

db	ADDED Acquisition (ECO-BAU, in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CF open vertical chilled multi deck (RVC2)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0
	CF open horizontal frozen island (RHF4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CF other supermarket display (non-BCs)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	CF Plug in one door beverage cooler	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
	CF Plug in horizontal ice cream freezer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CF Spiral vending machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CF Commercial Refrigeration</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.3</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>
	<b>PF Storage cabinets All types</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>0.0</b>	<b>1.3</b>	<b>2.0</b>	<b>2.7</b>	<b>4.0</b>	<b>3.2</b>	<b>4.2</b>	<b>4.5</b>	<b>4.7</b>	<b>4.9</b>
	CA El. Hobs	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	CA El. Ovens	0.0	0.0	0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.0
	CA Gas Hobs	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
	CA Gas Ovens	0.0	0.0	0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2
	CA Range Hoods	0.0	0.0	0.0	0.4	0.7	0.6	0.6	0.5	0.4	0.3
	<b>Total CA Cooking Appliances</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>1.5</b>	<b>1.7</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>0.9</b>	<b>0.7</b>
	<b>Total CM household Coffee Makers</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	<b>TOTAL COOKING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>1.5</b>	<b>1.7</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>0.9</b>	<b>0.7</b>
	<b>Total WM household Washing Machine</b>	<b>0.0</b>	<b>1.3</b>	<b>1.6</b>	<b>1.9</b>	<b>1.7</b>	<b>1.3</b>	<b>0.9</b>	<b>0.6</b>	<b>0.2</b>	<b>0.0</b>
	<b>Total DW household Dishwasher</b>	<b>0.0</b>	<b>1.3</b>	<b>1.6</b>	<b>1.6</b>	<b>1.6</b>	<b>1.6</b>	<b>1.5</b>	<b>1.3</b>	<b>1.2</b>	<b>1.0</b>
	LD vented el.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LD condens el.	0.0	0.0	0.2	0.4	0.4	0.3	0.2	0.1	0.0	0.0
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>
	VC dom	0.0	0.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0
	VC nondom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total VC Vacuum Cleaner</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>0.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	<b>TOTAL CLEANING</b>	<b>0.0</b>	<b>2.7</b>	<b>3.9</b>	<b>4.6</b>	<b>3.7</b>	<b>3.2</b>	<b>2.6</b>	<b>2.0</b>	<b>1.4</b>	<b>1.0</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	0.0	0.0	0.4	0.7	0.6	0.5	0.4	0.3	0.2	0.1
0.5	FAN Axial>300Pa	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.5	FAN Centr.FC	0.0	0.0	0.3	0.7	0.6	0.5	0.4	0.4	0.3	0.2
0.5	FAN Centr.BC-free	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
0.5	FAN Centr.BC	0.0	0.0	0.6	0.7	0.6	0.5	0.5	0.4	0.3	0.2
0.5	FAN Cross-flow	0.0	0.0	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.9</b>	<b>1.4</b>	<b>1.3</b>	<b>1.1</b>	<b>1.0</b>	<b>0.8</b>	<b>0.7</b>	<b>0.6</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Medium (L) 3-ph 75-375 kW no VSD	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0.0	0.0	0.3	1.1	1.1	1.0	0.8	0.7	0.5	0.2
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	0.0	0.0	0.4	0.7	0.7	0.6	0.5	0.4	0.2	0.1
0.45	Medium (L) 3-ph 75-375 kW with VSD	0.0	0.0	0.3	0.4	0.3	0.3	0.2	0.1	0.1	0.0
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>0.0</b>	<b>0.0</b>	<b>1.0</b>	<b>2.2</b>	<b>2.1</b>	<b>1.8</b>	<b>1.5</b>	<b>1.1</b>	<b>0.7</b>	<b>0.3</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>0.0</b>	<b>0.1</b>	<b>1.0</b>	<b>2.1</b>	<b>2.2</b>	<b>1.9</b>	<b>1.6</b>	<b>1.3</b>	<b>0.9</b>	<b>0.5</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.1
0.45	Small 1 ph 0.12-0.75 kW with VSD	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0
0.45	Small 3 ph 0.12-0.75 kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Large 3-ph LV 375-1000kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Explosion motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Explosion motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Brake motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Brake motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>

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db	ADDED Acquisition (ECO-BAU, in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.2</b>	<b>1.6</b>	<b>1.5</b>	<b>1.3</b>	<b>1.1</b>	<b>0.8</b>	<b>0.6</b>
	including double counted amounts	-	0	1	2	3	3	2	2	2	1
	<b>Total WP Water Pumps</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	CP Fixed Speed 5-1280 l/s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CP Variable speed 5-1280 l/s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CP Pistons 2-64 l/s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CP Standard Air Compressors</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>0.0</b>	<b>0.0</b>	<b>1.5</b>	<b>2.7</b>	<b>3.0</b>	<b>2.6</b>	<b>2.3</b>	<b>1.9</b>	<b>1.6</b>	<b>1.2</b>
	TRAF0 Distribution	0.0	0.0	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	TRAF0 Industry oil	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4
	TRAF0 Industry dry	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	TRAF0 Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TRAF0 DER oil	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
	TRAF0 DER dry	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.8	1.0
	TRAF0 Small	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total TRAF0 Utility Transformers</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>0.7</b>	<b>0.9</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.9</b>	<b>2.1</b>
	<b>TOTAL ENERGY SECTOR</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>0.7</b>	<b>0.9</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.9</b>	<b>2.1</b>
	Tyres C1, replacement for cars	0.0	0.8	3.0	4.9	5.7	6.0	6.0	6.0	6.0	6.0
	Tyres C1, OEM for cars	0.0	0.0	0.0	1.3	1.7	1.8	1.8	1.8	1.8	1.8
	<b>Tyres C1, total</b>	<b>0.0</b>	<b>0.8</b>	<b>3.0</b>	<b>6.2</b>	<b>7.4</b>	<b>7.8</b>	<b>7.8</b>	<b>7.8</b>	<b>7.8</b>	<b>7.8</b>
	Tyres C2, replacement for vans	0.0	0.0	0.1	0.5	0.6	0.7	0.7	0.7	0.7	0.7
	Tyres C2, OEM for vans	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
	<b>Tyres C2, total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.5</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>
	Tyres C3, replacement for trucks/busses	0.0	0.0	1.9	1.8	2.0	2.1	2.1	2.1	2.1	2.1
	Tyres C3, OEM for trucks/busses	0.0	0.0	0.0	0.1	0.6	0.6	0.6	0.6	0.6	0.6
	<b>Tyres C3, total</b>	<b>0.0</b>	<b>0.0</b>	<b>1.9</b>	<b>1.8</b>	<b>2.6</b>	<b>2.7</b>	<b>2.7</b>	<b>2.7</b>	<b>2.7</b>	<b>2.7</b>
	<b>Tyres, total C1+C2+C3</b>	<b>0.0</b>	<b>0.8</b>	<b>5.1</b>	<b>8.5</b>	<b>10.7</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>
	<b>TRANSPORT SECTOR</b>	<b>0.0</b>	<b>0.8</b>	<b>5.1</b>	<b>8.5</b>	<b>10.7</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>
	<b>Total Added Acquisition (in bn euros)</b>	<b>0</b>	<b>6</b>	<b>51</b>	<b>74</b>	<b>95</b>	<b>102</b>	<b>113</b>	<b>125</b>	<b>137</b>	<b>150</b>
	<b>ADDED Acquisition (ECO-BAU, summary table)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>0.0</b>	<b>0.0</b>	<b>7.0</b>	<b>11.6</b>	<b>13.8</b>	<b>14.6</b>	<b>15.6</b>	<b>16.4</b>	<b>17.2</b>	<b>17.9</b>
	<b>SPACE HEATING</b>	<b>0.0</b>	<b>1.1</b>	<b>22.9</b>	<b>38.2</b>	<b>53.5</b>	<b>61.9</b>	<b>71.9</b>	<b>82.7</b>	<b>94.5</b>	<b>107.0</b>
	<b>SPACE COOLING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.0</b>	<b>1.2</b>	<b>1.2</b>	<b>1.1</b>	<b>0.9</b>	<b>0.6</b>	<b>0.3</b>
	<b>VENTILATION</b>	<b>0.0</b>	<b>0.0</b>	<b>3.3</b>	<b>2.8</b>	<b>2.9</b>	<b>2.9</b>	<b>2.8</b>	<b>2.6</b>	<b>2.4</b>	<b>2.2</b>
	<b>LIGHTING (excl. SPL &amp; ctrl)</b>	<b>0.0</b>	<b>0.5</b>	<b>3.8</b>	<b>-0.3</b>	<b>-0.8</b>	<b>-1.4</b>	<b>-1.2</b>	<b>-0.2</b>	<b>0.8</b>	<b>1.4</b>
	<b>ELECTRONICS</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	<b>FOOD PRESERVATION</b>	<b>0.0</b>	<b>1.3</b>	<b>2.0</b>	<b>2.7</b>	<b>4.0</b>	<b>3.2</b>	<b>4.2</b>	<b>4.5</b>	<b>4.7</b>	<b>4.9</b>
	<b>COOKING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>1.5</b>	<b>1.7</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>0.9</b>	<b>0.7</b>
	<b>CLEANING</b>	<b>0.0</b>	<b>2.7</b>	<b>3.9</b>	<b>4.6</b>	<b>3.7</b>	<b>3.2</b>	<b>2.6</b>	<b>2.0</b>	<b>1.4</b>	<b>1.0</b>
	<b>INDUSTRY COMPONENTS</b>	<b>0.0</b>	<b>0.0</b>	<b>1.5</b>	<b>2.7</b>	<b>3.0</b>	<b>2.6</b>	<b>2.3</b>	<b>1.9</b>	<b>1.6</b>	<b>1.2</b>
	<b>ENERGY SECTOR</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>0.7</b>	<b>0.9</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.9</b>	<b>2.1</b>
	<b>TRANSPORT SECTOR</b>	<b>0.0</b>	<b>0.8</b>	<b>5.1</b>	<b>8.5</b>	<b>10.7</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>	<b>11.4</b>
	<b>Added Acquisition TOTAL in bn euros</b>	<b>0</b>	<b>6</b>	<b>51</b>	<b>74</b>	<b>95</b>	<b>102</b>	<b>113</b>	<b>125</b>	<b>137</b>	<b>150</b>
	(in bn euros 2015, incl VAT & install)										
	Increase in % versus BAU (from 1990=0)	0.0%	1.5%	11.2%	14.4%	16.8%	16.8%	17.9%	19.0%	20.2%	21.3%
	Increase in % versus BAU (from 2010=0)	-3.3%	0.0%	9.8%	13.2%	15.7%	15.7%	16.9%	18.1%	19.2%	20.4%

# ACQADD



Additional Acquisition costs for VSDs only (without motor)

VSD - Very Small 0.12 - 0.75 kW 1-phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VSD - Very Small 0.12 - 0.75 kW 3-phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VSD - Small 0.75 - 7.5 kW 3-phase	0.0	0.0	0.2	0.7	0.7	0.6	0.5	0.3	0.2	0.0
VSD - Medium 7.5 - 75kW 3-phase	0.0	0.0	0.3	0.5	0.5	0.4	0.3	0.2	0.1	0.0
VSD - Large 75 - 375kW 3-phase	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0
VSD - Very Large 375 - 1,000kW 3-phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Additional Acquisition, VSDs only (ECO-BAU)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.4</b>	<b>1.4</b>	<b>1.1</b>	<b>0.8</b>	<b>0.6</b>	<b>0.3</b>	<b>0.0</b>

## RATES

REAL Energy & consumables rates			1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
Data are a linked copy of those on GENERAL_1, see additional info and user settings on sheets General_1 and _2.												
RES=residential (incl. VAT); IND=industry, TER=tertiary/services, OTH=other sector (all excl. VAT)												
REAL rates (in Euro 2015, inflation corrected)												
<b>electricity</b>												
Rel1	electricity RES	€/kwh elec	0.202	0.184	0.210	0.207	0.217	0.228	0.240	0.252	0.265	0.278
Rel2	electricity IND	€/kwh elec	0.128	0.112	0.119	0.114	0.120	0.126	0.133	0.139	0.146	0.154
Rel3	electricity TER	€/kwh elec	0.176	0.159	0.178	0.174	0.183	0.192	0.202	0.213	0.223	0.235
Rel4	electricity OTH	€/kwh elec	0.176	0.159	0.178	0.174	0.183	0.192	0.202	0.213	0.223	0.235
<b>natural gas (heating fuel)</b>												
Rgas1	natural gas RES	€/kWh NCV	0.058	0.065	0.076	0.069	0.074	0.080	0.086	0.093	0.100	0.108
Rgas2	natural gas IND	€/kWh NCV	0.027	0.038	0.039	0.033	0.035	0.038	0.041	0.044	0.048	0.051
Rgas3	natural gas TER	€/kWh NCV	0.045	0.054	0.061	0.054	0.058	0.062	0.067	0.072	0.078	0.084
Rgas4	natural gas OTH	€/kWh NCV	0.045	0.054	0.061	0.054	0.058	0.062	0.067	0.072	0.078	0.084
<b>gas oil (heating fuel)</b>												
Roil1	gas oil heating RES	€/kWh NCV	0.041	0.079	0.069	0.077	0.083	0.090	0.097	0.104	0.112	0.121
Roil2	gas oil heating IND	€/kWh NCV	0.035	0.066	0.057	0.064	0.069	0.075	0.080	0.087	0.093	0.101
Roil3	gas oil heating TER	€/kWh NCV	0.035	0.066	0.057	0.064	0.069	0.075	0.080	0.087	0.093	0.101
Roil4	gas oil heating OTH	€/kWh NCV	0.035	0.066	0.057	0.064	0.069	0.075	0.080	0.087	0.093	0.101
<b>fossil fuel (heating fuel) (mix of gas and oil)</b>												
Rfossil1	oil-gas mix RES	€/kWh NCV	0.054	0.068	0.075	0.071	0.076	0.082	0.088	0.095	0.102	0.110
Rfossil2	oil-gas mix IND	€/kWh NCV	0.029	0.043	0.043	0.039	0.042	0.045	0.049	0.053	0.057	0.061
Rfossil3	oil-gas mix TER	€/kWh NCV	0.043	0.056	0.060	0.056	0.060	0.065	0.070	0.075	0.081	0.087
Rfossil4	oil-gas mix OTH	€/kWh NCV	0.043	0.056	0.060	0.056	0.060	0.065	0.070	0.075	0.081	0.087
<b>LPG (heating fuel)</b>												
RLPG1	LPG/propane RES	€/kWh NCV	0.059	0.100	0.085	0.088	0.095	0.102	0.110	0.119	0.128	0.138
RLPG2	LPG/propane IND	€/kWh NCV	0.050	0.083	0.071	0.073	0.079	0.085	0.092	0.099	0.106	0.115
RLPG3	LPG/propane TER	€/kWh NCV	0.050	0.083	0.071	0.073	0.079	0.085	0.092	0.099	0.106	0.115
RLPG4	LPG/propane OTH	€/kWh NCV	0.050	0.083	0.071	0.073	0.079	0.085	0.092	0.099	0.106	0.115
<b>Firewood, logs (heating fuel)</b>												
Rwood1	firewood logs RES	€/kWh NCV	0.028	0.033	0.049	0.051	0.057	0.063	0.069	0.076	0.084	0.093
Rwood2	firewood logs IND	€/kWh NCV	0.023	0.027	0.041	0.043	0.047	0.052	0.058	0.064	0.070	0.078
Rwood3	firewood logs TER	€/kWh NCV	0.023	0.027	0.041	0.043	0.047	0.052	0.058	0.064	0.070	0.078
Rwood4	firewood logs OTH	€/kWh NCV	0.023	0.027	0.041	0.043	0.047	0.052	0.058	0.064	0.070	0.078
<b>Wood pellets (heating fuel)</b>												
Rpellets1	pellets RES	€/kWh NCV	0.043	0.051	0.053	0.056	0.061	0.068	0.075	0.083	0.091	0.101
Rpellets2	pellets IND	€/kWh NCV	0.036	0.042	0.045	0.046	0.051	0.057	0.062	0.069	0.076	0.084
Rpellets3	pellets TER	€/kWh NCV	0.036	0.042	0.045	0.046	0.051	0.057	0.062	0.069	0.076	0.084
Rpellets4	pellets OTH	€/kWh NCV	0.036	0.042	0.045	0.046	0.051	0.057	0.062	0.069	0.076	0.084
<b>Coal (heating fuel)</b>												
Rcoal1	coal RES	€/kWh NCV	0.017	0.031	0.018	0.029	0.035	0.043	0.052	0.064	0.077	0.094
Rcoal2	coal IND	€/kWh NCV	0.014	0.026	0.015	0.024	0.029	0.036	0.044	0.053	0.064	0.078
Rcoal3	coal TER	€/kWh NCV	0.014	0.026	0.015	0.024	0.029	0.036	0.044	0.053	0.064	0.078
Rcoal4	coal OTH	€/kWh NCV	0.014	0.026	0.015	0.024	0.029	0.036	0.044	0.053	0.064	0.078
<b>Wood chips (heating fuel)</b>												
Rwoodchip1	wood chips RES	€/kWh NCV	0.021	0.030	0.034	0.036	0.040	0.044	0.049	0.054	0.060	0.066
Rwoodchip2	wood chips IND	€/kWh NCV	0.017	0.025	0.028	0.030	0.033	0.037	0.041	0.045	0.050	0.055
Rwoodchip3	wood chips TER	€/kWh NCV	0.017	0.025	0.028	0.030	0.033	0.037	0.041	0.045	0.050	0.055
Rwoodchip4	wood chips OTH	€/kWh NCV	0.017	0.025	0.028	0.030	0.033	0.037	0.041	0.045	0.050	0.055
<b>Petrol (automotive)</b>												
Rpetrol1	petrol RES	€/kWh NCV	0.116	0.158	0.153	0.156	0.172	0.190	0.210	0.232	0.256	0.282
Rpetrol2	petrol IND	€/kWh NCV	0.099	0.132	0.128	0.130	0.143	0.158	0.175	0.193	0.213	0.235
Rpetrol3	petrol TER	€/kWh NCV	0.099	0.132	0.128	0.130	0.143	0.158	0.175	0.193	0.213	0.235
Rpetrol4	petrol OTH	€/kWh NCV	0.099	0.132	0.128	0.130	0.143	0.158	0.175	0.193	0.213	0.235
<b>Diesel (automotive)</b>												
Rdiesel1	diesel RES	€/kWh NCV	0.076	0.129	0.126	0.135	0.149	0.164	0.181	0.200	0.221	0.244
Rdiesel2	diesel IND	€/kWh NCV	0.065	0.108	0.105	0.112	0.124	0.137	0.151	0.167	0.184	0.203
Rdiesel3	diesel TER	€/kWh NCV	0.065	0.108	0.105	0.112	0.124	0.137	0.151	0.167	0.184	0.203
Rdiesel4	diesel OTH	€/kWh NCV	0.065	0.108	0.105	0.112	0.124	0.137	0.151	0.167	0.184	0.203
<b>Non-energy consumables</b>												
<b>other</b>												
Rwater1	water & sewage R	€/m³	2.95	3.76	4.09	4.49	5.20	6.03	6.99	8.10	9.39	10.89
Rtoner	copier/printer R & NR	€/page	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Rpaper	copier/printer R & NR	€/page	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Rdishw1	dishwasher det. R	€/cycle	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Rwash1	washing mach. det. R	€/cycle	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Rbags1	vacuum cl. bags R	€/year(57h)	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56	7.56

NRGCOSTBAU

db	BAU Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	52	54	63	61	65	69	73	80	89	98
	<b>Total CH Central Heating combi, water heat</b>	13	26	30	30	34	39	44	51	59	67
	<b>TOTAL WATER HEATING</b>	65	80	93	91	99	107	118	131	147	165
	<b>Total CH Central Heating boiler, space heat</b>	125	145	145	127	127	134	139	142	140	134
	SFB Wood Manual	9.4	2.9	3.4	2.6	2.0	1.3	0.9	0.7	0.6	0.6
	SFB Wood Direct Draft	0.1	0.8	2.1	3.1	4.1	4.4	4.9	5.8	7.4	9.4
	SFB Coal	1.8	0.9	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1
	SFB Pellets	0.0	0.5	0.8	1.2	1.6	2.0	2.2	2.5	2.8	3.3
	SFB Wood chips	0.0	0.4	0.5	0.6	0.6	0.6	0.8	0.9	1.0	1.2
	<b>Total Solid Fuel Boiler</b>	11	5	7	8	9	8	9	10	12	15
	CHAE-S (≤ 400 kW)	0.7	1.7	2.1	2.2	2.3	2.4	2.6	2.7	2.9	3.0
	CHAE-L (> 400 kW)	1.0	2.1	2.6	2.6	2.7	2.6	2.5	2.5	2.5	2.5
	CHWE-S (≤ 400 kW)	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.2	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
	CHWE-L (> 1500 kW)	0.1	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	3.7	5.3	6.4	6.6	7.2	7.7	8.2	8.8	9.3	9.9
	HT PCH-AE-L	3.6	5.0	6.1	6.3	6.8	7.3	7.7	8.2	8.7	9.3
	HT PCH-WE-S	0.8	1.1	1.3	1.4	1.5	1.6	1.7	1.8	2.0	2.1
	HT PCH-WE-M	1.5	2.2	2.6	2.7	3.0	3.2	3.4	3.7	3.9	4.1
	HT PCH-WE-L	0.3	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9
	AC rooftop	0.6	1.2	1.3	1.1	0.9	0.6	0.3	0.1	0.1	0.1
	AC splits	0.8	2.0	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4
	AC VRF	0.0	0.5	0.8	1.1	1.4	1.8	2.1	2.5	2.7	3.0
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Cooling</b>	13	22	27	28	30	31	32	34	36	37
	AC rooftop (rev)	0.7	2.0	2.2	1.9	1.6	1.0	0.5	0.2	0.0	0.0
	AC splits (rev)	1.4	3.8	4.4	4.2	4.1	3.9	3.7	3.4	3.2	3.0
	AC VRF (rev)	0.0	1.3	2.1	2.8	3.6	4.6	5.4	6.0	6.3	6.5
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	AHF	8.7	8.7	7.7	6.2	5.8	5.5	5.2	5.0	4.7	4.5
	AHE	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC Heating</b>	11	16	17	15	15	15	15	15	15	14
	<b>Total AHC Heating &amp; Cooling</b>	24	39	44	43	45	46	47	49	50	52
								0			
	LH open fireplace	0.4	0.6	0.9	1.0	1.2	1.3	1.4	1.6	1.7	1.9
	LH closed fireplace/inset	0.5	1.3	2.3	2.8	3.4	4.0	4.5	5.0	5.4	5.8
	LH wood stove	1.1	1.2	1.8	1.9	2.2	2.4	2.7	2.9	3.2	3.4
	LH coal stove	0.4	0.4	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3
	LH cooker	0.2	0.3	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.4
	LH SHR stove	0.5	0.7	1.1	1.3	1.5	1.9	2.3	2.6	3.0	3.3
	LH pellet stove	0.0	0.4	0.6	0.8	1.0	1.2	1.3	1.5	1.6	1.7
	LH open fire gas	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	LH closed fire gas	0.8	0.8	0.9	0.8	0.9	0.9	1.0	1.0	1.1	1.2
	LH flueless fuel heater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	5.4	4.8	5.4	5.3	5.5	5.8	6.0	6.2	6.4	6.6
	LH elec.convect	22.3	20.0	22.5	21.9	22.8	23.9	25.0	25.8	26.5	27.1
	LH elec.storage	1.7	1.5	1.7	1.6	1.7	1.8	1.9	1.9	2.0	2.0
	LH elec.underfloor	3.1	2.8	3.2	3.1	3.3	3.4	3.6	3.7	3.8	4.0
	LH luminous heaters	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH tube heaters	0.5	0.6	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.8
	<b>LH total</b>	37	36	42	43	46	49	52	55	57	60
	RAC (cooling demand), all types <12 kW	0	3	4	5	6	7	8	8	9	10
	RAC (heating demand), reversible <12kW	0	4	6	8	10	11	11	12	12	12
	<b>Total RAC Room Air Conditioner</b>	1	7	10	12	16	18	19	20	21	22
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	3	4	4	4	4	5	5	5	5	5
	<b>TOTAL SPACE HEATING</b>	185	206	217	200	207	217	226	233	236	235
	<b>TOTAL SPACE COOLING</b>	14	26	31	32	36	38	40	42	45	47
	NRVU electricity	3	9	12	12	13	14	15	17	18	20
1	NRVU heat (negative=saving vs. natural ventilation)	-6	-35	-44	-46	-55	-63	-72	-83	-95	-108
	RVU Central Unidir. VU ≤125W/fan (1 fan)	2	3	4	4	4	4	4	5	5	6
	RVU Central Balanced VU ≤125W/fan (2 fans)	0	0	0	1	1	2	2	2	3	3
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0	0	0	0	0	0	0	1	1	1
1	RVU Central Unidir., heat (negative=saving)	-1	-2	-3	-3	-3	-3	-3	-4	-4	-5
1	RVU Central Balanced, heat (negative=saving)	0	-1	-1	-2	-3	-4	-6	-7	-8	-9
1	RVU Local Balanced, heat (negative=saving)	0	0	0	0	-1	-1	-1	-2	-2	-3
	<b>Total VU Ventilation Units</b>	-2	-25	-32	-34	-43	-51	-61	-71	-83	-95
	<b>TOTAL VENTILATION (from electricity)</b>	5	12	16	17	18	20	22	24	26	29
1	<i>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	-	-	-	-	-	-	-	-	-	-

NRGCOSTBAU

db	BAU Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LFL (T12,T8h,T8t,T5,other)		15.1	20.6	27.4	30.1	31.3	28.2	23.2	19.1	15.7	13.0
HID (HPM, HPS, MH)		5.8	10.9	12.7	12.6	11.3	8.0	4.5	2.6	1.5	0.9
CFLni (all shapes)		0.4	1.6	2.0	1.9	1.8	1.3	0.8	0.4	0.2	0.2
CFLi (retrofit for GLS, HL)		0.2	2.2	3.3	3.3	3.0	2.5	1.7	1.2	0.8	0.5
GLS (DLS & NDLS)		17.5	12.9	10.7	7.6	4.7	2.9	1.8	1.1	0.7	0.4
HL (DLS & NDLS, LV & MV)		1.4	7.3	10.8	12.5	9.4	5.0	2.7	1.5	0.9	0.5
LED replacing LFL (retrofit & luminaire)		0.0	0.0	0.2	1.5	4.7	9.8	15.6	21.6	28.0	35.2
LED replacing HID (retrofit & luminaire)		0.0	0.0	0.1	1.2	3.7	6.9	9.9	12.6	15.7	19.1
LED replacing CFLni (retrofit & luminaire)		0.0	0.0	0.0	0.1	0.2	0.6	0.9	1.1	1.4	1.6
LED replacing DLS (retrofit & luminaire)		0.0	0.0	0.0	0.2	0.5	0.9	1.2	1.4	1.7	1.9
LED replacing NDLS (retrofit & luminaire)		0.0	0.0	0.1	0.7	2.1	3.5	4.9	6.2	7.3	8.5
Special Purpose Lamps (exempt)		6.6	9.0	8.7	7.2	6.2	5.4	5.6	5.9	6.2	6.6
Lighting controls and standby		1.9	2.5	2.4	2.0	1.7	1.5	1.6	1.7	1.7	1.8
<b>TOTAL LIGHTING (incl. SPL, ctrl)</b>		<b>49</b>	<b>67</b>	<b>78</b>	<b>81</b>	<b>81</b>	<b>77</b>	<b>74</b>	<b>76</b>	<b>82</b>	<b>90</b>
<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>		<b>40</b>	<b>56</b>	<b>67</b>	<b>72</b>	<b>73</b>	<b>70</b>	<b>67</b>	<b>69</b>	<b>74</b>	<b>82</b>
DP TV on-mode, total all types		5.8	13.6	17.5	18.0	17.1	20.3	21.2	20.8	21.3	22.9
DP TV standby, standard (NoNA)		0.8	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DP TV standby, LoNA		0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0
DP TV standby, HiNA ('Smart')		0.0	0.0	0.4	1.0	1.6	2.1	2.3	2.2	2.0	1.7
<b>DP TV standby, total all types</b>		<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>DP TV total on-mode + standby</b>		<b>7</b>	<b>14</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>25</b>
DP Monitor on-mode		0.2	2.5	1.7	1.2	1.2	1.1	0.9	0.8	0.9	0.9
DP Monitor standby		0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>DP Monitor total</b>		<b>0</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
DP Signage on-mode		0.0	0.2	1.5	3.4	4.3	4.4	4.3	4.3	4.3	4.5
DP Signage standby		0.0	0.0	0.2	0.5	0.6	0.7	0.6	0.6	0.6	0.7
<b>DP Signage total</b>		<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
<b>DP Electronic Displays, total on-mode</b>		<b>6</b>	<b>16</b>	<b>21</b>	<b>23</b>	<b>23</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>28</b>
<b>DP Electronic Displays, total standby</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>
<b>DP Electronic Displays, total</b>		<b>7</b>	<b>17</b>	<b>22</b>	<b>24</b>	<b>25</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>31</b>
SSTB		0.0	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CSTB		0.0	1.3	3.5	3.9	4.2	4.3	4.8	5.4	6.1	6.9
<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>7</b>
VIDEO players/recorders		0.0	0.4	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO projectors		0.0	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
VIDEO game consoles		0.0	0.8	1.7	2.3	2.9	3.2	3.4	3.5	3.7	3.9
<b>Total VIDEO</b>		<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>
<i>ES&amp;DS only, without effects on infrastructure</i>											
ES tower 1-socket traditional		0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES rack 1-socket traditional		0.0	0.5	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5
ES rack 2-socket traditional		0.1	2.3	1.3	0.8	1.0	1.2	1.4	1.4	1.5	1.6
ES rack 2-socket cloud		0.0	1.3	2.2	2.4	2.9	3.6	4.1	4.3	4.5	4.7
ES rack 4-socket traditional		0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
ES rack 4-socket cloud		0.0	0.1	0.3	0.4	0.4	0.6	0.6	0.7	0.7	0.7
ES rack 2-socket resilient trad.		0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1
ES rack 2-socket resilient cloud		0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
ES rack 4-socket resilient trad.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient cloud		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES blade 1-socket traditional		0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
ES blade 2-socket traditional		0.1	1.0	0.6	0.4	0.4	0.6	0.6	0.7	0.7	0.7
ES blade 2-socket cloud		0.0	0.6	1.0	1.1	1.4	1.8	2.0	2.1	2.2	2.3
ES blade 4-socket traditional		0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 4-socket cloud		0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3
<b>ES total traditional</b>		<b>0</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>ES total cloud</b>		<b>0</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>
<b>ES Enterprise Servers total</b>		<b>0</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>
DS Online 2		0.1	1.0	1.5	2.0	2.6	3.3	3.6	3.8	4.0	4.2
DS Online 3		0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.6	0.6
DS Online 4		0.0	0.6	0.8	1.1	1.4	1.8	2.0	2.1	2.2	2.3
<b>DS Data Storage products total</b>		<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>
<b>ES + DS total (excl. infrastructure)</b>		<b>0</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>12</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>
PC Desktop		2.8	3.7	2.5	0.9	0.6	0.6	0.6	0.7	0.7	0.7
PC Notebook		0.0	1.3	0.8	0.2	0.1	0.1	0.1	0.1	0.2	0.2
PC Tablet/slate		0.0	0.0	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.6
PC Thin client		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC Workstation		0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1
<b>Total PC, electricity</b>		<b>3</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>
EP-Copier mono		1.8	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
EP-Copier colour		0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.6
EP-printer mono		1.6	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1
EP-printer colour		0.0	0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.1	1.3
IJ SFD printer		0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IJ MFD printer		0.3	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8
<b>Total imaging equipment, electricity</b>		<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>



NRGCOSTBAU

db	BAU Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	0.0	0.8	1.0	1.1	1.2	1.3	1.3	1.2	1.0	0.8
	SB Home NAS, on-mode hours	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
	SB Home Phones (fixed), on-mode hours	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	SB Office Phones (fixed), on-mode hours	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	SB Home Gateway, standby hours	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	SB Home Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	0.0	0.8	1.6	2.3	2.5	2.6	2.6	2.4	2.1	1.5
	SB Home NAS, idle hours	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	SB Home Phones (fixed), idle hours	0.1	0.7	0.9	0.9	0.9	0.8	0.7	0.6	0.4	0.3
	SB Office Phones (fixed), idle hours	0.1	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2
	<b>Total SB (networked) StandBy (rest)</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>3</b>
db	<i>EPS Active mode (for electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
0.6	EPS 10–12 W	0.0	1.4	2.6	2.7	2.8	2.8	2.8	2.9	2.9	3.0
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 30–65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1
0.0	EPS 12–15 W	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>EPS, total for active mode</b>	<b>0.0</b>	<b>2.2</b>	<b>3.5</b>	<b>3.5</b>	<b>3.6</b>	<b>3.6</b>	<b>3.7</b>	<b>3.7</b>	<b>3.8</b>	<b>3.9</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
0.0	EPS 10–12 W	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
0.0	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>	<b>0.0</b>	<b>0.3</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
	<b>EPS, overall total (active + no-load)</b>	<b>0.0</b>	<b>2.6</b>	<b>3.9</b>	<b>3.9</b>	<b>3.9</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.2</b>
	<b>EPS, double counted subtracted</b>	<b>0.0</b>	<b>1.3</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.1</b>
	UPS below 1.5 kVA	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.8
	UPS 1.5 to 5 kVA	0.5	0.9	1.1	1.2	1.5	1.8	2.2	2.6	2.9	3.3
	UPS 5 to 10 kVA	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
	UPS 10 to 200 kVA	0.3	0.6	0.8	0.8	0.9	1.1	1.3	1.5	1.7	2.0
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>1.0</b>	<b>1.9</b>	<b>2.3</b>	<b>2.4</b>	<b>3.0</b>	<b>3.6</b>	<b>4.3</b>	<b>5.1</b>	<b>5.8</b>	<b>6.5</b>
	<b>TOTAL ELECTRONICS</b>	<b>15</b>	<b>42</b>	<b>51</b>	<b>53</b>	<b>57</b>	<b>65</b>	<b>69</b>	<b>71</b>	<b>73</b>	<b>76</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>28</b>	<b>25</b>	<b>29</b>	<b>28</b>	<b>30</b>	<b>31</b>	<b>33</b>	<b>34</b>	<b>36</b>	<b>38</b>
	CF open vertical chilled multi deck (RVC2)	2.6	2.3	2.4	2.2	2.2	2.3	2.4	2.5	2.7	2.9
	CF open horizontal frozen island (RHF4)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
	CF other supermarket display (non-BCs)	4.6	4.2	4.6	4.4	4.6	5.0	5.5	6.0	6.5	7.1
	CF Plug in one door beverage cooler	3.2	2.8	3.0	2.7	2.8	3.0	3.2	3.4	3.7	4.1
	CF Plug in horizontal ice cream freezer	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.9	0.9
	CF Spiral vending machine	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4
	<b>Total CF Commercial Refrigeration</b>	<b>12</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>16</b>
	PF Storage cabinet Chilled Vertical (CV)	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.8	0.8
	PF Storage cabinet Frozen Vertical (FV)	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0
	PF Storage cabinet Chilled Horizontal (CH)	0.2	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6
	PF Storage cabinet Frozen Horizontal (FH)	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4
	<b>PF Storage cabinets All types</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.6</b>	<b>1.8</b>	<b>1.9</b>	<b>2.1</b>	<b>2.3</b>	<b>2.6</b>	<b>2.8</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.4	0.8	1.0	1.1	1.3	1.5	1.8	2.0	2.3	2.6
	PF Process Chiller AC MT L > 300 kW	0.4	0.8	1.0	1.1	1.3	1.5	1.7	2.0	2.2	2.5
	PF Process Chiller AC LT S ≤ 200 kW	0.4	0.8	1.0	1.1	1.3	1.5	1.8	2.0	2.3	2.6
	PF Process Chiller AC LT L > 200 kW	0.4	0.8	1.1	1.2	1.4	1.6	1.8	2.1	2.4	2.7
	PF Process Chiller WC MT S ≤ 300 kW	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7
	PF Process Chiller WC MT L > 300 kW	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.1
	PF Process Chiller WC LT S ≤ 200 kW	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9
	PF Process Chiller WC LT L > 200 kW	0.2	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.2
	<b>PF Process Chiller All MT&amp;LT</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>13</b>	<b>14</b>
	PF Condensing Unit MT S 0.2-1 kW	1.1	0.8	0.9	0.9	1.0	1.1	1.3	1.4	1.6	1.9
	PF Condensing Unit MT M 1-5 kW	2.8	2.0	2.2	2.2	2.5	2.9	3.2	3.7	4.2	4.7
	PF Condensing Unit MT L 5-20 kW	3.5	2.5	2.7	2.8	3.1	3.5	4.0	4.5	5.1	5.8
	PF Condensing Unit MT XL 20-50 kW	3.5	2.5	2.7	2.7	3.1	3.5	4.0	4.5	5.1	5.8
	PF Condensing Unit LT S 0.1-0.4 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	PF Condensing Unit LT M 0.4-2 kW	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9
	PF Condensing Unit LT L 2-8 kW	0.9	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.3	1.4
	PF Condensing Unit LT XL 8-20 kW	2.7	1.9	2.1	2.1	2.4	2.7	3.1	3.5	4.0	4.5
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>15</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>17</b>	<b>20</b>	<b>22</b>	<b>25</b>
	<b>PF Professional Refrigeration, Total</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>24</b>	<b>27</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>49</b>	<b>46</b>	<b>52</b>	<b>51</b>	<b>55</b>	<b>59</b>	<b>64</b>	<b>69</b>	<b>75</b>	<b>80</b>

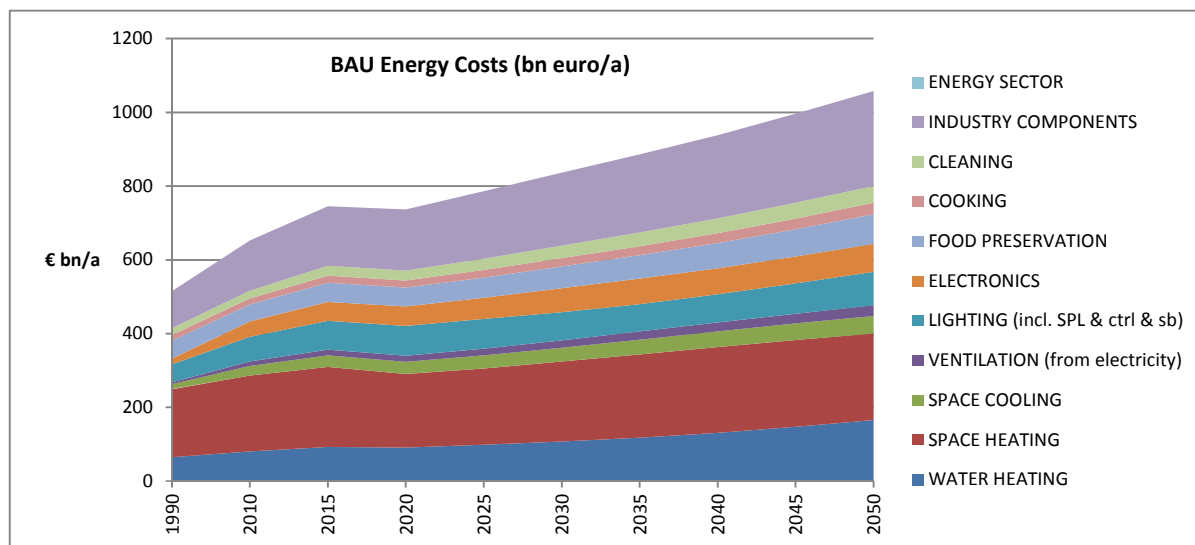
NRGCOSTBAU

db	BAU Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	4	6	7	8	9	10	11	12	13	14
	CA El. Ovens	5	4	4	4	4	5	5	5	6	6
	CA Gas Hobs	2	2	2	2	2	2	2	2	2	2
	CA Gas Ovens	1	1	1	1	1	1	1	1	1	1
	CA Range Hoods	2	2	3	3	3	3	4	4	4	5
	<b>Total CA Cooking Appliances</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>
	CM Dripfilter (glass)	1.3	0.8	0.8	0.7	0.6	0.6	0.7	0.7	0.8	0.8
	CM Dripfilter (thermos)	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
	CM Dripfilter (full automatic)	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
	CM Pad filter	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
	CM Hard cap espresso	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Semi-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	0.9	0.6	0.6	0.5	0.4	0.4	0.5	0.5	0.5	0.5
	CM Dripfilter (thermos), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
	CM Hard cap espresso, standby/keep warm	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	CM Semi-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CM household Coffee Makers</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<b>TOTAL COOKING</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>31</b>
	<b>Total WM household Washing Machine</b>	<b>11</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
	<b>Total DW household Dishwasher</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
	LD vented el.	2	2	2	2	2	2	3	3	3	3
	LD condens el.	0	3	4	4	5	5	6	6	6	7
	LD vented gas	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>	<b>2</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>
	VC dom	2	3	5	5	7	9	10	12	13	14
	VC nondom	1	1	1	1	1	1	1	2	2	2
	<b>Total VC Vacuum Cleaner</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>15</b>	<b>16</b>
	<b>TOTAL CLEANING</b>	<b>18</b>	<b>21</b>	<b>26</b>	<b>27</b>	<b>31</b>	<b>34</b>	<b>37</b>	<b>40</b>	<b>43</b>	<b>45</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	3	8	10	11	13	14	15	16	17	18
0.5	FAN Axial>300Pa	5	14	18	19	21	22	23	25	26	27
0.5	FAN Centr.FC	1	3	3	4	4	5	5	5	6	6
0.5	FAN Centr.BC-free	4	7	9	9	11	12	14	15	16	17
0.5	FAN Centr.BC	4	7	10	11	12	14	16	18	21	23
0.5	FAN Cross-flow	0	0	0	1	1	1	1	1	1	1
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>9</b>	<b>20</b>	<b>25</b>	<b>27</b>	<b>31</b>	<b>34</b>	<b>37</b>	<b>40</b>	<b>43</b>	<b>46</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	16	17	20	20	21	21	22	22	21	21
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	23	27	31	31	32	33	33	32	31	29
0.45	Medium (L) 3-ph 75-375 kW no VSD	48	54	61	60	62	61	59	54	49	47
0.45	<b>Total 3-ph 0.75-375 kW no VSD</b>	<b>87</b>	<b>98</b>	<b>112</b>	<b>111</b>	<b>115</b>	<b>116</b>	<b>113</b>	<b>108</b>	<b>102</b>	<b>97</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	2	3	3	4	5	6	7	9	11
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	2	4	6	6	8	10	12	15	18	22
0.45	Medium (L) 3-ph 75-375 kW with VSD	5	12	16	19	24	30	37	46	55	63
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>8</b>	<b>18</b>	<b>24</b>	<b>29</b>	<b>36</b>	<b>45</b>	<b>55</b>	<b>68</b>	<b>82</b>	<b>96</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>95</b>	<b>116</b>	<b>137</b>	<b>140</b>	<b>151</b>	<b>161</b>	<b>169</b>	<b>176</b>	<b>184</b>	<b>193</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	1	2	2	2	2	2	2	2	2
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	2	2	2	2	2	2	3	3	3	3
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	1	1
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	24	26	28	25	25	25	25	27	28	29
0.45	Large 3-ph LV 375-1000kW with VSD	1	6	10	13	16	20	22	24	27	29
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>26</b>	<b>32</b>	<b>37</b>	<b>38</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>51</b>	<b>54</b>	<b>58</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	1	1	1	1	1	1	1	1	1
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	2	2	2	2	2	2	3	3	3
0.45	Explosion motors (L) 3-ph 75-375 kW	2	3	4	4	4	5	5	5	6	6
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>10</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0	0	1	1	1	1	1	1	1	1
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	1	1	1	1	2	2	2	2	2
0.45	Brake motors (L) 3-ph 75-375 kW	1	2	2	2	2	2	2	3	3	3
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>14</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>75</b>	<b>93</b>	<b>109</b>	<b>111</b>	<b>120</b>	<b>128</b>	<b>136</b>	<b>143</b>	<b>150</b>	<b>158</b>

## NRGCOSTBAU

db	BAU Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WP Water Pumps</b>	<b>14</b>	<b>17</b>	<b>20</b>	<b>21</b>	<b>24</b>	<b>27</b>	<b>31</b>	<b>34</b>	<b>38</b>	<b>43</b>
	CP Fixed Speed 5-1280 l/s	3	6	5	4	5	5	5	6	6	7
	CP Variable speed 5-1280 l/s	0	1	2	2	3	3	3	3	4	4
	CP Pistons 2-64 l/s	0	0	0	0	0	0	0	0	0	0
	<b>Total CP Standard Air Compressors</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>101</b>	<b>136</b>	<b>162</b>	<b>166</b>	<b>183</b>	<b>198</b>	<b>212</b>	<b>226</b>	<b>241</b>	<b>258</b>
1	TRAF0 Distribution	2	2	3	3	3	4	4	5	6	6
1	TRAF0 Industry oil	1	2	2	2	3	3	3	4	4	5
1	TRAF0 Industry dry	0	1	1	1	1	1	1	1	1	1
1	TRAF0 Power	4	6	7	8	9	10	11	13	14	16
1	TRAF0 DER oil	0	0	0	0	0	1	1	1	2	3
1	TRAF0 DER dry	0	0	0	1	1	2	4	6	9	12
1	TRAF0 Small	0	0	0	0	0	0	0	0	0	0
	<b>Total TRAF0 Utility Transformers</b>	<b>8</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>17</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>36</b>	<b>44</b>
	<b>TOTAL ENERGY SECTOR (energy already included in power generation factor, so reference=0)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<i>(costs for fuel consumption due to rolling resistance)</i>										
	Tyres C1, replacement for cars	42	46	41	41	46	49	52	55	57	60
	Tyres C1, OEM for cars	13	13	13	13	14	15	16	16	17	18
	<b>Tyres C1, total</b>	<b>55</b>	<b>59</b>	<b>54</b>	<b>54</b>	<b>59</b>	<b>64</b>	<b>68</b>	<b>71</b>	<b>75</b>	<b>78</b>
	Tyres C2, replacement for vans	9	12	11	13	15	17	18	19	20	21
	Tyres C2, OEM for vans	2	3	2	3	3	4	4	4	4	5
	<b>Tyres C2, total</b>	<b>11</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>18</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>25</b>	<b>26</b>
	Tyres C3, replacement for trucks/busses	13	16	15	19	23	27	31	34	37	40
	Tyres C3, OEM for trucks/busses	3	4	3	4	5	6	7	7	8	9
	<b>Tyres C3, total</b>	<b>16</b>	<b>20</b>	<b>18</b>	<b>23</b>	<b>28</b>	<b>33</b>	<b>38</b>	<b>41</b>	<b>45</b>	<b>49</b>
	<b>Tyres, total C1+C2+C3</b>	<b>82</b>	<b>94</b>	<b>86</b>	<b>93</b>	<b>105</b>	<b>118</b>	<b>128</b>	<b>136</b>	<b>144</b>	<b>153</b>
	<b>TOTAL TRANSPORT SECTOR</b>	<b>82</b>	<b>94</b>	<b>86</b>	<b>93</b>	<b>105</b>	<b>118</b>	<b>128</b>	<b>136</b>	<b>144</b>	<b>153</b>
	<b>GENERAL TOTAL in bn euros</b>	<b>598</b>	<b>747</b>	<b>831</b>	<b>830</b>	<b>891</b>	<b>955</b>	<b>1014</b>	<b>1074</b>	<b>1140</b>	<b>1211</b>

db	BAU Energy Costs (summary)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WATER HEATING</b>	<b>65</b>	<b>80</b>	<b>93</b>	<b>91</b>	<b>99</b>	<b>107</b>	<b>118</b>	<b>131</b>	<b>147</b>	<b>165</b>
	<b>SPACE HEATING</b>	<b>185</b>	<b>206</b>	<b>217</b>	<b>200</b>	<b>207</b>	<b>217</b>	<b>226</b>	<b>233</b>	<b>236</b>	<b>235</b>
	<b>SPACE COOLING</b>	<b>14</b>	<b>26</b>	<b>31</b>	<b>32</b>	<b>36</b>	<b>38</b>	<b>40</b>	<b>42</b>	<b>45</b>	<b>47</b>
	<b>VENTILATION (from electricity)</b>	<b>5</b>	<b>12</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>29</b>
	<b>LIGHTING (incl. SPL &amp; ctrl &amp; sb)</b>	<b>49</b>	<b>67</b>	<b>78</b>	<b>81</b>	<b>81</b>	<b>77</b>	<b>74</b>	<b>76</b>	<b>82</b>	<b>90</b>
	<b>ELECTRONICS</b>	<b>15</b>	<b>42</b>	<b>51</b>	<b>53</b>	<b>57</b>	<b>65</b>	<b>69</b>	<b>71</b>	<b>73</b>	<b>76</b>
	<b>FOOD PRESERVATION</b>	<b>49</b>	<b>46</b>	<b>52</b>	<b>51</b>	<b>55</b>	<b>59</b>	<b>64</b>	<b>69</b>	<b>75</b>	<b>80</b>
	<b>COOKING</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>31</b>
	<b>CLEANING</b>	<b>18</b>	<b>21</b>	<b>26</b>	<b>27</b>	<b>31</b>	<b>34</b>	<b>37</b>	<b>40</b>	<b>43</b>	<b>45</b>
	<b>INDUSTRY COMPONENTS</b>	<b>101</b>	<b>136</b>	<b>162</b>	<b>166</b>	<b>183</b>	<b>198</b>	<b>212</b>	<b>226</b>	<b>241</b>	<b>258</b>
	<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>	<b>82</b>	<b>94</b>	<b>86</b>	<b>93</b>	<b>105</b>	<b>118</b>	<b>128</b>	<b>136</b>	<b>144</b>	<b>153</b>
	<b>TOTAL in bn euros</b>	<b>598</b>	<b>747</b>	<b>831</b>	<b>830</b>	<b>891</b>	<b>955</b>	<b>1014</b>	<b>1074</b>	<b>1140</b>	<b>1211</b>



NRGCOSTECO

db	ECO Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	52	54	57	48	44	44	47	51	56	63
	<b>Total CH Central Heating combi, water heat</b>	13	26	29	25	25	26	28	31	34	38
	<b>TOTAL WATER HEATING</b>	65	80	85	73	69	70	74	82	91	100
	<b>Total CH Central Heating boiler, space heat</b>	125	142	126	94	79	72	69	67	63	58
	SFB Wood Manual	9.4	2.9	3.3	2.4	1.7	1.0	0.6	0.5	0.4	0.4
	SFB Wood Direct Draft	0.1	0.8	2.1	3.1	3.9	4.1	4.6	5.3	6.7	8.5
	SFB Coal	1.8	0.9	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1
	SFB Pellets	0.0	0.5	0.8	1.2	1.5	1.8	2.0	2.3	2.6	3.0
	SFB Wood chips	0.0	0.4	0.5	0.6	0.5	0.6	0.6	0.8	0.9	1.0
	<b>Total Solid Fuel Boiler</b>	11	5	7	8	8	8	8	9	11	13
	CHAE-S (≤ 400 kW)	0.7	1.7	2.1	2.2	2.3	2.3	2.4	2.5	2.6	2.8
	CHAE-L (> 400 kW)	1.0	2.1	2.6	2.6	2.5	2.4	2.3	2.3	2.3	2.3
	CHWE-S (≤ 400 kW)	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.2	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
	CHWE-L (> 1500 kW)	0.1	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	3.7	5.3	6.4	6.5	6.8	7.1	7.5	8.0	8.7	9.3
	HT PCH-AE-L	3.6	5.0	6.1	6.1	6.3	6.4	6.7	7.1	7.6	8.2
	HT PCH-WE-S	0.8	1.1	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.1
	HT PCH-WE-M	1.5	2.2	2.6	2.7	2.9	3.1	3.3	3.6	3.9	4.1
	HT PCH-WE-L	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8
	AC rooftop	0.6	1.2	1.3	1.1	0.9	0.5	0.3	0.1	0.1	0.1
	AC splits	0.8	2.0	2.2	1.9	1.8	1.6	1.5	1.4	1.4	1.3
	AC VRF	0.0	0.5	0.8	1.1	1.3	1.6	1.9	2.2	2.5	2.7
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Cooling</b>	13	22	27	27	28	28	29	31	33	35
	AC rooftop (rev)	0.7	2.0	2.2	1.7	1.3	0.8	0.4	0.1	0.0	0.0
	AC splits (rev)	1.4	3.8	4.3	3.8	3.6	3.2	2.9	2.8	2.6	2.5
	AC VRF (rev)	0.0	1.3	2.0	2.6	3.2	3.8	4.5	4.9	5.2	5.4
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	AHF	8.7	8.7	7.5	5.6	4.8	4.1	3.8	3.6	3.4	3.3
	AHE	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC Heating</b>	11	16	16	14	13	12	12	12	12	11
	<b>Total AHC Heating &amp; Cooling</b>	24	39	44	41	41	41	41	43	44	46
	LH open fireplace	0.4	0.6	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.1
	LH closed fireplace/inset	0.5	1.3	2.3	2.7	3.1	3.5	3.8	4.1	4.3	4.6
	LH wood stove	1.1	1.2	1.8	1.9	2.0	2.1	2.3	2.4	2.5	2.7
	LH coal stove	0.4	0.4	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH cooker	0.2	0.3	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2
	LH SHR stove	0.5	0.7	1.1	1.2	1.5	1.8	2.1	2.4	2.7	3.0
	LH pellet stove	0.0	0.4	0.6	0.7	0.9	1.1	1.2	1.4	1.5	1.6
	LH open fire gas	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	LH closed fire gas	0.8	0.8	0.9	0.8	0.8	0.7	0.7	0.8	0.8	0.8
	LH flueless fuel heater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	5.4	4.8	5.3	4.6	4.5	4.7	5.0	5.1	5.2	5.3
	LH elec.convectector	22.3	20.0	22.0	19.9	19.7	20.6	21.7	22.4	22.8	23.2
	LH elec.storage	1.7	1.5	1.6	1.4	1.4	1.3	1.4	1.5	1.5	1.5
	LH elec.underfloor	3.1	2.8	3.1	2.9	2.8	2.8	2.9	2.9	2.9	3.0
	LH luminous heaters	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	LH tube heaters	0.5	0.6	0.7	0.5	0.5	0.5	0.5	0.6	0.6	0.6
	<b>LH total</b>	37	36	42	39	40	42	44	46	48	49
	RAC (cooling demand), all types <12 kW	0	3	4	4	5	6	6	7	7	8
	RAC (heating demand), reversible <12kW	0	4	5	6	8	8	9	9	9	9
	<b>Total RAC Room Air Conditioner</b>	1	7	9	10	13	14	15	16	16	17
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	3	3	3	2	2	2	2	2	2	2
	<b>TOTAL SPACE HEATING</b>	185	203	197	161	147	142	141	142	142	141
	<b>TOTAL SPACE COOLING</b>	14	26	31	31	33	34	36	38	40	43
	NRVU electricity	3	9	12	11	12	12	12	14	15	16
1	NRVU heat (negative=saving vs. natural ventilation)	-6	-35	-45	-50	-61	-72	-83	-94	-106	-119
	RVU Central Unidir. VU ≤125W/fan (1 fan)	2	3	3	3	2	2	2	2	3	3
	RVU Central Balanced VU ≤125W/fan (2 fans)	0	0	0	0	1	1	1	1	1	1
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0	0	0	0	0	0	0	0	0	1
1	RVU Central Unidir., heat (negative=saving )	-1	-2	-3	-4	-6	-7	-8	-9	-11	-12
1	RVU Central Balanced, heat (negative=saving )	0	-1	-1	-2	-4	-5	-6	-7	-9	-10
1	RVU Local Balanced, heat (negative=saving )	0	0	0	0	-1	-1	-1	-2	-3	-3
	<b>Total VU Ventilation Units</b>	-2	-25	-35	-42	-56	-71	-83	-95	-109	-124
	<b>TOTAL VENTILATION (from electricity)</b>	5	12	15	15	15	15	16	17	19	21
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</b>	-	-	-2	-5	-8	-10	-11	-11	-12	-13

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db	ECO Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LFL (T12,T8h,T8t,T5,other)	15.1	20.4	26.5	26.9	20.1	11.5	5.8	3.2	2.0	1.3
	HID (HPM, HPS, MH)	5.8	10.7	10.3	8.6	6.7	3.7	1.5	0.5	0.2	0.1
	CFLni (all shapes)	0.4	1.5	1.8	1.4	1.0	0.6	0.2	0.1	0.0	0.0
	CFLi (retrofit for GLS, HL)	0.2	2.7	4.0	3.1	1.1	0.3	0.0	0.0	0.0	0.0
	GLS (DLS & NDLS)	17.5	8.9	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HL (DLS & NDLS, LV & MV)	1.4	8.1	11.4	4.5	0.2	0.0	0.0	0.0	0.0	0.0
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	0.3	2.6	9.5	16.3	21.9	26.4	31.1	36.6
	LED replacing HID (retrofit & luminaire)	0.0	0.0	1.7	3.5	5.7	8.0	10.3	12.6	15.2	18.1
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.0	0.2	0.5	0.8	0.9	1.1	1.3	1.5
	LED replacing DLS (retrofit & luminaire)	0.0	0.0	0.2	0.7	1.2	1.3	1.4	1.6	1.8	2.0
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	0.4	2.4	4.6	5.5	6.2	6.9	7.7	8.6
	Special Purpose Lamps (exempt)	6.6	9.0	8.7	7.2	6.2	5.4	5.6	5.9	6.2	6.6
	Lighting controls and standby	1.9	2.5	2.4	2.0	1.7	1.5	1.6	1.7	1.7	1.8
	<b>TOTAL LIGHTING (incl. SPL, ctrl)</b>	<b>49</b>	<b>64</b>	<b>70</b>	<b>63</b>	<b>59</b>	<b>55</b>	<b>55</b>	<b>60</b>	<b>67</b>	<b>77</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>40</b>	<b>52</b>	<b>59</b>	<b>54</b>	<b>51</b>	<b>48</b>	<b>48</b>	<b>52</b>	<b>59</b>	<b>68</b>
	DP TV on-mode, total all types	5.8	13.6	16.3	13.7	9.0	8.5	7.8	8.9	10.9	13.2
	DP TV standby, standard (NoNA)	0.8	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	0.0	0.0	0.4	1.0	1.6	2.1	2.3	2.2	2.0	1.7
	<b>DP TV standby, total all types</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>DP TV total on-mode + standby</b>	<b>7</b>	<b>14</b>	<b>17</b>	<b>15</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>11</b>	<b>13</b>	<b>15</b>
	DP Monitor on-mode	0.2	2.5	1.5	0.6	0.5	0.4	0.3	0.3	0.3	0.4
	DP Monitor standby	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	DP Signage on-mode	0.0	0.2	1.5	3.4	4.2	3.7	2.9	3.0	3.5	4.2
	DP Signage standby	0.0	0.0	0.2	0.5	0.6	0.5	0.4	0.4	0.5	0.6
	<b>DP Signage total</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>DP Electronic Displays, total on-mode</b>	<b>6</b>	<b>16</b>	<b>19</b>	<b>18</b>	<b>14</b>	<b>13</b>	<b>11</b>	<b>12</b>	<b>15</b>	<b>18</b>
	<b>DP Electronic Displays, total standby</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>
	<b>DP Electronic Displays, total</b>	<b>7</b>	<b>17</b>	<b>20</b>	<b>19</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>17</b>	<b>20</b>
	SSTB	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	0.0	1.3	3.1	3.0	3.2	3.3	3.6	4.1	4.7	5.3
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>
	VIDEO players/recorders	0.0	0.4	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	0.0	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	0.0	0.8	1.6	2.0	2.7	3.0	3.1	3.3	3.4	3.6
	<b>Total VIDEO</b>	<b>0</b>	<b>1.6</b>	<b>2.4</b>	<b>2.4</b>	<b>2.8</b>	<b>3.0</b>	<b>3.1</b>	<b>3.3</b>	<b>3.4</b>	<b>3.6</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>										
	ES tower 1-socket traditional	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 1-socket traditional	0.0	0.5	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5
	ES rack 2-socket traditional	0.1	2.3	1.3	0.7	0.9	1.1	1.3	1.3	1.4	1.5
	ES rack 2-socket cloud	0.0	1.3	2.2	2.2	2.7	3.4	3.9	4.1	4.3	4.5
	ES rack 4-socket traditional	0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	ES rack 4-socket cloud	0.0	0.1	0.3	0.3	0.4	0.5	0.6	0.6	0.7	0.7
	ES rack 2-socket resilient trad.	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	ES rack 2-socket resilient cloud	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	ES rack 4-socket resilient trad.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	ES blade 2-socket traditional	0.1	1.0	0.6	0.4	0.4	0.5	0.6	0.6	0.7	0.7
	ES blade 2-socket cloud	0.0	0.6	1.0	1.1	1.3	1.7	1.9	2.0	2.1	2.2
	ES blade 4-socket traditional	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 4-socket cloud	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
	<b>ES total traditional</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<b>ES total cloud</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>
	<b>ES Enterprise Servers total</b>	<b>0</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>
	DS Online 2	0.1	1.0	1.5	2.0	2.6	3.2	3.5	3.7	3.9	4.1
	DS Online 3	0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.6	0.6
	DS Online 4	0.0	0.6	0.8	1.1	1.4	1.8	1.9	2.0	2.2	2.3
	<b>DS Data Storage products total</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>
	<b>ES + DS total (excl. infrastructure)</b>	<b>0</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>11</b>	<b>14</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>18</b>
	PC Desktop	2.8	3.7	2.5	0.9	0.6	0.6	0.6	0.7	0.7	0.7
	PC Notebook	0.0	1.3	0.8	0.2	0.1	0.1	0.1	0.1	0.2	0.2
	PC Tablet/slate	0.0	0.0	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.6
	PC Thin client	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1
	<b>Total PC, electricity</b>	<b>3</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>
	EP-Copier mono	1.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EP-Copier colour	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
	EP-printer mono	1.6	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	EP-printer colour	0.0	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4
	IJ SFD printer	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	IJ MFD printer	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
	<b>Total imaging equipment, electricity</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>

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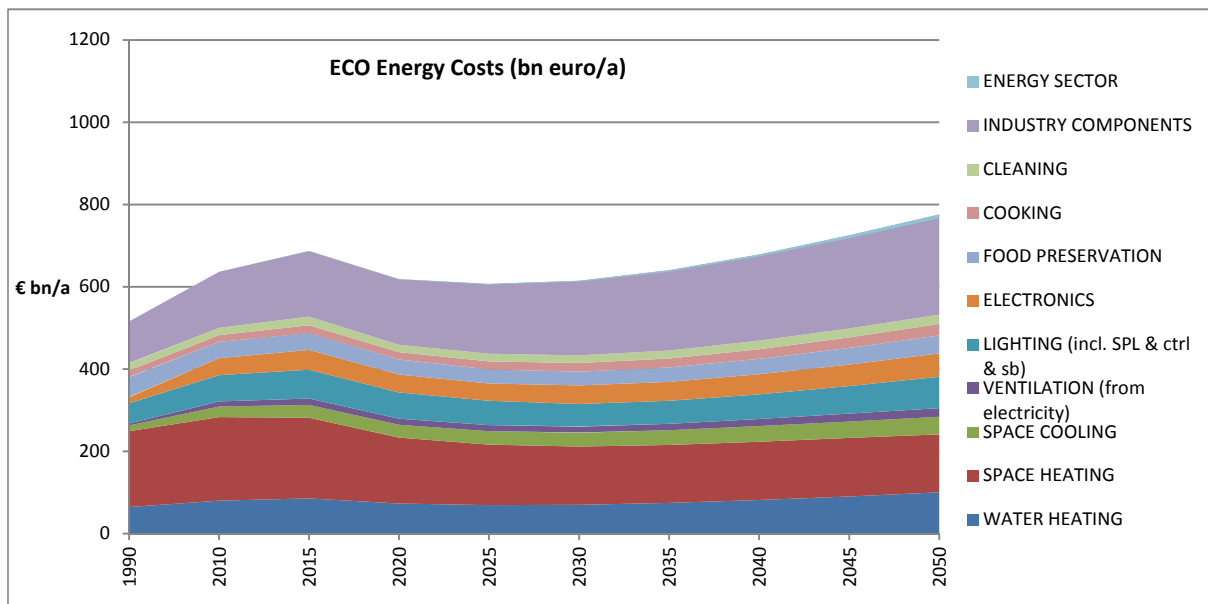
db	ECO Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	0.0	0.8	1.0	1.1	1.2	1.3	1.3	1.2	1.0	0.8
	SB Home NAS, on-mode hours	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
	SB Home Phones (fixed), on-mode hours	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	SB Office Phones (fixed), on-mode hours	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	SB Home Gateway, standby hours	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	SB Home Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	0.0	0.8	1.6	2.2	2.5	2.6	2.6	2.4	2.1	1.5
	SB Home NAS, idle hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), idle hours	0.1	0.7	0.9	0.9	0.9	0.8	0.7	0.6	0.4	0.3
	SB Office Phones (fixed), idle hours	0.1	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2
	<b>Total SB (networked) StandBy (rest)</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>3</b>
db	<i>EPS Active mode (for electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
0.6	EPS 10–12 W	0.0	1.4	2.2	2.0	1.8	1.9	2.0	2.1	2.2	2.4
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1
0.0	EPS 12–15 W	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
	<b>EPS, total for active mode</b>	<b>0.0</b>	<b>2.2</b>	<b>3.0</b>	<b>2.6</b>	<b>2.4</b>	<b>2.5</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.1</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	EPS 10–12 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>	<b>0.0</b>	<b>0.3</b>	<b>0.3</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
	<b>EPS, overall total (active + no-load)</b>	<b>0.0</b>	<b>2.5</b>	<b>3.3</b>	<b>2.7</b>	<b>2.4</b>	<b>2.6</b>	<b>2.7</b>	<b>2.9</b>	<b>3.1</b>	<b>3.3</b>
	<b>EPS, double counted subtracted</b>	<b>0.0</b>	<b>1.3</b>	<b>1.6</b>	<b>1.3</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>
	UPS below 1.5 kVA	0.1	0.2	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.1
	UPS 1.5 to 5 kVA	0.5	0.9	1.1	0.7	0.2	0.2	0.3	0.3	0.3	0.4
	UPS 5 to 10 kVA	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3
	UPS 10 to 200 kVA	0.3	0.6	0.8	0.7	0.6	0.7	0.8	1.0	1.1	1.2
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>1.0</b>	<b>1.9</b>	<b>2.3</b>	<b>1.7</b>	<b>1.1</b>	<b>1.1</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>2.0</b>
	<b>TOTAL ELECTRONICS</b>	<b>15</b>	<b>41</b>	<b>48</b>	<b>44</b>	<b>42</b>	<b>45</b>	<b>46</b>	<b>49</b>	<b>52</b>	<b>56</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>28</b>	<b>19</b>	<b>18</b>	<b>15</b>	<b>13</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>9</b>	<b>9</b>
	CF open vertical chilled multi deck (RVC2)	2.6	2.3	2.4	1.9	1.4	1.3	1.4	1.5	1.6	1.7
	CF open horizontal frozen island (RHF4)	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2
	CF other supermarket display (non-BCs)	4.6	4.2	4.6	4.0	3.7	3.8	4.1	4.4	4.8	5.2
	CF Plug in one door beverage cooler	3.2	2.8	3.0	2.3	1.9	1.9	2.0	2.2	2.4	2.6
	CF Plug in horizontal ice cream freezer	0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.8	0.8	0.9
	CF Spiral vending machine	0.6	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>Total CF Commercial Refrigeration</b>	<b>12</b>	<b>11</b>	<b>11</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
	PF Storage cabinet Chilled Vertical (CV)	0.3	0.4	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.5
	PF Storage cabinet Frozen Vertical (FV)	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.6
	PF Storage cabinet Chilled Horizontal (CH)	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4
	PF Storage cabinet Frozen Horizontal (FH)	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>PF Storage cabinets All types</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.4</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.4	0.8	1.0	1.1	1.3	1.4	1.6	1.9	2.1	2.4
	PF Process Chiller AC MT L > 300 kW	0.4	0.8	1.0	1.1	1.2	1.4	1.6	1.8	2.1	2.3
	PF Process Chiller AC LT S ≤ 200 kW	0.4	0.8	1.0	1.1	1.3	1.4	1.7	1.9	2.2	2.4
	PF Process Chiller AC LT L > 200 kW	0.4	0.8	1.1	1.2	1.3	1.5	1.7	2.0	2.2	2.5
	PF Process Chiller WC MT S ≤ 300 kW	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7
	PF Process Chiller WC MT L > 300 kW	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0
	PF Process Chiller WC LT S ≤ 200 kW	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9
	PF Process Chiller WC LT L > 200 kW	0.2	0.4	0.5	0.5	0.6	0.6	0.7	0.8	1.0	1.1
	<b>PF Process Chiller All MT&amp;LT</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>
	PF Condensing Unit MT S 0.2-1 kW	1.1	0.8	0.9	0.8	0.9	1.0	1.2	1.3	1.5	1.7
	PF Condensing Unit MT M 1-5 kW	2.8	2.0	2.2	2.2	2.4	2.7	3.0	3.4	3.9	4.4
	PF Condensing Unit MT L 5-20 kW	3.5	2.5	2.7	2.6	2.9	3.2	3.7	4.1	4.7	5.3
	PF Condensing Unit MT XL 20-50 kW	3.5	2.5	2.7	2.6	2.9	3.2	3.7	4.1	4.7	5.3
	PF Condensing Unit LT S 0.1-0.4 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	PF Condensing Unit LT M 0.4-2 kW	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.8
	PF Condensing Unit LT L 2-8 kW	0.9	0.6	0.7	0.6	0.7	0.7	0.8	1.0	1.1	1.2
	PF Condensing Unit LT XL 8-20 kW	2.7	1.9	2.1	2.0	2.2	2.5	2.8	3.2	3.6	4.1
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>15</b>	<b>11</b>	<b>12</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>16</b>	<b>18</b>	<b>20</b>	<b>23</b>
	<b>PF Professional Refrigeration, Total</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>24</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>49</b>	<b>40</b>	<b>41</b>	<b>36</b>	<b>34</b>	<b>34</b>	<b>35</b>	<b>37</b>	<b>40</b>	<b>44</b>

NRGCOSTECO

db	ECO Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	4	6	7	8	9	10	11	12	13	14
	CA El. Ovens	5	4	4	4	4	4	4	5	5	5
	CA Gas Hobs	2	2	2	2	2	2	2	2	2	2
	CA Gas Ovens	1	1	1	1	0	0	0	0	0	0
	CA Range Hoods	2	2	3	3	3	3	3	3	3	3
	<b>Total CA Cooking Appliances</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>25</b>
	CM Dripfilter (glass)	1.3	0.8	0.8	0.7	0.6	0.6	0.7	0.7	0.8	0.8
	CM Dripfilter (thermos)	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
	CM Dripfilter (full automatic)	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
	CM Pad filter	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
	CM Hard cap espresso	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Semi-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	0.9	0.6	0.5	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	CM Dripfilter (thermos), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Hard cap espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CM Semi-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CM household Coffee Makers</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>TOTAL COOKING</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>
	<b>Total WM household Washing Machine</b>	<b>11</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<b>Total DW household Dishwasher</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>8</b>
	LD vented el.	2	2	2	2	2	2	2	3	3	3
	LD condens el.	0	3	4	4	4	4	4	4	4	4
	LD vented gas	0	0	0	0	0	0	0	0	0	0
	<b>Total LD household Laundry Drier</b>	<b>2</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>
	VC dom	2	3	4	2	3	3	3	3	3	3
	VC nondom	1	1	1	1	1	1	1	1	1	1
	<b>Total VC Vacuum Cleaner</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<b>TOTAL CLEANING</b>	<b>18</b>	<b>18</b>	<b>21</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	3	8	10	10	11	11	12	13	13	14
0.5	FAN Axial>300Pa	5	14	18	18	18	19	20	21	22	23
0.5	FAN Centr.FC	1	3	3	3	3	3	4	4	4	4
0.5	FAN Centr.BC-free	4	7	8	8	9	10	12	12	13	14
0.5	FAN Centr.BC	4	7	9	10	10	12	13	15	17	19
0.5	FAN Cross-flow	0	0	0	0	0	0	0	0	0	0
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>9</b>	<b>20</b>	<b>25</b>	<b>25</b>	<b>26</b>	<b>28</b>	<b>30</b>	<b>32</b>	<b>35</b>	<b>38</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	16	17	19	17	15	16	16	17	18	18
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	23	27	30	26	23	23	24	24	25	26
0.45	Medium (L) 3-ph 75-375 kW no VSD	48	54	59	52	48	44	43	43	43	44
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>87</b>	<b>98</b>	<b>108</b>	<b>95</b>	<b>87</b>	<b>82</b>	<b>83</b>	<b>84</b>	<b>86</b>	<b>88</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1	2	3	5	6	7	8	9	10	11
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	2	4	6	9	13	15	17	19	21	23
0.45	Medium (L) 3-ph 75-375 kW with VSD	5	12	17	24	32	40	46	51	57	63
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>8</b>	<b>18</b>	<b>26</b>	<b>38</b>	<b>52</b>	<b>63</b>	<b>71</b>	<b>79</b>	<b>88</b>	<b>97</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>95</b>	<b>116</b>	<b>135</b>	<b>132</b>	<b>138</b>	<b>145</b>	<b>154</b>	<b>164</b>	<b>174</b>	<b>186</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1	1	2	2	2	2	2	2	2	2
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	2	2	2	2	2	2	2	2	3	3
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	1
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	24	26	28	25	25	25	25	26	28	29
0.45	Large 3-ph LV 375-1000kW with VSD	1	6	10	13	16	19	22	24	26	29
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>26</b>	<b>32</b>	<b>37</b>	<b>38</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>50</b>	<b>54</b>	<b>58</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	1	1	1	1	1	1	1	1	1	1
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1	2	2	2	2	2	2	3	3	3
0.45	Explosion motors (L) 3-ph 75-375 kW	2	3	4	4	4	5	5	5	6	6
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0	0	1	1	1	1	1	1	1	1
0.45	Brake motors (M) 3-ph 7.5-75 kW	1	1	1	1	1	1	2	2	2	2
0.45	Brake motors (L) 3-ph 75-375 kW	1	2	2	2	2	2	2	3	3	3
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>75</b>	<b>93</b>	<b>107</b>	<b>107</b>	<b>113</b>	<b>119</b>	<b>127</b>	<b>135</b>	<b>144</b>	<b>154</b>

NRGCOSTECO

db	ECO Energy costs (in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WP Water Pumps</b>	14	17	20	21	23	26	30	33	37	41
	CP Fixed Speed 5-1280 l/s	3	6	5	4	4	5	5	6	6	7
	CP Variable speed 5-1280 l/s	0	1	2	2	3	3	3	3	4	4
	CP Pistons 2-64 l/s	0	0	0	0	0	0	0	0	0	0
	<b>Total CP Standard Air Compressors</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>101</b>	<b>136</b>	<b>160</b>	<b>159</b>	<b>170</b>	<b>181</b>	<b>195</b>	<b>210</b>	<b>226</b>	<b>243</b>
1	TRAFO Distribution	2	2	3	3	3	3	3	4	4	4
1	TRAFO Industry oil	1	2	2	2	2	2	2	2	2	3
1	TRAFO Industry dry	0	1	1	1	1	1	1	1	1	1
1	TRAFO Power	4	6	7	8	9	10	11	13	14	16
1	TRAFO DER oil	0	0	0	0	0	0	1	1	1	2
1	TRAFO DER dry	0	0	0	1	1	2	3	4	7	9
1	TRAFO Small	0	0	0	0	0	0	0	0	0	0
	<b>Total TRAFO Utility Transformers</b>	<b>8</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>18</b>	<b>21</b>	<b>25</b>	<b>30</b>	<b>35</b>
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>-2</b>	<b>-4</b>	<b>-5</b>	<b>-7</b>	<b>-9</b>
	<i>(only improvement over BAU)</i>										
	<i>(costs for fuel consumption due to rolling resistance)</i>										
	Tyres C1, replacement for cars	42	45	36	38	40	43	46	49	52	56
	Tyres C1, OEM for cars	13	13	13	13	13	14	14	15	16	17
	<b>Tyres C1, total</b>	<b>55</b>	<b>59</b>	<b>48</b>	<b>50</b>	<b>53</b>	<b>57</b>	<b>60</b>	<b>64</b>	<b>68</b>	<b>73</b>
	Tyres C2, replacement for vans	9	12	10	12	14	16	17	18	19	20
	Tyres C2, OEM for vans	2	3	2	3	3	3	4	4	4	4
	<b>Tyres C2, total</b>	<b>11</b>	<b>15</b>	<b>13</b>	<b>15</b>	<b>16</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>25</b>
	Tyres C3, replacement for trucks/busses	13	16	13	18	21	26	29	31	34	37
	Tyres C3, OEM for trucks/busses	3	4	3	4	5	6	7	7	8	9
	<b>Tyres C3, total</b>	<b>16</b>	<b>20</b>	<b>17</b>	<b>23</b>	<b>26</b>	<b>32</b>	<b>35</b>	<b>39</b>	<b>42</b>	<b>46</b>
	<b>Tyres, total C1+C2+C3</b>	<b>82</b>	<b>93</b>	<b>78</b>	<b>88</b>	<b>96</b>	<b>107</b>	<b>117</b>	<b>125</b>	<b>134</b>	<b>144</b>
	<b>TOTAL TRANSPORT SECTOR</b>	<b>82</b>	<b>93</b>	<b>78</b>	<b>88</b>	<b>96</b>	<b>107</b>	<b>117</b>	<b>125</b>	<b>134</b>	<b>144</b>
	<b>GENERAL TOTAL in bn euros</b>	<b>598</b>	<b>730</b>	<b>765</b>	<b>706</b>	<b>701</b>	<b>720</b>	<b>754</b>	<b>799</b>	<b>852</b>	<b>911</b>
	<b>ECO Energy Costs (summary)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	65	80	85	73	69	70	74	82	91	100
	<b>SPACE HEATING</b>	185	203	197	161	147	142	141	142	142	141
	<b>SPACE COOLING</b>	14	26	31	31	33	34	36	38	40	43
	<b>VENTILATION (from electricity)</b>	5	12	15	15	15	15	16	17	19	21
1	<i>VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	0	0	-2	-5	-8	-10	-11	-11	-12	-13
	<b>LIGHTING (incl. SPL &amp; ctrl &amp; sb)</b>	49	64	70	63	59	55	55	60	67	77
	<b>ELECTRONICS</b>	15	41	48	44	42	45	46	49	52	56
	<b>FOOD PRESERVATION</b>	49	40	41	36	34	34	35	37	40	44
	<b>COOKING</b>	16	17	19	18	19	21	22	24	26	28
	<b>CLEANING</b>	18	18	21	18	19	19	20	21	22	23
	<b>INDUSTRY COMPONENTS</b>	101	136	160	159	170	181	195	210	226	243
	<b>ENERGY SECTOR</b>	0	0	0	-1	-1	-2	-4	-5	-7	-9
	<b>TRANSPORT SECTOR</b>	82	93	78	88	96	107	117	125	134	144
	<b>TOTAL in bn euros</b>	<b>598</b>	<b>730</b>	<b>765</b>	<b>706</b>	<b>701</b>	<b>720</b>	<b>754</b>	<b>799</b>	<b>852</b>	<b>911</b>





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db	SAVED Energy costs (BAU-ECO, in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0	0	6	13	21	24	27	29	32	36
	<b>Total CH Central Heating combi, water heat</b>	0	0	1	5	9	13	17	20	25	30
	<b>TOTAL WATER HEATING</b>	0	0	8	18	30	37	43	49	57	65
	<b>Total CH Central Heating boiler, space heat</b>	0	3	18	33	48	62	70	75	77	76
	SFB Wood Manual	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.2
	SFB Wood Direct Draft	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.9
	SFB Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Pellets	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.3
	SFB Wood chips	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	<b>Total Solid Fuel Boiler</b>	0.0	0.0	0.1	0.4	0.6	0.9	0.9	1.1	1.3	1.6
	CHAE-S (≤ 400 kW)	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
	CHAE-L (> 400 kW)	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
	CHWE-S (≤ 400 kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHWE-L (> 1500 kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	0.0	0.0	0.0	0.2	0.4	0.7	0.8	0.7	0.7	0.6
	HT PCH-AE-L	0.0	0.0	0.0	0.2	0.5	0.9	1.1	1.2	1.2	1.1
	HT PCH-WE-S	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
	HT PCH-WE-M	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
	HT PCH-WE-L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC rooftop	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC splits	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.1
	AC VRF	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.2
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Cooling</b>	0.0	0.0	0.0	0.6	1.5	2.4	2.9	2.9	2.7	2.5
	AC rooftop (rev)	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0	0.0	0.0
	AC splits (rev)	0.0	0.0	0.1	0.3	0.6	0.8	0.7	0.7	0.6	0.5
	AC VRF (rev)	0.0	0.0	0.0	0.2	0.4	0.7	1.0	1.1	1.1	1.1
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AHF	0.0	0.0	0.1	0.5	1.0	1.4	1.4	1.4	1.3	1.2
	AHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Heating</b>	0.0	0.0	0.3	1.2	2.3	3.2	3.3	3.2	3.0	2.9
	<b>Total AHC Heating &amp; Cooling</b>	0.0	0.0	0.3	1.8	3.8	5.6	6.2	6.1	5.8	5.3
	LH open fireplace	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.7
	LH closed fireplace/inset	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.9	1.1	1.2
	LH wood stove	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7
	LH coal stove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	LH cooker	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
	LH SHR stove	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3
	LH pellet stove	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
	LH open fire gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH closed fire gas	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3
	LH flueless fuel heater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	0.0	0.0	0.2	0.7	1.0	1.1	1.1	1.1	1.2	1.3
	LH elec.convector	0.0	0.0	0.5	2.0	3.1	3.3	3.3	3.5	3.7	3.9
	LH elec.storage	0.0	0.0	0.0	0.2	0.3	0.4	0.4	0.5	0.5	0.5
	LH elec.underfloor	0.0	0.0	0.1	0.2	0.4	0.6	0.7	0.8	0.9	0.9
	LH luminous heaters	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	LH tube heaters	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	<b>LH total</b>	0.0	0.0	0.9	3.6	6.1	7.3	8.0	8.9	9.7	10.5
	RAC (cooling demand), all types <12 kW	0.0	0.0	0.3	0.7	1.2	1.4	1.5	1.7	1.8	2.0
	RAC (heating demand), reversible <12kW	0.0	0.0	0.4	1.2	2.0	2.5	2.6	2.7	2.8	2.8
	<b>Total RAC Room Air Conditioner</b>	0.0	0.0	0.7	1.9	3.2	3.9	4.2	4.4	4.6	4.8
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	0.0	0.1	1.4	2.1	2.4	2.7	2.8	2.8	2.8	2.7
	<b>TOTAL SPACE HEATING</b>	0	3	20	39	59	76	85	91	94	94
	<b>TOTAL SPACE COOLING</b>	0	0	0	1	3	4	4	5	5	4
	NRVU electricity	0.0	0.0	0.3	1.0	1.8	2.6	2.9	3.0	3.2	3.4
1	NRVU heat (negative=saving vs. natural ventilation)	0.0	0.0	1.1	3.5	6.5	9.3	10.2	10.7	11.0	11.3
	RVU Central Unidir. VU ≤125W/fan (1 fan)	0.0	0.0	0.3	0.7	1.2	1.7	1.9	2.1	2.4	2.6
	RVU Central Balanced VU ≤125W/fan (2 fans)	0.0	0.0	0.1	0.3	0.5	0.8	1.0	1.2	1.3	1.5
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
1	RVU Central Unidir., heat (negative=saving )	0.0	0.0	0.7	1.8	3.2	4.5	5.1	5.9	6.7	7.7
1	RVU Central Balanced, heat (negative=saving )	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
1	RVU Local Balanced, heat (negative=saving )	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.6
	<b>Total VU Ventilation Units</b>	0	0	3	8	14	20	22	24	26	28
	<b>TOTAL VENTILATION (from electricity)</b>	0	0	1	2	4	5	6	6	7	8
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</b>	0	0	2	5	8	10	11	11	12	13

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db	SAVED Energy costs (BAU-ECO, in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	LFL (T12,T8h,T8t,T5,other)	0.0	0.2	1.0	3.2	11.1	16.7	17.5	15.9	13.7	11.7
	HID (HPM, HPS, MH)	0.0	0.2	2.4	4.0	4.6	4.3	3.0	2.0	1.3	0.8
	CFLni (all shapes)	0.0	0.0	0.2	0.5	0.8	0.8	0.5	0.3	0.2	0.1
	CFLi (retrofit for GLS, HL)	0.0	-0.5	-0.7	0.3	1.8	2.2	1.7	1.2	0.8	0.5
	GLS (DLS & NDLS)	0.0	4.1	8.0	7.6	4.7	2.9	1.8	1.1	0.7	0.4
	HL (DLS & NDLS, LV & MV)	0.0	-0.8	-0.6	8.0	9.2	5.0	2.7	1.5	0.9	0.5
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	-0.1	-1.1	-4.8	-6.5	-6.2	-4.8	-3.1	-1.4
	LED replacing HID (retrofit & luminaire)	0.0	0.0	-1.7	-2.3	-2.0	-1.1	-0.4	0.1	0.5	1.0
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.0	-0.2	-0.3	-0.2	0.0	0.0	0.1	0.1
	LED replacing DLS (retrofit & luminaire)	0.0	0.0	-0.2	-0.5	-0.7	-0.4	-0.3	-0.2	-0.1	0.0
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	-0.3	-1.8	-2.5	-2.0	-1.3	-0.8	-0.3	0.0
	<b>TOTAL LIGHTING (incl. SPL, ctrl)</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>18</b>	<b>22</b>	<b>22</b>	<b>19</b>	<b>16</b>	<b>15</b>	<b>14</b>
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>18</b>	<b>22</b>	<b>22</b>	<b>19</b>	<b>16</b>	<b>15</b>	<b>14</b>
	DP TV on-mode, total all types	0.0	0.0	1.2	4.3	8.2	11.8	13.3	11.9	10.4	9.7
	DP TV standby, standard (NoNA)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, LoNA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DP TV standby, HiNA ('Smart')	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP TV standby, total all types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DP TV total on-mode + standby</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>8</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>10</b>	<b>10</b>
	DP Monitor on-mode	0.0	0.0	0.2	0.6	0.6	0.7	0.6	0.5	0.5	0.5
	DP Monitor standby	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>DP Monitor total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>
	DP Signage on-mode	0.0	0.0	0.0	0.0	0.1	0.7	1.3	1.3	0.8	0.2
	DP Signage standby	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.0
	<b>DP Signage total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>
	<b>DP Electronic Displays, total on-mode</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>9</b>	<b>13</b>	<b>15</b>	<b>14</b>	<b>12</b>	<b>10</b>
	<b>DP Electronic Displays, total standby</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DP Electronic Displays, total</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>9</b>	<b>13</b>	<b>16</b>	<b>14</b>	<b>12</b>	<b>10</b>
	SSTB	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CSTB	0.0	0.0	0.4	0.9	1.0	1.0	1.1	1.3	1.4	1.6
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0.0</b>	<b>0.3</b>	<b>0.4</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>
	VIDEO players/recorders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO projectors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	VIDEO game consoles	0.0	0.0	0.1	0.2	0.3	0.2	0.3	0.3	0.3	0.3
	<b>Total VIDEO</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
	<i>ES&amp;DS only, without effects on infrastructure</i>										
	ES tower 1-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 1-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket traditional	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	ES rack 2-socket cloud	0	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	ES rack 4-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket cloud	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket resilient trad.	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 2-socket resilient cloud	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient trad.	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES rack 4-socket resilient cloud	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 1-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 2-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 2-socket cloud	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	ES blade 4-socket traditional	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ES blade 4-socket cloud	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>ES total traditional</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
	<b>ES total cloud</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
	<b>ES Enterprise Servers total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>
	DS Online 2	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	DS Online 3	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	DS Online 4	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	<b>DS Data Storage products total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
	<b>ES + DS total (excl. infrastructure)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>
	PC Desktop	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Notebook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Tablet/slate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Thin client	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PC Workstation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total PC, electricity</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	EP-Copier mono	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	EP-Copier colour	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4
	EP-printer mono	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
	EP-printer colour	0.0	0.0	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	IJ SFD printer	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	IJ MFD printer	0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6
	<b>Total imaging equipment, electricity</b>	<b>0.0</b>	<b>0.3</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>1.7</b>	<b>2.0</b>

NRGCOSTSAVE

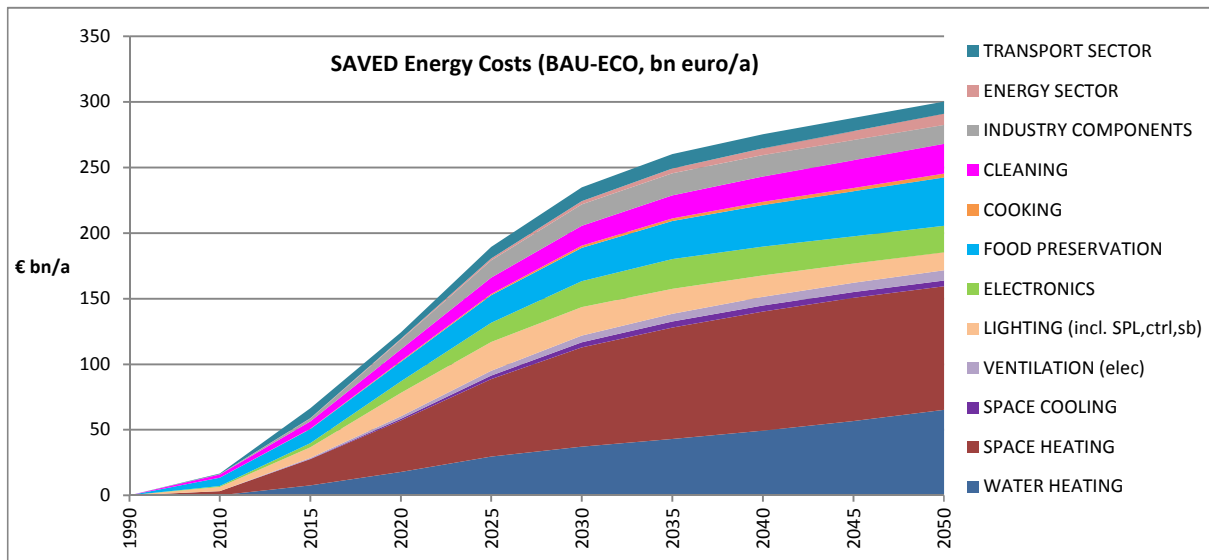
db	SAVED Energy costs (BAU-ECO, in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	SB Home Gateway, on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), on-mode hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), standby hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home Gateway, idle hours	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	SB Home NAS, idle hours	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
	SB Home Phones (fixed), idle hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SB Office Phones (fixed), idle hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total SB (networked) StandBy (rest)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
db	<i>EPS Active mode (for electricity losses)</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.6	EPS 10–12 W	0.0	0.0	0.4	0.8	1.0	0.9	0.9	0.8	0.6	0.6
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
	<b>EPS, total for active mode</b>	<b>0.0</b>	<b>0.0</b>	<b>0.5</b>	<b>1.0</b>	<b>1.2</b>	<b>1.2</b>	<b>1.1</b>	<b>0.9</b>	<b>0.8</b>	<b>0.7</b>
db	<i>EPS No-load mode</i>										
0.0	EPS ≤ 6W, low-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 6–10 W	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1
0.0	EPS 10–12 W	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
0.0	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 20–30 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>EPS, total for no-load mode</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
	<b>EPS, overall total (active + no-load)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.2</b>	<b>1.5</b>	<b>1.4</b>	<b>1.3</b>	<b>1.1</b>	<b>1.0</b>	<b>0.9</b>
	<b>EPS, double counted subtracted</b>	<b>0.0</b>	<b>0.0</b>	<b>0.3</b>	<b>0.6</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>
	UPS below 1.5 kVA	0.0	0.0	0.0	0.2	0.4	0.4	0.5	0.6	0.7	0.8
	UPS 1.5 to 5 kVA	0.0	0.0	0.0	0.5	1.3	1.6	1.9	2.3	2.6	2.9
	UPS 5 to 10 kVA	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	UPS 10 to 200 kVA	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.6	0.6	0.7
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.8</b>	<b>1.9</b>	<b>2.6</b>	<b>3.1</b>	<b>3.6</b>	<b>4.1</b>	<b>4.5</b>
	<b>TOTAL ELECTRONICS</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>9</b>	<b>15</b>	<b>20</b>	<b>23</b>	<b>22</b>	<b>21</b>	<b>20</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>0</b>	<b>6</b>	<b>11</b>	<b>13</b>	<b>17</b>	<b>20</b>	<b>23</b>	<b>25</b>	<b>27</b>	<b>29</b>
	CF open vertical chilled multi deck (RVC2)	0.0	0.0	0.0	0.3	0.8	1.0	1.0	1.1	1.2	1.2
	CF open horizontal frozen island (RHF4)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CF other supermarket display (non-BCs)	0.0	0.0	0.0	0.4	0.9	1.2	1.4	1.6	1.7	1.9
	CF Plug in one door beverage cooler	0.0	0.0	0.0	0.4	0.9	1.1	1.2	1.3	1.4	1.5
	CF Plug in horizontal ice cream freezer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CF Spiral vending machine	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
	<b>Total CF Commercial Refrigeration</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>1.1</b>	<b>2.8</b>	<b>3.6</b>	<b>3.9</b>	<b>4.2</b>	<b>4.5</b>	<b>4.9</b>
	PF Storage cabinet Chilled Vertical (CV)	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3
	PF Storage cabinet Frozen Vertical (FV)	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.4	0.4
	PF Storage cabinet Chilled Horizontal (CH)	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.3
	PF Storage cabinet Frozen Horizontal (FH)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
	<b>PF Storage cabinets All types</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.6</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
	PF Process Chiller AC MT L > 300 kW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Process Chiller AC LT S ≤ 200 kW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Process Chiller AC LT L > 200 kW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Process Chiller WC MT S ≤ 300 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	PF Process Chiller WC MT L > 300 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	PF Process Chiller WC LT S ≤ 200 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	PF Process Chiller WC LT L > 200 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.3</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.1</b>
	PF Condensing Unit MT S 0.2-1 kW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Condensing Unit MT M 1-5 kW	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.3	0.3
	PF Condensing Unit MT L 5-20 kW	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.4	0.4	0.5
	PF Condensing Unit MT XL 20-50 kW	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.5
	PF Condensing Unit LT S 0.1-0.4 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PF Condensing Unit LT M 0.4-2 kW	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Condensing Unit LT L 2-8 kW	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2
	PF Condensing Unit LT XL 8-20 kW	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.4	0.4
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.2</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>1.9</b>	<b>2.2</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>1.4</b>	<b>1.9</b>	<b>2.2</b>	<b>2.5</b>	<b>2.8</b>	<b>3.1</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>0</b>	<b>6</b>	<b>11</b>	<b>15</b>	<b>21</b>	<b>25</b>	<b>29</b>	<b>32</b>	<b>34</b>	<b>37</b>

NRGCOSTSAVE

db	SAVED Energy costs (BAU-ECO, in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	CA El. Hobs	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	CA El. Ovens	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.6	0.6	0.6
	CA Gas Hobs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CA Gas Ovens	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	CA Range Hoods	0.0	0.0	0.0	0.1	0.4	0.7	1.0	1.2	1.3	1.5
	<b>Total CA Cooking Appliances</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.3</b>	<b>0.7</b>	<b>1.3</b>	<b>1.7</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>
	CM Dripfilter (glass)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (thermos)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Hard cap espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Semi-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (glass), standby/keep warm	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	CM Dripfilter (thermos), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Dripfilter (full automatic), standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Pad filter, standby/keep warm	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CM Hard cap espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CM Semi-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CM Fully-auto espresso, standby/keep warm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CM household Coffee Makers</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
	<b>TOTAL COOKING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.6</b>	<b>1.1</b>	<b>1.7</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.9</b>
	<b>Total WM household Washing Machine</b>	<b>0.0</b>	<b>1.7</b>	<b>2.9</b>	<b>3.3</b>	<b>3.7</b>	<b>3.8</b>	<b>3.8</b>	<b>3.4</b>	<b>3.0</b>	<b>2.6</b>
	<b>Total DW household Dishwasher</b>	<b>0.0</b>	<b>0.8</b>	<b>1.4</b>	<b>1.8</b>	<b>2.2</b>	<b>2.7</b>	<b>3.2</b>	<b>3.6</b>	<b>4.2</b>	<b>4.8</b>
	LD vented el.	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
	LD condens el.	0.0	0.0	0.2	0.6	1.3	1.8	2.1	2.3	2.5	2.8
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.7</b>	<b>1.5</b>	<b>2.0</b>	<b>2.3</b>	<b>2.5</b>	<b>2.7</b>	<b>2.9</b>
	VC dom	0.0	0.0	0.9	2.8	4.7	6.1	7.6	9.1	10.4	11.5
	VC nondom	0.0	0.0	0.1	0.3	0.5	0.5	0.6	0.7	0.8	0.9
	<b>Total VC Vacuum Cleaner</b>	<b>0.0</b>	<b>0.0</b>	<b>1.0</b>	<b>3.1</b>	<b>5.2</b>	<b>6.7</b>	<b>8.2</b>	<b>9.8</b>	<b>11.2</b>	<b>12.3</b>
	<b>TOTAL CLEANING</b>	<b>-</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>23</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	0.0	0.0	0.4	1.1	2.1	2.8	3.2	3.3	3.5	3.7
0.5	FAN Axial>300Pa	0.0	0.0	0.4	1.2	2.3	3.2	3.7	3.9	4.1	4.3
0.5	FAN Centr.FC	0.0	0.0	0.1	0.5	1.0	1.3	1.5	1.6	1.6	1.7
0.5	FAN Centr.BC-free	0.0	0.0	0.3	0.8	1.5	1.9	2.2	2.3	2.5	2.7
0.5	FAN Centr.BC	0.0	0.0	0.4	1.1	1.8	2.4	2.7	3.1	3.5	4.0
0.5	FAN Cross-flow	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.6	0.7	0.8
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.9</b>	<b>2.5</b>	<b>4.6</b>	<b>6.1</b>	<b>6.9</b>	<b>7.4</b>	<b>8.0</b>	<b>8.6</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0.0	0.0	0.8	3.3	5.5	5.6	5.3	4.6	3.7	2.4
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	0.0	0.0	1.2	5.1	9.1	9.6	9.0	7.8	5.9	3.2
0.45	Medium (L) 3-ph 75-375 kW no VSD	0.0	0.0	2.1	7.8	13.7	17.9	15.8	11.3	6.3	2.5
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>0.0</b>	<b>0.1</b>	<b>4.0</b>	<b>16.1</b>	<b>28.3</b>	<b>33.2</b>	<b>30.0</b>	<b>23.7</b>	<b>15.9</b>	<b>8.1</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0.0	0.0	-0.1	-1.2	-2.4	-2.3	-2.0	-1.6	-1.0	-0.2
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	0.0	0.0	-0.6	-2.8	-5.0	-5.1	-4.6	-3.8	-2.6	-0.9
0.45	Medium (L) 3-ph 75-375 kW with VSD	0.0	0.0	-1.2	-4.5	-7.8	-10.1	-8.5	-5.6	-2.4	0.0
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>0.0</b>	<b>0.0</b>	<b>-1.9</b>	<b>-8.6</b>	<b>-15.2</b>	<b>-17.5</b>	<b>-15.1</b>	<b>-11.0</b>	<b>-6.1</b>	<b>-1.2</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>0.0</b>	<b>0.1</b>	<b>2.2</b>	<b>7.5</b>	<b>13.1</b>	<b>15.7</b>	<b>14.9</b>	<b>12.6</b>	<b>9.8</b>	<b>6.9</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0	0	0	0.0	0.1	0.2	0.2	0.2	0.2	0.1
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	0	0	0	0.0	0.1	0.1	0.1	0.2	0.1	0.1
0.45	Large 3-ph LV 375-1000kW with VSD	0	0	0	0.0	0.1	0.1	0.2	0.3	0.3	0.3
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	Explosion motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	Explosion motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Brake motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Brake motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.4</b>	<b>0.4</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>1.2</b>	<b>4.2</b>	<b>7.5</b>	<b>9.3</b>	<b>9.0</b>	<b>7.8</b>	<b>6.2</b>	<b>4.6</b>
	including double counted amounts	-	0	2	8	14	17	16	14	11	8

NRGCOSTSAVE

db	SAVED Energy costs (BAU-ECO, in bn euros)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WP Water Pumps</b>	0.0	0.0	0.2	0.5	0.7	0.8	0.9	1.0	1.1	1.2
	CP Fixed Speed 5-1280 l/s	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1
	CP Variable speed 5-1280 l/s	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
	CP Pistons 2-64 l/s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CP Standard Air Compressors</b>	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1
	<b>TOTAL INDUSTRY COMPONENTS</b>	0	0	2	7	13	16	17	16	15	15
1	TRAF0 Distribution	0.0	0.0	0.1	0.2	0.4	0.7	1.0	1.3	1.7	2.1
1	TRAF0 Industry oil	0.0	0.0	0.1	0.3	0.6	0.9	1.2	1.5	1.7	1.9
1	TRAF0 Industry dry	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4
1	TRAF0 Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	TRAF0 DER oil	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.8	1.2
1	TRAF0 DER dry	0.0	0.0	0.0	0.1	0.2	0.5	0.9	1.4	2.1	3.0
1	TRAF0 Small	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total TRAF0 Utility Transformers</b>	0.0	0.0	0.2	0.7	1.4	2.4	3.6	5.1	6.7	8.6
	<b>TOTAL ENERGY SECTOR</b>	0.0	0.0	0.2	0.7	1.4	2.4	3.6	5.1	6.7	8.6
	<i>(costs for fuel consumption due to rolling resistance)</i>										
	Tyres C1, replacement for cars	0.0	0.4	5.5	3.6	5.3	5.9	6.1	5.8	5.0	4.2
	Tyres C1, OEM for cars	0.0	0.0	0.0	0.1	1.0	1.2	1.2	1.1	1.1	1.0
	<b>Tyres C1, total</b>	0.0	0.4	5.5	3.7	6.3	7.2	7.3	6.9	6.1	5.2
	Tyres C2, replacement for vans	0.0	0.1	1.0	0.5	1.2	1.4	1.4	1.3	1.2	1.1
	Tyres C2, OEM for vans	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1
	<b>Tyres C2, total</b>	0.0	0.1	1.0	0.5	1.3	1.6	1.5	1.5	1.3	1.2
	Tyres C3, replacement for trucks/busses	0.0	0.1	1.2	0.7	1.2	1.7	1.9	2.1	2.2	2.4
	Tyres C3, OEM for trucks/busses	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.3	0.4
	<b>Tyres C3, total</b>	0.0	0.1	1.2	0.8	1.4	1.9	2.2	2.4	2.6	2.8
	<b>Tyres, total C1+C2+C3</b>	0.0	0.7	7.7	5.0	9.0	10.6	11.0	10.8	10.0	9.1
	<b>TOTAL TRANSPORT SECTOR</b>	0.0	0.7	7.7	5.0	9.0	10.6	11.0	10.8	10.0	9.1
	<b>SAVED GENERAL TOTAL in bn euros</b>	0	17	67	124	190	235	260	275	288	300
	<b>SAVED Energy costs (BAU-ECO, in bn euros, Summar</b>	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WATER HEATING</b>	0	0	8	18	30	37	43	49	57	65
	<b>SPACE HEATING</b>	0	3	20	39	59	76	85	91	94	94
	<b>SPACE COOLING</b>	0	0	0	1	3	4	4	5	5	4
	<b>VENTILATION (elec)</b>	0	0	1	2	4	5	6	6	7	8
1	<i>VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	0	0	2	5	8	10	11	11	12	13
	<b>LIGHTING (incl. SPL,ctrl,sb)</b>	0	3	8	18	22	22	19	16	15	14
	<b>ELECTRONICS</b>	0	1	3	9	15	20	23	22	21	20
	<b>FOOD PRESERVATION</b>	0	6	11	15	21	25	29	32	34	37
	<b>COOKING</b>	0	0	0	1	1	2	2	2	3	3
	<b>CLEANING</b>	-	3	6	9	13	15	17	19	21	23
	<b>INDUSTRY COMPONENTS</b>	0	0	2	7	13	16	17	16	15	15
	<b>ENERGY SECTOR</b>	0	0	0	1	1	2	4	5	7	9
	<b>TRANSPORT SECTOR</b>	0	1	8	5	9	11	11	11	10	9
	<b>TOTAL in bn euros</b>	0	17	67	124	190	235	260	275	288	300
	% saving versus BAU (from 1990=0%)	0%	2%	8%	15%	21%	25%	26%	26%	25%	25%
	% saving versus BAU (from 2010=0%)	-3%	0%	6%	13%	19%	23%	24%	24%	24%	23%



MAINTBAU

db	Maintenance BAU incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	6.5	7.5	7.8	7.9	8.1	8.3	8.4	8.6	8.8	8.9
	<b>CH Central Heating combi, water heat</b>	1.5	2.9	3.2	3.4	3.6	3.9	4.1	4.3	4.6	4.8
	<b>TOTAL WATER HEATING</b>	8.0	10.5	11.0	11.3	11.7	12.1	12.5	12.9	13.3	13.8
	<b>CH Central Heating boiler, space heat</b>	14.9	23.9	25.8	27.7	29.6	32.0	34.7	37.6	40.6	43.7
	SFB Wood Manual [18 kW]	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
	SFB Wood Direct Draft [20 kW]	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4
	SFB Coal [25 kW]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Pellets [25 kW]	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	SFB Wood chips [160 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total Solid Fuel Boiler</b>	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.5
	CHAE-S (≤ 400 kW)	0.2	1.0	1.2	1.5	1.6	1.8	2.0	2.1	2.3	2.5
	CHAE-L (> 400 kW)	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	CHWE-S (≤ 400 kW)	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	CHWE-L (> 1500 kW)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	HT PCH-AE-S	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-AE-L	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-WE-S	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	HT PCH-WE-M	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-WE-L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC rooftop	0.1	0.5	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.1
	AC splits	0.2	1.0	1.1	1.2	1.2	1.1	1.1	1.1	1.0	1.0
	AC VRF	0.0	1.1	1.8	2.7	3.5	4.6	5.7	6.7	7.7	8.5
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Cooling</b>	1	5	6	7	8	10	11	12	13	14
	AC rooftop (rev)	0.1	0.3	0.3	0.3	0.3	0.2	0.1	0.0	0.0	0.0
	AC splits (rev)	0.2	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7
	AC VRF (rev)	0.0	1.0	1.5	2.3	3.0	3.9	4.7	5.2	5.7	6.0
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AHF	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	AHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Heating (rev double)</b>	0	2	3	3	4	5	6	6	6	7
	<b>Total AHC Heating &amp; Cooling</b>	1	5	6	7	8	10	11	12	13	14
	LH open fireplace [8 kW]	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH closed fireplace/inset [8 kW]	0.1	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	LH wood stove [8 kW]	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH coal stove [8 kW]	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	LH cooker [10 kW]	0.2	0.4	0.4	0.5	0.6	0.7	0.7	0.7	0.7	0.7
	LH SHR stove [8 kW]	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	LH pellet stove [8 kW]	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	LH open fire gas, NCV [4.2 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	LH closed fire gas, NCV [4.2 kW]	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH flueless fuel heater, NCV [1.5 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable [1 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.convector [1 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.storage [2.75 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.underfloor [0.62 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH luminous heaters [20 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH tube heaters [30 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>LH total</b>	1.0	1.6	1.8	2.0	2.2	2.4	2.5	2.6	2.6	2.6
	RAC (cooling demand), all types <12 kW	0.1	0.7	0.8	1.0	1.2	1.3	1.4	1.4	1.5	1.5
	RAC (heating demand), reversible <12kW	0.0	0.4	0.6	0.8	1.1	1.2	1.3	1.3	1.3	1.3
	<b>Total RAC Room Air Conditioner</b>	0.1	1.1	1.4	1.8	2.3	2.5	2.7	2.7	2.8	2.8
1	<b>CIRC Circulator pumps &lt;2.5 kW</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	<b>TOTAL SPACE HEATING</b>	16.7	28.2	31.2	34.3	37.4	40.9	44.4	47.9	51.4	54.8
	<b>TOTAL SPACE COOLING</b>	1.2	5.4	6.8	8.3	9.6	10.9	12.1	13.3	14.5	16
	<b>NRVU avg (sales wt.)</b>	0.9	2.9	3.4	3.8	4.1	4.3	4.6	4.8	5.0	5
	RVU Central Unidir. VU (1 fan)	0.2	0.3	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0
	RVU Central Balanced VU (2 fans)	0.0	0.1	0.2	0.4	0.6	0.7	0.8	0.9	1.0	1
	RVU Local Balanced VU (2 fans)	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0
	<b>TOTAL VENTILATION</b>	1.1	3.4	4.0	4.6	5.1	5.6	6.0	6.3	6.7	7
	LFL (T12,T8h,T8t,T5,other)	0.5	0.8	0.9	0.9	0.9	0.8	0.6	0.5	0.4	0.3
	HID (HPM, HPS, MH)	0.2	0.6	0.6	0.7	0.5	0.4	0.2	0.1	0.1	0.0
	CFLni (all shapes)	0.2	1.0	1.1	1.1	1.0	0.6	0.3	0.1	0.0	0.0
	CFLi (retrofit for GLS, HL)	0.1	0.9	1.2	1.2	1.1	0.9	0.6	0.4	0.3	0.2
	GLS (DLS & NDLS)	0.7	0.6	0.5	0.3	0.2	0.1	0.1	0.0	0.0	0.0
	HL (DLS & NDLS, LV & MV)	0.1	0.6	0.7	0.8	0.6	0.4	0.2	0.1	0.1	0.0
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.2	1.5	1.8
	LED replacing HID (retrofit & luminaire)	0.0	0.0	0.0	0.1	0.3	0.6	0.9	1.1	1.3	1.5
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.0	0.1	0.4	0.9	1.4	1.8	2.1	2.4
	LED replacing DLS (retrofit & luminaire)	0.0	0.0	0.0	0.1	0.2	0.4	0.6	0.7	0.9	1.0
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	0.0	0.3	0.9	1.6	2.4	3.1	3.7	4.4
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	1.9	4.5	5.0	5.6	6.3	7.1	8.1	9.1	10.3	11.7

MAINTBAU

db	Maintenance BAU incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	DP TV total all types	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6
	DP Monitor	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	DP Signage	0.00	0.00	0.01	0.02	0.03	0.03	0.03	0.03	0.03	0.03
	<b>DP Electronic Displays, total</b>	<b>0.2</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total VIDEO</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ES + DS total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total PC, electricity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total imaging equipment, electricity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total SB (networked) StandBy (rest)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>EPS, double counted subtracted</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	UPS below 1.5 kVA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	UPS 1.5 to 5 kVA	0.04	0.10	0.11	0.12	0.14	0.16	0.19	0.21	0.22	0.24
	UPS 5 to 10 kVA	0.01	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.07
	UPS 10 to 200 kVA	0.26	0.58	0.64	0.70	0.82	0.96	1.11	1.24	1.36	1.46
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>0.3</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.2</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>
	<b>TOTAL ELECTRONICS</b>	<b>0.5</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.1</b>	<b>2.2</b>	<b>2.4</b>	<b>2.5</b>
	<b>RF Household refrigerator and freezer</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	CF open vertical chilled multi deck (RVC2)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
	CF open horizontal frozen island (RHF4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CF other supermarket display (non-BCs)	0.6	0.7	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.1
	CF Plug in one door beverage cooler	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
	CF Plug in horizontal ice cream freezer	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CF Spiral vending machine	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CF Commercial Refrigeration</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>
	<b>Total CA Cooking Appliances</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total CM household Coffee Makers</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>WM Household Washing Machine</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>DW Household Dishwasher</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total LD household Laundry Drier</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total VC Vacuum Cleaner</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL CLEANING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	0.5 FAN Axial<300Pa [247 W flow out]	0.2	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.7	1
	0.5 FAN Axial>300Pa [489 W fluid-dyn out]	0.2	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1
	0.5 FAN Centr.FC [141 W flow out]	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0
	0.5 FAN Centr.BC-free [2120 W flow out]	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0
	0.5 FAN Centr.BC [2052 W flow out]	0.1	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	1
	0.5 FAN Cross-flow [31 W flow out]	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>0.4</b>	<b>0.9</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	0.5	0.6	0.7	0.7	0.7	0.7	0.7	0.6	0.6	1
0.45	Medium (L) 3-ph 75-375 kW no VSD	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>0.8</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.0</b>	<b>0.9</b>	<b>0.8</b>	<b>0.7</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	1
0.45	Medium (L) 3-ph 75-375 kW with VSD	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	1
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>0.1</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>0.9</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.2</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	Small 1 ph 0.12-0.75 kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	Small 3 ph 0.12-0.75 kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
0.45	Large 3-ph LV 375-1000kW with VSD	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	Explosion motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0
0.45	Explosion motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	Brake motors (M) 3-ph 7.5-75 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
0.45	Brake motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>

## MAINTBAU

db	Maintenance BAU incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	MT Elec. Motors LV 0.12-1000 kW	0.6	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5
	WP Water pumps (load) [%]	1.1	1.5	1.6	1.8	1.9	2.0	2.2	2.3	2.5	3
	CP Fixed Speed 5-1280 l/s	0.4	0.8	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7
	CP Variable speed 5-1280 l/s	0.0	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4
	CP Pistons 2-64 l/s	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	<b>Total CP Standard Air Compressors</b>	<b>0.5</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>
	TOTAL INDUSTRY COMPONENTS	2.6	4.4	4.8	5.1	5.5	5.8	6.1	6.3	6.6	6.9
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>GENERAL TOTAL (in bn euro 2015)</b>	<b>33</b>	<b>59</b>	<b>66</b>	<b>72</b>	<b>79</b>	<b>86</b>	<b>93</b>	<b>100</b>	<b>107</b>	<b>114</b>
SUMMARY											
	<b>Maintenance BAU incl. VAT (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>14</b>
	<b>SPACE HEATING</b>	<b>17</b>	<b>28</b>	<b>31</b>	<b>34</b>	<b>37</b>	<b>41</b>	<b>44</b>	<b>48</b>	<b>51</b>	<b>55</b>
	<b>SPACE COOLING</b>	<b>1</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>16</b>
	<b>VENTILATION</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>
	<b>LIGHTING (excl. SPL, ctrl, sb)</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>12</b>
	<b>ELECTRONICS</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>FOOD PRESERVATION</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>CLEANING</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	INDUSTRY COMPONENTS	3	4	5	5	5	6	6	6	7	7
	<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL in bn euro 2015</b>	<b>33</b>	<b>59</b>	<b>66</b>	<b>72</b>	<b>79</b>	<b>86</b>	<b>93</b>	<b>100</b>	<b>107</b>	<b>114</b>



MAINTECO

db	Maintenance ECO incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	WH dedicated Water Heater	6.5	7.5	7.8	7.9	8.1	8.3	8.4	8.6	8.8	8.9
	CH Central Heating combi, water heat	1.5	2.9	3.2	3.4	3.6	3.9	4.1	4.3	4.6	4.8
	<b>TOTAL WATER HEATING</b>	<b>8.0</b>	<b>10.5</b>	<b>11.0</b>	<b>11.3</b>	<b>11.7</b>	<b>12.1</b>	<b>12.5</b>	<b>12.9</b>	<b>13.3</b>	<b>13.8</b>
	CH Central Heating boiler, space heat	14.9	23.9	25.8	27.7	29.6	32.0	34.7	37.6	40.6	43.7
	SFB Wood Manual [18 kW]	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
	SFB Wood Direct Draft [20 kW]	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4
	SFB Coal [25 kW]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Pellets [25 kW]	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	SFB Wood chips [160 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total Solid Fuel Boiler</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.5</b>
	CHAE-S (≤ 400 kW)	0.2	1.0	1.2	1.5	1.6	1.8	2.0	2.1	2.3	2.5
	CHAE-L (> 400 kW)	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	CHWE-S (≤ 400 kW)	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	CHWE-L (> 1500 kW)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	HT PCH-AE-S	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-AE-L	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-WE-S	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	HT PCH-WE-M	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	HT PCH-WE-L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC rooftop	0.1	0.5	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.1
	AC splits	0.2	1.0	1.1	1.2	1.2	1.1	1.1	1.1	1.0	1.0
	AC VRF	0.0	1.1	1.8	2.7	3.5	4.6	5.7	6.7	7.7	8.5
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Cooling</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
	AC rooftop (rev)	0.1	0.3	0.3	0.3	0.3	0.2	0.1	0.0	0.0	0.0
	AC splits (rev)	0.2	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7
	AC VRF (rev)	0.0	1.0	1.5	2.3	3.0	3.9	4.7	5.2	5.7	6.0
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AHF	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	AHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Heating (rev double)</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>
	<b>Total AHC Heating &amp; Cooling</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
	LH open fireplace [8 kW]	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH closed fireplace/inset [8 kW]	0.1	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	LH wood stove [8 kW]	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH coal stove [8 kW]	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	LH cooker [10 kW]	0.2	0.4	0.4	0.5	0.6	0.7	0.7	0.7	0.7	0.7
	LH SHR stove [8 kW]	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
	LH pellet stove [8 kW]	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	LH open fire gas, NCV [4.2 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	LH closed fire gas, NCV [4.2 kW]	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH flueless fuel heater, NCV [1.5 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable [1 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.convactor [1 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.storage [2.75 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.underfloor [0.62 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH luminous heaters [20 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH tube heaters [30 kW]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>LH total</b>	<b>1.0</b>	<b>1.6</b>	<b>1.8</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.5</b>	<b>2.6</b>	<b>2.6</b>	<b>2.6</b>
	RAC (cooling demand), all types <12 kW	0.1	0.7	0.8	1.0	1.2	1.3	1.4	1.4	1.5	1.5
	RAC (heating demand), reversible <12kW	0.0	0.4	0.6	0.8	1.1	1.2	1.3	1.3	1.3	1.3
	<b>Total RAC Room Air Conditioner</b>	<b>0.1</b>	<b>1.1</b>	<b>1.4</b>	<b>1.8</b>	<b>2.3</b>	<b>2.5</b>	<b>2.7</b>	<b>2.7</b>	<b>2.8</b>	<b>2.8</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0</b>
	<b>TOTAL SPACE HEATING</b>	<b>16.7</b>	<b>28.2</b>	<b>31.2</b>	<b>34.3</b>	<b>37.4</b>	<b>40.9</b>	<b>44.4</b>	<b>47.9</b>	<b>51.4</b>	<b>54.8</b>
	<b>TOTAL SPACE COOLING</b>	<b>1.2</b>	<b>5.4</b>	<b>6.8</b>	<b>8.3</b>	<b>9.6</b>	<b>10.9</b>	<b>12.1</b>	<b>13.3</b>	<b>14.5</b>	<b>16</b>
	<b>NRVU avg (sales wt.)</b>	<b>0.9</b>	<b>2.9</b>	<b>3.4</b>	<b>3.8</b>	<b>4.1</b>	<b>4.3</b>	<b>4.6</b>	<b>4.8</b>	<b>5.0</b>	<b>5</b>
	RVU Central Unidir. VU (1 fan)	0.2	0.3	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0
	RVU Central Balanced VU (2 fans)	0.0	0.1	0.2	0.4	0.6	0.7	0.8	0.9	1.0	1
	RVU Local Balanced VU (2 fans)	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0
	<b>TOTAL VENTILATION</b>	<b>1.1</b>	<b>3.4</b>	<b>4.0</b>	<b>4.6</b>	<b>5.1</b>	<b>5.6</b>	<b>6.0</b>	<b>6.3</b>	<b>6.7</b>	<b>7</b>
	LFL (T12,T8h,T8t,T5,other)	0.5	0.8	0.9	0.9	0.6	0.4	0.2	0.1	0.1	0.0
	HID (HPM, HPS, MH)	0.2	0.6	0.6	0.5	0.4	0.2	0.1	0.0	0.0	0.0
	CFLni (all shapes)	0.2	1.0	1.0	0.8	0.5	0.2	0.1	0.0	0.0	0.0
	CFLi (retrofit for GLS, HL)	0.1	1.2	1.5	1.1	0.4	0.1	0.0	0.0	0.0	0.0
	GLS (DLS & NDLS)	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HL (DLS & NDLS, LV & MV)	0.1	0.6	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0
	LED replacing LFL (retrofit & luminaire)	0.0	0.0	0.0	0.1	0.5	0.9	1.2	1.5	1.8	2.0
	LED replacing HID (retrofit & luminaire)	0.0	0.0	0.1	0.3	0.5	0.8	1.0	1.2	1.4	1.6
	LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.0	0.3	0.8	1.3	1.6	1.9	2.2	2.5
	LED replacing DLS (retrofit & luminaire)	0.0	0.0	0.1	0.3	0.6	0.7	0.8	0.9	1.0	1.1
	LED replacing NDLS (retrofit & luminaire)	0.0	0.0	0.1	0.9	2.0	2.7	3.2	3.6	4.1	4.6
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>1.9</b>	<b>4.5</b>	<b>5.0</b>	<b>5.6</b>	<b>6.3</b>	<b>7.2</b>	<b>8.1</b>	<b>9.2</b>	<b>10.4</b>	<b>11.8</b>

MAINTECO

db Maintenance ECO incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
DP TV total all types	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6
DP Monitor	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DP Signage	0.00	0.00	0.01	0.02	0.03	0.03	0.03	0.03	0.03	0.03
<b>DP Electronic Displays, total</b>	<b>0.2</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total VIDEO</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES + DS total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total PC, electricity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total imaging equipment, electricity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total SB (networked) StandBy (rest)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>EPS, double counted subtracted</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
UPS below 1.5 kVA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UPS 1.5 to 5 kVA	0.04	0.10	0.11	0.12	0.14	0.16	0.19	0.21	0.22	0.24
UPS 5 to 10 kVA	0.01	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.07	0.07
UPS 10 to 200 kVA	0.26	0.58	0.64	0.70	0.82	0.96	1.11	1.24	1.36	1.46
<b>Total UPS - Uninterrupted Power Supplies</b>	<b>0.3</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.2</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>
<b>TOTAL ELECTRONICS</b>	<b>0.5</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.1</b>	<b>2.2</b>	<b>2.4</b>	<b>2.5</b>
<b>RF Household refrigerator and freezer</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
CF open vertical chilled multi deck (RVC2)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
CF open horizontal frozen island (RHF4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CF other supermarket display (non-BCs)	0.6	0.7	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.1
CF Plug in one door beverage cooler	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
CF Plug in horizontal ice cream freezer	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CF Spiral vending machine	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total CF Commercial Refrigeration</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>
<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL FOOD PRESERVATION</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>#####</b>	<b>1.7</b>
<b>Total CA Cooking Appliances</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total CM household Coffee Makers</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>WM Household Washing Machine</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>DW Household Dishwasher</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total LD household Laundry Drier</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total VC Vacuum Cleaner</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL CLEANING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.5 FAN Axial<300Pa [247 W flow out]	0.2	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.7	1
0.5 FAN Axial>300Pa [489 W fluid-dyn out]	0.2	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1
0.5 FAN Centr.FC [141 W flow out]	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0
0.5 FAN Centr.BC-free [2120 W flow out]	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0
0.5 FAN Centr.BC [2052 W flow out]	0.1	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	1
0.5 FAN Cross-flow [31 W flow out]	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>0.4</b>	<b>0.9</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>
0.45 Medium (S) 3-ph 0.75-7.5 kW no VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 Medium (M) 3-ph 7.5-75 kW no VSD	0.5	0.6	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0
0.45 Medium (L) 3-ph 75-375 kW no VSD	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0
<b>0.45 Total 3ph 0.75-375 kW no VSD</b>	<b>0.8</b>	<b>1.0</b>	<b>1.1</b>	<b>1.0</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
0.45 Medium (S) 3-ph 0.75-7.5 kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 Medium (M) 3-ph 7.5-75 kW with VSD	0.1	0.2	0.3	0.4	0.6	0.7	0.7	0.7	0.8	1
0.45 Medium (L) 3-ph 75-375 kW with VSD	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.6	1
<b>0.45 Total 3-ph 0.75-375 kW with VSD</b>	<b>0.1</b>	<b>0.4</b>	<b>0.5</b>	<b>0.8</b>	<b>1.0</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>
<b>0.45 Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>0.9</b>	<b>1.4</b>	<b>1.6</b>	<b>1.7</b>	<b>1.9</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.1</b>	<b>2.2</b>
0.45 Small 1 ph 0.12-0.75 kW no VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 Small 1 ph 0.12-0.75 kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
<b>0.45 Total Small 1-ph 0.12-0.75 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45 Small 3 ph 0.12-0.75 kW no VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 Small 3 ph 0.12-0.75 kW with VSD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
<b>0.45 Total Small 3-ph 0.12-0.75 kW</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45 Large 3-ph LV 375-1000 kW no VSD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
0.45 Large 3-ph LV 375-1000kW with VSD	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0
<b>0.45 Total Large 3-ph LV 375-1000 kW</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
0.45 Explosion motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 Explosion motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0
0.45 Explosion motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
<b>0.45 Total Expl. 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45 Brake motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 Brake motors (M) 3-ph 7.5-75 kW	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
0.45 Brake motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
<b>0.45 Total Brake 0.75-375 kW (no VSD)</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>

## MAINTECO

db Maintenance ECO incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45 8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 8-pole motors (M) 3-ph 7.5-75 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 8-pole motors (L) 3-ph 75-375 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
0.45 <b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45 <b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>0.6</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>
<b>WP Water pumps (load) [%]</b>	<b>1.1</b>	<b>1.5</b>	<b>1.6</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.2</b>	<b>2.3</b>	<b>2.5</b>	<b>3</b>
CP Fixed Speed 5-1280 l/s	0.4	0.8	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7
CP Variable speed 5-1280 l/s	0.0	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4
CP Pistons 2-64 l/s	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Total CP Standard Air Compressors</b>	<b>0.5</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>
TOTAL INDUSTRY COMPONENTS	2.6	4.4	4.8	5.2	5.5	5.8	6.1	6.4	6.6	6.9
<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>GENERAL TOTAL (in bn euro 2015)</b>	<b>33</b>	<b>59</b>	<b>66</b>	<b>72</b>	<b>79</b>	<b>86</b>	<b>93</b>	<b>100</b>	<b>107</b>	<b>114</b>
<b>SUMMARY</b>										
<b>Maintenance ECO incl. VAT (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WATER HEATING</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>14</b>
<b>SPACE HEATING</b>	<b>17</b>	<b>28</b>	<b>31</b>	<b>34</b>	<b>37</b>	<b>41</b>	<b>44</b>	<b>48</b>	<b>51</b>	<b>55</b>
<b>SPACE COOLING</b>	<b>1</b>	<b>5</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>16</b>
<b>VENTILATION</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>
<b>LIGHTING (excl. SPL, ctrl, sb)</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>12</b>
<b>ELECTRONICS</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>FOOD PRESERVATION</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>CLEANING</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>INDUSTRY COMPONENTS</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>
<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL in bn euro 2015</b>	<b>33</b>	<b>59</b>	<b>66</b>	<b>72</b>	<b>79</b>	<b>86</b>	<b>93</b>	<b>100</b>	<b>107</b>	<b>114</b>

## RESOURCES

CONSUMABLE RESOURCES incl. VAT (bn euro 2015)											
	unit	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>Total imaging equipment</b>											
images per year	bn	711	755	801	843	875	918	960	1003	1051	1101
toner costs (€0.04 per image, at 15% N-print)	bn€	26	28	29	31	32	34	35	37	39	40
<i>duplexing is addressed in VA and impact assessment (toner only in terms of recycling, therefore not given)</i>											
BAU paper use (at given duplex 65%)	Mt/a	2.2	2.4	2.5	2.6	2.7	2.9	3.0	3.1	3.3	3.4
ECO paper use (at improved ECO duplex)	Mt/a	2.2	2.3	2.2	2.2	2.3	2.4	2.5	2.6	2.8	2.9
BAU paper costs (200 pages/kg; 1 kg=€2.5)	bn€	5.75	6.11	6.48	6.82	7.08	7.42	7.76	8.11	8.51	8.91
ECO paper costs (200 pages/kg; 1 kg=€2.5)	bn€	5.75	5.91	5.70	5.77	5.99	6.28	6.57	6.86	7.20	7.54
BAU paper indirect energy (40 MJ=11.1 kWh/kg)	TWh	24.6	26.2	27.8	29.2	30.3	31.8	33.3	34.7	36.4	38.2
ECO paper indirect energy (40 MJ=11.1 kWh/kg)	TWh	24.6	25.3	24.4	24.7	25.7	26.9	28.1	29.4	30.8	32.3
BAU paper CO <sub>2</sub> (1 kg= 0.6 kg CO <sub>2</sub> eq.)	MtCO <sub>2</sub>	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2.0	2.1
ECO paper CO <sub>2</sub> (1 kg= 0.6 kg CO <sub>2</sub> eq.)	MtCO <sub>2</sub>	1.3	1.4	1.3	1.3	1.4	1.5	1.5	1.6	1.7	1.7
<b>BAU total toner and paper costs</b>	<b>bn€</b>	<b>31.86</b>	<b>33.82</b>	<b>35.89</b>	<b>37.76</b>	<b>39.22</b>	<b>41.12</b>	<b>42.99</b>	<b>44.92</b>	<b>47.11</b>	<b>49.34</b>
<b>ECO total toner and paper costs</b>	<b>bn€</b>	<b>31.86</b>	<b>33.62</b>	<b>35.12</b>	<b>36.71</b>	<b>38.13</b>	<b>39.98</b>	<b>41.80</b>	<b>43.68</b>	<b>45.80</b>	<b>47.96</b>
<b>TOTAL ELECTRONICS (BAU)</b>		<b>32</b>	<b>34</b>	<b>36</b>	<b>38</b>	<b>39</b>	<b>41</b>	<b>43</b>	<b>45</b>	<b>47</b>	<b>49</b>
<b>TOTAL ELECTRONICS (ECO)</b>		<b>32</b>	<b>33.6</b>	<b>35</b>	<b>37</b>	<b>38</b>	<b>40</b>	<b>42</b>	<b>44</b>	<b>46</b>	<b>48</b>
<b>WM Household Washing Machine</b> (water is addressed in legislation; detergent costs are added to complete the economics)											
WM detergent (€ 0.15/cycle)	bn€	4.7	5.7	5.8	5.7	5.7	5.8	5.8	5.7	5.7	5.7
<b>BAU/FREEZE water consumption</b>											
Water stock average ltr./cycle	ltr/cyc	94	75	75	75	75	75	75	75	75	75
Water stock average m <sup>3</sup> /a per unit	m <sup>3</sup> /a	22	17	17	17	17	17	17	17	17	17
Water stock total M m <sup>3</sup> /a	M m <sup>3</sup> /a	2692	3206	3395	3464	3496	3549	3535	3515	3515	3515
Water costs	bn€	7.9	12.1	13.9	15.5	18.2	21.4	24.7	28.5	33.0	38.3
<b>ECO water consumption</b>											
Water stock average ltr./cycle	ltr/cyc	94	49	41	36	32	30	30	30	30	30
Water stock average m <sup>3</sup> /a per unit	m <sup>3</sup> /a	22	9	8	6	6	5	5	5	5	5
Water stock total M m <sup>3</sup> /a	M m <sup>3</sup> /a	2692	1724	1489	1257	1134	1084	1079	1073	1073	1073
Water costs	bn€	7.9	6.5	6.1	5.6	5.9	6.5	7.5	8.7	10.1	11.7
<b>WM detergent &amp; water costs BAU</b>	<b>bn€</b>	<b>12.6</b>	<b>17.8</b>	<b>19.7</b>	<b>21.2</b>	<b>23.9</b>	<b>27.2</b>	<b>30.5</b>	<b>34.2</b>	<b>38.7</b>	<b>44.0</b>
<b>WM detergent &amp; water costs ECO</b>	<b>bn€</b>	<b>12.6</b>	<b>12.2</b>	<b>11.9</b>	<b>11.3</b>	<b>11.6</b>	<b>12.3</b>	<b>13.3</b>	<b>14.4</b>	<b>15.8</b>	<b>17.4</b>
<b>DW Household Dishwasher</b> (water is addressed in legislation; detergent costs are added to complete the economics)											
DW detergent (€ 0.09/cycle)	bn€	0.8	1.7	2.0	2.4	2.7	3.0	3.4	3.7	4.1	4.4
<b>BAU/FREEZE water consumption</b>											
Water stock average ltr./cycle	ltr/cyc	30	24	24	24	24	24	24	24	24	24
Water stock average m <sup>3</sup> /a per unit	m <sup>3</sup> /a	6.4	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Water stock total M m <sup>3</sup> /a	M m <sup>3</sup> /a	236	419	498	583	668	752	837	922	1007	1092
Water costs	bn€	0.7	1.6	2.0	2.6	3.5	4.5	5.9	7.5	9.5	11.9
<b>ECO water consumption</b>											
Water stock average ltr./cycle	ltr/cyc	30	15	12	10	9	9	9	9	9	9
Water stock average m <sup>3</sup> /a per unit	m <sup>3</sup> /a	6.4	3.1	2.5	2.1	1.9	1.9	1.9	1.9	1.9	1.9
Water stock total M m <sup>3</sup> /a	M m <sup>3</sup> /a	236	254	244	245	255	276	307	338	370	401
Water costs	bn€	0.7	1.0	1.0	1.1	1.3	1.7	2.1	2.7	3.5	4.4
<b>DW detergent &amp; water costs BAU</b>	<b>bn€</b>	<b>1.4</b>	<b>3.3</b>	<b>4.1</b>	<b>5.0</b>	<b>6.2</b>	<b>7.6</b>	<b>9.2</b>	<b>11.2</b>	<b>13.5</b>	<b>16.3</b>
<b>DW detergent &amp; water costs ECO</b>	<b>bn€</b>	<b>1.4</b>	<b>2.7</b>	<b>3.0</b>	<b>3.5</b>	<b>4.0</b>	<b>4.7</b>	<b>5.5</b>	<b>6.5</b>	<b>7.5</b>	<b>8.8</b>
VC dom. Vacuum Cleaner	bn€	1.2	1.6	1.6	1.7	1.8	1.8	1.7	1.7	1.6	1.5
VC nondom Vacuum Cleaner	bn€	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7
<b>Total VC Vacuum Cleaner</b>	<b>bn€</b>	<b>1.6</b>	<b>2.1</b>	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.3</b>	<b>2.2</b>
<b>TOTAL CLEANING (BAU)</b>		<b>16</b>	<b>23</b>	<b>26</b>	<b>28</b>	<b>32</b>	<b>37</b>	<b>42</b>	<b>48</b>	<b>55</b>	<b>63</b>
<b>TOTAL CLEANING (ECO)</b>		<b>16</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>23</b>	<b>26</b>	<b>28</b>
<b>TOTAL BAU (in bn euro 2015)</b>		<b>47</b>	<b>57</b>	<b>62</b>	<b>66</b>	<b>72</b>	<b>78</b>	<b>85</b>	<b>93</b>	<b>102</b>	<b>112</b>
<b>TOTAL ECO (in bn euro 2015)</b>		<b>47</b>	<b>51</b>	<b>52</b>	<b>54</b>	<b>56</b>	<b>59</b>	<b>63</b>	<b>67</b>	<b>71</b>	<b>76</b>

SUMMARY											
RESOURCES BAU incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050	
ELECTRONICS	32	34	36	38	39	41	43	45	47	49	
CLEANING	16	23	26	28	32	37	42	48	55	63	
<b>TOTAL in bn euro 2015</b>	<b>47</b>	<b>57</b>	<b>62</b>	<b>66</b>	<b>72</b>	<b>78</b>	<b>85</b>	<b>93</b>	<b>102</b>	<b>112</b>	

SUMMARY											
RESOURCES ECO incl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050	
ELECTRONICS	32	34	35	37	38	40	42	44	46	48	
CLEANING	15.6	16.9	17.1	17.0	18.0	19.4	21.2	23.3	25.7	28.4	
<b>TOTAL in bn euro 2015</b>	<b>47</b>	<b>51</b>	<b>52</b>	<b>54</b>	<b>56</b>	<b>59</b>	<b>63</b>	<b>67</b>	<b>71</b>	<b>76</b>	

## RUNBAU

db	BAU Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	<b>58</b>	<b>62</b>	<b>70</b>	<b>69</b>	<b>73</b>	<b>77</b>	<b>82</b>	<b>89</b>	<b>97</b>	<b>107</b>
	<b>Total CH Central Heating combi, water heat</b>	<b>14</b>	<b>29</b>	<b>34</b>	<b>33</b>	<b>37</b>	<b>42</b>	<b>48</b>	<b>55</b>	<b>63</b>	<b>72</b>
	<b>TOTAL WATER HEATING</b>	<b>73</b>	<b>91</b>	<b>104</b>	<b>102</b>	<b>110</b>	<b>119</b>	<b>130</b>	<b>144</b>	<b>161</b>	<b>179</b>
	<b>Total CH Central Heating boiler, space heat</b>	<b>140</b>	<b>169</b>	<b>170</b>	<b>154</b>	<b>157</b>	<b>166</b>	<b>174</b>	<b>179</b>	<b>181</b>	<b>178</b>
	SFB Wood Manual	10	3	3	3	2	1	1	1	1	1
	SFB Wood Direct Draft	0	1	2	3	4	5	5	6	8	10
	SFB Coal	2	1	0	0	0	0	0	0	0	0
	SFB Pellets	0	0	1	1	2	2	2	3	3	3
	SFB Wood chips	0	0	0	1	1	1	1	1	1	1
	<b>Total Solid Fuel Boiler</b>	<b>12</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>15</b>
	CHAE-S (< 400 kW)	0.9	2.7	3.4	3.7	3.9	4.2	4.5	4.8	5.2	5.5
	CHAE-L (> 400 kW)	1.0	2.3	2.8	2.9	3.0	2.9	2.9	2.9	2.9	2.9
	CHWE-S (< 400 kW)	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5
	CHWE-M (> 400 kW; ≤ 1500 kW)	0.2	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	CHWE-L (> 1500 kW)	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	HT PCH-AE-S	3.9	5.5	6.6	6.9	7.5	8.0	8.6	9.1	9.7	10.3
	HT PCH-AE-L	3.7	5.2	6.3	6.5	7.1	7.6	8.0	8.5	9.1	9.6
	HT PCH-WE-S	0.8	1.2	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2
	HT PCH-WE-M	1.6	2.4	2.9	3.0	3.3	3.5	3.7	4.0	4.2	4.5
	HT PCH-WE-L	0.3	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9
	AC rooftop	0.7	1.6	1.8	1.6	1.3	0.8	0.4	0.2	0.2	0.2
	AC splits	1.0	3.0	3.3	3.2	3.1	3.0	2.8	2.7	2.5	2.4
	AC VRF	0.0	1.6	2.6	3.8	4.9	6.4	7.9	9.2	10.4	11.4
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Air Cooling</b>	<b>14</b>	<b>27</b>	<b>33</b>	<b>35</b>	<b>38</b>	<b>40</b>	<b>43</b>	<b>46</b>	<b>49</b>	<b>52</b>
	AC rooftop (rev)	0.8	2.3	2.5	2.2	1.8	1.2	0.6	0.2	0.0	0.0
	AC splits (rev)	1.6	4.5	5.2	5.0	4.9	4.7	4.4	4.2	3.9	3.7
	AC VRF (rev)	0.0	2.2	3.6	5.0	6.6	8.5	10.1	11.2	12.0	12.5
	ACF (rev)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	AHF	8.8	8.8	7.8	6.3	5.9	5.6	5.3	5.1	4.8	4.6
	AHE	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC Air Heating</b>	<b>11</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>21</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>26</b>	<b>43</b>	<b>50</b>	<b>50</b>	<b>53</b>	<b>56</b>	<b>58</b>	<b>61</b>	<b>63</b>	<b>66</b>
	LH open fireplace	1	1	1	1	1	2	2	2	2	2
	LH closed fireplace/inset	1	2	3	3	4	5	5	6	6	6
	LH wood stove	1	1	2	2	2	3	3	3	3	4
	LH coal stove	1	1	0	0	0	0	0	0	0	0
	LH cooker	0	1	1	1	1	2	2	2	2	2
	LH SHR stove	1	1	1	1	2	2	2	3	3	4
	LH pellet stove	0	0	1	1	1	1	2	2	2	2
	LH open fire gas	0	0	0	0	0	0	0	0	0	0
	LH closed fire gas	1	1	1	1	1	1	1	1	1	1
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	5	5	5	5	6	6	6	6	6	7
	LH elec.convector	22	20	23	22	23	24	25	26	26	27
	LH elec.storage	2	1	2	2	2	2	2	2	2	2
	LH elec.underfloor	3	3	3	3	3	3	4	4	4	4
	LH luminous heaters	0	0	0	0	0	0	0	0	0	0
	LH tube heaters	1	1	1	1	1	1	1	1	1	1
	<b>LH total</b>	<b>38</b>	<b>38</b>	<b>44</b>	<b>45</b>	<b>48</b>	<b>51</b>	<b>55</b>	<b>57</b>	<b>60</b>	<b>62</b>
	RAC (cooling demand), all types <12 kW	1	4	5	6	7	8	9	10	11	11
	RAC (heating demand), reversible <12kW	0	4	6	8	11	12	13	13	13	13
	<b>Total RAC Room Air Conditioner</b>	<b>1</b>	<b>8</b>	<b>11</b>	<b>14</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>24</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
	<b>TOTAL SPACE HEATING</b>	<b>201</b>	<b>234</b>	<b>248</b>	<b>234</b>	<b>244</b>	<b>258</b>	<b>271</b>	<b>281</b>	<b>287</b>	<b>290</b>
	<b>TOTAL SPACE COOLING</b>	<b>15</b>	<b>31</b>	<b>38</b>	<b>41</b>	<b>45</b>	<b>49</b>	<b>52</b>	<b>56</b>	<b>59</b>	<b>63</b>
	NRVU Ventilation units	4.1	12.3	15.2	16.2	17.6	18.7	19.9	21.3	23.0	24.8
	RVU Central Unidir.	1.7	3.2	4.0	3.9	3.9	4.0	4.4	4.9	5.5	6.1
	RVU Central Balanced VU ≤125W/fan (2 fans)	0.0	0.3	0.7	1.2	1.8	2.4	2.8	3.2	3.6	4.1
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.8	1.0	1.2
	<b>Total VU Ventilation Units</b>	<b>6</b>	<b>16</b>	<b>20</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>30</b>	<b>33</b>	<b>36</b>
	<b>TOTAL VENTILATION (electr. &amp; maint.)</b>	<b>6</b>	<b>16</b>	<b>20</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>30</b>	<b>33</b>	<b>36</b>
1	<i>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	-	-	-	-	-	-	-	-	-	-

RUNBAU

db	BAU Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LFL (T12,T8h,T8t,T5,other)		15.6	21.4	28.3	31.0	32.2	29.0	23.8	19.6	16.1	13.3
HID (HPM, HPS, MH)		6.1	11.5	13.4	13.3	11.8	8.3	4.7	2.6	1.5	0.9
CFLni (all shapes)		0.7	2.6	3.0	3.0	2.8	2.0	1.0	0.5	0.3	0.2
CFLi (retrofit for GLS, HL)		0.2	3.1	4.5	4.6	4.0	3.4	2.3	1.6	1.0	0.7
GLS (DLS & NDLS)		18.2	13.5	11.2	8.0	4.9	3.0	1.9	1.1	0.7	0.4
HL (DLS & NDLS, LV & MV)		1.5	7.9	11.5	13.3	10.0	5.4	2.9	1.7	1.0	0.6
LED replacing LFL (retrofit & luminaire)		0.0	0.0	0.2	1.5	4.9	10.3	16.5	22.8	29.5	37.0
LED replacing HID (retrofit & luminaire)		0.0	0.0	0.1	1.3	4.0	7.5	10.8	13.7	17.0	20.6
LED replacing CFLni (retrofit & luminaire)		0.0	0.0	0.0	0.2	0.6	1.4	2.3	2.9	3.5	4.1
LED replacing DLS (retrofit & luminaire)		0.0	0.0	0.0	0.2	0.7	1.3	1.8	2.2	2.6	3.0
LED replacing NDLS (retrofit & luminaire)		0.0	0.0	0.1	0.9	3.0	5.1	7.3	9.2	11.1	12.9
Special Purpose Lamps (exempt)		6.6	9.0	8.7	7.2	6.2	5.4	5.6	5.9	6.2	6.6
Lighting controls and standby		1.9	2.5	2.4	2.0	1.7	1.5	1.6	1.7	1.7	1.8
<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>51</b>	<b>71</b>	<b>83</b>	<b>86</b>	<b>87</b>	<b>84</b>	<b>83</b>	<b>86</b>	<b>92</b>	<b>102</b>
<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>42</b>	<b>60</b>	<b>72</b>	<b>77</b>	<b>79</b>	<b>77</b>	<b>75</b>	<b>78</b>	<b>84</b>	<b>94</b>
DP TV total all types		6.7	14.4	18.6	19.7	19.3	23.0	24.1	23.6	23.9	25.3
DP Monitor		0.2	2.7	1.8	1.3	1.3	1.2	1.0	0.9	0.9	1.0
DP Signage		0.0	0.2	1.8	3.9	5.0	5.1	4.9	4.9	5.0	5.1
<b>DP Electronic Displays, total</b>		<b>6.9</b>	<b>17.3</b>	<b>22.2</b>	<b>24.9</b>	<b>25.6</b>	<b>29.2</b>	<b>30.1</b>	<b>29.5</b>	<b>29.8</b>	<b>31.4</b>
SSTB		0.0	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CSTB		0.0	1.3	3.5	3.9	4.2	4.3	4.8	5.4	6.1	6.9
<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0.0</b>	<b>1.9</b>	<b>3.8</b>	<b>3.9</b>	<b>4.2</b>	<b>4.3</b>	<b>4.8</b>	<b>5.4</b>	<b>6.1</b>	<b>6.9</b>
VIDEO players/recorders		0.0	0.4	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO projectors		0.0	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
VIDEO game consoles		0.0	0.8	1.7	2.3	2.9	3.2	3.4	3.5	3.7	3.9
<b>Total VIDEO</b>		<b>0.0</b>	<b>1.6</b>	<b>2.6</b>	<b>2.6</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.5</b>	<b>3.7</b>	<b>3.9</b>
<i>ES&amp;DS only, without effects on infrastructure</i>											
ES tower 1-socket traditional		0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES rack 1-socket traditional		0.0	0.5	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5
ES rack 2-socket traditional		0.1	2.3	1.3	0.8	1.0	1.2	1.4	1.4	1.5	1.6
ES rack 2-socket cloud		0.0	1.3	2.2	2.4	2.9	3.6	4.1	4.3	4.5	4.7
ES rack 4-socket traditional		0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
ES rack 4-socket cloud		0.0	0.1	0.3	0.4	0.4	0.6	0.6	0.7	0.7	0.7
ES rack 2-socket resilient trad.		0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1
ES rack 2-socket resilient cloud		0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
ES rack 4-socket resilient trad.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient cloud		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES blade 1-socket traditional		0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
ES blade 2-socket traditional		0.1	1.0	0.6	0.4	0.4	0.6	0.6	0.7	0.7	0.7
ES blade 2-socket cloud		0.0	0.6	1.0	1.1	1.4	1.8	2.0	2.1	2.2	2.3
ES blade 4-socket traditional		0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 4-socket cloud		0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3
<b>ES total traditional</b>		<b>0</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>ES total cloud</b>		<b>0</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>
<b>ES Enterprise Servers total</b>		<b>0</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>
DS Online 2		0.1	1.0	1.5	2.0	2.6	3.3	3.6	3.8	4.0	4.2
DS Online 3		0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.6	0.6
DS Online 4		0.0	0.6	0.8	1.1	1.4	1.8	2.0	2.1	2.2	2.3
<b>DS Data Storage products total</b>		<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>
<b>ES + DS total (excl. infrastructure)</b>		<b>0</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>12</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>
PC Desktop		2.8	3.7	2.5	0.9	0.6	0.6	0.6	0.7	0.7	0.7
PC Notebook		0.0	1.3	0.8	0.2	0.1	0.1	0.1	0.1	0.2	0.2
PC Tablet/slate		0.0	0.0	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.6
PC Thin client		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC Workstation		0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1
<b>Total PC, electricity</b>		<b>2.8</b>	<b>5.3</b>	<b>3.8</b>	<b>1.5</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>
EP-Copier mono		1.8	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
EP-Copier colour		0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.6
EP-printer mono		1.6	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1
EP-printer colour		0.0	0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.1	1.3
IJ SFD printer		0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IJ MFD printer		0.3	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8
<b>Total imaging equipment (incl. resources)</b>		<b>35.8</b>	<b>35.0</b>	<b>37.3</b>	<b>39.2</b>	<b>40.8</b>	<b>42.9</b>	<b>45.0</b>	<b>47.2</b>	<b>49.6</b>	<b>52.1</b>
<i>including the following toner and paper costs:</i>		<i>31.9</i>	<i>33.8</i>	<i>35.9</i>	<i>37.8</i>	<i>39.2</i>	<i>41.1</i>	<i>43.0</i>	<i>44.9</i>	<i>47.1</i>	<i>49.3</i>
SB Home Gateway		0.0	1.9	2.7	3.4	3.7	3.9	3.8	3.6	3.1	2.3
SB Home NAS		0.0	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.4	0.3
SB Home Phones (fixed)		0.1	0.8	1.0	1.0	1.0	0.9	0.7	0.6	0.5	0.3
SB Office Phones (fixed)		0.2	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.2
<b>Total SB (networked) StandBy (rest)</b>		<b>0.3</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>3</b>

RUNBAU

db	BAU Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
0.6	EPS 10–12 W	0.0	1.5	2.7	2.8	2.9	2.9	2.9	2.9	2.9	3.0
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1
0.0	EPS 12–15 W	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>EPS, total</b>	<b>0.0</b>	<b>2.6</b>	<b>3.9</b>	<b>3.9</b>	<b>3.9</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.2</b>
	<b>EPS, double counted subtracted</b>	<b>0.0</b>	<b>1.3</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.1</b>
	UPS below 1.5 kVA	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.8
	UPS 1.5 to 5 kVA	0.5	1.0	1.2	1.3	1.6	2.0	2.4	2.8	3.2	3.5
	UPS 5 to 10 kVA	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5
	UPS 10 to 200 kVA	0.6	1.2	1.4	1.5	1.7	2.0	2.4	2.8	3.1	3.4
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>
	<b>TOTAL ELECTRONICS</b>	<b>48</b>	<b>77</b>	<b>88</b>	<b>92</b>	<b>98</b>	<b>108</b>	<b>114</b>	<b>118</b>	<b>122</b>	<b>128</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>28</b>	<b>25</b>	<b>29</b>	<b>28</b>	<b>30</b>	<b>31</b>	<b>33</b>	<b>34</b>	<b>36</b>	<b>38</b>
	CF open vertical chilled multi deck (RVC2)	2.8	2.5	2.6	2.4	2.4	2.5	2.6	2.8	3.0	3.1
	CF open horizontal frozen island (RHF4)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
	CF other supermarket display (non-BCs)	5.2	4.9	5.4	5.2	5.5	6.0	6.4	7.0	7.5	8.1
	CF Plug in one door beverage cooler	3.4	3.1	3.2	2.9	3.1	3.2	3.4	3.7	4.0	4.3
	CF Plug in horizontal ice cream freezer	0.8	0.7	0.8	0.7	0.7	0.8	0.8	0.9	1.0	1.0
	CF Spiral vending machine	0.6	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.5
	<b>Total CF Commercial Refrigeration</b>	<b>13</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>
	PF Storage cabinet Chilled Vertical (CV)	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.8	0.8
	PF Storage cabinet Frozen Vertical (FV)	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0
	PF Storage cabinet Chilled Horizontal (CH)	0.2	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6
	PF Storage cabinet Frozen Horizontal (FH)	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4
	<b>PF Storage cabinets All types</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.6</b>	<b>1.8</b>	<b>1.9</b>	<b>2.1</b>	<b>2.3</b>	<b>2.6</b>	<b>2.8</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.4	0.8	1.0	1.1	1.3	1.5	1.8	2.0	2.3	2.6
	PF Process Chiller AC MT L > 300 kW	0.4	0.8	1.0	1.1	1.3	1.5	1.7	2.0	2.2	2.5
	PF Process Chiller AC LT S ≤ 200 kW	0.4	0.8	1.0	1.1	1.3	1.5	1.8	2.0	2.3	2.6
	PF Process Chiller AC LT L > 200 kW	0.4	0.8	1.1	1.2	1.4	1.6	1.8	2.1	2.4	2.7
	PF Process Chiller WC MT S ≤ 300 kW	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7
	PF Process Chiller WC MT L > 300 kW	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.1
	PF Process Chiller WC LT S ≤ 200 kW	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9
	PF Process Chiller WC LT L > 200 kW	0.2	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.2
	<b>PF Process Chiller All MT&amp;LT</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>13</b>	<b>14</b>
	PF Condensing Unit MT S 0.2-1 kW	1.1	0.8	0.9	0.9	1.0	1.1	1.3	1.4	1.6	1.9
	PF Condensing Unit MT M 1-5 kW	2.8	2.0	2.2	2.2	2.5	2.9	3.2	3.7	4.2	4.7
	PF Condensing Unit MT L 5-20 kW	3.5	2.5	2.7	2.8	3.1	3.5	4.0	4.5	5.1	5.8
	PF Condensing Unit MT XL 20-50 kW	3.5	2.5	2.7	2.7	3.1	3.5	4.0	4.5	5.1	5.8
	PF Condensing Unit LT S 0.1-0.4 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	PF Condensing Unit LT M 0.4-2 kW	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9
	PF Condensing Unit LT L 2-8 kW	0.9	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.3	1.4
	PF Condensing Unit LT XL 8-20 kW	2.7	1.9	2.1	2.1	2.4	2.7	3.1	3.5	4.0	4.5
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>15</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>17</b>	<b>20</b>	<b>22</b>	<b>25</b>
	<b>PF Professional Refrigeration, Total</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>24</b>	<b>27</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>50</b>	<b>47</b>	<b>53</b>	<b>53</b>	<b>56</b>	<b>61</b>	<b>65</b>	<b>71</b>	<b>76</b>	<b>82</b>
	CA El. Hobs	4.1	5.8	7.3	7.8	8.8	9.8	10.9	12.0	13.1	14.4
	CA El. Ovens	4.6	4.2	4.5	4.2	4.3	4.6	4.9	5.2	5.5	5.9
	CA Gas Hobs	1.9	1.8	2.0	1.8	1.8	1.9	1.9	1.9	2.0	2.0
	CA Gas Ovens	0.8	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.7
	CA Range Hoods	2.0	2.2	2.6	2.7	3.0	3.3	3.7	4.0	4.5	4.9
	<b>Total CA Cooking Appliances</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>
	COFFEE Dripfilter (glass)	2.14	1.36	1.37	1.12	1.05	1.10	1.15	1.21	1.28	1.34
	COFFEE Dripfilter (thermos)	0.07	0.19	0.22	0.22	0.24	0.25	0.27	0.29	0.30	0.32
	COFFEE Dripfilter (full automatic)	0.00	0.09	0.12	0.13	0.16	0.18	0.21	0.23	0.26	0.30
	COFFEE Pad filter	0.00	0.20	0.25	0.27	0.31	0.35	0.39	0.44	0.49	0.55
	COFFEE Hard cap espresso	0.00	0.05	0.10	0.18	0.23	0.24	0.25	0.27	0.28	0.29
	COFFEE Semi-auto espresso	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
	COFFEE Fully-auto espresso	0.02	0.03	0.03	0.04	0.04	0.05	0.06	0.07	0.08	0.09
	<b>Total CM household Coffee Makers</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<b>TOTAL COOKING</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>31</b>

## RUNBAU

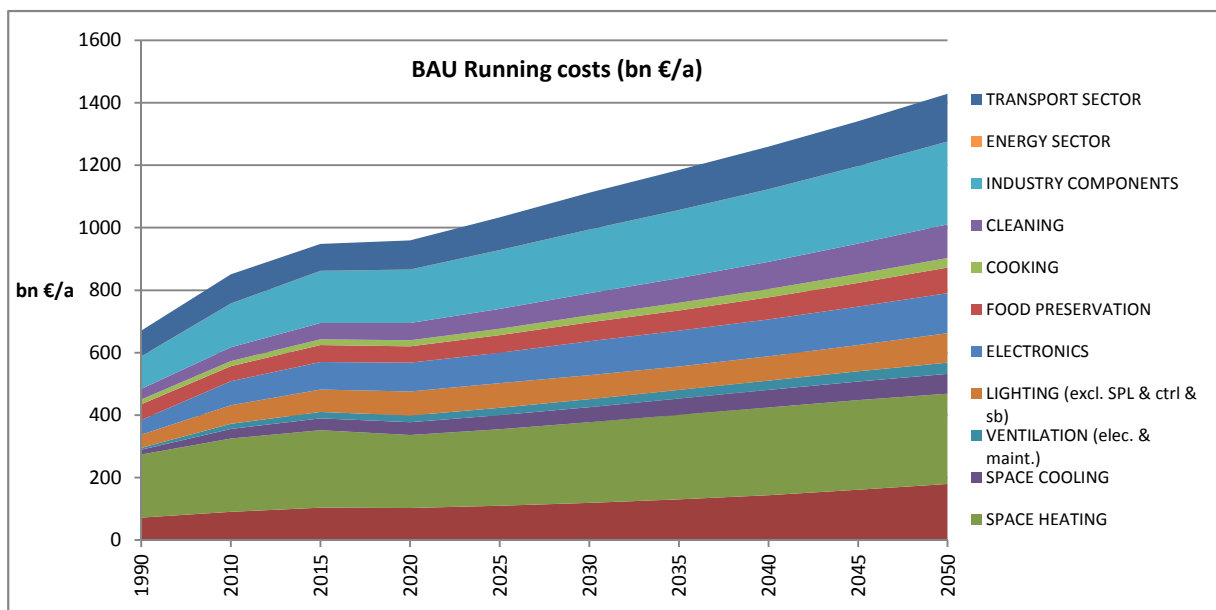
db	BAU Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WM household Washing Machine</b>	<b>23</b>	<b>26</b>	<b>29</b>	<b>29</b>	<b>32</b>	<b>35</b>	<b>38</b>	<b>41</b>	<b>46</b>	<b>51</b>
	<i>including detergent and water costs</i>	13	18	20	21	24	27	30	34	39	44
	<b>Total DW household Dishwasher</b>	<b>4</b>	<b>7</b>	<b>10</b>	<b>11</b>	<b>13</b>	<b>16</b>	<b>19</b>	<b>22</b>	<b>25</b>	<b>29</b>
	<i>including detergent and water costs</i>	1.4	3.3	4.1	5.0	6.2	7.6	9.2	11.2	13.5	16.3
	LD vented el.	1.7	2.0	2.4	2.3	2.4	2.4	2.5	2.7	2.9	3.0
	LD condens el.	0.3	2.6	3.7	4.3	5.0	5.5	5.7	6.0	6.2	6.5
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>2</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>
	VC dom	2.1	3.1	4.7	4.9	7.4	8.9	10.4	11.8	13.1	14.1
	VC nondom	0.5	0.7	0.9	1.0	1.2	1.3	1.4	1.5	1.7	1.8
	<b>Total VC Vacuum Cleaner</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>17</b>	<b>18</b>
	<i>including costs of bags &amp; filters</i>	1.6	2.1	2.1	2.2	2.3	2.4	2.4	2.4	2.3	2.2
	<b>TOTAL CLEANING</b>	<b>33</b>	<b>44</b>	<b>52</b>	<b>55</b>	<b>64</b>	<b>71</b>	<b>79</b>	<b>88</b>	<b>97</b>	<b>108</b>
	0.5 FAN Axial<300Pa (all FAN types >125W)	3.3	8.3	10.7	11.7	13.5	14.9	15.9	16.7	17.5	18.4
	0.5 FAN Axial>300Pa	5.6	15.0	19.0	19.6	21.4	23.0	24.3	25.5	26.8	28.1
	0.5 FAN Centr.FC	1.5	2.8	3.8	4.1	4.7	5.2	5.5	5.8	6.0	6.3
	0.5 FAN Centr.BC-free	3.6	6.7	8.9	9.5	10.9	12.5	13.9	15.1	16.1	17.3
	0.5 FAN Centr.BC	3.8	7.7	10.2	11.0	12.7	14.6	16.5	18.6	21.2	24.2
	0.5 FAN Cross-flow	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.3
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>9</b>	<b>20</b>	<b>27</b>	<b>28</b>	<b>32</b>	<b>36</b>	<b>39</b>	<b>41</b>	<b>44</b>	<b>48</b>
	0.45 Medium (S) 3-ph 0.75-7.5 kW no VSD	15.6	17.5	20.1	19.9	20.8	21.3	21.6	21.7	21.5	20.9
	0.45 Medium (M) 3-ph 7.5-75 kW no VSD	23.9	27.7	31.8	31.6	32.9	33.5	33.4	32.8	31.5	29.5
	0.45 Medium (L) 3-ph 75-375 kW no VSD	47.9	54.3	61.4	60.4	62.3	61.8	59.2	54.4	49.5	46.9
	<b>0.45 Total 3ph 0.75-375 kW no VSD</b>	<b>87</b>	<b>99</b>	<b>113</b>	<b>112</b>	<b>116</b>	<b>117</b>	<b>114</b>	<b>109</b>	<b>103</b>	<b>97</b>
	0.45 Medium (S) 3-ph 0.75-7.5 kW with VSD	1.0	2.1	2.8	3.3	4.1	5.0	6.1	7.4	9.0	11.0
	0.45 Medium (M) 3-ph 7.5-75 kW with VSD	2.0	4.3	5.7	6.8	8.4	10.4	12.7	15.6	19.1	23.3
	0.45 Medium (L) 3-ph 75-375 kW with VSD	5.5	12.0	16.3	19.4	24.6	30.5	37.6	46.3	55.4	63.5
	<b>0.45 Total 3-ph 0.75-375 kW with VSD</b>	<b>9</b>	<b>18</b>	<b>25</b>	<b>29</b>	<b>37</b>	<b>46</b>	<b>56</b>	<b>69</b>	<b>84</b>	<b>98</b>
	<b>0.45 Total 3-ph 0.75-375 kW w/w/o VSD</b>	<b>96</b>	<b>118</b>	<b>138</b>	<b>141</b>	<b>153</b>	<b>163</b>	<b>171</b>	<b>178</b>	<b>186</b>	<b>195</b>
	0.45 Small 1 ph 0.12-0.75 kW no VSD	1.2	1.4	1.6	1.5	1.6	1.7	1.7	1.8	1.9	2.0
	0.45 Small 1 ph 0.12-0.75 kW with VSD	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	<b>0.45 Total Small 1-ph 0.12-0.75 kW</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	0.45 Small 3 ph 0.12-0.75 kW no VSD	1.7	1.9	2.2	2.2	2.3	2.4	2.5	2.6	2.8	2.9
	0.45 Small 3 ph 0.12-0.75 kW with VSD	0.0	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6
	<b>0.45 Total Small 3-ph 0.12-0.75 kW</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	0.45 Large 3-ph LV 375-1000 kW no VSD	24.4	26.3	27.8	25.3	24.9	24.8	25.6	26.7	27.8	29.0
	0.45 Large 3-ph LV 375-1000kW with VSD	1.2	5.9	9.6	12.7	16.5	19.7	22.0	24.3	26.7	29.5
	<b>0.45 Total Large 3-ph LV 375-1000 kW</b>	<b>26</b>	<b>32</b>	<b>37</b>	<b>38</b>	<b>41</b>	<b>44</b>	<b>48</b>	<b>51</b>	<b>55</b>	<b>58</b>
	0.45 Explosion motors (S) 3-ph 0.75-7.5 kW	0.5	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1
	0.45 Explosion motors (M) 3-ph 7.5-75 kW	1.3	1.6	1.9	2.0	2.2	2.3	2.5	2.7	2.9	3.1
	0.45 Explosion motors (L) 3-ph 75-375 kW	2.4	3.1	3.7	3.9	4.3	4.7	5.0	5.4	5.8	6.3
	<b>0.45 Total Expl. 0.75-375 kW (no VSD)</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
	0.45 Brake motors (S) 3-ph 0.75-7.5 kW	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8
	0.45 Brake motors (M) 3-ph 7.5-75 kW	0.9	1.1	1.3	1.4	1.5	1.6	1.7	1.8	2.0	2.1
	0.45 Brake motors (L) 3-ph 75-375 kW	1.2	1.6	1.9	2.0	2.2	2.4	2.5	2.7	2.9	3.2
	<b>0.45 Total Brake 0.75-375 kW (no VSD)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>
	0.45 8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	0.45 8-pole motors (M) 3-ph 7.5-75 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	0.45 8-pole motors (L) 3-ph 75-375 kW	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	<b>0.45 Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
	0.45 1-phase motors >0.75 kW (no VSD)	6	8	9	9	10	11	12	13	13	14
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>76</b>	<b>94</b>	<b>110</b>	<b>112</b>	<b>122</b>	<b>130</b>	<b>137</b>	<b>144</b>	<b>151</b>	<b>160</b>
	<b>Total WP Water Pumps</b>	<b>15</b>	<b>19</b>	<b>22</b>	<b>23</b>	<b>26</b>	<b>29</b>	<b>33</b>	<b>37</b>	<b>41</b>	<b>45</b>
	CP Fixed Speed 5-1280 l/s	3.6	6.6	6.0	5.1	5.2	5.6	6.0	6.4	6.9	7.4
	CP Variable speed 5-1280 l/s	0.0	1.1	2.1	2.6	3.0	3.2	3.5	3.7	3.9	4.2
	CP Pistons 2-64 l/s	0	0	0	0	0	0	0	0	0	1
	<b>Total CP Standard Air Compressors</b>	<b>4</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>104</b>	<b>141</b>	<b>167</b>	<b>171</b>	<b>188</b>	<b>204</b>	<b>218</b>	<b>233</b>	<b>248</b>	<b>265</b>



# RUNBAU

db BAU Running costs (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
TRAF0 Distribution	1.5	2.2	2.7	2.8	3.3	3.8	4.3	4.9	5.5	6.2
TRAF0 Industry oil	1.1	1.7	2.1	2.2	2.5	2.9	3.2	3.6	4.1	4.6
TRAF0 Industry dry	0.4	0.5	0.7	0.7	0.8	0.9	1.0	1.2	1.3	1.4
TRAF0 Power	4.4	6.0	7.1	7.6	8.7	10.0	11.3	12.7	14.3	16.1
TRAF0 DER oil	0.0	0.1	0.1	0.2	0.3	0.5	0.9	1.4	2.1	2.9
TRAF0 DER dry	0.0	0.2	0.4	0.7	1.3	2.2	3.7	5.8	8.7	12.2
TRAF0 Small	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
<b>Total TRAF0 Utility Transformers</b>	<b>8</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>17</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>36</b>	<b>44</b>
<b>TOTAL ENERGY SECTOR (energy already included in power generation factor, so reference=0)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Tyres C1, replacement for cars	42	46	41	41	46	49	52	55	57	60
Tyres C1, OEM for cars	13	13	13	13	14	15	16	16	17	18
<b>Tyres C1, total</b>	<b>55</b>	<b>59</b>	<b>54</b>	<b>54</b>	<b>59</b>	<b>64</b>	<b>68</b>	<b>71</b>	<b>75</b>	<b>78</b>
Tyres C2, replacement for vans	9	12	11	13	15	17	18	19	20	21
Tyres C2, OEM for vans	2	3	2	3	3	4	4	4	4	5
<b>Tyres C2, total</b>	<b>11</b>	<b>15</b>	<b>14</b>	<b>15</b>	<b>18</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>25</b>	<b>26</b>
Tyres C3, replacement for trucks/busses	13	16	15	19	23	27	31	34	37	40
Tyres C3, OEM for trucks/busses	3	4	3	4	5	6	7	7	8	9
<b>Tyres C3, total</b>	<b>16</b>	<b>20</b>	<b>18</b>	<b>23</b>	<b>28</b>	<b>33</b>	<b>38</b>	<b>41</b>	<b>45</b>	<b>49</b>
<b>Tyres, total C1+C2+C3</b>	<b>82</b>	<b>94</b>	<b>86</b>	<b>93</b>	<b>105</b>	<b>118</b>	<b>128</b>	<b>136</b>	<b>144</b>	<b>153</b>
<b>TRANSPORT SECTOR</b>	<b>82</b>	<b>94</b>	<b>86</b>	<b>93</b>	<b>105</b>	<b>118</b>	<b>128</b>	<b>136</b>	<b>144</b>	<b>153</b>
<b>GENERAL TOTAL (in bn euros)</b>	<b>670</b>	<b>851</b>	<b>948</b>	<b>959</b>	<b>1033</b>	<b>1112</b>	<b>1185</b>	<b>1259</b>	<b>1341</b>	<b>1428</b>

BAU Running costs (summary table)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	<b>73</b>	<b>91</b>	<b>104</b>	<b>102</b>	<b>110</b>	<b>119</b>	<b>130</b>	<b>144</b>	<b>161</b>	<b>179</b>
<b>SPACE HEATING</b>	<b>201</b>	<b>234</b>	<b>248</b>	<b>234</b>	<b>244</b>	<b>258</b>	<b>271</b>	<b>281</b>	<b>287</b>	<b>290</b>
<b>SPACE COOLING</b>	<b>15</b>	<b>31</b>	<b>38</b>	<b>41</b>	<b>45</b>	<b>49</b>	<b>52</b>	<b>56</b>	<b>59</b>	<b>63</b>
<b>VENTILATION (elec. &amp; maint.)</b>	<b>6</b>	<b>16</b>	<b>20</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>30</b>	<b>33</b>	<b>36</b>
<sup>1</sup> <b>VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>LIGHTING (excl. SPL &amp; ctrl &amp; sb)</b>	<b>42</b>	<b>60</b>	<b>72</b>	<b>77</b>	<b>79</b>	<b>77</b>	<b>75</b>	<b>78</b>	<b>84</b>	<b>94</b>
<b>ELECTRONICS</b>	<b>48</b>	<b>77</b>	<b>88</b>	<b>92</b>	<b>98</b>	<b>108</b>	<b>114</b>	<b>118</b>	<b>122</b>	<b>128</b>
<b>FOOD PRESERVATION</b>	<b>50</b>	<b>47</b>	<b>53</b>	<b>53</b>	<b>56</b>	<b>61</b>	<b>65</b>	<b>71</b>	<b>76</b>	<b>82</b>
<b>COOKING</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>	<b>31</b>
<b>CLEANING</b>	<b>33</b>	<b>44</b>	<b>52</b>	<b>55</b>	<b>64</b>	<b>71</b>	<b>79</b>	<b>88</b>	<b>97</b>	<b>108</b>
<b>INDUSTRY COMPONENTS</b>	<b>104</b>	<b>141</b>	<b>167</b>	<b>171</b>	<b>188</b>	<b>204</b>	<b>218</b>	<b>233</b>	<b>248</b>	<b>265</b>
<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TRANSPORT SECTOR</b>	<b>82</b>	<b>94</b>	<b>86</b>	<b>93</b>	<b>105</b>	<b>118</b>	<b>128</b>	<b>136</b>	<b>144</b>	<b>153</b>
<b>TOTAL in bn euros</b>	<b>670</b>	<b>851</b>	<b>948</b>	<b>959</b>	<b>1033</b>	<b>1112</b>	<b>1185</b>	<b>1259</b>	<b>1341</b>	<b>1428</b>



RUNECO

db	ECO Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	58	62	64	56	53	53	55	60	65	71
	<b>Total CH Central Heating combi, water heat</b>	14	29	32	28	28	29	32	35	39	43
	<b>TOTAL WATER HEATING</b>	73	91	96	84	81	82	87	95	104	114
	<b>Total CH Central Heating boiler, space heat</b>	140	166	152	121	109	104	104	104	104	102
	SFB Wood Manual	10	3	3	3	2	1	1	0	0	0
	SFB Wood Direct Draft	0	1	2	3	4	4	5	6	7	9
	SFB Coal	2	1	0	0	0	0	0	0	0	0
	SFB Pellets	0	0	1	1	2	2	2	2	3	3
	SFB Wood chips	0	0	0	1	1	1	1	1	1	1
	<b>Total Solid Fuel Boiler</b>	12	6	7	8	8	8	8	9	11	13
	CHAE-S (<= 400 kW)	0.9	2.7	3.4	3.7	3.9	4.1	4.3	4.6	5.0	5.3
	CHAE-L (> 400 kW)	1.0	2.3	2.8	2.8	2.9	2.8	2.7	2.7	2.7	2.7
	CHWE-S (<= 400 kW)	0.1	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5
	CHWE-M (> 400 kW; <= 1500 kW)	0.2	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	CHWE-L (> 1500 kW)	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	HT PCH-AE-S	3.9	5.5	6.6	6.7	7.1	7.4	7.8	8.4	9.0	9.7
	HT PCH-AE-L	3.7	5.2	6.3	6.4	6.6	6.7	6.9	7.4	7.9	8.5
	HT PCH-WE-S	0.8	1.2	1.4	1.4	1.5	1.6	1.7	1.9	2.0	2.1
	HT PCH-WE-M	1.6	2.4	2.9	3.0	3.2	3.4	3.6	3.9	4.2	4.5
	HT PCH-WE-L	0.3	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
	AC rooftop	0.7	1.6	1.8	1.6	1.3	0.8	0.4	0.2	0.2	0.2
	AC splits	1.0	3.0	3.3	3.1	3.0	2.8	2.6	2.5	2.4	2.3
	AC VRF	0.0	1.6	2.6	3.7	4.9	6.3	7.7	8.9	10.2	11.2
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Air Cooling</b>	14	27	33	34	36	38	40	43	46	49
	AC rooftop (rev)	0.8	2.3	2.5	2.0	1.5	0.9	0.4	0.1	0.0	0.0
	AC splits (rev)	1.6	4.5	5.1	4.7	4.4	4.0	3.7	3.5	3.3	3.2
	AC VRF (rev)	0.0	2.2	3.6	4.9	6.2	7.7	9.2	10.1	10.9	11.4
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	AHF	8.8	8.8	7.6	5.7	4.9	4.2	3.9	3.7	3.5	3.3
	AHE	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC Air Heating</b>	11	18	19	18	17	17	17	18	18	18
	<b>Total AHC Air Heating &amp; Cooling</b>	26	43	50	49	50	50	52	55	58	61
	LH open fireplace	0.6	1	1	1	1	1	1	1	1	1
	LH closed fireplace/inset	0.6	2	3	3	4	4	4	5	5	5
	LH wood stove	1.2	1	2	2	2	2	2	3	3	3
	LH coal stove	0.5	1	0	0	0	0	0	0	0	0
	LH cooker	0.4	1	1	1	1	2	2	2	2	2
	LH SHR stove	0.5	1	1	1	2	2	2	3	3	3
	LH pellet stove	0.0	0	1	1	1	1	1	2	2	2
	LH open fire gas	0.1	0	0	0	0	0	0	0	0	0
	LH closed fire gas	0.9	1	1	1	1	1	1	1	1	1
	LH flueless fuel heater	0.0	0	0	0	0	0	0	0	0	0
	LH elec.portable	5.4	5	5	5	5	5	5	5	5	5
	LH elec.convector	22.3	20	22	20	20	21	22	22	23	23
	LH elec.storage	1.7	1	2	1	1	1	1	1	2	2
	LH elec.underfloor	3.1	3	3	3	3	3	3	3	3	3
	LH luminous heaters	0.3	0	0	0	0	0	0	0	0	0
	LH tube heaters	0.5	1	1	1	1	1	1	1	1	1
	<b>LH total</b>	38.0	38	43	41	42	44	47	49	50	52
	RAC (cooling demand), all types <12 kW	1	4	5	5	6	7	8	8	9	9
	RAC (heating demand), reversible <12kW	0	4	6	7	9	10	10	10	10	10
	<b>Total RAC Room Air Conditioner</b>	1	8	11	12	15	17	18	18	19	20
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	3	3	3	2	2	2	2	2	2	2
	<b>TOTAL SPACE HEATING</b>	201	231	228	195	185	182	186	190	193	196
	<b>TOTAL SPACE COOLING</b>	15	31	38	39	42	45	48	51	55	59
	NRVU Ventilation units	4.1	12.3	15.0	15.3	15.8	16.1	17.0	18.3	19.8	21.5
	RVU Central Unidir.	1.7	3.2	3.7	3.2	2.7	2.3	2.5	2.8	3.2	3.5
	RVU Central Balanced VU <=125W/fan (2 fans)	0.0	0.3	0.6	0.9	1.2	1.5	1.8	2.0	2.3	2.6
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8
	<b>Total VU Ventilation Units</b>	6	16	19	19	20	20	22	24	26	28
	<b>TOTAL VENTILATION (electr. &amp; maint.)</b>	6	16	19	19	20	20	22	24	26	28
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</b>	-	-	-2	-5	-8	-10	-11	-11	-12	-13

# RUNECO

db	ECO Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LFL (T12,T8h,T8t,T5,other)		15.6	21.2	27.3	27.7	20.8	11.8	6.0	3.3	2.1	1.3
HID (HPM, HPS, MH)		6.1	11.3	10.9	9.1	7.0	3.9	1.6	0.6	0.2	0.1
CFLni (all shapes)		0.7	2.6	2.8	2.3	1.5	0.8	0.3	0.1	0.0	0.0
CFLi (retrofit for GLS, HL)		0.2	3.8	5.5	4.2	1.6	0.4	0.0	0.0	0.0	0.0
GLS (DLS & NDLS)		18.2	9.2	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HL (DLS & NDLS, LV & MV)		1.5	8.7	12.1	5.0	0.2	0.0	0.0	0.0	0.0	0.0
LED replacing LFL (retrofit & luminaire)		0.0	0.0	0.3	2.7	10.0	17.2	23.1	27.9	32.8	38.6
LED replacing HID (retrofit & luminaire)		0.0	0.0	1.8	3.8	6.2	8.8	11.3	13.8	16.5	19.7
LED replacing CFLni (retrofit & luminaire)		0.0	0.0	0.1	0.6	1.3	2.0	2.6	3.0	3.5	4.0
LED replacing DLS (retrofit & luminaire)		0.0	0.0	0.3	1.0	1.7	2.0	2.2	2.5	2.7	3.1
LED replacing NDLS (retrofit & luminaire)		0.0	0.0	0.4	3.3	6.6	8.2	9.4	10.5	11.7	13.1
Special Purpose Lamps (exempt)		6.6	9.0	8.7	7.2	6.2	5.4	5.6	5.9	6.2	6.6
Lighting controls and standby		1.9	2.5	2.4	2.0	1.7	1.5	1.6	1.7	1.7	1.8
<b>TOTAL LIGHTING (incl. SPL, ctrl, sb)</b>		<b>51</b>	<b>68</b>	<b>75</b>	<b>69</b>	<b>65</b>	<b>62</b>	<b>64</b>	<b>69</b>	<b>78</b>	<b>88</b>
<b>TOTAL LIGHTING (excl. SPL, ctrl, sb)</b>		<b>42</b>	<b>57</b>	<b>64</b>	<b>60</b>	<b>57</b>	<b>55</b>	<b>56</b>	<b>62</b>	<b>70</b>	<b>80</b>
DP TV total all types		6.7	14.4	17.3	15.4	11.2	11.2	10.8	11.8	13.5	15.6
DP Monitor		0.2	2.7	1.6	0.7	0.6	0.5	0.4	0.4	0.4	0.5
DP Signage		0.0	0.2	1.8	3.9	4.8	4.2	3.4	3.5	4.0	4.9
<b>DP Electronic Displays, total</b>		<b>6.9</b>	<b>17.3</b>	<b>20.8</b>	<b>20.0</b>	<b>16.7</b>	<b>15.9</b>	<b>14.6</b>	<b>15.6</b>	<b>18.0</b>	<b>20.9</b>
SSTB		0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CSTB		0.0	1.3	3.1	3.0	3.2	3.3	3.6	4.1	4.7	5.3
<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0.0</b>	<b>1.6</b>	<b>3.4</b>	<b>3.0</b>	<b>3.2</b>	<b>3.3</b>	<b>3.6</b>	<b>4.1</b>	<b>4.7</b>	<b>5.3</b>
VIDEO players/recorders		0.0	0.4	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO projectors		0.0	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
VIDEO game consoles		0.0	0.8	1.6	2.0	2.7	3.0	3.1	3.3	3.4	3.6
<b>Total VIDEO</b>		<b>0.0</b>	<b>1.6</b>	<b>2.4</b>	<b>2.4</b>	<b>2.8</b>	<b>3.0</b>	<b>3.1</b>	<b>3.3</b>	<b>3.4</b>	<b>3.6</b>
<i>ES&amp;DS only, without effects on infrastructure</i>											
ES tower 1-socket traditional		0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES rack 1-socket traditional		0.0	0.5	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5
ES rack 2-socket traditional		0.1	2.3	1.3	0.7	0.9	1.1	1.3	1.3	1.4	1.5
ES rack 2-socket cloud		0.0	1.3	2.2	2.2	2.7	3.4	3.9	4.1	4.3	4.5
ES rack 4-socket traditional		0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
ES rack 4-socket cloud		0.0	0.1	0.3	0.3	0.4	0.5	0.6	0.6	0.7	0.7
ES rack 2-socket resilient trad.		0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1
ES rack 2-socket resilient cloud		0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
ES rack 4-socket resilient trad.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient cloud		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES blade 1-socket traditional		0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
ES blade 2-socket traditional		0.1	1.0	0.6	0.4	0.4	0.5	0.6	0.6	0.7	0.7
ES blade 2-socket cloud		0.0	0.6	1.0	1.1	1.3	1.7	1.9	2.0	2.1	2.2
ES blade 4-socket traditional		0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 4-socket cloud		0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
<b>ES total traditional</b>		<b>0</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>ES total cloud</b>		<b>0</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>
<b>ES Enterprise Servers total</b>		<b>0</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>
DS Online 2		0.1	1.0	1.5	2.0	2.6	3.2	3.5	3.7	3.9	4.1
DS Online 3		0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.6	0.6
DS Online 4		0.0	0.6	0.8	1.1	1.4	1.8	1.9	2.0	2.2	2.3
<b>DS Data Storage products total</b>		<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>
<b>ES + DS total (excl. infrastructure)</b>		<b>0</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>11</b>	<b>14</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>18</b>
PC Desktop		2.8	3.7	2.5	0.9	0.6	0.6	0.6	0.7	0.7	0.7
PC Notebook		0.0	1.3	0.8	0.2	0.1	0.1	0.1	0.1	0.2	0.2
PC Tablet/slate		0.0	0.0	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.6
PC Thin client		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC Workstation		0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1
<b>Total PC, electricity</b>		<b>2.8</b>	<b>5.3</b>	<b>3.8</b>	<b>1.5</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>
EP-Copier mono		1.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EP-Copier colour		0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
EP-printer mono		1.6	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
EP-printer colour		0.0	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4
IJ SFD printer		0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IJ MFD printer		0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
<b>Total imaging equipment (incl. resources)</b>		<b>35.8</b>	<b>34.5</b>	<b>35.6</b>	<b>37.2</b>	<b>38.6</b>	<b>40.5</b>	<b>42.4</b>	<b>44.4</b>	<b>46.6</b>	<b>48.8</b>
<i>including the following toner and paper costs:</i>		<i>31.9</i>	<i>33.6</i>	<i>35.1</i>	<i>36.7</i>	<i>38.1</i>	<i>40.0</i>	<i>41.8</i>	<i>43.7</i>	<i>45.8</i>	<i>48.0</i>
SB Home Gateway		0.0	1.9	2.7	3.3	3.7	3.9	3.8	3.6	3.1	2.3
SB Home NAS		0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.3
SB Home Phones (fixed)		0.1	0.8	1.0	1.0	1.0	0.9	0.7	0.6	0.5	0.3
SB Office Phones (fixed)		0.2	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.2
<b>Total SB (networked) StandBy (rest)</b>		<b>0.3</b>	<b>3.4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>3</b>

RUNECO

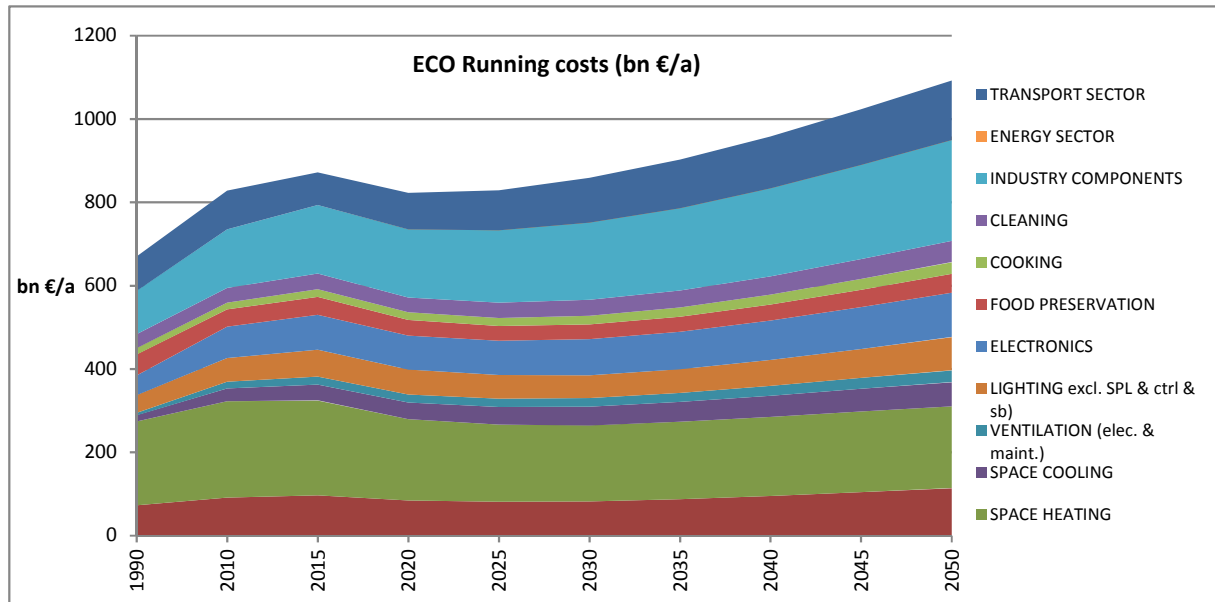
db	ECO Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.0	EPS ≤ 6W, low-V	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.4	0.4	0.3	0.2	0.2	0.3	0.3	0.3	0.3
0.6	EPS 10–12 W	0.0	1.5	2.3	2.0	1.8	1.9	2.0	2.1	2.2	2.4
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
1.0	EPS 65–120 W	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1
0.0	EPS 12–15 W	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
	<b>EPS, total</b>	<b>0.0</b>	<b>2.5</b>	<b>3.3</b>	<b>2.7</b>	<b>2.4</b>	<b>2.6</b>	<b>2.7</b>	<b>2.9</b>	<b>3.1</b>	<b>3.3</b>
	<b>EPS, double counted subtracted</b>	<b>0.0</b>	<b>1.3</b>	<b>1.6</b>	<b>1.3</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>
	UPS below 1.5 kVA	0.1	0.2	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.1
	UPS 1.5 to 5 kVA	0.5	1.0	1.2	0.9	0.4	0.4	0.4	0.5	0.6	0.6
	UPS 5 to 10 kVA	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
	UPS 10 to 200 kVA	0.6	1.2	1.4	1.4	1.5	1.6	1.9	2.2	2.5	2.7
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>1.3</b>	<b>2.6</b>	<b>3.1</b>	<b>2.5</b>	<b>2.1</b>	<b>2.3</b>	<b>2.6</b>	<b>3.0</b>	<b>3.4</b>	<b>3.7</b>
	<b>TOTAL ELECTRONICS</b>	<b>48</b>	<b>76</b>	<b>84</b>	<b>82</b>	<b>82</b>	<b>87</b>	<b>90</b>	<b>95</b>	<b>100</b>	<b>107</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>28</b>	<b>19</b>	<b>18</b>	<b>15</b>	<b>13</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>9</b>	<b>9</b>
	CF open vertical chilled multi deck (RVC2)	2.8	2.5	2.6	2.1	1.7	1.5	1.6	1.7	1.8	1.9
	CF open horizontal frozen island (RHF4)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	CF other supermarket display (non-BCs)	5.2	4.9	5.4	4.9	4.6	4.7	5.0	5.4	5.8	6.3
	CF Plug in one door beverage cooler	3.4	3.1	3.2	2.6	2.1	2.1	2.2	2.4	2.6	2.8
	CF Plug in horizontal ice cream freezer	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.9	0.9	1.0
	CF Spiral vending machine	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.3
	<b>Total CF Commercial Refrigeration</b>	<b>13.0</b>	<b>12.0</b>	<b>12.6</b>	<b>10.7</b>	<b>9.5</b>	<b>9.4</b>	<b>10.0</b>	<b>10.8</b>	<b>11.6</b>	<b>12.5</b>
	PF Storage cabinet Chilled Vertical (CV)	0.3	0.4	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.5
	PF Storage cabinet Frozen Vertical (FV)	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.6
	PF Storage cabinet Chilled Horizontal (CH)	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4
	PF Storage cabinet Frozen Horizontal (FH)	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>PF Storage cabinets All types</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>1.4</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.7</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.4	0.8	1.0	1.1	1.3	1.4	1.6	1.9	2.1	2.4
	PF Process Chiller AC MT L > 300 kW	0.4	0.8	1.0	1.1	1.2	1.4	1.6	1.8	2.1	2.3
	PF Process Chiller AC LT S ≤ 200 kW	0.4	0.8	1.0	1.1	1.3	1.4	1.7	1.9	2.2	2.4
	PF Process Chiller AC LT L > 200 kW	0.4	0.8	1.1	1.2	1.3	1.5	1.7	2.0	2.2	2.5
	PF Process Chiller WC MT S ≤ 300 kW	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7
	PF Process Chiller WC MT L > 300 kW	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0
	PF Process Chiller WC LT S ≤ 200 kW	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9
	PF Process Chiller WC LT L > 200 kW	0.2	0.4	0.5	0.5	0.6	0.6	0.7	0.8	1.0	1.1
	<b>PF Process Chiller All MT&amp;LT</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>
	PF Condensing Unit MT S 0.2-1 kW	1.1	0.8	0.9	0.8	0.9	1.0	1.2	1.3	1.5	1.7
	PF Condensing Unit MT M 1-5 kW	2.8	2.0	2.2	2.2	2.4	2.7	3.0	3.4	3.9	4.4
	PF Condensing Unit MT L 5-20 kW	3.5	2.5	2.7	2.6	2.9	3.2	3.7	4.1	4.7	5.3
	PF Condensing Unit MT XL 20-50 kW	3.5	2.5	2.7	2.6	2.9	3.2	3.7	4.1	4.7	5.3
	PF Condensing Unit LT S 0.1-0.4 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
	PF Condensing Unit LT M 0.4-2 kW	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.8
	PF Condensing Unit LT L 2-8 kW	0.9	0.6	0.7	0.6	0.7	0.7	0.8	1.0	1.1	1.2
	PF Condensing Unit LT XL 8-20 kW	2.7	1.9	2.1	2.0	2.2	2.5	2.8	3.2	3.6	4.1
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>15</b>	<b>11</b>	<b>12</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>16</b>	<b>18</b>	<b>20</b>	<b>23</b>
	<b>PF Professional Refrigeration, Total</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>24</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>50</b>	<b>41</b>	<b>42</b>	<b>38</b>	<b>36</b>	<b>35</b>	<b>36</b>	<b>39</b>	<b>42</b>	<b>45</b>
	CA El. Hobs	4.1	5.8	7.3	7.8	8.8	9.8	10.8	11.9	13.1	14.3
	CA El. Ovens	4.6	4.2	4.5	4.1	4.1	4.2	4.4	4.7	5.0	5.2
	CA Gas Hobs	1.9	1.8	2.0	1.8	1.8	1.8	1.9	1.9	1.9	2.0
	CA Gas Ovens	0.8	0.6	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	CA Range Hoods	2.0	2.2	2.6	2.6	2.6	2.6	2.7	2.9	3.1	3.4
	<b>Total CA Cooking Appliances</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>25</b>
	COFFEE Dripfilter (glass)	2.14	1.36	1.31	0.90	0.84	0.88	0.92	0.97	1.02	1.07
	COFFEE Dripfilter (thermos)	0.07	0.19	0.22	0.22	0.24	0.25	0.27	0.29	0.30	0.32
	COFFEE Dripfilter (full automatic)	0.00	0.09	0.12	0.13	0.16	0.18	0.21	0.23	0.26	0.30
	COFFEE Pad filter	0.00	0.20	0.24	0.20	0.23	0.26	0.29	0.33	0.37	0.41
	COFFEE Hard cap espresso	0.00	0.05	0.09	0.13	0.17	0.18	0.19	0.20	0.21	0.22
	COFFEE Semi-auto espresso	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	COFFEE Fully-auto espresso	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.07
	<b>Total CM household Coffee Makers</b>	<b>2.3</b>	<b>1.9</b>	<b>2.0</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.1</b>	<b>2.2</b>	<b>2.4</b>
	<b>TOTAL COOKING</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>

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db	ECO Running costs (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WM household Washing Machine</b> <i>including detergent and water costs</i>	<b>23.2</b> 12.6	<b>18.6</b> 12.2	<b>17.9</b> 11.9	<b>16.2</b> 11.3	<b>15.8</b> 11.6	<b>16.2</b> 12.3	<b>17.0</b> 13.3	<b>18.3</b> 14.4	<b>19.8</b> 15.8	<b>21.6</b> 17.4
	<b>Total DW household Dishwasher</b> <i>including detergent and water costs</i>	<b>4.0</b> 1.4	<b>6.0</b> 2.7	<b>7.2</b> 3.0	<b>7.9</b> 3.5	<b>9.1</b> 4.0	<b>10.4</b> 4.7	<b>11.9</b> 5.5	<b>13.5</b> 6.5	<b>15.3</b> 7.5	<b>17.1</b> 8.8
	LD vented el.	1.7	2.0	2.4	2.3	2.3	2.3	2.4	2.5	2.7	2.9
	LD condens el.	0.3	2.6	3.5	3.7	3.7	3.6	3.6	3.6	3.7	3.7
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>2.0</b>	<b>4.6</b>	<b>5.9</b>	<b>5.9</b>	<b>6.0</b>	<b>5.9</b>	<b>6.0</b>	<b>6.2</b>	<b>6.4</b>	<b>6.6</b>
	VC dom	2.1	3.1	3.8	2.1	2.7	2.8	2.8	2.8	2.7	2.6
	VC nondom	0.5	0.7	0.8	0.7	0.7	0.7	0.8	0.8	0.9	1.0
	<b>Total VC Vacuum Cleaner</b> <i>including costs of bags &amp; filters</i>	<b>4.2</b> 1.6	<b>5.9</b> 2.1	<b>6.7</b> 2.1	<b>5.0</b> 2.2	<b>5.7</b> 2.3	<b>5.9</b> 2.4	<b>6.0</b> 2.4	<b>6.0</b> 2.4	<b>5.9</b> 2.3	<b>5.8</b> 2.2
	<b>TOTAL CLEANING</b>	<b>33</b>	<b>35</b>	<b>38</b>	<b>35</b>	<b>37</b>	<b>38</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>51</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	3.3	8.3	10.3	10.5	11.3	12.1	12.7	13.4	14.0	14.7
0.5	FAN Axial>300Pa	5.6	15.0	18.6	18.4	19.1	19.8	20.6	21.6	22.7	23.8
0.5	FAN Centr.FC	1.5	2.8	3.6	3.6	3.7	3.8	4.0	4.2	4.4	4.6
0.5	FAN Centr.BC-free	3.6	6.7	8.5	8.7	9.5	10.6	11.8	12.7	13.6	14.6
0.5	FAN Centr.BC	3.8	7.7	9.8	9.9	10.8	12.2	13.8	15.5	17.7	20.2
0.5	FAN Cross-flow	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>9.1</b>	<b>20.4</b>	<b>25.7</b>	<b>25.8</b>	<b>27.4</b>	<b>29.5</b>	<b>31.7</b>	<b>33.9</b>	<b>36.4</b>	<b>39.2</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	15.6	17.4	19.3	16.7	15.3	15.7	16.4	17.1	17.8	18.5
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	23.9	27.7	30.7	26.4	23.7	23.6	24.3	25.0	25.5	26.2
0.45	Medium (L) 3-ph 75-375 kW no VSD	47.9	54.3	59.3	52.6	48.5	43.9	43.3	43.0	43.2	44.4
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>87</b>	<b>99</b>	<b>109</b>	<b>96</b>	<b>87</b>	<b>83</b>	<b>84</b>	<b>85</b>	<b>87</b>	<b>89</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1.0	2.1	3.0	4.5	6.4	7.2	8.1	9.0	10.1	11.2
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	2.0	4.3	6.3	9.7	13.7	15.7	17.5	19.6	21.9	24.3
0.45	Medium (L) 3-ph 75-375 kW with VSD	5.5	12.1	17.5	24.0	32.5	40.8	46.2	51.9	57.8	63.5
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>9</b>	<b>18</b>	<b>27</b>	<b>38</b>	<b>53</b>	<b>64</b>	<b>72</b>	<b>80</b>	<b>90</b>	<b>99</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>96</b>	<b>118</b>	<b>136</b>	<b>134</b>	<b>140</b>	<b>147</b>	<b>156</b>	<b>166</b>	<b>176</b>	<b>188</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1.2	1.4	1.6	1.5	1.5	1.6	1.6	1.7	1.8	1.9
0.45	Small 1 ph 0.12-0.75 kW with VSD	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1.7	1.9	2.2	2.2	2.2	2.2	2.4	2.5	2.6	2.7
0.45	Small 3 ph 0.12-0.75 kW with VSD	0.0	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	24.4	26.3	27.8	25.3	24.8	24.7	25.5	26.6	27.7	28.9
0.45	Large 3-ph LV 375-1000kW with VSD	1.2	5.9	9.6	12.7	16.5	19.6	21.8	24.0	26.5	29.2
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>26</b>	<b>32</b>	<b>37</b>	<b>38</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>51</b>	<b>54</b>	<b>58</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0.5	0.6	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.1
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1.3	1.6	1.9	2.0	2.2	2.3	2.4	2.6	2.8	3.0
0.45	Explosion motors (L) 3-ph 75-375 kW	2.4	3.1	3.7	3.9	4.3	4.6	5.0	5.3	5.7	6.2
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>10</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.8
0.45	Brake motors (M) 3-ph 7.5-75 kW	0.9	1.1	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.1
0.45	Brake motors (L) 3-ph 75-375 kW	1.2	1.6	1.9	2.0	2.2	2.3	2.5	2.7	2.9	3.1
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0.45	8-pole motors (L) 3-ph 75-375 kW	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>76</b>	<b>94</b>	<b>108</b>	<b>108</b>	<b>114</b>	<b>120</b>	<b>128</b>	<b>136</b>	<b>145</b>	<b>155</b>
	<b>Total WP Water Pumps</b>	<b>15.4</b>	<b>18.6</b>	<b>21.8</b>	<b>22.6</b>	<b>25.4</b>	<b>28.5</b>	<b>31.9</b>	<b>35.6</b>	<b>39.6</b>	<b>43.9</b>
	CP Fixed Speed 5-1280 l/s	3.6	6.6	6.0	5.0	5.1	5.4	5.8	6.3	6.8	7.3
	CP Variable speed 5-1280 l/s	0.0	1.1	2.1	2.6	2.9	3.2	3.4	3.6	3.9	4.2
	CP Pistons 2-64 l/s	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5
	<b>Total CP Standard Air Compressors</b>	<b>3.9</b>	<b>8.0</b>	<b>8.4</b>	<b>7.9</b>	<b>8.3</b>	<b>9.0</b>	<b>9.6</b>	<b>10.4</b>	<b>11.1</b>	<b>11.9</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>104</b>	<b>141</b>	<b>164</b>	<b>164</b>	<b>175</b>	<b>187</b>	<b>201</b>	<b>216</b>	<b>232</b>	<b>250</b>

# RUNECO

db	ECO Running costs (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	TRAF0 Distribution	1.5	2.2	2.6	2.6	2.8	3.1	3.4	3.6	3.9	4.1
	TRAF0 Industry oil	1.1	1.7	2.0	1.9	2.0	2.0	2.0	2.1	2.4	2.6
	TRAF0 Industry dry	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0
	TRAF0 Power	4.4	6.0	7.1	7.6	8.7	10.0	11.3	12.7	14.3	16.1
	TRAF0 DER oil	0.0	0.1	0.1	0.1	0.2	0.3	0.5	0.8	1.2	1.7
	TRAF0 DER dry	0.0	0.2	0.4	0.6	1.0	1.7	2.8	4.4	6.6	9.2
	TRAF0 Small	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	<b>Total TRAF0 Utility Transformers</b>	<b>7.7</b>	<b>11.0</b>	<b>13.1</b>	<b>13.7</b>	<b>15.7</b>	<b>18.1</b>	<b>21.0</b>	<b>24.8</b>	<b>29.6</b>	<b>35.2</b>
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>-2</b>	<b>-4</b>	<b>-5</b>	<b>-7</b>	<b>-9</b>
	<i>(only improvement over BAU)</i>										
	Tyres C1, replacement for cars	42	45	36	38	40	43	46	49	52	56
	Tyres C1, OEM for cars	13	13	13	13	13	14	14	15	16	17
	<b>Tyres C1, total</b>	<b>55</b>	<b>59</b>	<b>48</b>	<b>50</b>	<b>53</b>	<b>57</b>	<b>60</b>	<b>64</b>	<b>68</b>	<b>73</b>
	Tyres C2, replacement for vans	9	12	10	12	14	16	17	18	19	20
	Tyres C2, OEM for vans	2	3	2	3	3	3	4	4	4	4
	<b>Tyres C2, total</b>	<b>11</b>	<b>15</b>	<b>13</b>	<b>15</b>	<b>16</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>25</b>
	Tyres C3, replacement for trucks/busses	13	16	13	18	21	26	29	31	34	37
	Tyres C3, OEM for trucks/busses	3	4	3	4	5	6	7	7	8	9
	<b>Tyres C3, total</b>	<b>16</b>	<b>20</b>	<b>17</b>	<b>23</b>	<b>26</b>	<b>32</b>	<b>35</b>	<b>39</b>	<b>42</b>	<b>46</b>
	<b>Tyres, total C1+C2+C3</b>	<b>82</b>	<b>93</b>	<b>78</b>	<b>88</b>	<b>96</b>	<b>107</b>	<b>117</b>	<b>125</b>	<b>134</b>	<b>144</b>
	<b>TRANSPORT SECTOR</b>	<b>82</b>	<b>93</b>	<b>78</b>	<b>88</b>	<b>96</b>	<b>107</b>	<b>117</b>	<b>125</b>	<b>134</b>	<b>144</b>
	<b>GENERAL TOTAL (in bn euros)</b>	<b>670</b>	<b>828</b>	<b>871</b>	<b>822</b>	<b>828</b>	<b>858</b>	<b>902</b>	<b>958</b>	<b>1023</b>	<b>1093</b>
	<b>ECO Running costs (summary table)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>73</b>	<b>91</b>	<b>96</b>	<b>84</b>	<b>81</b>	<b>82</b>	<b>87</b>	<b>95</b>	<b>104</b>	<b>114</b>
	<b>SPACE HEATING</b>	<b>201</b>	<b>231</b>	<b>228</b>	<b>195</b>	<b>185</b>	<b>182</b>	<b>186</b>	<b>190</b>	<b>193</b>	<b>196</b>
	<b>SPACE COOLING</b>	<b>15</b>	<b>31</b>	<b>38</b>	<b>39</b>	<b>42</b>	<b>45</b>	<b>48</b>	<b>51</b>	<b>55</b>	<b>59</b>
	<b>VENTILATION (elec. &amp; maint.)</b>	<b>6</b>	<b>16</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>
1	<i>VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	<i>0</i>	<i>0</i>	<i>-2</i>	<i>-5</i>	<i>-8</i>	<i>-10</i>	<i>-11</i>	<i>-11</i>	<i>-12</i>	<i>-13</i>
	<b>LIGHTING excl. SPL &amp; ctrl &amp; sb)</b>	<b>42</b>	<b>57</b>	<b>64</b>	<b>60</b>	<b>57</b>	<b>55</b>	<b>56</b>	<b>62</b>	<b>70</b>	<b>80</b>
	<b>ELECTRONICS</b>	<b>48</b>	<b>76</b>	<b>84</b>	<b>82</b>	<b>82</b>	<b>87</b>	<b>90</b>	<b>95</b>	<b>100</b>	<b>107</b>
	<b>FOOD PRESERVATION</b>	<b>50</b>	<b>41</b>	<b>42</b>	<b>38</b>	<b>36</b>	<b>35</b>	<b>36</b>	<b>39</b>	<b>42</b>	<b>45</b>
	<b>COOKING</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>18</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>	<b>26</b>	<b>28</b>
	<b>CLEANING</b>	<b>33</b>	<b>35</b>	<b>38</b>	<b>35</b>	<b>37</b>	<b>38</b>	<b>41</b>	<b>44</b>	<b>47</b>	<b>51</b>
	<b>INDUSTRY COMPONENTS</b>	<b>104</b>	<b>141</b>	<b>164</b>	<b>164</b>	<b>175</b>	<b>187</b>	<b>201</b>	<b>216</b>	<b>232</b>	<b>250</b>
	<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>-2</b>	<b>-4</b>	<b>-5</b>	<b>-7</b>	<b>-9</b>
	<b>TRANSPORT SECTOR</b>	<b>82</b>	<b>93</b>	<b>78</b>	<b>88</b>	<b>96</b>	<b>107</b>	<b>117</b>	<b>125</b>	<b>134</b>	<b>144</b>
	<b>TOTAL in bn euros</b>	<b>670</b>	<b>828</b>	<b>871</b>	<b>822</b>	<b>828</b>	<b>858</b>	<b>902</b>	<b>958</b>	<b>1023</b>	<b>1093</b>



## RUNECO

Running costs saving ECO vs. BAU	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0	0	8	18	30	37	43	49	57	65
SPACE HEATING	0	3	20	39	59	76	85	91	94	94
SPACE COOLING	0	0	0	1	3	4	4	5	5	4
VENTILATION (elec. & maint.)	0	0	1	2	4	5	6	6	7	8
<i>VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	0	0	2	5	8	10	11	11	12	13
LIGHTING (incl. SPL, ctrl, sb)	0	3	8	18	22	22	19	16	15	14
ELECTRONICS	0	1	4	10	16	21	24	23	22	22
FOOD PRESERVATION	0	6	11	15	21	25	29	32	34	37
COOKING	0	0	0	1	1	2	2	2	3	3
CLEANING	0	9	14	20	27	33	38	44	50	57
INDUSTRY COMPONENTS	0	0	2	7	13	16	17	16	15	15
ENERGY SECTOR	0	0	0	1	1	2	4	5	7	9
TRANSPORT SECTOR	0	1	8	5	9	11	11	11	10	9
<b>TOTAL in bn euros</b>	<b>0</b>	<b>23</b>	<b>76</b>	<b>137</b>	<b>205</b>	<b>254</b>	<b>282</b>	<b>301</b>	<b>318</b>	<b>336</b>
Saving in % versus BAU (from 1990=0)	0.0%	2.7%	8.0%	14.3%	19.8%	22.8%	23.8%	23.9%	23.7%	23.5%
Saving ln % versus BAU (from 2010=0)	-3.4%	0.0%	5.6%	11.9%	17.6%	20.7%	21.9%	22.1%	22.0%	21.9%

## EXPENSBAU

db	BAU Expenditure (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	<b>63</b>	<b>68</b>	<b>77</b>	<b>76</b>	<b>81</b>	<b>84</b>	<b>89</b>	<b>96</b>	<b>105</b>	<b>114</b>
	<b>Total CH Central Heating combi, water heat</b>	<b>18</b>	<b>36</b>	<b>41</b>	<b>41</b>	<b>46</b>	<b>51</b>	<b>57</b>	<b>65</b>	<b>73</b>	<b>82</b>
	<b>TOTAL WATER HEATING</b>	<b>82</b>	<b>104</b>	<b>118</b>	<b>117</b>	<b>126</b>	<b>135</b>	<b>146</b>	<b>161</b>	<b>178</b>	<b>197</b>
	<b>Total CH Central Heating boiler, space heat</b>	<b>160</b>	<b>198</b>	<b>202</b>	<b>188</b>	<b>193</b>	<b>205</b>	<b>217</b>	<b>226</b>	<b>231</b>	<b>231</b>
	SFB Wood Manual	11	4	4	3	2	1	1	1	1	1
	SFB Wood Direct Draft	0	2	4	5	6	7	8	9	11	14
	SFB Coal	2	1	0	0	0	0	0	0	0	0
	SFB Pellets	0	1	1	2	2	3	3	3	4	4
	SFB Wood chips	0	1	1	1	1	1	1	1	1	2
	<b>Total Solid Fuel Boiler</b>	<b>13</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>17</b>	<b>20</b>
	CHAE-S (<= 400 kW)	1.3	4.3	5.2	5.7	6.2	6.6	7.2	7.7	8.2	8.7
	CHAE-L (> 400 kW)	1.1	2.6	3.1	3.2	3.3	3.3	3.2	3.2	3.2	3.3
	CHWE-S (<= 400 kW)	0.1	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.8
	CHWE-M (> 400 kW; <= 1500 kW)	0.3	0.7	0.8	0.8	0.9	0.8	0.8	0.8	0.9	0.9
	CHWE-L (> 1500 kW)	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	CHF	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	HT PCH-AE-S	4.1	5.8	7.0	7.2	7.9	8.4	8.9	9.5	10.1	10.7
	HT PCH-AE-L	3.9	5.5	6.6	6.8	7.4	7.9	8.4	8.9	9.4	10.0
	HT PCH-WE-S	0.8	1.2	1.5	1.5	1.7	1.8	1.9	2.0	2.1	2.3
	HT PCH-WE-M	1.8	2.6	3.1	3.3	3.6	3.8	4.0	4.3	4.5	4.8
	HT PCH-WE-L	0.3	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	1.0
	AC rooftop	0.9	2.4	2.5	2.1	1.6	0.9	0.5	0.3	0.2	0.2
	AC splits	1.3	4.2	4.6	4.4	4.3	4.1	3.9	3.7	3.5	3.3
	AC VRF	0.0	4.6	6.5	9.5	12.2	15.2	18.1	20.7	23.0	24.8
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	<b>SubTotal AHC Air Cooling</b>	<b>16</b>	<b>35</b>	<b>42</b>	<b>46</b>	<b>51</b>	<b>55</b>	<b>59</b>	<b>63</b>	<b>68</b>	<b>71</b>
	AC rooftop (rev)	1.0	2.7	3.0	2.6	2.0	1.2	0.6	0.2	0.0	0.0
	AC splits (rev)	1.8	5.3	6.0	5.8	5.7	5.4	5.1	4.8	4.6	4.3
	AC VRF (rev)	0.0	4.8	6.8	9.9	12.5	15.3	17.7	19.3	20.5	21.1
	ACF (rev)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	AHF	9.5	9.3	8.2	6.7	6.3	6.0	5.7	5.4	5.1	4.9
	AHE	0.2	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC Air Heating</b>	<b>12</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>31</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>28</b>	<b>52</b>	<b>60</b>	<b>62</b>	<b>67</b>	<b>71</b>	<b>75</b>	<b>78</b>	<b>82</b>	<b>86</b>
	LH open fireplace	2	3	3	4	4	4	4	4	4	4
	LH closed fireplace/inset	2	4	5	6	7	8	8	9	9	10
	LH wood stove	2	2	3	3	4	4	4	5	5	5
	LH coal stove	1	1	0	1	1	0	0	0	0	0
	LH cooker	1	2	3	3	4	4	4	4	4	4
	LH SHR stove	2	3	4	5	6	7	7	8	8	8
	LH pellet stove	0	1	2	2	3	3	3	3	3	3
	LH open fire gas	0	0	0	0	0	0	0	0	0	0
	LH closed fire gas	1	1	1	1	1	1	2	2	2	2
	LH flueless fuel heater	0	0	0	0	0	0	0	0	0	0
	LH elec.portable	6	5	6	6	6	6	6	6	7	7
	LH elec.convector	24	22	25	24	25	26	27	28	29	29
	LH elec.storage	2	2	2	2	2	2	2	2	2	2
	LH elec.underfloor	3	3	4	4	4	4	4	4	4	5
	LH luminous heaters	0	0	0	0	0	0	0	0	0	0
	LH tube heaters	1	1	1	1	1	1	1	1	1	1
	<b>LH total</b>	<b>47</b>	<b>52</b>	<b>60</b>	<b>62</b>	<b>66</b>	<b>71</b>	<b>74</b>	<b>77</b>	<b>79</b>	<b>82</b>
	RAC (cooling demand), all types <12 kW	1	9	12	15	17	18	19	20	21	22
	RAC (heating demand), reversible <12kW	1	8	13	16	20	21	22	22	22	23
	<b>Total RAC Room Air Conditioner</b>	<b>2</b>	<b>17</b>	<b>25</b>	<b>31</b>	<b>37</b>	<b>39</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>45</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
	<b>TOTAL SPACE HEATING</b>	<b>233</b>	<b>289</b>	<b>310</b>	<b>303</b>	<b>318</b>	<b>337</b>	<b>355</b>	<b>369</b>	<b>380</b>	<b>386</b>
	<b>TOTAL SPACE COOLING</b>	<b>17</b>	<b>44</b>	<b>55</b>	<b>61</b>	<b>68</b>	<b>73</b>	<b>78</b>	<b>83</b>	<b>89</b>	<b>93</b>
	NRVU Ventilation units	36.3	87.6	94.0	99.2	105.2	110.9	116.7	122.7	128.9	135.4
	RVU Central Unidir.	3.4	6.8	7.1	6.7	6.9	7.2	7.7	8.5	9.3	10.1
	RVU Central Balanced VU <=125W/fan (2 fans)	0.2	1.5	3.6	4.9	6.0	7.1	8.0	8.8	9.7	10.7
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.2	0.3	0.6	0.8	1.1	1.5	1.8	2.2	2.5
	<b>Total VU Ventilation Units</b>	<b>40</b>	<b>96</b>	<b>105</b>	<b>111</b>	<b>119</b>	<b>126</b>	<b>134</b>	<b>142</b>	<b>150</b>	<b>159</b>
	<b>TOTAL VENTILATION (acq. &amp; electr. &amp; maint.)</b>	<b>40</b>	<b>96</b>	<b>105</b>	<b>111</b>	<b>119</b>	<b>126</b>	<b>134</b>	<b>142</b>	<b>150</b>	<b>159</b>
1	<i>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	-	-	-	-	-	-	-	-	-	-



EXPENSBAU

db BAU Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LFL (T12,T8h,T8t,T5,other)	19.4	26.9	33.3	34.8	34.8	30.9	25.4	20.8	17.0	14.0
HID (HPM, HPS, MH)	6.6	12.9	14.7	14.1	12.5	8.7	4.8	2.7	1.6	0.9
CFLni (all shapes)	0.9	3.4	3.7	3.7	3.3	2.2	1.2	0.6	0.3	0.2
CFLi (retrofit for GLS, HL)	0.4	5.1	5.8	6.1	5.0	4.1	2.7	1.8	1.2	0.8
GLS (DLS & NDLS)	20.2	15.2	12.6	8.9	5.5	3.4	2.0	1.3	0.8	0.5
HL (DLS & NDLS, LV & MV)	1.9	10.4	14.5	16.4	12.0	6.4	3.5	2.0	1.1	0.7
LED replacing LFL (retrofit & luminaire)	0.0	0.0	0.8	3.8	8.2	15.0	21.6	28.7	36.6	45.4
LED replacing HID (retrofit & luminaire)	0.0	0.0	0.3	2.4	5.3	9.2	12.8	16.1	19.8	23.8
LED replacing CFLni (retrofit & luminaire)	0.0	0.0	0.1	0.3	1.0	2.0	2.9	3.6	4.3	4.9
LED replacing DLS (retrofit & luminaire)	0.0	0.0	0.2	0.7	1.3	1.7	2.0	2.4	2.8	3.2
LED replacing NDLS (retrofit & luminaire)	0.0	0.1	0.4	3.6	5.2	6.8	8.6	10.3	12.0	13.8
Special Purpose Lamps (exempt) (nrgcost only)	6.6	9.0	8.7	7.2	6.2	5.4	5.6	5.9	6.2	6.6
Lighting controls and standby (nrgcost only)	1.9	2.5	2.4	2.0	1.7	1.5	1.6	1.7	1.7	1.8
<b>TOTAL LIGHTING (incl. SPL, ctrl)</b>	<b>58</b>	<b>85</b>	<b>97</b>	<b>104</b>	<b>102</b>	<b>97</b>	<b>95</b>	<b>98</b>	<b>105</b>	<b>117</b>
<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>49</b>	<b>74</b>	<b>86</b>	<b>95</b>	<b>94</b>	<b>90</b>	<b>88</b>	<b>90</b>	<b>97</b>	<b>108</b>
DP TV total all types	27.5	47.7	37.5	43.1	46.3	54.0	55.6	55.1	55.4	56.8
DP Monitor	2.2	7.0	4.2	3.6	3.7	3.6	3.4	3.3	3.3	3.4
DP Signage	0.0	0.5	3.3	7.5	7.7	7.8	7.6	7.6	7.7	7.8
<b>DP Electronic Displays, total</b>	<b>30</b>	<b>55</b>	<b>45</b>	<b>54</b>	<b>58</b>	<b>65</b>	<b>67</b>	<b>66</b>	<b>66</b>	<b>68</b>
SSTB	0.0	2.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CSTB	0.0	6.7	10.2	11.0	11.4	11.3	12.4	13.7	15.0	16.4
<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>9</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>16</b>
VIDEO players/recorders	0.0	4.2	3.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO projectors	0.0	3.3	2.8	1.2	0.5	0.0	0.0	0.0	0.0	0.0
VIDEO game consoles	0.0	7.7	7.5	6.7	8.2	8.5	8.7	8.8	9.0	9.2
<b>Total VIDEO</b>	<b>0</b>	<b>15</b>	<b>14</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>
<i>ES&amp;DS only, without effects on infrastructure</i>										
ES tower 1-socket traditional	0.0	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.3
ES rack 1-socket traditional	0.0	1.1	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1
ES rack 2-socket traditional	0.3	5.5	2.8	2.6	3.1	3.8	4.0	4.0	4.1	4.2
ES rack 2-socket cloud	0.0	4.3	6.8	7.9	9.7	11.9	12.4	12.6	12.8	13.0
ES rack 4-socket traditional	0.1	1.9	0.9	1.0	1.2	1.5	1.5	1.5	1.5	1.5
ES rack 4-socket cloud	0.0	1.6	2.3	2.8	3.4	4.1	4.2	4.2	4.3	4.3
ES rack 2-socket resilient trad.	0.0	0.7	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6
ES rack 2-socket resilient cloud	0.0	0.5	0.8	0.9	1.1	1.4	1.4	1.4	1.4	1.4
ES rack 4-socket resilient trad.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient cloud	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 1-socket traditional	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ES blade 2-socket traditional	0.3	2.1	1.0	0.9	1.1	1.4	1.5	1.5	1.5	1.6
ES blade 2-socket cloud	0.0	1.6	2.4	2.9	3.5	4.3	4.6	4.7	4.8	4.9
ES blade 4-socket traditional	0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
ES blade 4-socket cloud	0.0	0.2	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.5
<b>ES total traditional</b>	<b>1</b>	<b>12</b>	<b>7</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>10</b>
<b>ES total cloud</b>	<b>0</b>	<b>8</b>	<b>13</b>	<b>15</b>	<b>18</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>24</b>	<b>24</b>
<b>ES Enterprise Servers total</b>	<b>1</b>	<b>20</b>	<b>19</b>	<b>21</b>	<b>26</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>33</b>	<b>34</b>
DS Online 2	0.3	7.1	7.1	8.2	9.4	10.8	11.2	11.4	11.6	11.8
DS Online 3	0.5	9.7	7.0	7.7	8.6	9.5	9.6	9.6	9.6	9.6
DS Online 4	0.4	6.8	6.5	7.3	8.3	9.4	9.5	9.7	9.8	9.9
<b>DS Data Storage products total</b>	<b>1</b>	<b>24</b>	<b>21</b>	<b>23</b>	<b>26</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>31</b>	<b>31</b>
<b>ES + DS total (excl. infrastructure)</b>	<b>2</b>	<b>44</b>	<b>40</b>	<b>44</b>	<b>52</b>	<b>61</b>	<b>63</b>	<b>63</b>	<b>64</b>	<b>65</b>
PC Desktop	6.4	15.7	11.5	9.1	8.7	8.7	8.8	8.8	8.8	8.9
PC Notebook	0.4	28.6	13.3	12.0	11.9	11.9	11.9	11.9	11.9	11.9
PC Tablet/slate	0.0	1.9	29.7	47.9	61.8	73.7	77.4	81.1	84.8	88.5
PC Thin client	0.0	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PC Workstation	0.2	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
<b>Total PC, electricity</b>	<b>7</b>	<b>49</b>	<b>57</b>	<b>72</b>	<b>85</b>	<b>97</b>	<b>101</b>	<b>105</b>	<b>108</b>	<b>112</b>
EP-Copier mono	5.6	1.7	1.0	0.4	0.3	0.2	0.1	0.0	0.0	0.0
EP-Copier colour	0.0	0.5	2.4	3.6	4.1	4.5	4.9	5.3	5.7	6.1
EP-printer mono	2.4	1.1	1.0	0.8	0.7	0.6	0.6	0.5	0.4	0.3
EP-printer colour	0.0	0.9	1.4	1.8	2.2	2.6	3.0	3.5	3.9	4.3
IJ SFD printer	0.9	1.2	0.8	0.6	0.4	0.4	0.3	0.2	0.1	0.1
IJ MFD printer	1.1	2.8	3.9	4.5	5.0	5.4	5.9	6.4	6.9	7.4
<b>Total imaging equipment, electricity and including the following toner and paper costs:</b>	<b>42</b>	<b>42</b>	<b>46</b>	<b>49</b>	<b>52</b>	<b>55</b>	<b>58</b>	<b>61</b>	<b>64</b>	<b>67</b>
SB Home Gateway	0.0	8.6	11.3	13.9	16.2	18.3	20.2	21.9	23.3	24.4
SB Home NAS	0.0	0.7	1.3	1.8	2.3	2.8	3.2	3.7	4.0	4.4
SB Home Phones (fixed)	0.6	3.3	4.0	4.2	4.1	4.0	3.9	3.8	3.7	3.5
SB Office Phones (fixed)	0.8	1.7	1.8	1.9	1.9	2.0	2.0	2.0	2.1	2.0
<b>Total SB (networked) StandBy (rest)</b>	<b>1</b>	<b>14</b>	<b>18</b>	<b>22</b>	<b>25</b>	<b>27</b>	<b>29</b>	<b>31</b>	<b>33</b>	<b>34</b>

## EXPENSBAU

db	BAU Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.0	EPS ≤ 6W, low-V	0.0	0.4	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.2	2.2	2.4	2.5	2.6	2.7	2.8	2.8	2.9	3.0
0.6	EPS 10–12 W	0.0	2.9	4.4	4.7	4.7	4.8	4.8	4.8	4.8	4.9
0.5	EPS 15–20 W	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 20–30 W	0.0	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3
1.0	EPS 30–65 W	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
1.0	EPS 65–120 W	0.0	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	1.2	0.6	0.2	0.1	0.1	0.1	0.2	0.2	0.2
0.0	EPS 12–15 W	0.0	0.2	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	<b>EPS, total</b>	<b>0.2</b>	<b>7.5</b>	<b>8.8</b>	<b>8.8</b>	<b>8.9</b>	<b>9.1</b>	<b>9.1</b>	<b>9.2</b>	<b>9.3</b>	<b>9.5</b>
	<b>EPS, double counted subtracted</b>	<b>0.2</b>	<b>4.1</b>	<b>4.7</b>	<b>4.7</b>	<b>4.8</b>	<b>4.8</b>	<b>4.9</b>	<b>4.9</b>	<b>5.0</b>	<b>5.1</b>
	UPS below 1.5 kVA	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.2	1.3
	UPS 1.5 to 5 kVA	0.7	1.4	1.6	1.8	2.3	2.7	3.2	3.7	4.1	4.5
	UPS 5 to 10 kVA	0.1	0.3	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7
	UPS 10 to 200 kVA	0.8	1.7	1.9	2.0	2.3	2.8	3.2	3.7	4.1	4.4
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
	<b>TOTAL ELECTRONICS</b>	<b>84</b>	<b>237</b>	<b>241</b>	<b>271</b>	<b>302</b>	<b>337</b>	<b>351</b>	<b>363</b>	<b>375</b>	<b>389</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>36</b>	<b>34</b>	<b>38</b>	<b>37</b>	<b>39</b>	<b>40</b>	<b>42</b>	<b>44</b>	<b>46</b>	<b>47</b>
	CF open vertical chilled multi deck (RVC2)	3.1	2.9	3.0	2.8	2.8	2.9	3.0	3.2	3.4	3.6
	CF open horizontal frozen island (RHF4)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	CF other supermarket display (non-BCs)	6.0	5.9	6.4	6.3	6.6	7.1	7.6	8.2	8.8	9.4
	CF Plug in one door beverage cooler	4.0	3.8	3.9	3.7	3.9	4.0	4.3	4.6	4.9	5.3
	CF Plug in horizontal ice cream freezer	1.0	1.0	1.1	1.0	1.1	1.1	1.2	1.2	1.3	1.4
	CF Spiral vending machine	1.0	0.8	0.6	0.5	0.6	0.6	0.6	0.7	0.7	0.8
	<b>Total CF Commercial Refrigeration</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>21</b>
	PF Storage cabinet Chilled Vertical (CV)	0.5	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.2
	PF Storage cabinet Frozen Vertical (FV)	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.2
	PF Storage cabinet Chilled Horizontal (CH)	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7
	PF Storage cabinet Frozen Horizontal (FH)	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
	<b>PF Storage cabinets All types</b>	<b>1.5</b>	<b>1.9</b>	<b>2.2</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.8</b>	<b>3.1</b>	<b>3.3</b>	<b>3.6</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.5	0.9	1.1	1.2	1.4	1.6	1.9	2.1	2.4	2.7
	PF Process Chiller AC MT > 300 kW	0.4	0.8	1.1	1.2	1.4	1.6	1.8	2.1	2.3	2.6
	PF Process Chiller AC LT S ≤ 200 kW	0.5	0.9	1.1	1.2	1.4	1.6	1.9	2.1	2.4	2.7
	PF Process Chiller AC LT L > 200 kW	0.5	0.9	1.1	1.2	1.4	1.7	1.9	2.2	2.5	2.8
	PF Process Chiller WC MT S ≤ 300 kW	0.1	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8
	PF Process Chiller WC MT L > 300 kW	0.2	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.2
	PF Process Chiller WC LT S ≤ 200 kW	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0
	PF Process Chiller WC LT L > 200 kW	0.2	0.4	0.5	0.6	0.6	0.7	0.9	1.0	1.1	1.2
	<b>PF Process Chiller All MT&amp;LT</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>15</b>
	PF Condensing Unit MT S 0.2-1 kW	1.3	0.9	1.0	1.0	1.2	1.3	1.5	1.7	1.9	2.1
	PF Condensing Unit MT M 1-5 kW	3.2	2.3	2.5	2.6	2.9	3.3	3.7	4.1	4.6	5.2
	PF Condensing Unit MT L 5-20 kW	3.9	2.8	3.0	3.1	3.5	3.9	4.4	5.0	5.6	6.3
	PF Condensing Unit MT XL 20-50 kW	3.8	2.7	2.9	3.0	3.4	3.8	4.3	4.8	5.5	6.2
	PF Condensing Unit LT S 0.1-0.4 kW	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
	PF Condensing Unit LT M 0.4-2 kW	0.6	0.4	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.0
	PF Condensing Unit LT L 2-8 kW	1.0	0.7	0.8	0.8	0.9	1.0	1.2	1.3	1.5	1.6
	PF Condensing Unit LT XL 8-20 kW	2.8	2.0	2.2	2.2	2.5	2.9	3.2	3.6	4.1	4.7
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>17</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>15</b>	<b>17</b>	<b>19</b>	<b>22</b>	<b>24</b>	<b>27</b>
	<b>PF Professional Refrigeration, Total</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>18</b>	<b>21</b>	<b>23</b>	<b>26</b>	<b>30</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>62</b>	<b>60</b>	<b>66</b>	<b>66</b>	<b>70</b>	<b>75</b>	<b>80</b>	<b>85</b>	<b>91</b>	<b>98</b>
	CA El. Hobs	6.6	11.4	13.3	14.4	15.7	17.1	18.4	19.8	21.2	22.7
	CA El. Ovens	10.1	10.7	11.3	11.6	11.5	11.8	12.3	12.6	13.0	13.5
	CA Gas Hobs	4.2	3.8	3.8	3.4	3.3	3.3	3.2	3.2	3.2	3.1
	CA Gas Ovens	1.6	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.3	1.3
	CA Range Hoods	3.3	3.8	4.3	4.5	4.9	5.3	5.7	6.2	6.7	7.2
	<b>Total CA Cooking Appliances</b>	<b>26</b>	<b>31</b>	<b>34</b>	<b>35</b>	<b>37</b>	<b>39</b>	<b>41</b>	<b>43</b>	<b>45</b>	<b>48</b>
	COFFEE Dripfilter (glass)	2.53	1.63	1.60	1.31	1.24	1.29	1.34	1.40	1.46	1.53
	COFFEE Dripfilter (thermos)	0.15	0.31	0.34	0.35	0.36	0.38	0.40	0.42	0.43	0.45
	COFFEE Dripfilter (full automatic)	0.00	0.29	0.35	0.38	0.43	0.48	0.53	0.59	0.65	0.71
	COFFEE Pad filter	0.00	0.66	0.76	0.82	0.90	0.98	1.07	1.16	1.25	1.35
	COFFEE Hard cap espresso	0.06	0.29	0.62	0.95	1.04	1.05	1.06	1.08	1.09	1.10
	COFFEE Semi-auto espresso	0.08	0.10	0.10	0.09	0.09	0.08	0.08	0.07	0.07	0.06
	COFFEE Fully-auto espresso	0.39	0.45	0.52	0.60	0.67	0.75	0.82	0.90	0.98	1.05
	<b>Total CM household Coffee Makers</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>6</b>
	<b>TOTAL COOKING</b>	<b>29</b>	<b>35</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>44</b>	<b>46</b>	<b>49</b>	<b>51</b>	<b>54</b>

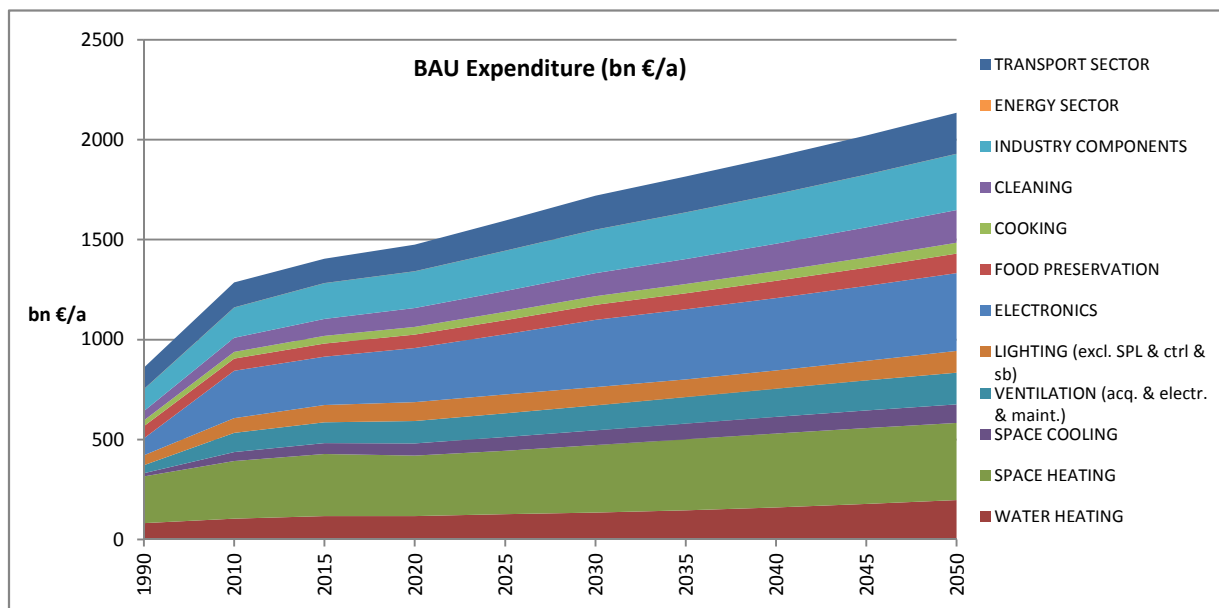
## EXPENSBAU

db	BAU Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WM household Washing Machine</b>	<b>28</b>	<b>32</b>	<b>35</b>	<b>36</b>	<b>38</b>	<b>41</b>	<b>45</b>	<b>48</b>	<b>52</b>	<b>57</b>
	<i>including detergent and water costs</i>	13	18	20	21	24	27	30	34	39	44
	<b>Total DW household Dishwasher</b>	<b>6</b>	<b>12</b>	<b>14</b>	<b>17</b>	<b>20</b>	<b>23</b>	<b>26</b>	<b>30</b>	<b>34</b>	<b>39</b>
	<i>including detergent and water costs</i>	1	3	4	5	6	8	9	11	14	16
	LD vented el.	2.6	2.9	3.3	3.1	3.1	3.2	3.3	3.5	3.7	3.8
	LD condens el.	0.8	4.5	5.9	6.8	7.6	8.0	8.3	8.6	8.8	9.1
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>3</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>
	VC dom	6.3	15.7	22.4	26.4	31.2	34.9	38.7	42.3	45.8	49.0
	VC nondom	1.3	1.6	1.8	1.9	2.1	2.3	2.5	2.6	2.8	3.1
	<b>Total VC Vacuum Cleaner</b>	<b>9</b>	<b>19</b>	<b>26</b>	<b>31</b>	<b>36</b>	<b>40</b>	<b>44</b>	<b>47</b>	<b>51</b>	<b>54</b>
	<i>including costs of bags &amp; filters</i>	1.6	2.1	2.1	2.2	2.3	2.4	2.4	2.4	2.3	2.2
	<b>TOTAL CLEANING</b>	<b>46</b>	<b>71</b>	<b>85</b>	<b>93</b>	<b>104</b>	<b>115</b>	<b>126</b>	<b>137</b>	<b>150</b>	<b>163</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	3.8	9.7	12.3	13.5	15.3	16.8	17.7	18.5	19.3	20.2
0.5	FAN Axial>300Pa	6.2	17.0	21.1	21.8	23.7	25.3	26.6	27.8	29.0	30.3
0.5	FAN Centr.FC	1.8	3.7	4.8	5.3	5.8	6.4	6.7	6.9	7.2	7.5
0.5	FAN Centr.BC-free	3.8	7.2	9.4	10.1	11.7	13.3	14.7	15.8	16.9	18.1
0.5	FAN Centr.BC	4.3	8.9	11.6	12.6	14.5	16.4	18.5	20.8	23.5	26.7
0.5	FAN Cross-flow	0.3	0.6	0.7	0.8	1.0	1.1	1.2	1.4	1.5	1.7
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>10</b>	<b>24</b>	<b>30</b>	<b>32</b>	<b>36</b>	<b>40</b>	<b>43</b>	<b>46</b>	<b>49</b>	<b>52</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	16.2	18.5	21.2	21.0	21.9	22.3	22.6	22.6	22.3	21.6
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	24.3	28.2	32.4	32.1	33.5	33.9	33.9	33.2	31.9	29.8
0.45	Medium (L) 3-ph 75-375 kW no VSD	48.1	54.7	61.8	60.8	62.6	62.1	59.4	54.6	49.7	47.1
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>89</b>	<b>101</b>	<b>115</b>	<b>114</b>	<b>118</b>	<b>118</b>	<b>116</b>	<b>110</b>	<b>104</b>	<b>98</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1.3	3.0	3.9	4.5	5.4	6.5	7.9	9.5	11.5	13.9
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	2.2	4.9	6.5	7.6	9.4	11.5	14.0	17.1	20.9	25.2
0.45	Medium (L) 3-ph 75-375 kW with VSD	5.6	12.5	16.8	20.0	25.2	31.3	38.5	47.3	56.4	64.6
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>9</b>	<b>20</b>	<b>27</b>	<b>32</b>	<b>40</b>	<b>49</b>	<b>60</b>	<b>74</b>	<b>89</b>	<b>104</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>98</b>	<b>122</b>	<b>143</b>	<b>146</b>	<b>158</b>	<b>168</b>	<b>176</b>	<b>184</b>	<b>193</b>	<b>202</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1.6	2.2	2.4	2.4	2.4	2.5	2.6	2.6	2.7	2.8
0.45	Small 1 ph 0.12-0.75 kW with VSD	0.1	0.7	0.9	1.0	1.0	1.1	1.2	1.3	1.3	1.4
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1.9	2.3	2.6	2.6	2.7	2.8	2.9	3.0	3.2	3.3
0.45	Small 3 ph 0.12-0.75 kW with VSD	0.0	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.2
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	24.5	26.5	27.9	25.5	25.0	24.9	25.7	26.8	27.9	29.1
0.45	Large 3-ph LV 375-1000kW with VSD	1.3	6.2	10.1	13.2	17.0	20.2	22.6	24.8	27.3	30.1
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>26</b>	<b>33</b>	<b>38</b>	<b>39</b>	<b>42</b>	<b>45</b>	<b>48</b>	<b>52</b>	<b>55</b>	<b>59</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0.6	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.1	1.2
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1.3	1.7	2.0	2.1	2.2	2.4	2.6	2.8	3.0	3.2
0.45	Explosion motors (L) 3-ph 75-375 kW	2.4	3.1	3.7	3.9	4.3	4.7	5.1	5.5	5.9	6.3
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>4</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9
0.45	Brake motors (M) 3-ph 7.5-75 kW	0.9	1.2	1.4	1.4	1.6	1.7	1.8	1.9	2.0	2.2
0.45	Brake motors (L) 3-ph 75-375 kW	1.2	1.6	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.2
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
0.45	8-pole motors (L) 3-ph 75-375 kW	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>7</b>	<b>9</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>16</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>78</b>	<b>98</b>	<b>115</b>	<b>117</b>	<b>127</b>	<b>135</b>	<b>143</b>	<b>150</b>	<b>158</b>	<b>167</b>
	<b>Total WP Water Pumps</b>	<b>17</b>	<b>21</b>	<b>25</b>	<b>26</b>	<b>29</b>	<b>33</b>	<b>36</b>	<b>41</b>	<b>45</b>	<b>49</b>
	CP Fixed Speed 5-1280 l/s	4.0	7.0	6.4	5.4	5.6	6.0	6.4	6.9	7.3	7.9
	CP Variable speed 5-1280 l/s	0.0	1.3	2.3	2.9	3.3	3.5	3.8	4.0	4.3	4.5
	CP Pistons 2-64 l/s	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7
	<b>Total CP Standard Air Compressors</b>	<b>4</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>110</b>	<b>152</b>	<b>179</b>	<b>184</b>	<b>202</b>	<b>218</b>	<b>233</b>	<b>248</b>	<b>264</b>	<b>282</b>

## EXPENSBAU

db BAU Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
TRAF0 Distribution	2.0	3.0	3.5	3.8	4.3	4.8	5.5	6.1	6.8	7.6
TRAF0 Industry oil	1.4	2.2	2.5	2.7	3.0	3.4	3.8	4.3	4.8	5.3
TRAF0 Industry dry	0.5	0.7	0.9	0.9	1.0	1.2	1.3	1.5	1.6	1.8
TRAF0 Power	6.4	9.2	10.6	11.3	12.8	14.3	16.0	17.7	19.7	21.7
TRAF0 DER oil	0.0	0.1	0.1	0.2	0.4	0.7	1.1	1.7	2.5	3.4
TRAF0 DER dry	0.0	0.4	0.7	1.1	1.9	3.2	5.3	7.9	11.3	15.3
TRAF0 Small	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>Total TRAF0 Utility Transformers</b>	<b>11</b>	<b>16</b>	<b>19</b>	<b>20</b>	<b>24</b>	<b>28</b>	<b>33</b>	<b>40</b>	<b>47</b>	<b>55</b>
<b>TOTAL ENERGY SECTOR (BAU=0 as reference)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<i>(incl. costs for fuel due to rolling resistance)</i>										
Tyres C1, replacement for cars	56	64	61	64	72	78	81	84	87	89
Tyres C1, OEM for cars	17	19	19	20	22	24	25	25	26	27
<b>Tyres C1, total</b>	<b>73</b>	<b>83</b>	<b>81</b>	<b>84</b>	<b>93</b>	<b>102</b>	<b>106</b>	<b>109</b>	<b>113</b>	<b>116</b>
Tyres C2, replacement for vans	11	15	14	16	18	21	22	23	24	25
Tyres C2, OEM for vans	2	3	3	3	4	4	5	5	5	5
<b>Tyres C2, total</b>	<b>13</b>	<b>18</b>	<b>17</b>	<b>19</b>	<b>22</b>	<b>25</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
Tyres C3, replacement for trucks/busses	17	20	19	25	29	34	38	41	44	47
Tyres C3, OEM for trucks/busses	4	4	5	6	7	8	9	9	10	11
<b>Tyres C3, total</b>	<b>21</b>	<b>24</b>	<b>23</b>	<b>30</b>	<b>36</b>	<b>43</b>	<b>47</b>	<b>50</b>	<b>54</b>	<b>58</b>
<b>Tyres, total C1+C2+C3</b>	<b>107</b>	<b>125</b>	<b>121</b>	<b>133</b>	<b>150</b>	<b>170</b>	<b>179</b>	<b>187</b>	<b>196</b>	<b>204</b>
<b>TRANSPORT SECTOR</b>	<b>107</b>	<b>125</b>	<b>121</b>	<b>133</b>	<b>150</b>	<b>170</b>	<b>179</b>	<b>187</b>	<b>196</b>	<b>204</b>
<b>GENERAL TOTAL (in bn euros)</b>	<b>860</b>	<b>1286</b>	<b>1404</b>	<b>1475</b>	<b>1595</b>	<b>1720</b>	<b>1816</b>	<b>1915</b>	<b>2021</b>	<b>2134</b>

BAU Expenditure (summary table)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	<b>82</b>	<b>104</b>	<b>118</b>	<b>117</b>	<b>126</b>	<b>135</b>	<b>146</b>	<b>161</b>	<b>178</b>	<b>197</b>
<b>SPACE HEATING</b>	<b>233</b>	<b>289</b>	<b>310</b>	<b>303</b>	<b>318</b>	<b>337</b>	<b>355</b>	<b>369</b>	<b>380</b>	<b>386</b>
<b>SPACE COOLING</b>	<b>17</b>	<b>44</b>	<b>55</b>	<b>61</b>	<b>68</b>	<b>73</b>	<b>78</b>	<b>83</b>	<b>89</b>	<b>93</b>
<b>VENTILATION (acq. &amp; electr. &amp; maint.)</b>	<b>40</b>	<b>96</b>	<b>105</b>	<b>111</b>	<b>119</b>	<b>126</b>	<b>134</b>	<b>142</b>	<b>150</b>	<b>159</b>
<sup>1</sup> <b>VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>LIGHTING (excl. SPL &amp; ctrl &amp; sb)</b>	<b>49</b>	<b>74</b>	<b>86</b>	<b>95</b>	<b>94</b>	<b>90</b>	<b>88</b>	<b>90</b>	<b>97</b>	<b>108</b>
<b>ELECTRONICS</b>	<b>84</b>	<b>237</b>	<b>241</b>	<b>271</b>	<b>302</b>	<b>337</b>	<b>351</b>	<b>363</b>	<b>375</b>	<b>389</b>
<b>FOOD PRESERVATION</b>	<b>62</b>	<b>60</b>	<b>66</b>	<b>66</b>	<b>70</b>	<b>75</b>	<b>80</b>	<b>85</b>	<b>91</b>	<b>98</b>
<b>COOKING</b>	<b>29</b>	<b>35</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>44</b>	<b>46</b>	<b>49</b>	<b>51</b>	<b>54</b>
<b>CLEANING</b>	<b>46</b>	<b>71</b>	<b>85</b>	<b>93</b>	<b>104</b>	<b>115</b>	<b>126</b>	<b>137</b>	<b>150</b>	<b>163</b>
<b>INDUSTRY COMPONENTS</b>	<b>110</b>	<b>152</b>	<b>179</b>	<b>184</b>	<b>202</b>	<b>218</b>	<b>233</b>	<b>248</b>	<b>264</b>	<b>282</b>
<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TRANSPORT SECTOR</b>	<b>107</b>	<b>125</b>	<b>121</b>	<b>133</b>	<b>150</b>	<b>170</b>	<b>179</b>	<b>187</b>	<b>196</b>	<b>204</b>
<b>TOTAL in bn euros</b>	<b>860</b>	<b>1286</b>	<b>1404</b>	<b>1475</b>	<b>1595</b>	<b>1720</b>	<b>1816</b>	<b>1915</b>	<b>2021</b>	<b>2134</b>



## EXPENSECO

db	ECO Expenditure (in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	<b>63</b>	<b>68</b>	<b>75</b>	<b>68</b>	<b>66</b>	<b>66</b>	<b>68</b>	<b>73</b>	<b>78</b>	<b>84</b>
	<b>Total CH Central Heating combi, water heat</b>	<b>18</b>	<b>36</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>47</b>	<b>51</b>	<b>55</b>	<b>60</b>	<b>65</b>
	<b>TOTAL WATER HEATING</b>	<b>82</b>	<b>104</b>	<b>117</b>	<b>111</b>	<b>111</b>	<b>113</b>	<b>119</b>	<b>128</b>	<b>138</b>	<b>149</b>
	<b>Total CH Central Heating boiler, space heat</b>	<b>160</b>	<b>196</b>	<b>205</b>	<b>190</b>	<b>195</b>	<b>202</b>	<b>216</b>	<b>231</b>	<b>246</b>	<b>260</b>
	SFB Wood Manual	11	4	4	3	2	1	1	1	1	1
	SFB Wood Direct Draft	0	2	4	5	6	7	7	9	11	13
	SFB Coal	2	1	0	0	0	0	0	0	0	0
	SFB Pellets	0	1	1	2	2	3	3	3	4	4
	SFB Wood chips	0	1	1	1	1	1	1	1	1	1
	<b>Total Solid Fuel Boiler</b>	<b>13</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>16</b>	<b>19</b>
	CHAE-S (<= 400 kW)	1.3	4.3	5.2	5.7	6.1	6.5	7.0	7.5	8.0	8.5
	CHAE-L (> 400 kW)	1.1	2.6	3.1	3.1	3.2	3.1	3.0	3.0	3.0	3.1
	CHWE-S (<= 400 kW)	0.1	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.8
	CHWE-M (> 400 kW; <= 1500 kW)	0.3	0.7	0.8	0.8	0.9	0.8	0.8	0.8	0.9	0.9
	CHWE-L (> 1500 kW)	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	CHF	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	HT PCH-AE-S	4.1	5.8	6.9	7.1	7.4	7.7	8.2	8.8	9.4	10.1
	HT PCH-AE-L	3.9	5.5	6.6	6.6	6.9	7.0	7.3	7.7	8.2	8.9
	HT PCH-WE-S	0.8	1.2	1.5	1.5	1.6	1.7	1.8	1.9	2.1	2.2
	HT PCH-WE-M	1.8	2.6	3.1	3.2	3.5	3.7	3.9	4.2	4.5	4.8
	HT PCH-WE-L	0.3	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9
	AC rooftop	0.9	2.4	2.5	2.1	1.6	0.9	0.5	0.3	0.2	0.2
	AC splits	1.3	4.2	4.6	4.3	4.1	3.9	3.7	3.5	3.4	3.2
	AC VRF	0.0	4.6	6.5	9.5	12.1	15.0	17.9	20.4	22.8	24.6
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	<b>SubTotal AHC Air Cooling</b>	<b>16</b>	<b>35</b>	<b>42</b>	<b>46</b>	<b>49</b>	<b>52</b>	<b>56</b>	<b>60</b>	<b>65</b>	<b>69</b>
	AC rooftop (rev)	1.0	2.7	2.9	2.4	1.7	1.0	0.4	0.1	0.0	0.0
	AC splits (rev)	1.8	5.3	5.9	5.4	5.1	4.7	4.4	4.2	4.0	3.8
	AC VRF (rev)	0.0	4.8	6.8	9.8	12.1	14.6	16.7	18.3	19.4	20.0
	ACF (rev)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	AHF	9.5	9.3	8.1	6.2	5.3	4.6	4.2	4.0	3.8	3.6
	AHE	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	<b>SubTotal AHC Air Heating</b>	<b>12</b>	<b>23</b>	<b>24</b>	<b>24</b>	<b>25</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>27</b>	<b>28</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>28</b>	<b>52</b>	<b>59</b>	<b>60</b>	<b>63</b>	<b>65</b>	<b>68</b>	<b>72</b>	<b>77</b>	<b>81</b>
	LH open fireplace	2.0	3.0	3.4	4.0	4.2	4.1	4.1	4.0	3.9	3.9
	LH closed fireplace/inset	1.5	4.1	5.4	6.8	7.5	7.8	8.0	8.2	8.3	8.5
	LH wood stove	2.1	2.5	3.2	3.6	3.9	4.0	4.1	4.2	4.3	4.4
	LH coal stove	0.8	0.7	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4
	LH cooker	1.1	2.3	2.9	3.6	3.9	4.0	4.0	4.0	4.1	4.2
	LH SHR stove	2.4	3.4	4.4	5.2	5.9	6.7	7.1	7.5	7.8	8.1
	LH pellet stove	0.0	1.3	1.7	2.2	2.5	2.7	2.9	3.1	3.2	3.3
	LH open fire gas	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	LH closed fire gas	1.2	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.4	1.4
	LH flueless fuel heater	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
	LH elec.portable	5.6	5.1	5.5	4.8	4.7	4.9	5.2	5.4	5.5	5.5
	LH elec.convector	23.9	22.0	24.0	21.9	21.8	22.8	23.9	24.6	25.0	25.5
	LH elec.storage	1.8	1.7	1.9	1.7	1.6	1.6	1.7	1.7	1.8	1.8
	LH elec.underfloor	3.5	3.4	3.7	3.5	3.4	3.4	3.5	3.5	3.6	3.7
	LH luminous heaters	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	LH tube heaters	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7
	<b>LH total</b>	<b>47</b>	<b>52</b>	<b>59</b>	<b>61</b>	<b>63</b>	<b>65</b>	<b>68</b>	<b>69</b>	<b>70</b>	<b>72</b>
	RAC (cooling demand), all types <12 kW	1.1	8.9	12.6	15.1	17.2	18.3	18.8	19.3	19.8	20.4
	RAC (heating demand), reversible <12kW	0.5	7.9	13.0	16.2	18.7	19.6	19.9	20.0	20.0	20.0
	<b>Total RAC Room Air Conditioner</b>	<b>2</b>	<b>17</b>	<b>26</b>	<b>31</b>	<b>36</b>	<b>38</b>	<b>39</b>	<b>39</b>	<b>40</b>	<b>40</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<b>TOTAL SPACE HEATING</b>	<b>233</b>	<b>287</b>	<b>312</b>	<b>302</b>	<b>312</b>	<b>324</b>	<b>342</b>	<b>361</b>	<b>380</b>	<b>399</b>
	<b>TOTAL SPACE COOLING</b>	<b>17</b>	<b>44</b>	<b>55</b>	<b>61</b>	<b>66</b>	<b>71</b>	<b>75</b>	<b>80</b>	<b>85</b>	<b>89</b>
	NRVU Ventilation units	36.3	87.6	94.0	98.2	103.4	108.3	113.8	119.7	125.7	132.0
	RVU Central Unidir.	3.4	6.8	9.2	8.1	7.9	7.8	8.2	8.7	9.2	9.7
	RVU Central Balanced VU <=125W/fan (2 fans)	0.2	1.5	4.2	5.4	6.1	6.8	7.4	8.0	8.5	9.1
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.2	0.3	0.5	0.8	1.0	1.3	1.6	1.9	2.2
	<b>Total VU Ventilation Units</b>	<b>40</b>	<b>96</b>	<b>108</b>	<b>112</b>	<b>118</b>	<b>124</b>	<b>131</b>	<b>138</b>	<b>145</b>	<b>153</b>
	<b>TOTAL VENTILATION (acq. &amp; electr. &amp; maint.)</b>	<b>40</b>	<b>96</b>	<b>108</b>	<b>112</b>	<b>118</b>	<b>124</b>	<b>131</b>	<b>138</b>	<b>145</b>	<b>153</b>
1	<i>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</i>	-	-	-2	-5	-8	-10	-11	-11	-12	-13

## EXPENSECO

db	ECO Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LFL (T12,T8h,T8t,T5,other)		19.4	26.7	31.3	30.7	21.7	12.4	6.2	3.5	2.2	1.4
HID (HPM, HPS, MH)		6.6	12.7	11.9	9.7	7.4	4.0	1.6	0.6	0.2	0.1
CFLni (all shapes)		0.9	3.3	3.4	2.7	1.8	0.8	0.3	0.1	0.0	0.0
CFLi (retrofit for GLS, HL)		0.4	6.6	6.3	4.7	1.6	0.4	0.0	0.0	0.0	0.0
GLS (DLS & NDLS)		20.2	10.1	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HL (DLS & NDLS, LV & MV)		1.9	11.5	15.3	5.6	0.3	0.0	0.0	0.0	0.0	0.0
LED replacing LFL (retrofit & luminaire)		0.0	0.0	1.4	6.5	17.1	24.0	29.6	35.3	41.6	48.7
LED replacing HID (retrofit & luminaire)		0.0	0.0	3.6	5.0	8.0	11.0	13.8	16.6	19.8	23.3
LED replacing CFLni (retrofit & luminaire)		0.0	0.0	0.3	1.0	1.9	2.7	3.2	3.8	4.3	4.9
LED replacing DLS (retrofit & luminaire)		0.0	0.2	1.5	1.8	2.4	2.1	2.4	2.6	3.0	3.3
LED replacing NDLS (retrofit & luminaire)		0.0	0.1	4.2	9.1	9.2	9.7	10.2	11.3	12.7	14.2
<i>Special Purpose Lamps (exempt) (nrgcost only)</i>		6.6	9.0	8.7	7.2	6.2	5.4	5.6	5.9	6.2	6.6
<i>Lighting controls and standby (nrgcost only)</i>		1.9	2.5	2.4	2.0	1.7	1.5	1.6	1.7	1.7	1.8
<b>TOTAL LIGHTING (incl. SPL, ctrl)</b>		<b>58</b>	<b>83</b>	<b>93</b>	<b>86</b>	<b>79</b>	<b>74</b>	<b>75</b>	<b>81</b>	<b>92</b>	<b>104</b>
<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>		<b>49</b>	<b>71</b>	<b>82</b>	<b>77</b>	<b>71</b>	<b>67</b>	<b>67</b>	<b>74</b>	<b>84</b>	<b>96</b>
DP TV total all types		27.5	47.7	36.2	38.8	38.2	42.2	42.3	43.3	45.0	47.1
DP Monitor		2.2	7.0	4.0	3.1	3.0	2.9	2.8	2.8	2.8	2.9
DP Signage		0.0	0.5	3.3	7.5	7.5	6.9	6.1	6.2	6.7	7.6
<b>DP Electronic Displays, total</b>		<b>30</b>	<b>55</b>	<b>44</b>	<b>49</b>	<b>49</b>	<b>52</b>	<b>51</b>	<b>52</b>	<b>55</b>	<b>58</b>
SSTB		0.0	1.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CSTB		0.0	6.7	9.9	10.1	10.5	10.3	11.3	12.4	13.6	14.8
<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>8</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>15</b>
VIDEO players/recorders		0.0	4.22	3.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO projectors		0.0	3.29	2.8	1.2	0.5	0.0	0.0	0.0	0.0	0.0
VIDEO game consoles		0.0	7.74	7.4	6.5	8.0	8.3	8.4	8.6	8.7	8.9
<b>Total VIDEO</b>		<b>0</b>	<b>15</b>	<b>14</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>
<i>ES&amp;DS only, without effects on infrastructure</i>		0.0	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2
ES tower 1-socket traditional		0.0	1.1	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1
ES rack 1-socket traditional		0.3	5.5	2.8	2.5	3.0	3.7	3.9	4.0	4.0	4.1
ES rack 2-socket traditional		0.0	4.3	6.8	7.8	9.5	11.7	12.2	12.4	12.6	12.8
ES rack 4-socket traditional		0.1	1.9	0.9	1.0	1.2	1.4	1.5	1.5	1.5	1.5
ES rack 4-socket cloud		0.0	1.6	2.3	2.8	3.4	4.1	4.2	4.2	4.2	4.3
ES rack 2-socket resilient trad.		0.0	0.7	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6
ES rack 2-socket resilient cloud		0.0	0.5	0.8	0.9	1.1	1.4	1.4	1.4	1.4	1.4
ES rack 4-socket resilient trad.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient cloud		0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 1-socket traditional		0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ES blade 2-socket traditional		0.3	2.1	1.0	0.9	1.1	1.4	1.4	1.5	1.5	1.5
ES blade 2-socket cloud		0.0	1.6	2.4	2.8	3.5	4.3	4.5	4.6	4.7	4.8
ES blade 4-socket traditional		0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
ES blade 4-socket cloud		0.0	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5
<b>ES total traditional</b>		<b>1</b>	<b>12</b>	<b>7</b>	<b>6</b>	<b>7</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>10</b>
<b>ES total cloud</b>		<b>0</b>	<b>8</b>	<b>13</b>	<b>15</b>	<b>18</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>24</b>
<b>ES Enterprise Servers total</b>		<b>1</b>	<b>20</b>	<b>19</b>	<b>21</b>	<b>25</b>	<b>31</b>	<b>32</b>	<b>32</b>	<b>33</b>	<b>33</b>
DS Online 2		0.3	7.1	7.1	8.1	9.4	10.8	11.1	11.3	11.5	11.7
DS Online 3		0.5	9.7	7.0	7.7	8.6	9.5	9.5	9.6	9.6	9.6
DS Online 4		0.4	6.8	6.5	7.3	8.2	9.3	9.5	9.6	9.7	9.8
<b>DS Data Storage products total</b>		<b>1</b>	<b>24</b>	<b>21</b>	<b>23</b>	<b>26</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>31</b>
<b>ES + DS total (excl. infrastructure)</b>		<b>2</b>	<b>44</b>	<b>40</b>	<b>44</b>	<b>51</b>	<b>60</b>	<b>62</b>	<b>63</b>	<b>64</b>	<b>64</b>
PC Desktop		6.4	15.7	11.5	9.1	8.7	8.7	8.8	8.8	8.8	8.9
PC Notebook		0.4	28.6	13.3	12.0	11.9	11.9	11.9	11.9	11.9	11.9
PC Tablet/slate		0.0	1.9	29.7	47.9	61.8	73.7	77.4	81.1	84.8	88.5
PC Thin client		0.0	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PC Workstation		0.2	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
<b>Total PC, electricity</b>		<b>7</b>	<b>49</b>	<b>57</b>	<b>72</b>	<b>85</b>	<b>97</b>	<b>101</b>	<b>105</b>	<b>108</b>	<b>112</b>
EP-Copier mono		5.6	1.6	1.0	0.4	0.3	0.2	0.1	0.0	0.0	0.0
EP-Copier colour		0.0	0.5	2.3	3.4	3.9	4.2	4.6	5.0	5.3	5.7
EP-printer mono		2.4	1.0	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.2
EP-printer colour		0.0	0.9	1.2	1.5	1.9	2.2	2.5	2.8	3.1	3.4
IJ SFD printer		0.9	1.1	0.7	0.5	0.4	0.3	0.3	0.2	0.1	0.1
IJ MFD printer		1.1	2.7	3.7	4.2	4.7	5.1	5.5	5.9	6.4	6.8
<b>Total imaging equipment, electricity and including the following toner and paper costs:</b>		<b>42</b>	<b>42</b>	<b>45</b>	<b>47</b>	<b>50</b>	<b>53</b>	<b>55</b>	<b>58</b>	<b>61</b>	<b>64</b>
SB Home Gateway		0.0	8.6	11.3	13.8	16.2	18.3	20.2	21.9	23.3	24.4
SB Home NAS		0.0	0.7	1.3	1.8	2.3	2.7	3.2	3.6	4.0	4.4
SB Home Phones (fixed)		0.6	3.3	4.0	4.2	4.1	4.0	3.9	3.8	3.7	3.5
SB Office Phones (fixed)		0.8	1.7	1.8	1.9	1.9	2.0	2.0	2.0	2.1	2.0
<b>Total SB (networked) StandBy (rest)</b>		<b>1</b>	<b>14</b>	<b>18</b>	<b>22</b>	<b>24</b>	<b>27</b>	<b>29</b>	<b>31</b>	<b>33</b>	<b>34</b>

EXPENSECO

db	ECO Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.0	EPS ≤ 6W, low-V	0.0	0.4	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.2	2.2	2.3	2.3	2.3	2.4	2.5	2.6	2.7	2.8
0.6	EPS 10–12 W	0.0	2.9	4.0	3.9	3.7	3.8	3.9	4.0	4.2	4.3
0.5	EPS 15–20 W	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1.0	EPS 20–30 W	0.0	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3
1.0	EPS 30-65 W	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
1.0	EPS 65–120 W	0.0	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	1.2	0.6	0.2	0.1	0.1	0.1	0.2	0.2	0.2
0.0	EPS 12–15 W	0.0	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	<b>EPS, total</b>	<b>0.2</b>	<b>7.5</b>	<b>8.2</b>	<b>7.7</b>	<b>7.5</b>	<b>7.7</b>	<b>7.9</b>	<b>8.1</b>	<b>8.3</b>	<b>8.6</b>
	<b>EPS, double counted subtracted</b>	<b>0.2</b>	<b>4.1</b>	<b>4.4</b>	<b>4.1</b>	<b>4.0</b>	<b>4.1</b>	<b>4.2</b>	<b>4.3</b>	<b>4.4</b>	<b>4.6</b>
	UPS below 1.5 kVA	0.2	0.4	0.5	0.3	0.3	0.4	0.4	0.5	0.5	0.5
	UPS 1.5 to 5 kVA	0.7	1.4	1.6	1.4	1.0	1.1	1.2	1.4	1.5	1.6
	UPS 5 to 10 kVA	0.1	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6
	UPS 10 to 200 kVA	0.8	1.7	1.9	1.9	2.1	2.4	2.7	3.1	3.4	3.7
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>
	<b>TOTAL ELECTRONICS</b>	<b>84</b>	<b>236</b>	<b>237</b>	<b>261</b>	<b>286</b>	<b>316</b>	<b>327</b>	<b>339</b>	<b>353</b>	<b>367</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>36</b>	<b>29</b>	<b>29</b>	<b>26</b>	<b>26</b>	<b>24</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>
	CF open vertical chilled multi deck (RVC2)	3.1	2.9	3.0	2.6	2.2	2.0	2.1	2.2	2.2	2.3
	CF open horizontal frozen island (RHF4)	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	CF other supermarket display (non-BCs)	6.0	5.9	6.4	6.0	5.7	5.8	6.2	6.6	7.0	7.6
	CF Plug in one door beverage cooler	4.0	3.8	3.9	3.4	3.0	2.9	3.1	3.3	3.5	3.8
	CF Plug in horizontal ice cream freezer	1.0	1.0	1.1	1.0	1.0	1.1	1.1	1.2	1.3	1.4
	CF Spiral vending machine	1.0	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6
	<b>Total CF Commercial Refrigeration</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
	PF Storage cabinet Chilled Vertical (CV)	0.5	0.7	0.8	0.8	0.7	0.7	0.7	0.8	0.8	0.9
	PF Storage cabinet Frozen Vertical (FV)	0.5	0.6	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.8
	PF Storage cabinet Chilled Horizontal (CH)	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.5
	PF Storage cabinet Frozen Horizontal (FH)	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	<b>PF Storage cabinets All types</b>	<b>1.5</b>	<b>1.9</b>	<b>2.2</b>	<b>2.0</b>	<b>1.8</b>	<b>1.8</b>	<b>2.0</b>	<b>2.1</b>	<b>2.3</b>	<b>2.4</b>
	PF Process Chiller AC MT S ≤ 300 kW	0.5	0.9	1.1	1.2	1.3	1.5	1.7	2.0	2.2	2.5
	PF Process Chiller AC MT L > 300 kW	0.4	0.8	1.1	1.1	1.3	1.5	1.7	1.9	2.2	2.4
	PF Process Chiller AC LT S ≤ 200 kW	0.5	0.9	1.1	1.2	1.3	1.5	1.7	2.0	2.2	2.5
	PF Process Chiller AC LT L > 200 kW	0.5	0.9	1.1	1.2	1.4	1.6	1.8	2.0	2.3	2.6
	PF Process Chiller WC MT S ≤ 300 kW	0.1	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7
	PF Process Chiller WC MT L > 300 kW	0.2	0.4	0.5	0.5	0.6	0.7	0.7	0.9	1.0	1.1
	PF Process Chiller WC LT S ≤ 200 kW	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.9
	PF Process Chiller WC LT L > 200 kW	0.2	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.2
	<b>PF Process Chiller All MT&amp;LT</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>14</b>
	PF Condensing Unit MT S 0.2-1 kW	1.3	0.9	1.0	1.0	1.1	1.2	1.3	1.5	1.7	1.9
	PF Condensing Unit MT M 1-5 kW	3.2	2.3	2.5	2.5	2.7	3.1	3.4	3.9	4.4	4.9
	PF Condensing Unit MT L 5-20 kW	3.9	2.8	3.0	3.0	3.2	3.6	4.1	4.6	5.2	5.8
	PF Condensing Unit MT XL 20-50 kW	3.8	2.7	2.9	2.9	3.1	3.5	4.0	4.5	5.1	5.7
	PF Condensing Unit LT S 0.1-0.4 kW	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
	PF Condensing Unit LT M 0.4-2 kW	0.6	0.4	0.5	0.4	0.5	0.5	0.6	0.7	0.8	0.9
	PF Condensing Unit LT L 2-8 kW	1.0	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.3	1.4
	PF Condensing Unit LT XL 8-20 kW	2.8	2.0	2.2	2.1	2.3	2.6	2.9	3.3	3.7	4.2
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>17</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>25</b>
	<b>PF Professional Refrigeration, Total</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>19</b>	<b>21</b>	<b>24</b>	<b>27</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>62</b>	<b>55</b>	<b>58</b>	<b>54</b>	<b>53</b>	<b>53</b>	<b>55</b>	<b>58</b>	<b>62</b>	<b>66</b>
	CA El. Hobs	6.6	11.4	13.3	14.6	16.0	17.3	18.7	20.0	21.5	22.9
	CA El. Ovens	10.1	10.7	11.4	11.9	11.6	11.5	11.7	12.1	12.4	12.8
	CA Gas Hobs	4.2	3.8	3.8	3.4	3.3	3.2	3.2	3.2	3.1	3.1
	CA Gas Ovens	1.6	1.4	1.5	1.5	1.5	1.4	1.3	1.3	1.3	1.3
	CA Range Hoods	3.3	3.8	4.3	4.8	5.2	5.2	5.3	5.5	5.8	6.1
	<b>Total CA Cooking Appliances</b>	<b>26</b>	<b>31</b>	<b>34</b>	<b>36</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>42</b>	<b>44</b>	<b>46</b>
	COFFEE Dripfilter (glass)	2.53	1.63	1.57	1.12	1.04	1.07	1.11	1.15	1.20	1.26
	COFFEE Dripfilter (thermos)	0.15	0.31	0.34	0.35	0.36	0.38	0.40	0.42	0.43	0.45
	COFFEE Dripfilter (full automatic)	0.00	0.29	0.35	0.38	0.43	0.48	0.53	0.59	0.65	0.71
	COFFEE Pad filter	0.00	0.66	0.74	0.75	0.82	0.89	0.97	1.05	1.13	1.21
	COFFEE Hard cap espresso	0.06	0.29	0.61	0.91	0.98	0.99	1.00	1.01	1.02	1.03
	COFFEE Semi-auto espresso	0.08	0.10	0.10	0.08	0.08	0.08	0.07	0.07	0.06	0.06
	COFFEE Fully-auto espresso	0.39	0.45	0.52	0.59	0.66	0.73	0.81	0.88	0.96	1.03
	<b>Total CM household Coffee Makers</b>	<b>3.2</b>	<b>3.7</b>	<b>4.2</b>	<b>4.2</b>	<b>4.4</b>	<b>4.6</b>	<b>4.9</b>	<b>5.2</b>	<b>5.4</b>	<b>5.7</b>
	<b>TOTAL COOKING</b>	<b>29</b>	<b>35</b>	<b>39</b>	<b>40</b>	<b>42</b>	<b>43</b>	<b>45</b>	<b>47</b>	<b>50</b>	<b>52</b>

## EXPENSECO

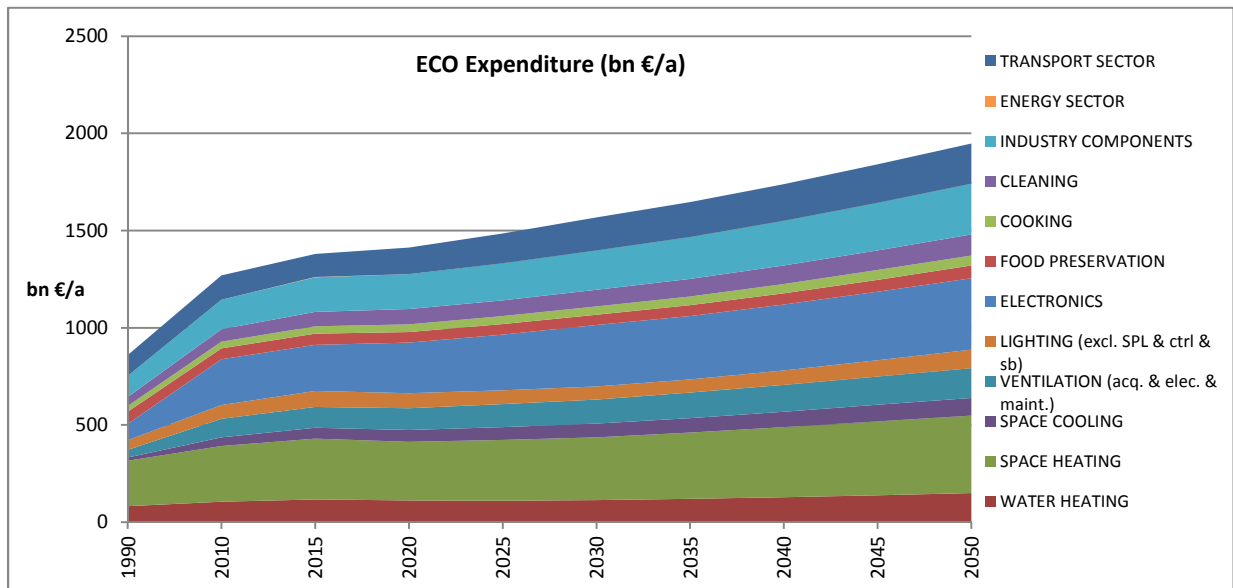
db	ECO Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WM household Washing Machine</b>	<b>27.6</b>	<b>26.2</b>	<b>25.8</b>	<b>24.9</b>	<b>24.1</b>	<b>24.0</b>	<b>24.5</b>	<b>25.4</b>	<b>26.6</b>	<b>28.2</b>
	<i>including detergent and water costs</i>	<i>12.6</i>	<i>12.2</i>	<i>11.9</i>	<i>11.3</i>	<i>11.6</i>	<i>12.3</i>	<i>13.3</i>	<i>14.4</i>	<i>15.8</i>	<i>17.4</i>
	<b>Total DW household Dishwasher</b>	<b>5.9</b>	<b>11.5</b>	<b>13.5</b>	<b>15.0</b>	<b>16.8</b>	<b>18.7</b>	<b>20.8</b>	<b>22.9</b>	<b>25.1</b>	<b>27.4</b>
	<i>including detergent and water costs</i>	<i>1.4</i>	<i>2.7</i>	<i>3.0</i>	<i>3.5</i>	<i>4.0</i>	<i>4.7</i>	<i>5.5</i>	<i>6.5</i>	<i>7.5</i>	<i>8.8</i>
	LD vented el.	2.6	2.9	3.2	3.0	3.0	3.1	3.2	3.3	3.5	3.7
	LD condens el.	0.8	4.5	5.9	6.5	6.6	6.5	6.4	6.4	6.3	6.3
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>3.4</b>	<b>7.4</b>	<b>9.2</b>	<b>9.6</b>	<b>9.7</b>	<b>9.6</b>	<b>9.6</b>	<b>9.7</b>	<b>9.9</b>	<b>10.1</b>
	VC dom	6.3	15.7	22.1	24.2	26.5	28.8	31.1	33.3	35.5	37.6
	VC nondom	1.3	1.6	1.7	1.6	1.7	1.8	1.9	2.0	2.1	2.2
	<b>Total VC Vacuum Cleaner</b>	<b>9.2</b>	<b>19.3</b>	<b>25.9</b>	<b>28.1</b>	<b>30.5</b>	<b>32.9</b>	<b>35.3</b>	<b>37.6</b>	<b>39.8</b>	<b>42.0</b>
	<i>including costs of bags &amp; filters</i>	<i>1.6</i>	<i>2.1</i>	<i>2.1</i>	<i>2.2</i>	<i>2.3</i>	<i>2.4</i>	<i>2.4</i>	<i>2.4</i>	<i>2.3</i>	<i>2.2</i>
	<b>TOTAL CLEANING</b>	<b>46</b>	<b>65</b>	<b>74</b>	<b>78</b>	<b>81</b>	<b>85</b>	<b>90</b>	<b>96</b>	<b>101</b>	<b>108</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	3.8	9.7	12.4	13.1	13.8	14.5	15.0	15.5	16.0	16.6
0.5	FAN Axial>300Pa	6.2	17.0	20.8	20.7	21.3	22.0	22.9	23.9	24.9	26.0
0.5	FAN Centr.FC	1.8	3.7	5.0	5.5	5.5	5.5	5.6	5.7	5.9	6.0
0.5	FAN Centr.BC-free	3.8	7.2	9.3	9.5	10.3	11.4	12.6	13.5	14.4	15.4
0.5	FAN Centr.BC	4.3	8.9	11.8	12.2	13.2	14.6	16.2	18.1	20.3	22.9
0.5	FAN Cross-flow	0.3	0.6	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.5
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>10.1</b>	<b>23.6</b>	<b>30.1</b>	<b>31.0</b>	<b>32.7</b>	<b>34.6</b>	<b>36.8</b>	<b>39.0</b>	<b>41.5</b>	<b>44.2</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	16.2	18.5	20.5	17.8	16.5	16.8	17.4	18.1	18.7	19.4
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	24.3	28.2	31.2	26.9	24.1	24.1	24.7	25.4	25.9	26.6
0.45	Medium (L) 3-ph 75-375 kW no VSD	48.1	54.6	59.6	52.9	48.8	44.1	43.5	43.3	43.4	44.6
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>89</b>	<b>101</b>	<b>111</b>	<b>98</b>	<b>89</b>	<b>85</b>	<b>86</b>	<b>87</b>	<b>88</b>	<b>91</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	1.3	3.0	4.3	6.8	8.9	9.8	10.7	11.8	13.0	14.3
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	2.2	4.9	7.5	11.3	15.4	17.4	19.3	21.5	23.8	26.3
0.45	Medium (L) 3-ph 75-375 kW with VSD	5.6	12.5	18.3	25.0	33.5	41.8	47.3	53.0	58.9	64.6
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>9</b>	<b>20</b>	<b>30</b>	<b>43</b>	<b>58</b>	<b>69</b>	<b>77</b>	<b>86</b>	<b>96</b>	<b>105</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>98</b>	<b>122</b>	<b>141</b>	<b>141</b>	<b>147</b>	<b>154</b>	<b>163</b>	<b>173</b>	<b>184</b>	<b>196</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	1.6	2.2	2.4	2.4	2.6	2.6	2.6	2.7	2.7	2.8
0.45	Small 1 ph 0.12-0.75 kW with VSD	0.1	0.7	0.9	1.0	1.1	1.1	1.2	1.3	1.4	1.4
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	1.9	2.3	2.6	2.6	2.7	2.7	2.8	2.9	3.1	3.2
0.45	Small 3 ph 0.12-0.75 kW with VSD	0.0	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	24.5	26.5	27.9	25.5	25.0	24.8	25.6	26.7	27.8	29.0
0.45	Large 3-ph LV 375-1000kW with VSD	1.3	6.2	10.1	13.2	17.0	20.1	22.4	24.6	27.1	29.8
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>26</b>	<b>33</b>	<b>38</b>	<b>39</b>	<b>42</b>	<b>45</b>	<b>48</b>	<b>51</b>	<b>55</b>	<b>59</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.2
0.45	Explosion motors (M) 3-ph 7.5-75 kW	1.3	1.7	2.0	2.1	2.2	2.4	2.5	2.7	2.9	3.1
0.45	Explosion motors (L) 3-ph 75-375 kW	2.4	3.1	3.7	3.9	4.3	4.7	5.0	5.4	5.8	6.2
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>4</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>11</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9
0.45	Brake motors (M) 3-ph 7.5-75 kW	0.9	1.2	1.4	1.4	1.6	1.7	1.8	1.9	2.0	2.2
0.45	Brake motors (L) 3-ph 75-375 kW	1.2	1.6	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.2
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>6</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
0.45	8-pole motors (L) 3-ph 75-375 kW	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>7</b>	<b>9</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>78</b>	<b>98</b>	<b>114</b>	<b>115</b>	<b>121</b>	<b>128</b>	<b>135</b>	<b>144</b>	<b>153</b>	<b>163</b>
	<b>Total WP Water Pumps</b>	<b>17.3</b>	<b>21.2</b>	<b>24.6</b>	<b>25.6</b>	<b>28.6</b>	<b>31.9</b>	<b>35.6</b>	<b>39.5</b>	<b>43.7</b>	<b>48.3</b>
	CP Fixed Speed 5-1280 l/s	4.0	7.0	6.4	5.4	5.5	5.9	6.3	6.8	7.2	7.8
	CP Variable speed 5-1280 l/s	0.0	1.3	2.3	2.8	3.2	3.5	3.7	4.0	4.2	4.5
	CP Pistons 2-64 l/s	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7
	<b>Total CP Standard Air Compressors</b>	<b>4.4</b>	<b>8.7</b>	<b>9.2</b>	<b>8.7</b>	<b>9.2</b>	<b>9.9</b>	<b>10.6</b>	<b>11.3</b>	<b>12.1</b>	<b>13.0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>110</b>	<b>152</b>	<b>178</b>	<b>180</b>	<b>192</b>	<b>204</b>	<b>218</b>	<b>234</b>	<b>250</b>	<b>268</b>



## EXPENSECO

db ECO Expenditure (in bn euros), c'td	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
TRAFO Distribution	2.0	3.0	3.7	3.7	4.1	4.4	4.8	5.1	5.5	5.8
TRAFO Industry oil	1.4	2.2	2.7	2.6	2.8	2.9	2.9	3.1	3.4	3.7
TRAFO Industry dry	0.5	0.7	0.9	0.9	1.0	1.1	1.2	1.3	1.4	1.5
TRAFO Power	6.4	9.2	10.6	11.3	12.8	14.3	16.0	17.7	19.7	21.7
TRAFO DER oil	0.0	0.1	0.2	0.2	0.4	0.6	1.0	1.4	1.9	2.6
TRAFO DER dry	0.0	0.4	0.7	1.1	1.9	3.1	4.9	7.1	9.9	13.3
TRAFO Small	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>Total TRAFO Utility Transformers</b>	<b>10.7</b>	<b>15.9</b>	<b>19.1</b>	<b>20.3</b>	<b>23.2</b>	<b>26.7</b>	<b>31.0</b>	<b>36.1</b>	<b>42.1</b>	<b>49.0</b>
<b>TOTAL ENERGY SECTOR (only improvement over BAU)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>-2</b>	<b>-4</b>	<b>-5</b>	<b>-6</b>
<i>(incl. costs for fuel due to rolling resistance)</i>										
Tyres C1, replacement for cars	56	64	59	66	72	79	81	84	88	91
Tyres C1, OEM for cars	17	19	19	21	22	24	25	26	27	28
<b>Tyres C1, total</b>	<b>73</b>	<b>83</b>	<b>78</b>	<b>86</b>	<b>94</b>	<b>103</b>	<b>107</b>	<b>110</b>	<b>114</b>	<b>119</b>
Tyres C2, replacement for vans	11	15	13	15	17	20	21	22	24	25
Tyres C2, OEM for vans	2	3	3	3	4	4	5	5	5	5
<b>Tyres C2, total</b>	<b>13</b>	<b>18</b>	<b>16</b>	<b>19</b>	<b>21</b>	<b>24</b>	<b>26</b>	<b>27</b>	<b>29</b>	<b>30</b>
Tyres C3, replacement for trucks/busses	17	20	20	26	30	35	38	41	43	47
Tyres C3, OEM for trucks/busses	4	4	5	6	7	8	9	10	10	11
<b>Tyres C3, total</b>	<b>21</b>	<b>24</b>	<b>24</b>	<b>31</b>	<b>37</b>	<b>43</b>	<b>47</b>	<b>50</b>	<b>54</b>	<b>58</b>
<b>Tyres, total C1+C2+C3</b>	<b>107</b>	<b>125</b>	<b>118</b>	<b>136</b>	<b>152</b>	<b>170</b>	<b>180</b>	<b>188</b>	<b>197</b>	<b>207</b>
<b>TRANSPORT SECTOR</b>	<b>107</b>	<b>125</b>	<b>118</b>	<b>136</b>	<b>152</b>	<b>170</b>	<b>180</b>	<b>188</b>	<b>197</b>	<b>207</b>
<b>GENERAL TOTAL (in bn euros)</b>	<b>860</b>	<b>1270</b>	<b>1379</b>	<b>1412</b>	<b>1485</b>	<b>1568</b>	<b>1647</b>	<b>1738</b>	<b>1840</b>	<b>1948</b>

ECO Expenditure (summary table)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	<b>82</b>	<b>104</b>	<b>117</b>	<b>111</b>	<b>111</b>	<b>113</b>	<b>119</b>	<b>128</b>	<b>138</b>	<b>149</b>
<b>SPACE HEATING</b>	<b>233</b>	<b>287</b>	<b>312</b>	<b>302</b>	<b>312</b>	<b>324</b>	<b>342</b>	<b>361</b>	<b>380</b>	<b>399</b>
<b>SPACE COOLING</b>	<b>17</b>	<b>44</b>	<b>55</b>	<b>61</b>	<b>66</b>	<b>71</b>	<b>75</b>	<b>80</b>	<b>85</b>	<b>89</b>
<b>VENTILATION (acq. &amp; elec. &amp; maint.)</b>	<b>40</b>	<b>96</b>	<b>108</b>	<b>112</b>	<b>118</b>	<b>124</b>	<b>131</b>	<b>138</b>	<b>145</b>	<b>153</b>
<sup>1</sup> <b>VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</b>	<b>0</b>	<b>0</b>	<b>-2</b>	<b>-5</b>	<b>-8</b>	<b>-10</b>	<b>-11</b>	<b>-11</b>	<b>-12</b>	<b>-13</b>
<b>LIGHTING (excl. SPL &amp; ctrl &amp; sb)</b>	<b>49</b>	<b>71</b>	<b>82</b>	<b>77</b>	<b>71</b>	<b>67</b>	<b>67</b>	<b>74</b>	<b>84</b>	<b>96</b>
<b>ELECTRONICS</b>	<b>84</b>	<b>236</b>	<b>237</b>	<b>261</b>	<b>286</b>	<b>316</b>	<b>327</b>	<b>339</b>	<b>353</b>	<b>367</b>
<b>FOOD PRESERVATION</b>	<b>62</b>	<b>55</b>	<b>58</b>	<b>54</b>	<b>53</b>	<b>53</b>	<b>55</b>	<b>58</b>	<b>62</b>	<b>66</b>
<b>COOKING</b>	<b>29</b>	<b>35</b>	<b>39</b>	<b>40</b>	<b>42</b>	<b>43</b>	<b>45</b>	<b>47</b>	<b>50</b>	<b>52</b>
<b>CLEANING</b>	<b>46</b>	<b>65</b>	<b>74</b>	<b>78</b>	<b>81</b>	<b>85</b>	<b>90</b>	<b>96</b>	<b>101</b>	<b>108</b>
<b>INDUSTRY COMPONENTS</b>	<b>110</b>	<b>152</b>	<b>178</b>	<b>180</b>	<b>192</b>	<b>204</b>	<b>218</b>	<b>234</b>	<b>250</b>	<b>268</b>
<b>ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>-2</b>	<b>-4</b>	<b>-5</b>	<b>-6</b>
<b>TRANSPORT SECTOR</b>	<b>107</b>	<b>125</b>	<b>118</b>	<b>136</b>	<b>152</b>	<b>170</b>	<b>180</b>	<b>188</b>	<b>197</b>	<b>207</b>
<b>TOTAL in bn euros</b>	<b>860</b>	<b>1270</b>	<b>1379</b>	<b>1412</b>	<b>1485</b>	<b>1568</b>	<b>1647</b>	<b>1738</b>	<b>1840</b>	<b>1948</b>



EXPENSSAVE

db	SAVED Expenditure (BAU-ECO, in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WH dedicated Water Heater</b>	0	0	2	8	14	18	21	23	27	30
	<b>Total CH Central Heating combi, water heat</b>	0	0	-2	-2	1	4	7	10	13	17
	<b>TOTAL WATER HEATING</b>	0	0	0	6	16	23	27	33	40	47
	<b>Total CH Central Heating boiler, space heat</b>	0	2	-4	-3	-1	3	1	-5	-16	-29
	SFB Wood Manual	0.0	0.0	-0.1	0.0	0.2	0.2	0.2	0.2	0.1	0.1
	SFB Wood Direct Draft	0.0	0.0	0.0	0.1	-0.1	0.1	0.1	0.2	0.3	0.5
	SFB Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	SFB Pellets	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
	SFB Wood chips	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	<b>Total Solid Fuel Boiler</b>	0.0	0.0	-0.1	0.1	0.2	0.5	0.6	0.7	0.8	1.2
	CHAE-S (<= 400 kW)	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
	CHAE-L (> 400 kW)	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
	CHWE-S (<= 400 kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHWE-M (> 400 kW; <= 1500 kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHWE-L (> 1500 kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CHF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HT PCH-AE-S	0.0	0.0	0.0	0.2	0.4	0.7	0.8	0.7	0.7	0.6
	HT PCH-AE-L	0.0	0.0	0.0	0.2	0.5	0.9	1.1	1.2	1.2	1.1
	HT PCH-WE-S	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
	HT PCH-WE-M	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
	HT PCH-WE-L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC rooftop	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AC splits	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.1
	AC VRF	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.2
	ACF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Air Cooling</b>	0.0	0.0	0.0	0.6	1.5	2.4	2.9	2.9	2.7	2.5
	AC rooftop (rev)	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0	0.0	0.0
	AC splits (rev)	0.0	0.0	0.1	0.3	0.6	0.8	0.7	0.7	0.6	0.5
	AC VRF (rev)	0.0	0.0	0.0	0.2	0.4	0.7	1.0	1.1	1.1	1.1
	ACF (rev)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	AHF	0.0	0.0	0.1	0.5	1.0	1.3	1.4	1.4	1.3	1.2
	AHE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>SubTotal AHC Air Heating</b>	0.0	0.0	0.3	1.2	2.3	3.1	3.3	3.2	3.0	2.9
	<b>Total AHC Air Heating &amp; Cooling</b>	0.0	0.0	0.3	1.8	3.8	5.6	6.2	6.1	5.8	5.3
	LH open fireplace	0.0	0.0	0.0	-0.4	-0.6	-0.4	-0.1	0.1	0.3	0.5
	LH closed fireplace/inset	0.0	0.0	0.0	-0.5	-0.5	-0.1	0.2	0.5	0.8	1.0
	LH wood stove	0.0	0.0	0.0	-0.2	-0.2	0.0	0.2	0.3	0.5	0.6
	LH coal stove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	LH cooker	0.0	0.0	0.0	-0.2	-0.2	-0.1	0.0	0.2	0.2	0.2
	LH SHR stove	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3
	LH pellet stove	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
	LH open fire gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH closed fire gas	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3
	LH flueless fuel heater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LH elec.portable	0.0	0.0	0.2	0.7	1.0	1.1	1.1	1.1	1.2	1.3
	LH elec.convector	0.0	0.0	0.5	2.0	3.1	3.3	3.3	3.5	3.7	3.9
	LH elec.storage	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.5	0.5
	LH elec.underfloor	0.0	0.0	0.1	0.2	0.4	0.6	0.7	0.8	0.9	0.9
	LH luminous heaters	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
	LH tube heaters	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	<b>LH total</b>	0.0	0.0	0.9	1.8	3.6	5.4	6.5	7.8	9.0	10.0
	RAC (cooling demand), all types <12 kW	0.0	0.0	-0.3	-0.2	0.0	0.1	0.4	0.8	1.2	1.6
	RAC (heating demand), reversible <12kW	0.0	0.0	-0.1	0.3	1.0	1.4	1.6	1.9	2.2	2.6
	<b>Total RAC Room Air Conditioner</b>	0.0	0.0	-0.4	0.1	1.0	1.5	2.0	2.7	3.5	4.2
1	<b>CIRC Circulator pumps &lt;2.5 kW, net load</b>	0.0	0.0	0.8	1.6	2.0	2.4	2.7	2.8	2.8	2.7
	<b>TOTAL SPACE HEATING</b>	0	2	-3	1	6	14	13	8	-1	-13
	<b>TOTAL SPACE COOLING</b>	0	0	0	0	2	3	3	4	4	4
	NRVU Ventilation units	0.0	0.0	0.0	1.0	1.8	2.6	2.9	3.0	3.2	3.4
	RVU Central Unidir.	0.0	0.0	-2.0	-1.4	-1.0	-0.6	-0.5	-0.2	0.1	0.4
	RVU Central Balanced VU <=125W/fan (2 fans)	0.0	0.0	-0.6	-0.5	-0.1	0.3	0.6	0.9	1.2	1.5
	RVU Local Balanced VU (<125 W, also NR) (2 fans)	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3
	<b>Total VU Ventilation Units</b>	0	0	-3	-1	1	2	3	4	5	6
	<b>TOTAL VENTILATION (acq. &amp; electr. &amp; maint.)</b>	0	0	-3	-1	1	2	3	4	5	6
1	<b>TOTAL VENTILATION (from heat saving vs. BAU; already included in COST for space heating)</b>	0	0	2	5	8	10	11	11	12	13

EXPENSSAVE

db	SAVED Expenditure (BAU-ECO, in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
LFL (T12,T8h,T8t,T5,other)		0.0	0.2	2.0	4.1	13.1	18.5	19.2	17.3	14.9	12.6
HID (HPM, HPS, MH)		0.0	0.2	2.8	4.5	5.1	4.7	3.2	2.2	1.4	0.8
CFLni (all shapes)		0.0	0.0	0.3	1.0	1.5	1.4	0.9	0.5	0.3	0.2
CFLi (retrofit for GLS, HL)		0.0	-1.5	-0.5	1.4	3.4	3.7	2.7	1.8	1.2	0.8
GLS (DLS & NDLS)		0.0	5.1	9.8	8.9	5.5	3.4	2.0	1.3	0.8	0.5
HL (DLS & NDLS, LV & MV)		0.0	-1.2	-0.8	10.8	11.7	6.4	3.5	2.0	1.1	0.7
LED replacing LFL (retrofit & luminaire)		0.0	0.0	-0.6	-2.8	-8.9	-9.0	-8.0	-6.6	-5.0	-3.2
LED replacing HID (retrofit & luminaire)		0.0	0.0	-3.3	-2.6	-2.7	-1.8	-1.0	-0.5	0.0	0.4
LED replacing CFLni (retrofit & luminaire)		0.0	0.0	-0.3	-0.7	-0.9	-0.7	-0.4	-0.1	0.0	0.0
LED replacing DLS (retrofit & luminaire)		0.0	-0.2	-1.3	-1.1	-1.1	-0.5	-0.4	-0.3	-0.2	-0.1
LED replacing NDLS (retrofit & luminaire)		0.0	0.0	-3.7	-5.5	-4.0	-3.0	-1.6	-1.0	-0.7	-0.4
Special Purpose Lamps (exempt) (nrgcost only)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lighting controls and standby (nrgcost only)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>TOTAL LIGHTING (incl. SPL, ctrl)</b>		<b>0</b>	<b>3</b>	<b>4</b>	<b>18</b>	<b>23</b>	<b>23</b>	<b>20</b>	<b>16</b>	<b>14</b>	<b>12</b>
<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>		<b>0</b>	<b>3</b>	<b>4</b>	<b>18</b>	<b>23</b>	<b>23</b>	<b>20</b>	<b>16</b>	<b>14</b>	<b>12</b>
DP TV total all types		0.0	0.0	1.2	4.3	8.2	11.8	13.3	11.9	10.4	9.7
DP Monitor		0.0	0.0	0.2	0.6	0.6	0.7	0.6	0.5	0.5	0.5
DP Signage		0.0	0.0	0.0	0.0	0.2	0.8	1.5	1.5	0.9	0.3
<b>DP Electronic Displays, total</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>9</b>	<b>13</b>	<b>16</b>	<b>14</b>	<b>12</b>	<b>10</b>
SSTB		0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CSTB		0.0	0.0	0.2	0.9	1.0	1.0	1.1	1.3	1.4	1.6
<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0.0</b>	<b>0.3</b>	<b>0.2</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.6</b>
VIDEO players/recorders		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO projectors		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VIDEO game consoles		0.0	0.0	0.1	0.2	0.3	0.2	0.3	0.3	0.3	0.3
<b>Total VIDEO</b>		<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
<i>ES&amp;DS only, without effects on infrastructure</i>											
ES tower 1-socket traditional		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 1-socket traditional		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 2-socket traditional		0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ES rack 2-socket cloud		0	0	0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
ES rack 4-socket traditional		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket cloud		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 2-socket resilient trad.		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 2-socket resilient cloud		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient trad.		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES rack 4-socket resilient cloud		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES blade 1-socket traditional		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES blade 2-socket traditional		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES blade 2-socket cloud		0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
ES blade 4-socket traditional		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES blade 4-socket cloud		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>ES total traditional</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>ES total cloud</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
<b>ES Enterprise Servers total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>
DS Online 2		0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
DS Online 3		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DS Online 4		0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
<b>DS Data Storage products total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>ES + DS total (excl. infrastructure)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>
PC Desktop		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC Notebook		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC Tablet/slate		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC Thin client		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PC Workstation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total PC, electricity</b>		<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
EP-Copier mono		0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EP-Copier colour		0.0	0.0	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4
EP-printer mono		0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
EP-printer colour		0.0	0.0	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
IJ SFD printer		0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IJ MFD printer		0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6
<b>Total imaging equipment, electricity and including the following toner and paper costs:</b>		<b>0.0</b>	<b>0.5</b>	<b>1.7</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.8</b>	<b>3.1</b>	<b>3.3</b>
SB Home Gateway		0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SB Home NAS		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
SB Home Phones (fixed)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SB Office Phones (fixed)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total SB (networked) StandBy (rest)</b>		<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

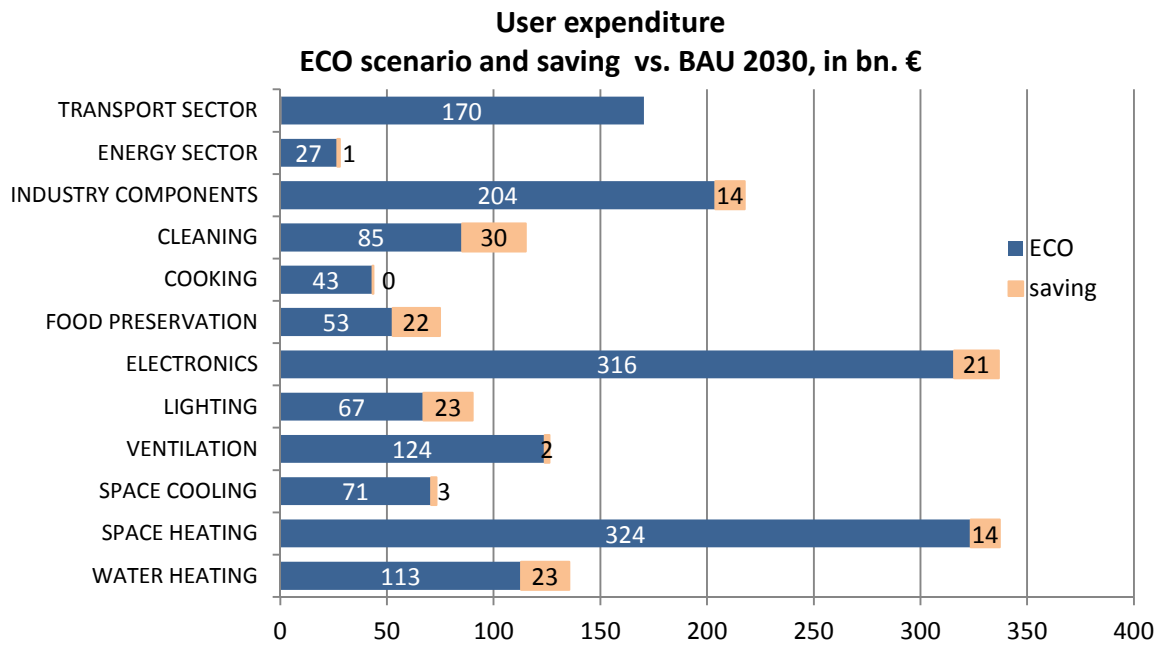
EXPENSSAVE

db	SAVED Expenditure (BAU-ECO, in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.0	EPS ≤ 6W, low-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	EPS 6–10 W	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2
0.6	EPS 10–12 W	0.0	0.0	0.4	0.8	1.1	1.0	0.9	0.8	0.7	0.6
0.5	EPS 15–20 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 20–30 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.8	EPS 30–65 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 30–65 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.0	EPS 65–120 W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5	EPS 65–120 W, multiple-V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	EPS 12–15 W	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
	<b>EPS, total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.5</b>	<b>1.1</b>	<b>1.4</b>	<b>1.4</b>	<b>1.3</b>	<b>1.1</b>	<b>1.0</b>	<b>0.9</b>
	<b>EPS, double counted subtracted</b>	<b>0.0</b>	<b>0.0</b>	<b>0.3</b>	<b>0.6</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>
	UPS below 1.5 kVA	0.0	0.0	0.0	0.2	0.4	0.4	0.5	0.6	0.7	0.8
	UPS 1.5 to 5 kVA	0.0	0.0	0.0	0.5	1.3	1.6	1.9	2.3	2.6	2.9
	UPS 5 to 10 kVA	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	UPS 10 to 200 kVA	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.6	0.6	0.7
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.8</b>	<b>1.9</b>	<b>2.6</b>	<b>3.1</b>	<b>3.6</b>	<b>4.1</b>	<b>4.5</b>
	<b>TOTAL ELECTRONICS</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>10</b>	<b>16</b>	<b>21</b>	<b>24</b>	<b>23</b>	<b>22</b>	<b>22</b>
	<b>Total RF household Refrigerators &amp; Freezers</b>	<b>0</b>	<b>5</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>17</b>	<b>19</b>	<b>21</b>	<b>22</b>	<b>24</b>
	CF open vertical chilled multi deck (RVC2)	0.0	0.0	0.0	0.2	0.6	0.9	1.0	1.0	1.1	1.2
	CF open horizontal frozen island (RHF4)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CF other supermarket display (non-BCs)	0.0	0.0	0.0	0.3	0.9	1.2	1.4	1.6	1.7	1.9
	CF Plug in one door beverage cooler	0.0	0.0	0.0	0.3	0.9	1.1	1.2	1.3	1.4	1.5
	CF Plug in horizontal ice cream freezer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CF Spiral vending machine	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
	<b>Total CF Commercial Refrigeration</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.8</b>	<b>2.6</b>	<b>3.5</b>	<b>3.8</b>	<b>4.1</b>	<b>4.5</b>	<b>4.9</b>
	PF Storage cabinet Chilled Vertical (CV)	0	0	0	0.0	0.2	0.2	0.3	0.3	0.3	0.3
	PF Storage cabinet Frozen Vertical (FV)	0	0	0	0.1	0.2	0.3	0.3	0.3	0.4	0.4
	PF Storage cabinet Chilled Horizontal (CH)	0	0	0	0.0	0.1	0.2	0.2	0.2	0.2	0.3
	PF Storage cabinet Frozen Horizontal (FH)	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
	<b>PF Storage cabinets All types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0.6</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>
	PF Process Chiller AC MT S ≤ 300 kW	0	0	0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
	PF Process Chiller AC MT L > 300 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Process Chiller AC LT S ≤ 200 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Process Chiller AC LT L > 200 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Process Chiller WC MT S ≤ 300 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	PF Process Chiller WC MT L > 300 kW	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	PF Process Chiller WC LT S ≤ 200 kW	0	0	0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
	PF Process Chiller WC LT L > 200 kW	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>0.3</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.1</b>
	PF Condensing Unit MT S 0.2-1 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
	PF Condensing Unit MT M 1-5 kW	0	0	0	0.1	0.2	0.2	0.2	0.3	0.3	0.3
	PF Condensing Unit MT L 5-20 kW	0	0	0	0.1	0.3	0.3	0.3	0.4	0.4	0.5
	PF Condensing Unit MT XL 20-50 kW	0	0	0	0.1	0.2	0.3	0.3	0.4	0.4	0.5
	PF Condensing Unit LT S 0.1-0.4 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PF Condensing Unit LT M 0.4-2 kW	0	0	0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	PF Condensing Unit LT L 2-8 kW	0	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2
	PF Condensing Unit LT XL 8-20 kW	0	0	0	0.1	0.2	0.3	0.3	0.3	0.4	0.4
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.5</b>	<b>1.2</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>1.9</b>	<b>2.2</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.5</b>	<b>1.4</b>	<b>1.9</b>	<b>2.2</b>	<b>2.5</b>	<b>2.8</b>	<b>3.1</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>0</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>17</b>	<b>22</b>	<b>25</b>	<b>27</b>	<b>30</b>	<b>32</b>
	CA El. Hobs	0.0	0.0	0.0	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2
	CA El. Ovens	0.0	0.0	-0.1	-0.3	-0.1	0.3	0.5	0.6	0.6	0.6
	CA Gas Hobs	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
	CA Gas Ovens	0.0	0.0	0.0	-0.3	-0.2	-0.2	-0.1	-0.1	0.0	0.0
	CA Range Hoods	0.0	0.0	0.0	-0.3	-0.3	0.1	0.4	0.7	0.9	1.2
	<b>Total CA Cooking Appliances</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.1</b>	<b>-1.2</b>	<b>-0.9</b>	<b>0.1</b>	<b>0.7</b>	<b>1.0</b>	<b>1.3</b>	<b>1.6</b>
	COFFEE Dripfilter (glass)	0.00	0.00	0.04	0.19	0.20	0.22	0.23	0.25	0.26	0.27
	COFFEE Dripfilter (thermos)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COFFEE Dripfilter (full automatic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COFFEE Pad filter	0.00	0.00	0.02	0.07	0.08	0.09	0.10	0.11	0.13	0.14
	COFFEE Hard cap espresso	0.00	0.00	0.01	0.04	0.06	0.06	0.07	0.07	0.07	0.08
	COFFEE Semi-auto espresso	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	COFFEE Fully-auto espresso	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02
	<b>Total CM household Coffee Makers</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
	<b>TOTAL COOKING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.9</b>	<b>-0.6</b>	<b>0.5</b>	<b>1.1</b>	<b>1.4</b>	<b>1.8</b>	<b>2.1</b>

EXPENSSAVE

db	SAVED Expenditure (BAU-ECO, in bn euros 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total WM household Washing Machine</b>	<b>0.0</b>	<b>6.0</b>	<b>9.2</b>	<b>11.3</b>	<b>14.2</b>	<b>17.4</b>	<b>20.0</b>	<b>22.6</b>	<b>25.7</b>	<b>29.2</b>
	<i>including detergent and water savings</i>	<i>0.0</i>	<i>5.6</i>	<i>7.8</i>	<i>9.9</i>	<i>12.3</i>	<i>14.9</i>	<i>17.2</i>	<i>19.8</i>	<i>22.9</i>	<i>26.6</i>
	<b>Total DW household Dishwasher</b>	<b>0.0</b>	<b>0.1</b>	<b>0.9</b>	<b>1.7</b>	<b>2.8</b>	<b>4.0</b>	<b>5.4</b>	<b>7.0</b>	<b>9.0</b>	<b>11.3</b>
	<i>including detergent and water savings</i>	<i>0.0</i>	<i>0.6</i>	<i>1.0</i>	<i>1.5</i>	<i>2.1</i>	<i>2.9</i>	<i>3.7</i>	<i>4.7</i>	<i>6.0</i>	<i>7.5</i>
	LD vented el.	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
	LD condens el.	0.0	0.0	0.0	0.3	1.0	1.6	1.9	2.2	2.5	2.8
	LD vented gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total LD household Laundry Drier</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.3</b>	<b>1.1</b>	<b>1.7</b>	<b>2.1</b>	<b>2.4</b>	<b>2.7</b>	<b>2.9</b>
	VC dom	0.0	0.0	0.4	2.2	4.7	6.1	7.6	9.1	10.4	11.5
	VC nondom	0.0	0.0	0.1	0.3	0.5	0.5	0.6	0.7	0.8	0.9
	<b>Total VC Vacuum Cleaner</b>	<b>0.0</b>	<b>0.0</b>	<b>0.4</b>	<b>2.5</b>	<b>5.2</b>	<b>6.7</b>	<b>8.2</b>	<b>9.8</b>	<b>11.2</b>	<b>12.3</b>
	<i>including costs of bags &amp; filters</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
	<b>TOTAL CLEANING</b>	<b>-</b>	<b>6</b>	<b>10</b>	<b>16</b>	<b>23</b>	<b>30</b>	<b>36</b>	<b>42</b>	<b>49</b>	<b>56</b>
0.5	FAN Axial<300Pa (all FAN types >125W)	0.0	0.0	0.0	0.4	1.5	2.3	2.8	3.0	3.3	3.6
0.5	FAN Axial>300Pa	0.0	0.0	0.4	1.1	2.3	3.2	3.7	3.9	4.1	4.3
0.5	FAN Centr.FC	0.0	0.0	-0.2	-0.2	0.4	0.8	1.0	1.2	1.3	1.5
0.5	FAN Centr.BC-free	0.0	0.0	0.2	0.7	1.4	1.8	2.1	2.3	2.5	2.7
0.5	FAN Centr.BC	0.0	0.0	-0.1	0.4	1.2	1.8	2.3	2.7	3.2	3.8
0.5	FAN Cross-flow	0.0	0.0	-0.3	-0.3	-0.2	-0.1	0.0	0.0	0.1	0.2
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.1</b>	<b>3.3</b>	<b>5.0</b>	<b>5.9</b>	<b>6.6</b>	<b>7.3</b>	<b>8.0</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0.0	0.0	0.7	3.2	5.4	5.5	5.1	4.5	3.5	2.2
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	0.0	0.0	1.2	5.3	9.3	9.9	9.1	7.9	6.0	3.2
0.45	Medium (L) 3-ph 75-375 kW no VSD	0.0	0.0	2.1	7.9	13.8	18.0	15.9	11.3	6.3	2.5
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>0.0</b>	<b>0.1</b>	<b>4.0</b>	<b>16.3</b>	<b>28.6</b>	<b>33.4</b>	<b>30.1</b>	<b>23.7</b>	<b>15.8</b>	<b>7.9</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0.0	0.0	-0.4	-2.4	-3.5	-3.2	-2.8	-2.3	-1.5	-0.4
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	0.0	0.0	-1.0	-3.7	-6.0	-6.0	-5.3	-4.4	-3.0	-1.1
0.45	Medium (L) 3-ph 75-375 kW with VSD	0.0	0.0	-1.5	-4.9	-8.3	-10.5	-8.8	-5.7	-2.5	-0.1
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>0.0</b>	<b>-0.1</b>	<b>-2.9</b>	<b>-11.0</b>	<b>-17.7</b>	<b>-19.7</b>	<b>-16.9</b>	<b>-12.4</b>	<b>-7.0</b>	<b>-1.6</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>0.0</b>	<b>0.0</b>	<b>1.1</b>	<b>5.4</b>	<b>10.9</b>	<b>13.7</b>	<b>13.2</b>	<b>11.3</b>	<b>8.8</b>	<b>6.3</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0	0	0	0.0	-0.2	-0.1	-0.1	-0.1	0.0	0.0
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-0.1</b>	<b>-0.2</b>	<b>-0.1</b>	<b>-0.1</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.0</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	0	0	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
0.45	Large 3-ph LV 375-1000kW with VSD	0	0	0	0.0	0.1	0.1	0.2	0.3	0.3	0.3
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Explosion motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
0.45	Explosion motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Brake motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	Brake motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0</b>	<b>-0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>4</b>
	<i>including double counted amounts</i>	<i>-</i>	<i>0</i>	<i>1</i>	<i>5</i>	<i>11</i>	<i>14</i>	<i>14</i>	<i>12</i>	<i>10</i>	<i>7</i>
	<b>Total WP Water Pumps</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.5</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>
	CP Fixed Speed 5-1280 l/s	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
	CP Variable speed 5-1280 l/s	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
	CP Pistons 2-64 l/s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>Total CP Standard Air Compressors</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>10</b>	<b>14</b>	<b>15</b>	<b>14</b>	<b>14</b>	<b>13</b>





Data for graph above:

	2030	
	ECO	saving
WATER HEATING	113	23
SPACE HEATING	324	14
SPACE COOLING	71	3
VENTILATION	124	2
LIGHTING	67	23
ELECTRONICS	316	21
FOOD PRESERVATION	53	22
COOKING	43	0
CLEANING	85	30
INDUSTRY COMPONENTS	204	14
ENERGY SECTOR	27	1
TRANSPORT SECTOR	170	-1

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db	REVENUE INDUSTRY BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	<b>1992</b>	<b>2422</b>	<b>2395</b>	<b>2577</b>	<b>2857</b>	<b>2883</b>	<b>2845</b>	<b>2806</b>	<b>2767</b>	<b>2728</b>
	<b>CH Central Heating combi, water heat</b>	<b>1445</b>	<b>2518</b>	<b>2718</b>	<b>3024</b>	<b>3114</b>	<b>3195</b>	<b>3296</b>	<b>3471</b>	<b>3647</b>	<b>3822</b>
	<b>TOTAL WATER HEATING</b>	<b>3436</b>	<b>4940</b>	<b>5113</b>	<b>5601</b>	<b>5971</b>	<b>6078</b>	<b>6140</b>	<b>6277</b>	<b>6414</b>	<b>6550</b>
	<b>CH Central Heating boiler, space heat</b>	<b>7624</b>	<b>11093</b>	<b>11859</b>	<b>12624</b>	<b>13860</b>	<b>15097</b>	<b>16334</b>	<b>17570</b>	<b>18807</b>	<b>20044</b>
	SFB Wood Manual [18 kW]	576	347	233	138	81	76	70	65	61	56
	SFB Wood Direct Draft [20 kW]	21	948	986	1050	976	1217	1425	1668	1953	2333
	SFB Coal [25 kW]	216	94	12	11	9	8	8	7	6	6
	SFB Pellets [25 kW]	0	242	376	376	376	415	458	506	559	617
	SFB Wood chips [160 kW]	0	151	151	182	212	234	258	285	314	347
	<b>Total Solid Fuel Boiler</b>	<b>813</b>	<b>1783</b>	<b>1759</b>	<b>1756</b>	<b>1654</b>	<b>1949</b>	<b>2219</b>	<b>2531</b>	<b>2893</b>	<b>3358</b>
	CHAE-S (≤ 400 kW)	228	954	1049	1158	1281	1402	1525	1644	1759	1867
	CHAE-L (> 400 kW)	51	166	171	176	184	191	199	206	213	220
	CHWE-S (≤ 400 kW)	20	85	94	103	114	125	136	147	157	166
	CHWE-M (> 400 kW; ≤ 1500 kW)	23	78	81	84	87	91	94	98	102	105
	CHWE-L (> 1500 kW)	15	50	52	54	56	59	61	63	66	68
	CHF	0	4	5	6	7	8	9	10	11	12
	HT PCH-AE-S	112	182	195	206	215	224	233	242	250	259
	HT PCH-AE-L	90	146	156	165	172	179	186	193	200	207
	HT PCH-WE-S	25	40	43	45	47	49	51	53	55	57
	HT PCH-WE-M	97	158	169	178	186	194	201	209	216	224
	HT PCH-WE-L	18	30	32	33	35	36	38	39	40	42
	AC rooftop	105	341	344	263	153	40	40	40	40	40
	AC splits	180	656	685	662	638	613	590	567	544	521
	AC VRF	1	1502	1961	2856	3612	4360	5072	5727	6275	6672
	ACF	0	4	5	6	7	8	9	10	11	12
	<b>SubTotal AHC Air Cooling</b>	<b>963</b>	<b>4393</b>	<b>5040</b>	<b>5996</b>	<b>6794</b>	<b>7580</b>	<b>8444</b>	<b>9248</b>	<b>9941</b>	<b>10474</b>
	AC rooftop (rev)	64	209	201	162	90	23	0	0	0	0
	AC splits (rev)	121	420	439	425	410	394	379	364	350	335
	AC VRF (rev)	1	1282	1592	2438	2963	3403	3766	4046	4218	4268
	ACF (rev)	0	8	11	13	15	18	21	23	25	27
	AHF	357	234	219	206	196	184	173	163	152	141
	AHE	1	2	2	2	2	2	2	2	2	2
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>544</b>	<b>2155</b>	<b>2465</b>	<b>3245</b>	<b>3676</b>	<b>4024</b>	<b>4341</b>	<b>4598</b>	<b>4747</b>	<b>4772</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>1321</b>	<b>4630</b>	<b>5263</b>	<b>6206</b>	<b>6993</b>	<b>7768</b>	<b>8621</b>	<b>9415</b>	<b>10097</b>	<b>10620</b>
	LH open fireplace [8 kW]	689	1005	1012	1019	1012	1005	1004	1004	1004	1004
	LH closed fireplace/inset [8 kW]	435	1179	1315	1452	1471	1489	1493	1493	1493	1493
	LH wood stove [8 kW]	471	555	615	675	684	693	695	695	695	695
	LH coal stove [8 kW]	143	111	102	92	69	46	42	42	42	42
	LH cooker [10 kW]	402	807	975	1142	1171	1200	1206	1206	1206	1206
	LH SHR stove [8 kW]	437	609	757	904	1011	1117	1139	1139	1139	1139
	LH pellet stove [8 kW]	0	454	572	690	740	789	799	799	799	799
	LH open fire gas, NCV [4.2 kW]	26	38	42	46	46	46	46	46	46	46
	LH closed fire gas, NCV [4.2 kW]	127	143	147	151	155	159	160	160	160	160
	LH flueless fuel heater, NCV [1.5 kW]	47	93	89	84	75	65	64	64	64	64
	LH elec.portable [1 kW]	109	133	137	142	148	154	156	156	156	156
	LH elec.convectoor [1 kW]	800	976	1007	1038	1084	1131	1141	1141	1141	1141
	LH elec.storage [2.75 kW]	91	112	115	119	124	129	131	131	131	131
	LH elec.underfloor [0.62 kW]	166	202	209	215	225	235	237	237	237	237
	LH luminous heaters [20 kW]	18	22	22	22	22	22	22	22	22	22
	LH tube heaters [30 kW]	18	22	22	22	22	22	22	22	22	22
	<b>LH total</b>	<b>3979</b>	<b>6459</b>	<b>7136</b>	<b>7812</b>	<b>8058</b>	<b>8304</b>	<b>8354</b>	<b>8354</b>	<b>8354</b>	<b>8354</b>
	RAC (cooling demand), all types <12 kW	169	1553	2226	2788	3038	3069	3069	3120	3171	3223
	RAC (heating demand), reversible <12kW	47	1152	1962	2465	2690	2719	2721	2769	2817	2864
	<b>Total Room Air Conditioner</b>	<b>217</b>	<b>2705</b>	<b>4188</b>	<b>5254</b>	<b>5728</b>	<b>5788</b>	<b>5790</b>	<b>5889</b>	<b>5988</b>	<b>6087</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>856</b>	<b>1262</b>	<b>1337</b>	<b>1419</b>	<b>1501</b>	<b>1485</b>	<b>1403</b>	<b>1321</b>	<b>1238</b>	<b>1156</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>13007</b>	<b>22643</b>	<b>25181</b>	<b>27903</b>	<b>29938</b>	<b>32093</b>	<b>33969</b>	<b>35823</b>	<b>37618</b>	<b>39393</b>
	<b>TOTAL SPACE COOLING</b>	<b>1132</b>	<b>5946</b>	<b>7266</b>	<b>8785</b>	<b>9833</b>	<b>10649</b>	<b>11513</b>	<b>12368</b>	<b>13112</b>	<b>13697</b>
	NRVU avg (sales wt.)	10941	25598	26777	28230	29790	31351	32911	34472	36032	37592
	RVU Central Unidir. VU (1 fan)	505	1133	975	889	932	973	1029	1097	1165	1233
	RVU Central Balanced VU (2 fans)	57	397	966	1240	1394	1547	1700	1854	2007	2161
	RVU Local Balanced VU (2 fans)	4	52	114	185	259	334	409	484	558	633
	<b>TOTAL VENTILATION</b>	<b>11507</b>	<b>27179</b>	<b>28831</b>	<b>30543</b>	<b>32376</b>	<b>34205</b>	<b>36050</b>	<b>37906</b>	<b>39763</b>	<b>41619</b>
	LFL (T12,T8h,T8t,T5,other)	1803	2590	2328	1756	1208	886	738	581	448	343
	HID (HPM, HPS, MH)	296	849	755	521	402	222	110	56	29	15
	CFLni (all shapes)	47	175	153	147	119	59	31	18	8	5
	CFLi (retrofit for GLS, HL)	55	703	456	545	325	242	131	90	56	36
	GLS (DLS & NDLS)	574	460	386	266	157	92	54	31	18	11
	HL (DLS & NDLS, LV & MV)	111	856	1061	1079	666	344	182	99	56	33
	LED replacing LFL (retrofit & luminaire)	0	4	442	1610	2181	2917	3201	3719	4471	5268
	LED replacing HID (retrofit & luminaire)	0	0	137	839	973	1231	1469	1755	2035	2323
	LED replacing CFLni (retrofit & luminaire)	0	0	27	103	163	207	235	266	290	315
	LED replacing DLS (retrofit & luminaire)	0	0	101	304	343	204	144	118	108	105
	LED replacing NDLS (retrofit & luminaire)	0	40	249	1692	1358	924	713	579	498	468
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	2886	5633	5139	4315	2877	1844	1245	875	615	443
	SUBTOTAL LED	0	43	956	4549	5019	5484	5760	6437	7402	8480
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>2886</b>	<b>5676</b>	<b>6094</b>	<b>8863</b>	<b>7896</b>	<b>7328</b>	<b>7006</b>	<b>7311</b>	<b>8017</b>	<b>8923</b>



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db	REVENUE INDUSTRY BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	DP TV all types	8267	13236	7512	9301	10731	12341	12520	12520	12520	12520
	DP Monitor	1000	2125	1190	1190	1190	1190	1190	1190	1190	1190
	DP Signage	0	198	866	1980	1485	1485	1485	1485	1485	1485
	<b>DP Electronic Displays, total</b>	<b>9267</b>	<b>15559</b>	<b>9568</b>	<b>12471</b>	<b>13407</b>	<b>15016</b>	<b>15195</b>	<b>15195</b>	<b>15195</b>	<b>15195</b>
	SSTB	0	787	178	0	0	0	0	0	0	0
	CSTB	0	2963	3631	3912	3957	3858	4191	4525	4859	5192
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>3751</b>	<b>3809</b>	<b>3912</b>	<b>3957</b>	<b>3858</b>	<b>4191</b>	<b>4525</b>	<b>4859</b>	<b>5192</b>
	VIDEO players/recorders	2	1519	1309	172	0	0	0	0	0	0
	VIDEO projectors	25	1751	1486	605	261	0	0	0	0	0
	VIDEO game consoles	0	2714	2294	1759	2083	2083	2083	2083	2083	2083
	<b>Total VIDEO</b>	<b>27</b>	<b>5985</b>	<b>5089</b>	<b>2535</b>	<b>2344</b>	<b>2083</b>	<b>2083</b>	<b>2083</b>	<b>2083</b>	<b>2083</b>
	ES tower 1-socket traditional	10	267	278	238	205	176	176	176	176	176
	ES rack 1-socket traditional	21	559	543	571	600	630	630	630	630	630
	ES rack 2-socket traditional	209	3219	1461	1777	2162	2630	2630	2630	2630	2630
	ES rack 2-socket cloud	0	3055	4586	5580	6789	8260	8260	8260	8260	8260
	ES rack 4-socket traditional	110	1687	716	871	1060	1289	1289	1289	1289	1289
	ES rack 4-socket cloud	0	1415	1987	2417	2941	3578	3578	3578	3578	3578
	ES rack 2-socket resilient trad.	41	623	287	349	425	517	517	517	517	517
	ES rack 2-socket resilient cloud	0	456	695	846	1029	1252	1252	1252	1252	1252
	ES rack 4-socket resilient trad.	2	36	17	20	25	30	30	30	30	30
	ES rack 4-socket resilient cloud	0	26	40	49	60	73	73	73	73	73
	ES blade 1-socket traditional	6	63	59	62	66	69	69	69	69	69
	ES blade 2-socket traditional	160	1044	458	557	677	824	824	824	824	824
	ES blade 2-socket cloud	0	991	1437	1748	2127	2588	2588	2588	2588	2588
	ES blade 4-socket traditional	18	116	49	60	73	88	88	88	88	88
	ES blade 4-socket cloud	0	96	135	164	199	243	243	243	243	243
	<b>ES total traditional</b>	<b>577</b>	<b>7614</b>	<b>3867</b>	<b>4505</b>	<b>5291</b>	<b>6254</b>	<b>6254</b>	<b>6254</b>	<b>6254</b>	<b>6254</b>
	<b>ES total cloud</b>	<b>0</b>	<b>6040</b>	<b>8881</b>	<b>10805</b>	<b>13145</b>	<b>15993</b>	<b>15993</b>	<b>15993</b>	<b>15993</b>	<b>15993</b>
	<b>ES Enterprise Servers total</b>	<b>577</b>	<b>13654</b>	<b>12747</b>	<b>15310</b>	<b>18437</b>	<b>22248</b>	<b>22248</b>	<b>22248</b>	<b>22248</b>	<b>22248</b>
	DS Online 2	265	6106	5652	6179	6822	7532	7532	7532	7532	7532
	DS Online 3	464	9514	6789	7422	8195	9047	9047	9047	9047	9047
	DS Online 4	318	6253	5667	6196	6840	7552	7552	7552	7552	7552
	<b>DS Data Storage products total</b>	<b>1047</b>	<b>21874</b>	<b>18108</b>	<b>19797</b>	<b>21857</b>	<b>24132</b>	<b>24132</b>	<b>24132</b>	<b>24132</b>	<b>24132</b>
	<b>ES + DS total</b>	<b>1624</b>	<b>35528</b>	<b>30855</b>	<b>35107</b>	<b>40294</b>	<b>46380</b>	<b>46380</b>	<b>46380</b>	<b>46380</b>	<b>46380</b>
	PC Desktop	1452	4840	3612	3284	3284	3284	3284	3284	3284	3284
	PC Notebook	153	11033	5057	4750	4750	4750	4750	4750	4750	4750
	PC Tablet/slate	0	737	11647	18926	24458	29117	30573	32029	33485	34941
	PC Thin client	24	287	287	287	287	287	287	287	287	287
	PC Workstation	124	1237	1237	1237	1237	1237	1237	1237	1237	1237
	<b>Total PC, electricity</b>	<b>1753</b>	<b>18133</b>	<b>21839</b>	<b>28484</b>	<b>34016</b>	<b>38675</b>	<b>40131</b>	<b>41586</b>	<b>43042</b>	<b>44498</b>
	EP-Copier mono	2633	1057	633	268	197	127	56	0	0	0
	EP-Copier colour	0	353	1538	2306	2629	2864	3098	3333	3568	3802
	EP-printer mono	529	501	439	358	307	273	236	198	161	124
	EP-printer colour	0	485	719	968	1161	1348	1535	1723	1910	2097
	IJ SFD printer	271	431	301	212	156	134	106	78	50	22
	IJ MFD printer	333	1079	1480	1709	1877	2044	2212	2380	2547	2715
	<b>Total imaging equipment, electricity</b>	<b>3767</b>	<b>3907</b>	<b>5110</b>	<b>5822</b>	<b>6327</b>	<b>6790</b>	<b>7244</b>	<b>7712</b>	<b>8236</b>	<b>8760</b>
	SB Home Gateway, on-mode power	0	3227	4161	5095	6028	6962	7896	8830	9763	10697
	SB Home NAS, on-mode power	0	324	556	787	1019	1250	1482	1713	1945	2176
	SB Home Phones (fixed), on-mode power	201	1002	1202	1282	1282	1282	1282	1282	1282	1282
	SB Office Phones (fixed), on-mode power	316	605	643	682	721	760	798	837	876	915
	<b>Total SB (networked) StandBy (rest)</b>	<b>518</b>	<b>5158</b>	<b>6562</b>	<b>7846</b>	<b>9050</b>	<b>10254</b>	<b>11458</b>	<b>12662</b>	<b>13866</b>	<b>15070</b>
db											
0.0	EPS ≤ 6W, low-V	12	146	103	70	51	26	12	5	2	1
0.3	EPS 6–10 W	64	869	934	991	1038	1091	1118	1147	1176	1205
0.6	EPS 10–12 W	0	718	853	914	922	928	934	940	945	951
0.5	EPS 15–20 W	0	3	19	36	40	45	47	50	52	55
1.0	EPS 20–30 W	2	103	106	97	93	88	81	74	67	60
0.8	EPS 30–65 W, multiple-V	0	0	0	14	21	29	38	48	57	66
1.0	EPS 30-65 W	0	0	0	16	40	69	69	69	69	69
1.0	EPS 65–120 W	2	79	76	58	32	1	0	0	0	0
0.5	EPS 65–120 W, multiple-V	0	475	171	50	51	51	51	51	51	51
0.0	EPS 12–15 W	2	78	158	191	192	194	194	194	194	194
	<b>EPS, total for active mode</b>	<b>81</b>	<b>2471</b>	<b>2420</b>	<b>2437</b>	<b>2481</b>	<b>2521</b>	<b>2544</b>	<b>2576</b>	<b>2613</b>	<b>2652</b>
	<b>EPS, double counted subtracted</b>	<b>56</b>	<b>1362</b>	<b>1357</b>	<b>1373</b>	<b>1395</b>	<b>1415</b>	<b>1424</b>	<b>1443</b>	<b>1465</b>	<b>1490</b>
	UPS below 1.5 kVA	49	97	101	123	145	166	186	204	217	226
	UPS 1.5 to 5 kVA	92	182	189	230	270	310	348	380	405	422
	UPS 5 to 10 kVA	32	63	66	80	94	108	121	132	141	147
	UPS 10 to 200 kVA	135	268	279	339	399	459	514	562	599	624
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>308</b>	<b>610</b>	<b>635</b>	<b>772</b>	<b>908</b>	<b>1043</b>	<b>1168</b>	<b>1277</b>	<b>1363</b>	<b>1418</b>
	<b>TOTAL ELECTRONICS</b>	<b>17320</b>	<b>89991</b>	<b>84825</b>	<b>98321</b>	<b>111699</b>	<b>125513</b>	<b>129275</b>	<b>132863</b>	<b>136489</b>	<b>140087</b>
	<b>RF Household refrigerator and freezer</b>	<b>3315</b>	<b>3618</b>	<b>3675</b>	<b>3732</b>	<b>3789</b>	<b>3846</b>	<b>3902</b>	<b>3959</b>	<b>4016</b>	<b>4073</b>
	CF open vertical chilled multi deck (RVC2)	217	237	235	239	243	246	250	254	258	262
	CF open horizontal frozen island (RHF4)	26	28	28	28	29	29	30	30	31	31
	CF other supermarket display (non-BCs)	500	592	625	649	673	697	722	747	773	800
	CF Plug in one door beverage cooler	424	516	514	532	550	569	588	607	627	648
	CF Plug in horizontal ice cream freezer	175	213	212	220	227	235	243	251	259	268
	CF Spiral vending machine	279	211	172	178	185	192	200	207	215	224
	<b>Total CF Commercial Refrigeration</b>	<b>1620</b>	<b>1798</b>	<b>1786</b>	<b>1846</b>	<b>1908</b>	<b>1969</b>	<b>2032</b>	<b>2097</b>	<b>2164</b>	<b>2233</b>

db	REVENUE INDUSTRY BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Storage cabinet Chilled Vertical (CV)	159	206	216	224	234	245	256	267	277	288
	PF Storage cabinet Frozen Vertical (FV)	83	108	113	117	123	128	134	140	145	151
	PF Storage cabinet Chilled Horizontal (CH)	33	42	44	46	48	50	53	55	57	59
	PF Storage cabinet Frozen Horizontal (FH)	25	32	34	35	37	38	40	42	43	45
	<b>PF Storage cabinets All types</b>	<b>300</b>	<b>389</b>	<b>407</b>	<b>422</b>	<b>442</b>	<b>462</b>	<b>482</b>	<b>503</b>	<b>523</b>	<b>543</b>
	PF Process Chiller AC MT S ≤ 300 kW	23	46	51	56	62	67	73	79	85	91
	PF Process Chiller AC MT L > 300 kW	22	44	48	53	58	64	70	75	81	86
	PF Process Chiller AC LT S ≤ 200 kW	18	37	41	45	50	55	59	64	69	73
	PF Process Chiller AC LT L > 200 kW	17	35	39	43	47	52	56	60	65	69
	PF Process Chiller WC MT S ≤ 300 kW	10	21	23	25	28	30	33	35	38	41
	PF Process Chiller WC MT L > 300 kW	15	31	34	37	41	45	49	53	57	61
	PF Process Chiller WC LT S ≤ 200 kW	10	20	22	24	27	29	32	34	37	39
	PF Process Chiller WC LT L > 200 kW	12	25	27	30	33	37	40	43	46	49
	<b>PF Process Chiller All MT&amp;LT</b>	<b>128</b>	<b>258</b>	<b>285</b>	<b>313</b>	<b>346</b>	<b>379</b>	<b>411</b>	<b>444</b>	<b>476</b>	<b>509</b>
	PF Condensing Unit MT S 0.2-1 kW	123	98	100	108	116	125	135	145	157	169
	PF Condensing Unit MT M 1-5 kW	266	212	216	233	251	270	291	314	338	364
	PF Condensing Unit MT L 5-20 kW	273	218	222	240	258	278	299	323	348	374
	PF Condensing Unit MT XL 20-50 kW	209	167	170	183	198	213	229	247	266	287
	PF Condensing Unit LT S 0.1-0.4 kW	21	17	17	19	20	22	23	25	27	29
	PF Condensing Unit LT M 0.4-2 kW	38	30	31	33	36	38	41	45	48	52
	PF Condensing Unit LT L 2-8 kW	102	81	83	89	96	103	111	120	129	139
	PF Condensing Unit LT XL 8-20 kW	89	71	72	78	84	90	97	105	113	121
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1120</b>	<b>892</b>	<b>912</b>	<b>982</b>	<b>1058</b>	<b>1140</b>	<b>1228</b>	<b>1323</b>	<b>1425</b>	<b>1536</b>
	<b>PF Professional Refrigeration, Total</b>	<b>876</b>	<b>1004</b>	<b>1056</b>	<b>1128</b>	<b>1211</b>	<b>1297</b>	<b>1385</b>	<b>1476</b>	<b>1570</b>	<b>1667</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>5811</b>	<b>6420</b>	<b>6517</b>	<b>6706</b>	<b>6908</b>	<b>7111</b>	<b>7319</b>	<b>7532</b>	<b>7749</b>	<b>7973</b>
	COOK El. Hobs, Wh/ltr	1007	2290	2455	2650	2795	2927	3051	3167	3276	3378
	COOK El. Ovens, kWh/a	2356	2799	2951	3202	3097	3120	3159	3199	3239	3280
	COOK Gas Hobs, % efficiency NCV	960	829	756	688	636	605	575	544	514	483
	COOK Gas Ovens, kWh prim, NCV	321	328	312	303	294	286	277	268	259	251
	COOK Range Hoods, kWh elec	572	699	735	772	812	853	895	936	977	1019
	<b>Total CA Cooking Appliances</b>	<b>5216</b>	<b>6945</b>	<b>7209</b>	<b>7616</b>	<b>7634</b>	<b>7791</b>	<b>7956</b>	<b>8114</b>	<b>8266</b>	<b>8410</b>
	COFFEE Dripfilter (glass)	162	113	96	79	77	77	77	77	77	77
	COFFEE Dripfilter (thermos)	31	49	50	51	51	52	53	53	54	54
	COFFEE Dripfilter (full automatic)	0	82	92	103	114	125	135	146	157	168
	COFFEE Pad filter	0	189	206	224	242	259	277	295	312	330
	COFFEE Hard cap espresso	23	99	211	317	332	332	332	332	332	332
	COFFEE Semi-auto espresso	26	30	28	26	25	23	21	19	18	16
	COFFEE Fully-auto espresso	152	173	201	229	257	285	312	340	368	396
	<b>Total CM household Coffee Makers</b>	<b>394</b>	<b>734</b>	<b>885</b>	<b>1030</b>	<b>1098</b>	<b>1153</b>	<b>1208</b>	<b>1262</b>	<b>1317</b>	<b>1372</b>
	<b>TOTAL COOKING</b>	<b>5611</b>	<b>7679</b>	<b>8094</b>	<b>8646</b>	<b>8732</b>	<b>8943</b>	<b>9164</b>	<b>9377</b>	<b>9583</b>	<b>9782</b>
	<b>WM Household Washing Machine</b>	<b>1785</b>	<b>2598</b>	<b>2598</b>	<b>2793</b>	<b>2681</b>	<b>2681</b>	<b>2681</b>	<b>2681</b>	<b>2681</b>	<b>2681</b>
	<b>DW Household Dishwasher</b>	<b>776</b>	<b>1699</b>	<b>1969</b>	<b>2240</b>	<b>2511</b>	<b>2782</b>	<b>3053</b>	<b>3323</b>	<b>3594</b>	<b>3865</b>
	LD Household Laundry Drier vented el.	366	370	349	311	317	320	321	323	325	326
	LD Household Laundry Drier condens el.	207	776	908	1019	1040	1049	1055	1060	1066	1072
	LD Household Laundry Drier vented gas	3	6	8	9	9	9	10	10	10	10
	<b>Total LD household Laundry Drier</b>	<b>576</b>	<b>1152</b>	<b>1264</b>	<b>1339</b>	<b>1366</b>	<b>1378</b>	<b>1385</b>	<b>1393</b>	<b>1401</b>	<b>1409</b>
	VC dom. Vacuum Cleaner	1719	5090	7139	8686	9590	10494	11398	12302	13206	14110
	VC nondom Vacuum Cleaner	527	543	571	600	630	661	691	722	753	783
	<b>Total VC Vacuum Cleaner</b>	<b>2246</b>	<b>5633</b>	<b>7710</b>	<b>9286</b>	<b>10220</b>	<b>11155</b>	<b>12090</b>	<b>13024</b>	<b>13959</b>	<b>14893</b>
	<b>TOTAL CLEANING</b>	<b>5384</b>	<b>11082</b>	<b>13541</b>	<b>15658</b>	<b>16779</b>	<b>17996</b>	<b>19209</b>	<b>20422</b>	<b>21635</b>	<b>22848</b>
0.5	FAN Axial<300Pa [247 W flow out]	261	856	983	1110	1110	1110	1110	1110	1110	1110
0.5	FAN Axial>300Pa [489 W fluid-dyn out]	360	1246	1315	1383	1383	1383	1383	1383	1383	1383
0.5	FAN Centr.FC [141 W flow out]	224	568	656	743	743	743	743	743	743	743
0.5	FAN Centr.BC-free [2120 W flow out]	128	312	354	397	440	448	457	465	474	482
0.5	FAN Centr.BC [2052 W flow out]	280	743	852	960	1068	1090	1198	1307	1415	1523
0.5	FAN Cross-flow [31 W flow out]	52	115	131	147	163	166	182	198	214	230
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>652</b>	<b>1921</b>	<b>2145</b>	<b>2370</b>	<b>2454</b>	<b>2470</b>	<b>2537</b>	<b>2603</b>	<b>2670</b>	<b>2736</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	354	568	573	565	542	515	484	449	418	382
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	210	329	329	321	304	284	261	234	202	183
0.45	Medium (L) 3-ph 75-375 kW no VSD	164	241	235	222	201	176	147	115	113	115
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>728</b>	<b>1138</b>	<b>1138</b>	<b>1108</b>	<b>1047</b>	<b>975</b>	<b>893</b>	<b>798</b>	<b>733</b>	<b>680</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	139	408	486	561	636	725	846	986	1156	1358
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	103	302	360	416	472	539	629	734	857	955
0.45	Medium (L) 3-ph 75-375 kW with VSD	78	230	274	318	362	413	481	560	573	586
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>321</b>	<b>940</b>	<b>1120</b>	<b>1295</b>	<b>1469</b>	<b>1677</b>	<b>1955</b>	<b>2280</b>	<b>2586</b>	<b>2899</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>1049</b>	<b>2078</b>	<b>2258</b>	<b>2404</b>	<b>2516</b>	<b>2652</b>	<b>2848</b>	<b>3078</b>	<b>3319</b>	<b>3579</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	225	426	444	443	441	439	436	432	428	423
0.45	Small 1 ph 0.12-0.75 kW with VSD	36	292	351	368	391	415	441	468	498	528
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>261</b>	<b>718</b>	<b>795</b>	<b>811</b>	<b>832</b>	<b>854</b>	<b>877</b>	<b>901</b>	<b>926</b>	<b>952</b>

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db	REVENUE INDUSTRY BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	Small 3 ph 0.12-0.75 kW no VSD	124	209	218	219	218	216	213	211	207	204
0.45	Small 3 ph 0.12-0.75 kW with VSD	13	108	132	144	158	174	191	210	231	254
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>137</b>	<b>317</b>	<b>350</b>	<b>364</b>	<b>376</b>	<b>390</b>	<b>405</b>	<b>421</b>	<b>439</b>	<b>458</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	75	95	84	82	82	82	79	76	73	70
0.45	Large 3-ph LV 375-1000kW with VSD	27	160	220	242	255	268	279	291	303	316
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>102</b>	<b>256</b>	<b>304</b>	<b>324</b>	<b>337</b>	<b>350</b>	<b>358</b>	<b>366</b>	<b>376</b>	<b>385</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	22	39	40	41	41	41	41	41	42	43
0.45	Explosion motors (M) 3-ph 7.5-75 kW	20	35	36	37	37	37	37	37	37	38
0.45	Explosion motors (L) 3-ph 75-375 kW	15	26	27	28	28	28	28	28	28	28
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>57</b>	<b>99</b>	<b>103</b>	<b>106</b>	<b>106</b>	<b>106</b>	<b>106</b>	<b>106</b>	<b>107</b>	<b>109</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	28	48	50	51	51	51	51	51	52	53
0.45	Brake motors (M) 3-ph 7.5-75 kW	25	43	45	46	46	47	47	47	47	48
0.45	Brake motors (L) 3-ph 75-375 kW	19	32	34	35	35	35	35	35	35	35
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>71</b>	<b>124</b>	<b>129</b>	<b>132</b>	<b>132</b>	<b>133</b>	<b>133</b>	<b>133</b>	<b>134</b>	<b>136</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	2	2	2	2	2	2	2	2	3
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	2	2	2	2	2	2	2	2	2
0.45	8-pole motors (L) 3-ph 75-375 kW	1	1	1	1	2	2	2	2	2	2
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>3</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>512</b>	<b>890</b>	<b>925</b>	<b>943</b>	<b>943</b>	<b>942</b>	<b>940</b>	<b>938</b>	<b>956</b>	<b>980</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>1206</b>	<b>2468</b>	<b>2678</b>	<b>2799</b>	<b>2886</b>	<b>2987</b>	<b>3120</b>	<b>3272</b>	<b>3444</b>	<b>3633</b>
	<b>WP Water pumps</b>	<b>875</b>	<b>1189</b>	<b>1278</b>	<b>1374</b>	<b>1477</b>	<b>1580</b>	<b>1683</b>	<b>1786</b>	<b>1889</b>	<b>1992</b>
	CP Fixed Speed 5-1280 l/s	413	365	344	360	378	396	412	429	447	465
	CP Variable speed 5-1280 l/s	0	156	234	255	268	280	291	302	314	326
	CP Pistons 2-64 l/s	84	92	100	109	117	125	133	141	149	157
	<b>Total CP Standard Air Compressors</b>	<b>497</b>	<b>612</b>	<b>679</b>	<b>724</b>	<b>764</b>	<b>801</b>	<b>836</b>	<b>872</b>	<b>909</b>	<b>948</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>3230</b>	<b>6189</b>	<b>6781</b>	<b>7267</b>	<b>7580</b>	<b>7839</b>	<b>8175</b>	<b>8532</b>	<b>8911</b>	<b>9309</b>
	TRAF0 Distribution, kWh/a	406	638	685	736	791	849	909	969	1029	1089
	TRAF0 Industry oil	211	341	366	393	422	453	485	517	550	582
	TRAF0 Industry dry	100	160	172	184	197	212	226	241	255	270
	TRAF0 Power	1630	2614	2811	3023	3250	3495	3747	3998	4250	4502
	TRAF0 DER oil	0	19	31	51	84	138	204	270	335	401
	TRAF0 DER dry	0	115	189	313	516	853	1259	1666	2073	2479
	TRAF0 Small	46	46	46	46	46	46	46	46	46	46
	<b>TOTAL ENERGY SECTOR</b>	<b>2393</b>	<b>3933</b>	<b>4300</b>	<b>4745</b>	<b>5306</b>	<b>6045</b>	<b>6876</b>	<b>7707</b>	<b>8538</b>	<b>9369</b>
	Tyres C1, replacement for cars	5882	7890	8736	9907	11211	12661	12661	12661	12661	12661
	Tyres C1, OEM for cars	1771	2358	2788	2983	3376	3813	3813	3813	3813	3813
	<b>Tyres C1, total</b>	<b>7653</b>	<b>10248</b>	<b>11524</b>	<b>12890</b>	<b>14587</b>	<b>16474</b>	<b>16474</b>	<b>16474</b>	<b>16474</b>	<b>16474</b>
	Tyres C2, replacement for vans	1021	1292	1296	1454	1630	1825	1825	1825	1825	1825
	Tyres C2, OEM for vans	215	232	291	307	344	385	385	385	385	385
	<b>Tyres C2, total</b>	<b>1236</b>	<b>1523</b>	<b>1587</b>	<b>1760</b>	<b>1974</b>	<b>2210</b>	<b>2210</b>	<b>2210</b>	<b>2210</b>	<b>2210</b>
	Tyres C3, replacement for trucks/busses	1788	1756	2127	2703	3099	3550	3550	3550	3550	3550
	Tyres C3, OEM for trucks/busses	498	413	580	753	864	989	989	989	989	989
	<b>Tyres C3, total</b>	<b>2286</b>	<b>2170</b>	<b>2707</b>	<b>3457</b>	<b>3963</b>	<b>4539</b>	<b>4539</b>	<b>4539</b>	<b>4539</b>	<b>4539</b>
	<b>Tyres, total C1+C2+C3</b>	<b>11175</b>	<b>13941</b>	<b>15818</b>	<b>18107</b>	<b>20525</b>	<b>23223</b>	<b>23223</b>	<b>23223</b>	<b>23223</b>	<b>23223</b>
	<b>TRANSPORT SECTOR</b>	<b>11175</b>	<b>13941</b>	<b>15818</b>	<b>18107</b>	<b>20525</b>	<b>23223</b>	<b>23223</b>	<b>23223</b>	<b>23223</b>	<b>23223</b>
	<b>GENERAL TOTAL (in m euro 2015)</b>	<b>82893</b>	<b>205620</b>	<b>212360</b>	<b>241145</b>	<b>263542</b>	<b>287023</b>	<b>297919</b>	<b>309343</b>	<b>321054</b>	<b>332774</b>
	GENERAL TOTAL (in bn euro 2015)	83	206	212	241	264	287	298	309	321	333
	<b>SUMMARY BAU</b>										
	<b>Industry revenue (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>3.4</b>	<b>4.9</b>	<b>5.1</b>	<b>5.6</b>	<b>6.0</b>	<b>6.1</b>	<b>6.1</b>	<b>6.3</b>	<b>6.4</b>	<b>6.6</b>
	<b>SPACE HEATING</b>	<b>13.0</b>	<b>22.6</b>	<b>25.2</b>	<b>27.9</b>	<b>29.9</b>	<b>32.1</b>	<b>34.0</b>	<b>35.8</b>	<b>37.6</b>	<b>39.4</b>
	<b>SPACE COOLING</b>	<b>1.1</b>	<b>5.9</b>	<b>7.3</b>	<b>8.8</b>	<b>9.8</b>	<b>10.6</b>	<b>11.5</b>	<b>12.4</b>	<b>13.1</b>	<b>13.7</b>
	<b>VENTILATION</b>	<b>11.5</b>	<b>27.2</b>	<b>28.8</b>	<b>30.5</b>	<b>32.4</b>	<b>34.2</b>	<b>36.0</b>	<b>37.9</b>	<b>39.8</b>	<b>41.6</b>
	<b>LIGHTING</b>	<b>2.9</b>	<b>5.7</b>	<b>6.1</b>	<b>6.9</b>	<b>7.9</b>	<b>7.3</b>	<b>7.0</b>	<b>7.3</b>	<b>8.0</b>	<b>8.9</b>
	<b>ELECTRONICS</b>	<b>17.3</b>	<b>90.0</b>	<b>84.8</b>	<b>98.3</b>	<b>111.7</b>	<b>125.5</b>	<b>129.3</b>	<b>132.9</b>	<b>136.5</b>	<b>140.1</b>
	<b>FOOD PRESERVATION</b>	<b>5.8</b>	<b>6.4</b>	<b>6.5</b>	<b>6.7</b>	<b>6.9</b>	<b>7.1</b>	<b>7.3</b>	<b>7.5</b>	<b>7.7</b>	<b>8.0</b>
	<b>COOKING</b>	<b>5.6</b>	<b>7.7</b>	<b>8.1</b>	<b>8.6</b>	<b>8.7</b>	<b>8.9</b>	<b>9.2</b>	<b>9.4</b>	<b>9.6</b>	<b>9.8</b>
	<b>CLEANING</b>	<b>5.4</b>	<b>11.1</b>	<b>13.5</b>	<b>15.7</b>	<b>16.8</b>	<b>18.0</b>	<b>19.2</b>	<b>20.4</b>	<b>21.6</b>	<b>22.8</b>
	<b>INDUSTRY COMPONENTS</b>	<b>3.2</b>	<b>6.2</b>	<b>6.8</b>	<b>7.3</b>	<b>7.6</b>	<b>7.8</b>	<b>8.2</b>	<b>8.5</b>	<b>8.9</b>	<b>9.3</b>
	<b>ENERGY SECTOR</b>	<b>2.4</b>	<b>3.9</b>	<b>4.3</b>	<b>4.7</b>	<b>5.3</b>	<b>6.0</b>	<b>6.9</b>	<b>7.7</b>	<b>8.5</b>	<b>9.4</b>
	<b>TRANSPORT SECTOR</b>	<b>11.2</b>	<b>13.9</b>	<b>15.8</b>	<b>18.1</b>	<b>20.5</b>	<b>23.2</b>	<b>23.2</b>	<b>23.2</b>	<b>23.2</b>	<b>23.2</b>
	<b>TOTAL in bn euro 2015</b>	<b>83</b>	<b>206</b>	<b>212</b>	<b>241</b>	<b>264</b>	<b>287</b>	<b>298</b>	<b>309</b>	<b>321</b>	<b>333</b>
	<u>Revenues for VSDs only (without motor, m euros)</u>										
	VSD - Very Small 0.12 - 0.75 kW 1-phase	31	244	292	305	324	344	366	390	415	442
	VSD - Very Small 0.12 - 0.75 kW 3-phase	10	80	98	106	117	129	142	157	174	192
	VSD - Small 0.75 - 7.5 kW 3-phase	100	292	348	400	452	515	605	710	834	979
	VSD - Medium 7.5 - 75kW 3-phase	72	209	249	287	324	369	433	508	597	666
	VSD - Large 75 - 375kW 3-phase	41	118	141	162	183	209	245	288	297	305
	VSD - Very Large 375 - 1,000kW 3-phase	18	103	140	152	160	168	177	186	196	206
	<b>Total revenues, VSDs only (BAU)</b>	<b>272</b>	<b>1047</b>	<b>1267</b>	<b>1413</b>	<b>1559</b>	<b>1734</b>	<b>1968</b>	<b>2239</b>	<b>2512</b>	<b>2789</b>

db	REVENUE INDUSTRY ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	<b>1992</b>	<b>2422</b>	<b>3887</b>	<b>4473</b>	<b>5147</b>	<b>5081</b>	<b>5015</b>	<b>4947</b>	<b>4878</b>	<b>4809</b>
	<b>CH Central Heating combi, water heat</b>	<b>1445</b>	<b>2518</b>	<b>3854</b>	<b>5479</b>	<b>5972</b>	<b>6467</b>	<b>6961</b>	<b>7453</b>	<b>7941</b>	<b>8425</b>
	<b>TOTAL WATER HEATING</b>	<b>3436</b>	<b>4940</b>	<b>7741</b>	<b>9953</b>	<b>11119</b>	<b>11548</b>	<b>11975</b>	<b>12400</b>	<b>12819</b>	<b>13234</b>
	<b>CH Central Heating boiler, space heat</b>	<b>7624</b>	<b>11508</b>	<b>20263</b>	<b>26016</b>	<b>32638</b>	<b>37262</b>	<b>42502</b>	<b>48063</b>	<b>53945</b>	<b>60148</b>
	SFB Wood Manual [18 kW]	576	347	313	245	140	123	107	94	82	72
	SFB Wood Direct Draft [20 kW]	21	948	989	1065	1159	1357	1589	1861	2179	2552
	SFB Coal [25 kW]	216	94	12	11	9	8	8	7	6	6
	SFB Pellets [25 kW]	0	242	376	376	391	416	458	506	559	617
	SFB Wood chips [160 kW]	0	151	158	194	216	234	258	285	314	347
	<b>Total Solid Fuel Boiler</b>	<b>813</b>	<b>1783</b>	<b>1849</b>	<b>1890</b>	<b>1916</b>	<b>2138</b>	<b>2420</b>	<b>2752</b>	<b>3140</b>	<b>3593</b>
	CHAE-S (≤ 400 kW)	228	954	1049	1158	1281	1402	1525	1644	1759	1867
	CHAE-L (> 400 kW)	51	166	171	176	184	191	199	206	213	220
	CHWE-S (≤ 400 kW)	20	85	94	103	114	125	136	147	157	166
	CHWE-M (> 400 kW; ≤ 1500 kW)	23	78	81	84	87	91	94	98	102	105
	CHWE-L (> 1500 kW)	15	50	52	54	56	59	61	63	66	68
	CHF	0	4	5	7	8	9	10	10	11	12
	HT PCH-AE-S	112	182	195	206	215	224	233	242	250	259
	HT PCH-AE-L	90	146	156	165	172	179	186	193	200	207
	HT PCH-WE-S	25	40	43	45	47	49	51	53	55	57
	HT PCH-WE-M	97	158	169	178	186	194	201	209	216	224
	HT PCH-WE-L	18	30	32	33	35	36	38	39	40	42
	AC rooftop	105	341	344	263	153	40	40	40	40	40
	AC splits	180	656	685	662	638	613	590	567	544	521
	AC VRF	1	1502	1961	2856	3612	4360	5072	5727	6275	6672
	ACF	0	4	5	7	8	9	10	10	11	12
	<b>SubTotal AHC Air Cooling</b>	<b>963</b>	<b>4393</b>	<b>5041</b>	<b>5998</b>	<b>6796</b>	<b>7581</b>	<b>8445</b>	<b>9248</b>	<b>9941</b>	<b>10474</b>
	AC rooftop (rev)	64	209	201	162	90	23	0	0	0	0
	AC splits (rev)	121	420	439	425	410	394	379	364	350	335
	AC VRF (rev)	1	1282	1592	2438	2963	3403	3766	4046	4218	4268
	ACF (rev)	0	8	11	13	15	18	21	23	25	27
	AHF	357	234	219	226	216	200	180	163	152	141
	AHE	1	2	2	2	2	2	2	2	2	2
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>544</b>	<b>2155</b>	<b>2465</b>	<b>3265</b>	<b>3696</b>	<b>4039</b>	<b>4348</b>	<b>4598</b>	<b>4747</b>	<b>4772</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>1321</b>	<b>4630</b>	<b>5263</b>	<b>6226</b>	<b>7014</b>	<b>7784</b>	<b>8628</b>	<b>9415</b>	<b>10097</b>	<b>10620</b>
	LH open fireplace [8 kW]	689	1005	1012	1256	1376	1318	1269	1223	1179	1137
	LH closed fireplace/inset [8 kW]	435	1179	1315	1725	1852	1807	1746	1682	1621	1563
	LH wood stove [8 kW]	471	555	615	811	874	851	819	787	757	727
	LH coal stove [8 kW]	143	111	102	110	87	56	49	47	46	44
	LH cooker [10 kW]	402	807	975	1255	1332	1311	1264	1213	1206	1206
	LH SHR stove [8 kW]	437	609	757	909	1013	1117	1139	1139	1139	1139
	LH pellet stove [8 kW]	0	454	572	691	740	789	799	799	799	799
	LH open fire gas, NCV [4.2 kW]	26	38	42	48	49	47	46	46	46	46
	LH closed fire gas, NCV [4.2 kW]	127	143	147	158	165	163	160	160	160	160
	LH flueless fuel heater, NCV [1.5 kW]	47	93	89	84	75	65	64	64	64	64
	LH elec.portable [1 kW]	109	133	137	142	148	154	156	156	156	156
	LH elec.convecter [1 kW]	800	976	1007	1038	1084	1131	1141	1141	1141	1141
	LH elec.storage [2.75 kW]	91	112	130	149	149	149	144	138	132	131
	LH elec.underfloor [0.62 kW]	166	202	214	225	228	235	237	237	237	237
	LH luminous heaters [20 kW]	18	22	22	27	26	25	24	23	22	22
	LH tube heaters [30 kW]	18	22	22	25	24	23	22	22	22	22
	<b>LH total</b>	<b>3979</b>	<b>6459</b>	<b>7156</b>	<b>8652</b>	<b>9222</b>	<b>9242</b>	<b>9078</b>	<b>8876</b>	<b>8725</b>	<b>8590</b>
	RAC (cooling demand), all types <12 kW	169	1553	2405	3085	3399	3445	3416	3386	3355	3324
	RAC (heating demand), reversible <12kW	47	1152	2120	2727	3009	3052	3029	3005	2980	2955
	<b>Total Room Air Conditioner</b>	<b>217</b>	<b>2705</b>	<b>4525</b>	<b>5812</b>	<b>6408</b>	<b>6497</b>	<b>6445</b>	<b>6391</b>	<b>6335</b>	<b>6279</b>
<b>1</b>	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>856</b>	<b>1364</b>	<b>1742</b>	<b>1768</b>	<b>1788</b>	<b>1681</b>	<b>1511</b>	<b>1353</b>	<b>1238</b>	<b>1156</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>13007</b>	<b>23058</b>	<b>33852</b>	<b>42550</b>	<b>50482</b>	<b>55734</b>	<b>61376</b>	<b>67294</b>	<b>73537</b>	<b>80058</b>
	<b>TOTAL SPACE COOLING</b>	<b>1132</b>	<b>5946</b>	<b>7446</b>	<b>9083</b>	<b>10195</b>	<b>11026</b>	<b>11861</b>	<b>12634</b>	<b>13296</b>	<b>13798</b>
	<b>NRVU avg (sales wt.)</b>	10941	25598	26873	28230	29790	31351	32911	34472	36032	37592
	RVU Central Unidir. VU (1 fan)	505	1133	1695	1545	1622	1692	1756	1815	1869	1918
	RVU Central Balanced VU (2 fans)	57	397	1193	1482	1612	1732	1843	1945	2038	2161
	RVU Local Balanced VU (2 fans)	4	52	114	185	259	334	409	484	558	633
	<b>TOTAL VENTILATION</b>	<b>11507</b>	<b>27179</b>	<b>29875</b>	<b>31442</b>	<b>33283</b>	<b>35109</b>	<b>36919</b>	<b>38715</b>	<b>40498</b>	<b>42305</b>
	LFL (T12,T8h,T8t,T5,other)	1803	2588	1881	1372	420	238	131	86	51	29
	HID (HPM, HPS, MH)	296	849	602	370	229	89	27	9	3	1
	CFLni (all shapes)	47	175	132	95	57	17	5	2	1	0
	CFLi (retrofit for GLS, HL)	55	964	311	167	0	0	0	0	0	0
	GLS (DLS & NDLS)	574	237	20	0	0	0	0	0	0	0
	HL (DLS & NDLS, LV & MV)	111	975	1130	232	1	0	0	0	0	0
	LED replacing LFL (retrofit & luminaire)	0	4	790	2696	4717	4368	4204	4729	5626	6466
	LED replacing HID (retrofit & luminaire)	0	0	1370	903	1352	1590	1840	2114	2399	2717
	LED replacing CFLni (retrofit & luminaire)	0	0	158	226	243	273	292	310	347	384
	LED replacing DLS (retrofit & luminaire)	0	120	798	515	413	93	102	113	125	138
	LED replacing NDLS (retrofit & luminaire)	0	69	2510	3664	1586	905	464	487	533	589
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	2886	5788	4076	2236	707	344	162	97	55	31
	SUBTOTAL LED	0	192	5626	8004	8311	7229	6902	7752	9029	10294
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>2886</b>	<b>5980</b>	<b>9703</b>	<b>10240</b>	<b>9018</b>	<b>7573</b>	<b>7065</b>	<b>7849</b>	<b>9084</b>	<b>10325</b>

db	REVENUE INDUSTRY ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	DP TV all types	8267	13236	7512	9301	10731	12341	12520	12520	12520	12520
	DP Monitor	1000	2125	1190	1190	1190	1190	1190	1190	1190	1190
	DP Signage	0	198	866	1980	1485	1485	1485	1485	1485	1485
	<b>DP Electronic Displays, total</b>	<b>9267</b>	<b>15559</b>	<b>9568</b>	<b>12471</b>	<b>13407</b>	<b>15016</b>	<b>15195</b>	<b>15195</b>	<b>15195</b>	<b>15195</b>
	SSTB	0	787	178	0	0	0	0	0	0	0
	CSTB	0	2963	3737	3912	3957	3858	4191	4525	4859	5192
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>3751</b>	<b>3916</b>	<b>3912</b>	<b>3957</b>	<b>3858</b>	<b>4191</b>	<b>4525</b>	<b>4859</b>	<b>5192</b>
	VIDEO players/recorders	2	1519	1309	172	0	0	0	0	0	0
	VIDEO projectors	25	1751	1486	605	261	0	0	0	0	0
	VIDEO game consoles	0	2714	2294	1759	2083	2083	2083	2083	2083	2083
	<b>Total VIDEO</b>	<b>27</b>	<b>5985</b>	<b>5089</b>	<b>2535</b>	<b>2344</b>	<b>2083</b>	<b>2083</b>	<b>2083</b>	<b>2083</b>	<b>2083</b>
	ES tower 1-socket traditional	10	267	278	238	205	176	176	176	176	176
	ES rack 1-socket traditional	21	559	543	571	600	630	630	630	630	630
	ES rack 2-socket traditional	209	3219	1461	1777	2162	2630	2630	2630	2630	2630
	ES rack 2-socket cloud	0	3055	4586	5580	6789	8260	8260	8260	8260	8260
	ES rack 4-socket traditional	110	1687	716	871	1060	1289	1289	1289	1289	1289
	ES rack 4-socket cloud	0	1415	1987	2417	2941	3578	3578	3578	3578	3578
	ES rack 2-socket resilient trad.	41	623	287	349	425	517	517	517	517	517
	ES rack 2-socket resilient cloud	0	456	695	846	1029	1252	1252	1252	1252	1252
	ES rack 4-socket resilient trad.	2	36	17	20	25	30	30	30	30	30
	ES rack 4-socket resilient cloud	0	26	40	49	60	73	73	73	73	73
	ES blade 1-socket traditional	6	63	59	62	66	69	69	69	69	69
	ES blade 2-socket traditional	160	1044	458	557	677	824	824	824	824	824
	ES blade 2-socket cloud	0	991	1437	1748	2127	2588	2588	2588	2588	2588
	ES blade 4-socket traditional	18	116	49	60	73	88	88	88	88	88
	ES blade 4-socket cloud	0	96	135	164	199	243	243	243	243	243
	<b>ES total traditional</b>	<b>577</b>	<b>7614</b>	<b>3867</b>	<b>4505</b>	<b>5291</b>	<b>6254</b>	<b>6254</b>	<b>6254</b>	<b>6254</b>	<b>6254</b>
	<b>ES total cloud</b>	<b>0</b>	<b>6040</b>	<b>8881</b>	<b>10805</b>	<b>13145</b>	<b>15993</b>	<b>15993</b>	<b>15993</b>	<b>15993</b>	<b>15993</b>
	<b>ES Enterprise Servers total</b>	<b>577</b>	<b>13654</b>	<b>12747</b>	<b>15310</b>	<b>18437</b>	<b>22248</b>	<b>22248</b>	<b>22248</b>	<b>22248</b>	<b>22248</b>
	DS Online 2	265	6106	5652	6179	6822	7532	7532	7532	7532	7532
	DS Online 3	464	9514	6789	7422	8195	9047	9047	9047	9047	9047
	DS Online 4	318	6253	5667	6196	6840	7552	7552	7552	7552	7552
	<b>DS Data Storage products total</b>	<b>1047</b>	<b>21874</b>	<b>18108</b>	<b>19797</b>	<b>21857</b>	<b>24132</b>	<b>24132</b>	<b>24132</b>	<b>24132</b>	<b>24132</b>
	<b>ES + DS total</b>	<b>1624</b>	<b>35528</b>	<b>30855</b>	<b>35107</b>	<b>40294</b>	<b>46380</b>	<b>46380</b>	<b>46380</b>	<b>46380</b>	<b>46380</b>
	PC Desktop	1452	4840	3612	3284	3284	3284	3284	3284	3284	3284
	PC Notebook	153	11033	5057	4750	4750	4750	4750	4750	4750	4750
	PC Tablet/slate	0	737	11647	18926	24458	29117	30573	32029	33485	34941
	PC Thin client	24	287	287	287	287	287	287	287	287	287
	PC Workstation	124	1237	1237	1237	1237	1237	1237	1237	1237	1237
	<b>Total PC, electricity</b>	<b>1753</b>	<b>18133</b>	<b>21839</b>	<b>28484</b>	<b>34016</b>	<b>38675</b>	<b>40131</b>	<b>41586</b>	<b>43042</b>	<b>44498</b>
	EP-Copier mono	2633	1057	633	268	197	127	56	0	0	0
	EP-Copier colour	0	353	1538	2306	2629	2864	3098	3333	3568	3802
	EP-printer mono	529	501	439	358	307	273	236	198	161	124
	EP-printer colour	0	485	719	968	1161	1348	1535	1723	1910	2097
	IJ SFD printer	271	431	301	212	156	134	106	78	50	22
	IJ MFD printer	333	1079	1480	1709	1877	2044	2212	2380	2547	2715
	<b>Total imaging equipment, electricity</b>	<b>3767</b>	<b>3907</b>	<b>5110</b>	<b>5822</b>	<b>6327</b>	<b>6790</b>	<b>7244</b>	<b>7712</b>	<b>8236</b>	<b>8760</b>
	SB Home Gateway, on-mode power	0	3227	4161	5095	6028	6962	7896	8830	9763	10697
	SB Home NAS, on-mode power	0	324	556	787	1019	1250	1482	1713	1945	2176
	SB Home Phones (fixed), on-mode power	201	1002	1202	1282	1282	1282	1282	1282	1282	1282
	SB Office Phones (fixed), on-mode power	316	605	643	682	721	760	798	837	876	915
	<b>Total SB (networked) StandBy (rest)</b>	<b>518</b>	<b>5158</b>	<b>6562</b>	<b>7846</b>	<b>9050</b>	<b>10254</b>	<b>11458</b>	<b>12662</b>	<b>13866</b>	<b>15070</b>
db											
0.0	EPS ≤ 6W, low-V	12	151	120	91	64	33	14	6	3	1
0.3	EPS 6–10 W	64	872	935	991	1038	1091	1118	1147	1176	1205
0.6	EPS 10–12 W	0	721	855	917	922	928	934	940	945	951
0.5	EPS 15–20 W	0	3	20	39	43	47	48	50	52	55
1.0	EPS 20–30 W	2	105	115	108	101	93	83	74	67	60
0.8	EPS 30–65 W, multiple-V	0	0	0	14	21	29	38	48	57	66
1.0	EPS 30–65 W	0	0	0	17	40	69	69	69	69	69
1.0	EPS 65–120 W	2	79	77	59	32	1	0	0	0	0
0.5	EPS 65–120 W, multiple-V	0	475	171	50	51	51	51	51	51	51
0.0	EPS 12–15 W	2	78	158	191	192	194	194	194	194	194
	<b>EPS, total</b>	<b>81</b>	<b>2483</b>	<b>2451</b>	<b>2477</b>	<b>2505</b>	<b>2535</b>	<b>2550</b>	<b>2577</b>	<b>2613</b>	<b>2652</b>
	<b>EPS, double counted subtracted</b>	<b>56</b>	<b>1369</b>	<b>1376</b>	<b>1397</b>	<b>1410</b>	<b>1422</b>	<b>1427</b>	<b>1444</b>	<b>1466</b>	<b>1490</b>
	UPS below 1.5 kVA	49	97	101	123	145	166	186	204	217	226
	UPS 1.5 to 5 kVA	92	182	189	230	270	310	348	380	405	422
	UPS 5 to 10 kVA	32	63	66	80	94	108	121	132	141	147
	UPS 10 to 200 kVA	135	268	279	339	399	459	514	562	599	624
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>308</b>	<b>610</b>	<b>635</b>	<b>772</b>	<b>908</b>	<b>1043</b>	<b>1168</b>	<b>1277</b>	<b>1363</b>	<b>1418</b>
	<b>TOTAL ELECTRONICS</b>	<b>17320</b>	<b>89999</b>	<b>84950</b>	<b>98344</b>	<b>111714</b>	<b>125521</b>	<b>129278</b>	<b>132865</b>	<b>136489</b>	<b>140087</b>
	<b>RF Household refrigerator and freezer</b>	<b>3315</b>	<b>4153</b>	<b>4497</b>	<b>4689</b>	<b>5352</b>	<b>5139</b>	<b>5627</b>	<b>5800</b>	<b>5953</b>	<b>6087</b>
	CF open vertical chilled multi deck (RVC2)	217	237	247	318	320	310	299	289	280	270
	CF open horizontal frozen island (RHF4)	26	28	28	29	29	29	30	30	31	31
	CF other supermarket display (non-BCs)	500	592	629	694	692	722	747	773	800	800
	CF Plug in one door beverage cooler	424	516	514	583	594	584	588	607	627	648
	CF Plug in horizontal ice cream freezer	175	213	212	220	227	235	243	251	259	268
	CF Spiral vending machine	279	211	173	181	185	192	200	207	215	224
	<b>Total CF Commercial Refrigeration</b>	<b>1620</b>	<b>1798</b>	<b>1803</b>	<b>2025</b>	<b>2047</b>	<b>2081</b>	<b>2132</b>	<b>2185</b>	<b>2241</b>	<b>2241</b>

db	REVENUE INDUSTRY ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Storage cabinet Chilled Vertical (CV)	159	206	216	243	242	245	256	267	277	288
	PF Storage cabinet Frozen Vertical (FV)	83	108	113	127	127	128	134	140	145	151
	PF Storage cabinet Chilled Horizontal (CH)	33	42	44	50	50	50	53	55	57	59
	PF Storage cabinet Frozen Horizontal (FH)	25	32	34	38	38	38	40	42	43	45
	<b>PF Storage cabinets All types</b>	<b>300</b>	<b>389</b>	<b>407</b>	<b>458</b>	<b>457</b>	<b>462</b>	<b>482</b>	<b>503</b>	<b>523</b>	<b>543</b>
	PF Process Chiller AC MT S ≤ 300 kW	23	46	51	58	62	67	73	79	85	91
	PF Process Chiller AC MT L > 300 kW	22	44	48	53	58	64	70	75	81	86
	PF Process Chiller AC LT S ≤ 200 kW	18	37	41	47	50	55	59	64	69	73
	PF Process Chiller AC LT L > 200 kW	17	35	39	43	47	52	56	60	65	69
	PF Process Chiller WC MT S ≤ 300 kW	10	21	23	26	28	30	33	35	38	41
	PF Process Chiller WC MT L > 300 kW	15	31	34	37	41	45	49	53	57	61
	PF Process Chiller WC LT S ≤ 200 kW	10	20	22	25	27	29	32	34	37	39
	PF Process Chiller WC LT L > 200 kW	12	25	27	30	33	37	40	43	46	49
	<b>PF Process Chiller All MT&amp;LT</b>	<b>128</b>	<b>258</b>	<b>285</b>	<b>319</b>	<b>346</b>	<b>379</b>	<b>411</b>	<b>444</b>	<b>476</b>	<b>509</b>
	PF Condensing Unit MT S 0.2-1 kW	123	98	100	112	116	125	135	145	157	169
	PF Condensing Unit MT M 1-5 kW	266	212	216	241	251	270	291	314	338	364
	PF Condensing Unit MT L 5-20 kW	273	218	222	256	262	278	299	323	348	374
	PF Condensing Unit MT XL 20-50 kW	209	167	170	196	201	213	229	247	266	287
	PF Condensing Unit LT S 0.1-0.4 kW	21	17	17	19	20	22	23	25	27	29
	PF Condensing Unit LT M 0.4-2 kW	38	30	31	34	36	38	41	45	48	52
	PF Condensing Unit LT L 2-8 kW	102	81	83	95	98	103	111	120	129	139
	PF Condensing Unit LT XL 8-20 kW	89	71	72	83	85	90	97	105	113	121
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>1120</b>	<b>892</b>	<b>912</b>	<b>1038</b>	<b>1066</b>	<b>1140</b>	<b>1228</b>	<b>1323</b>	<b>1425</b>	<b>1536</b>
	<b>PF Professional Refrigeration, Total</b>	<b>876</b>	<b>1004</b>	<b>1056</b>	<b>1192</b>	<b>1229</b>	<b>1297</b>	<b>1385</b>	<b>1476</b>	<b>1570</b>	<b>1667</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>5811</b>	<b>6954</b>	<b>7356</b>	<b>7906</b>	<b>8628</b>	<b>8483</b>	<b>9093</b>	<b>9408</b>	<b>9708</b>	<b>9995</b>
	COOK El. Hobs, Wh/ltr	1007	2290	2455	2761	2907	3039	3163	3279	3387	3488
	COOK El. Ovens, kWh/a	2356	2799	2991	3365	3250	3139	3159	3199	3239	3280
	COOK Gas Hobs, % efficiency NCV	960	829	756	727	662	605	575	544	514	483
	COOK Gas Ovens, kWh prim, NCV	321	328	331	419	403	388	373	358	344	330
	COOK Range Hoods, kWh elec	572	699	735	960	1119	1129	1136	1140	1142	1142
	<b>Total CA Cooking Appliances</b>	<b>5216</b>	<b>6945</b>	<b>7267</b>	<b>8232</b>	<b>8342</b>	<b>8299</b>	<b>8405</b>	<b>8520</b>	<b>8626</b>	<b>8723</b>
	COFFEE Dripfilter (glass)	162	113	108	90	83	79	77	77	77	77
	COFFEE Dripfilter (thermos)	31	49	50	51	51	52	53	53	54	54
	COFFEE Dripfilter (full automatic)	0	82	92	103	114	125	135	146	157	168
	COFFEE Pad filter	0	189	206	224	242	259	277	295	312	330
	COFFEE Hard cap espresso	23	99	211	317	332	332	332	332	332	332
	COFFEE Semi-auto espresso	26	30	28	26	25	23	21	19	18	16
	COFFEE Fully-auto espresso	152	173	201	229	257	285	312	340	368	396
	<b>Total CM household Coffee Makers</b>	<b>394</b>	<b>734</b>	<b>897</b>	<b>1040</b>	<b>1103</b>	<b>1154</b>	<b>1208</b>	<b>1262</b>	<b>1317</b>	<b>1372</b>
	<b>TOTAL COOKING</b>	<b>5611</b>	<b>7679</b>	<b>8165</b>	<b>9273</b>	<b>9445</b>	<b>9454</b>	<b>9613</b>	<b>9783</b>	<b>9944</b>	<b>10095</b>
	<b>WM Household Washing Machine</b>	<b>1785</b>	<b>3134</b>	<b>3237</b>	<b>3572</b>	<b>3375</b>	<b>3212</b>	<b>3056</b>	<b>2907</b>	<b>2766</b>	<b>2681</b>
	<b>DW Household Dishwasher</b>	<b>776</b>	<b>2254</b>	<b>2616</b>	<b>2914</b>	<b>3182</b>	<b>3432</b>	<b>3664</b>	<b>3879</b>	<b>4078</b>	<b>4261</b>
	LD Household Laundry Drier vented el.	366	370	349	311	317	320	321	323	325	326
	LD Household Laundry Drier condens el.	207	776	986	1174	1194	1171	1140	1109	1078	1072
	LD Household Laundry Drier vented gas	3	6	8	9	9	9	10	10	10	10
	<b>Total LD household Laundry Drier</b>	<b>576</b>	<b>1152</b>	<b>1342</b>	<b>1494</b>	<b>1520</b>	<b>1500</b>	<b>1471</b>	<b>1441</b>	<b>1413</b>	<b>1409</b>
	VC dom. Vacuum Cleaner	1719	5090	7364	8932	9590	10494	11398	12302	13206	14110
	VC nondom Vacuum Cleaner	527	543	584	617	630	661	691	722	753	783
	<b>Total VC Vacuum Cleaner</b>	<b>2246</b>	<b>5633</b>	<b>7948</b>	<b>9549</b>	<b>10220</b>	<b>11155</b>	<b>12090</b>	<b>13024</b>	<b>13959</b>	<b>14893</b>
	<b>TOTAL CLEANING</b>	<b>5384</b>	<b>12173</b>	<b>15144</b>	<b>17529</b>	<b>18297</b>	<b>19298</b>	<b>20280</b>	<b>21252</b>	<b>22216</b>	<b>23244</b>
	0.5 FAN Axial<300Pa [247 W flow out]	261	856	1225	1540	1473	1408	1347	1288	1231	1177
	0.5 FAN Axial>300Pa [489 W fluid-dyn out]	360	1246	1315	1439	1383	1383	1383	1383	1383	1383
	0.5 FAN Centr.FC [141 W flow out]	224	568	846	1170	1117	1066	1017	971	926	884
	0.5 FAN Centr.BC-free [2120 W flow out]	128	312	433	486	514	501	487	475	474	482
	0.5 FAN Centr.BC [2052 W flow out]	280	743	1190	1365	1452	1416	1488	1551	1605	1652
	0.5 FAN Cross-flow [31 W flow out]	52	115	376	499	528	514	538	559	577	593
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>652</b>	<b>1921</b>	<b>2692</b>	<b>3250</b>	<b>3233</b>	<b>3144</b>	<b>3131</b>	<b>3113</b>	<b>3099</b>	<b>3086</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	354	575	618	590	595	573	547	522	496	471
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	210	332	318	289	282	267	250	233	217	209
0.45	Medium (L) 3-ph 75-375 kW no VSD	164	243	211	189	178	162	146	133	128	125
0.45	<b>Total 3-ph 0.75-375 kW no VSD</b>	<b>728</b>	<b>1150</b>	<b>1147</b>	<b>1068</b>	<b>1056</b>	<b>1002</b>	<b>943</b>	<b>888</b>	<b>841</b>	<b>805</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	139	413	636	1081	1159	1187	1235	1301	1372	1447
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	103	307	571	771	815	834	867	913	963	987
0.45	Medium (L) 3-ph 75-375 kW with VSD	78	235	413	505	534	548	570	594	602	606
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>321</b>	<b>955</b>	<b>1620</b>	<b>2357</b>	<b>2509</b>	<b>2570</b>	<b>2671</b>	<b>2809</b>	<b>2937</b>	<b>3040</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>1049</b>	<b>2105</b>	<b>2767</b>	<b>3425</b>	<b>3565</b>	<b>3571</b>	<b>3615</b>	<b>3697</b>	<b>3778</b>	<b>3845</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	225	426	444	462	569	553	537	521	506	490
0.45	Small 1 ph 0.12-0.75 kW with VSD	36	292	351	378	427	435	456	482	510	540
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>261</b>	<b>718</b>	<b>795</b>	<b>840</b>	<b>995</b>	<b>987</b>	<b>993</b>	<b>1004</b>	<b>1016</b>	<b>1031</b>



REV\_IND\_ECO

db	REVENUE INDUSTRY ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	Small 3 ph 0.12-0.75 kW no VSD	124	209	218	227	266	259	252	245	237	229
0.45	Small 3 ph 0.12-0.75 kW with VSD	13	108	132	148	174	184	199	218	239	261
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>137</b>	<b>317</b>	<b>350</b>	<b>374</b>	<b>439</b>	<b>443</b>	<b>451</b>	<b>463</b>	<b>476</b>	<b>491</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	75	95	84	87	93	89	84	80	76	72
0.45	Large 3-ph LV 375-1000kW with VSD	27	160	220	247	265	274	285	295	307	319
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>102</b>	<b>256</b>	<b>304</b>	<b>334</b>	<b>358</b>	<b>363</b>	<b>369</b>	<b>376</b>	<b>383</b>	<b>391</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	22	39	40	42	56	56	55	54	54	53
0.45	Explosion motors (M) 3-ph 7.5-75 kW	20	35	36	39	47	47	46	45	44	43
0.45	Explosion motors (L) 3-ph 75-375 kW	15	26	27	29	34	34	33	32	32	31
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>57</b>	<b>99</b>	<b>103</b>	<b>110</b>	<b>137</b>	<b>136</b>	<b>134</b>	<b>132</b>	<b>129</b>	<b>127</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	28	48	50	53	70	70	69	68	67	66
0.45	Brake motors (M) 3-ph 7.5-75 kW	25	43	45	48	59	58	57	56	55	54
0.45	Brake motors (L) 3-ph 75-375 kW	19	32	34	36	43	42	41	40	40	39
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>71</b>	<b>124</b>	<b>129</b>	<b>137</b>	<b>171</b>	<b>170</b>	<b>167</b>	<b>164</b>	<b>162</b>	<b>159</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	1	2	2	2	4	4	4	4	4	4
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	2	2	2	3	3	3	3	2	2
0.45	8-pole motors (L) 3-ph 75-375 kW	1	1	1	2	2	2	2	2	2	2
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>3</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>512</b>	<b>890</b>	<b>925</b>	<b>953</b>	<b>1062</b>	<b>1069</b>	<b>1075</b>	<b>1080</b>	<b>1085</b>	<b>1088</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>1206</b>	<b>2483</b>	<b>2958</b>	<b>3398</b>	<b>3705</b>	<b>3711</b>	<b>3747</b>	<b>3808</b>	<b>3870</b>	<b>3926</b>
	<b>WP Water pumps</b>	<b>875</b>	<b>1189</b>	<b>1278</b>	<b>1374</b>	<b>1477</b>	<b>1580</b>	<b>1683</b>	<b>1786</b>	<b>1889</b>	<b>1992</b>
	CP Fixed Speed 5-1280 l/s	413	365	361	390	408	423	437	452	467	481
	CP Variable speed 5-1280 l/s	0	156	236	268	281	290	299	308	317	326
	CP Pistons 2-64 l/s	84	92	114	138	147	152	156	161	166	171
	<b>Total CP Standard Air Compressors</b>	<b>497</b>	<b>612</b>	<b>711</b>	<b>796</b>	<b>835</b>	<b>865</b>	<b>892</b>	<b>920</b>	<b>949</b>	<b>978</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>3230</b>	<b>6205</b>	<b>7639</b>	<b>8817</b>	<b>9250</b>	<b>9300</b>	<b>9452</b>	<b>9627</b>	<b>9807</b>	<b>9982</b>
	TRAFO Distribution, kWh/a	406	638	847	909	977	1049	1123	1197	1272	1346
	TRAFO Industry oil	211	341	560	601	646	693	743	792	841	890
	TRAFO Industry dry	100	160	232	249	267	286	306	325	345	365
	TRAFO Power	1630	2614	2811	3023	3250	3495	3747	3998	4250	4502
	TRAFO DER oil	0	19	52	85	140	232	342	453	563	674
	TRAFO DER dry	0	115	248	410	676	1117	1650	2182	2715	3248
	TRAFO Small	46	46	46	46	46	46	46	46	46	46
	<b>TOTAL ENERGY SECTOR</b>	<b>2393</b>	<b>3933</b>	<b>4795</b>	<b>5323</b>	<b>6002</b>	<b>6917</b>	<b>7956</b>	<b>8994</b>	<b>10032</b>	<b>11070</b>
	Tyres C1, replacement for cars	5882	8216	10032	12039	13653	15258	15258	15258	15258	15258
	Tyres C1, OEM for cars	1771	2358	2788	3544	4111	4595	4595	4595	4595	4595
	<b>Tyres C1, total</b>	<b>7653</b>	<b>10574</b>	<b>12820</b>	<b>15583</b>	<b>17764</b>	<b>19852</b>	<b>19852</b>	<b>19852</b>	<b>19852</b>	<b>19852</b>
	Tyres C2, replacement for vans	1021	1292	1352	1682	1947	2187	2187	2187	2187	2187
	Tyres C2, OEM for vans	215	232	291	319	403	461	461	461	461	461
	<b>Tyres C2, total</b>	<b>1236</b>	<b>1523</b>	<b>1643</b>	<b>2000</b>	<b>2350</b>	<b>2649</b>	<b>2649</b>	<b>2649</b>	<b>2649</b>	<b>2649</b>
	Tyres C3, replacement for trucks/busses	1788	1756	3096	3580	4121	4594	4594	4594	4594	4594
	Tyres C3, OEM for trucks/busses	498	413	580	783	1149	1280	1280	1280	1280	1280
	<b>Tyres C3, total</b>	<b>2286</b>	<b>2170</b>	<b>3676</b>	<b>4363</b>	<b>5270</b>	<b>5874</b>	<b>5874</b>	<b>5874</b>	<b>5874</b>	<b>5874</b>
	<b>Tyres, total C1+C2+C3</b>	<b>11175</b>	<b>14267</b>	<b>18139</b>	<b>21946</b>	<b>25383</b>	<b>28375</b>	<b>28375</b>	<b>28375</b>	<b>28375</b>	<b>28375</b>
	<b>TRANSPORT SECTOR</b>	<b>11175</b>	<b>14267</b>	<b>18139</b>	<b>21946</b>	<b>25383</b>	<b>28375</b>	<b>28375</b>	<b>28375</b>	<b>28375</b>	<b>28375</b>
	<b>GENERAL TOTAL (in m euro 2015)</b>	<b>82893</b>	<b>208313</b>	<b>234805</b>	<b>272406</b>	<b>302817</b>	<b>328338</b>	<b>343242</b>	<b>359195</b>	<b>375805</b>	<b>392568</b>
	GENERAL TOTAL (in bn euro 2015)	83	208	235	272	303	328	343	359	376	393
	<b>SUMMARY ECO</b>										
	<b>Industry revenue (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>3.4</b>	<b>4.9</b>	<b>7.7</b>	<b>10.0</b>	<b>11.1</b>	<b>11.5</b>	<b>12.0</b>	<b>12.4</b>	<b>12.8</b>	<b>13.2</b>
	<b>SPACE HEATING</b>	<b>13.0</b>	<b>23.1</b>	<b>33.9</b>	<b>42.6</b>	<b>50.5</b>	<b>55.7</b>	<b>61.4</b>	<b>67.3</b>	<b>73.5</b>	<b>80.1</b>
	<b>SPACE COOLING</b>	<b>1.1</b>	<b>5.9</b>	<b>7.4</b>	<b>9.1</b>	<b>10.2</b>	<b>11.0</b>	<b>11.9</b>	<b>12.6</b>	<b>13.3</b>	<b>13.8</b>
	<b>VENTILATION</b>	<b>11.5</b>	<b>27.2</b>	<b>29.9</b>	<b>31.4</b>	<b>33.3</b>	<b>35.1</b>	<b>36.9</b>	<b>38.7</b>	<b>40.5</b>	<b>42.3</b>
	<b>LIGHTING</b>	<b>2.9</b>	<b>6.0</b>	<b>9.7</b>	<b>10.2</b>	<b>9.0</b>	<b>7.6</b>	<b>7.1</b>	<b>7.8</b>	<b>9.1</b>	<b>10.3</b>
	<b>ELECTRONICS</b>	<b>17.3</b>	<b>90.0</b>	<b>85.0</b>	<b>98.3</b>	<b>111.7</b>	<b>125.5</b>	<b>129.3</b>	<b>132.9</b>	<b>136.5</b>	<b>140.1</b>
	<b>FOOD PRESERVATION</b>	<b>5.8</b>	<b>7.0</b>	<b>7.4</b>	<b>7.9</b>	<b>8.6</b>	<b>8.5</b>	<b>9.1</b>	<b>9.4</b>	<b>9.7</b>	<b>10.0</b>
	<b>COOKING</b>	<b>5.6</b>	<b>7.7</b>	<b>8.2</b>	<b>9.3</b>	<b>9.4</b>	<b>9.5</b>	<b>9.6</b>	<b>9.8</b>	<b>9.9</b>	<b>10.1</b>
	<b>CLEANING</b>	<b>5.4</b>	<b>12.2</b>	<b>15.1</b>	<b>17.5</b>	<b>18.3</b>	<b>19.3</b>	<b>20.3</b>	<b>21.3</b>	<b>22.2</b>	<b>23.2</b>
	<b>INDUSTRY COMPONENTS</b>	<b>3.2</b>	<b>6.2</b>	<b>7.6</b>	<b>8.8</b>	<b>9.2</b>	<b>9.3</b>	<b>9.5</b>	<b>9.6</b>	<b>9.8</b>	<b>10.0</b>
	<b>ENERGY SECTOR</b>	<b>2.4</b>	<b>3.9</b>	<b>4.8</b>	<b>5.3</b>	<b>6.0</b>	<b>6.9</b>	<b>8.0</b>	<b>9.0</b>	<b>10.0</b>	<b>11.1</b>
	<b>TRANSPORT SECTOR</b>	<b>11.2</b>	<b>14.3</b>	<b>18.1</b>	<b>21.9</b>	<b>25.4</b>	<b>28.4</b>	<b>28.4</b>	<b>28.4</b>	<b>28.4</b>	<b>28.4</b>
	<b>TOTAL in bn euro 2010</b>	<b>83</b>	<b>208</b>	<b>235</b>	<b>272</b>	<b>303</b>	<b>328</b>	<b>343</b>	<b>359</b>	<b>376</b>	<b>393</b>

## REV\_IND\_ECO

Industry revenue ECO-BAU (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	-	-	2.6	4.4	5.1	5.5	5.8	6.1	6.4	6.7
SPACE HEATING	-	0.4	8.7	14.6	20.5	23.6	27.4	31.5	35.9	40.7
SPACE COOLING	-	-	0.2	0.3	0.4	0.4	0.3	0.3	0.2	0.1
VENTILATION	-	-	1.0	0.9	0.9	0.9	0.9	0.8	0.7	0.7
LIGHTING	-	0.3	3.6	1.4	1.1	0.2	0.1	0.5	1.1	1.4
ELECTRONICS	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FOOD PRESERVATION	-	0.5	0.8	1.2	1.7	1.4	1.8	1.9	2.0	2.0
COOKING	-	-	0.1	0.6	0.7	0.5	0.4	0.4	0.4	0.3
CLEANING	-	1.1	1.6	1.9	1.5	1.3	1.1	0.8	0.6	0.4
INDUSTRY COMPONENTS	-	0.0	0.9	1.6	1.7	1.5	1.3	1.1	0.9	0.7
ENERGY SECTOR	-	-	0.5	0.6	0.7	0.9	1.1	1.3	1.5	1.7
TRANSPORT SECTOR	-	0.3	2.3	3.8	4.9	5.2	5.2	5.2	5.2	5.2
<b>TOTAL in bn euro 2015</b>	<b>0</b>	<b>3</b>	<b>22</b>	<b>31</b>	<b>39</b>	<b>41</b>	<b>45</b>	<b>50</b>	<b>55</b>	<b>60</b>

### Revenues for VSDs only (without motor, m euros)

VSD - Very Small 0.12 - 0.75 kW 1-phase	31	244	292	312	343	348	366	390	415	442
VSD - Very Small 0.12 - 0.75 kW 3-phase	10	80	98	108	124	130	142	157	174	192
VSD - Small 0.75 - 7.5 kW 3-phase	100	295	439	714	759	776	812	866	924	986
VSD - Medium 7.5 - 75kW 3-phase	72	212	380	500	528	539	564	602	642	666
VSD - Large 75 - 375kW 3-phase	41	120	200	237	251	258	271	288	297	305
VSD - Very Large 375 - 1,000kW 3-phase	18	103	140	152	160	168	177	186	196	206
<b>Total revenues, VSDs only (ECO)</b>	<b>272</b>	<b>1055</b>	<b>1548</b>	<b>2023</b>	<b>2165</b>	<b>2220</b>	<b>2333</b>	<b>2490</b>	<b>2648</b>	<b>2796</b>



REV\_RETAIL\_BAU

db	REVENUE RETAIL BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	529	643	636	684	759	765	755	745	735	724
	<b>CH Central Heating combi, water heat</b>	376	655	707	787	810	831	857	903	949	994
	<b>TOTAL WATER HEATING</b>	905	1298	1343	1471	1569	1597	1613	1648	1684	1719
	<b>CH Central Heating boiler, space hea</b>	1962	2855	3052	3249	3567	3885	4204	4522	4840	5158
	SFB Wood Manual [18 kW]	22	13	9	5	3	3	3	3	2	2
	SFB Wood Direct Draft [20 kW]	1	37	38	41	38	47	55	65	76	90
	SFB Coal [25 kW]	8	4	0	0	0	0	0	0	0	0
	SFB Pellets [25 kW]	0	9	15	15	15	16	18	20	22	24
	SFB Wood chips [160 kW]	0	6	6	7	8	9	10	11	12	13
	<b>Total Solid Fuel Boiler</b>	31	69	68	68	64	75	86	98	112	130
	CHAE-S (≤ 400 kW)	29	121	133	147	162	177	193	208	223	236
	CHAE-L (> 400 kW)	6	21	21	22	23	24	25	26	27	28
	CHWE-S (≤ 400 kW)	3	11	12	13	14	16	17	19	20	21
	CHWE-M (> 400 kW; ≤ 1500 kW)	3	10	10	11	11	11	12	12	13	13
	CHWE-L (> 1500 kW)	2	6	7	7	7	7	8	8	8	9
	CHF	0	0	1	1	1	1	1	1	1	2
	HT PCH-AE-S	14	23	24	26	27	28	29	30	31	32
	HT PCH-AE-L	11	18	20	21	21	22	23	24	25	26
	HT PCH-WE-S	3	5	5	6	6	6	6	7	7	7
	HT PCH-WE-M	12	20	21	22	23	24	25	26	27	28
	HT PCH-WE-L	2	4	4	4	4	5	5	5	5	5
	AC rooftop	13	43	43	33	19	5	5	5	5	5
	AC splits	23	83	87	84	81	78	75	72	69	66
	AC VRF	0	188	246	358	453	546	636	718	786	836
	ACF	0	0	1	1	1	1	1	1	1	2
	<b>SubTotal AHC Air Cooling</b>	121	552	634	753	854	952	1061	1162	1248	1315
	AC rooftop (rev)	8	26	25	20	11	3	0	0	0	0
	AC splits (rev)	15	53	56	54	52	50	48	46	44	42
	AC VRF (rev)	0	161	200	305	371	426	472	507	529	535
	ACF (rev)	0	1	1	2	2	2	3	3	3	3
	AHF	45	29	28	26	25	23	22	20	19	18
	AHE	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC Air Heating (rev double)</b>	68	271	309	407	461	505	545	577	595	599
	<b>Total AHC Air Heating &amp; Cooling</b>	166	582	661	780	879	976	1083	1182	1268	1334
	LH open fireplace [8 kW]	118	172	173	174	173	172	172	172	172	172
	LH closed fireplace/inset [8 kW]	74	202	225	248	252	255	255	255	255	255
	LH wood stove [8 kW]	81	95	105	116	117	119	119	119	119	119
	LH coal stove [8 kW]	25	19	17	16	12	8	7	7	7	7
	LH cooker [10 kW]	69	138	167	195	200	205	206	206	206	206
	LH SHR stove [8 kW]	75	104	129	155	173	191	195	195	195	195
	LH pellet stove [8 kW]	0	78	98	118	126	135	137	137	137	137
	LH open fire gas, NCV [4.2 kW]	4	6	7	8	8	8	8	8	8	8
	LH closed fire gas, NCV [4.2 kW]	22	24	25	26	27	27	27	27	27	27
	LH flueless fuel heater, NCV [1.5 kW]	8	16	15	14	13	11	11	11	11	11
	LH elec.portable [1 kW]	19	23	24	24	25	26	27	27	27	27
	LH elec.convactor [1 kW]	137	167	172	177	185	194	195	195	195	195
	LH elec.storage [2.75 kW]	16	19	20	20	21	22	22	22	22	22
	LH elec.underfloor [0.62 kW]	28	35	36	37	38	40	40	40	40	40
	LH luminous heaters [20 kW]	2	3	3	3	3	3	3	3	3	3
	LH tube heaters [30 kW]	2	3	3	3	3	3	3	3	3	3
	<b>LH total</b>	679	1103	1219	1334	1376	1418	1427	1427	1427	1427
	RAC (cooling demand), all types <12 kW	42	390	559	700	763	771	770	783	796	809
	RAC (heating demand), reversible <12kW	12	289	493	619	675	683	683	695	707	719
	<b>Total Room Air Conditioner</b>	54	679	1052	1319	1438	1453	1454	1479	1503	1528
1	<b>CIRC Circulator pumps &lt;2.5 kW</b>	75	111	117	125	132	130	123	116	109	102
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	2753	4587	5141	5677	6144	6567	6944	7319	7682	8033
	<b>TOTAL SPACE COOLING</b>	164	942	1192	1454	1617	1723	1831	1945	2045	2124
	NRVU avg (sales wt.)	1368	3200	3347	3529	3724	3919	4114	4309	4504	4699
	RVU Central Unidir. VU (1 fan)	171	383	329	300	315	329	348	371	393	416
	RVU Central Balanced VU (2 fans)	19	134	326	419	471	523	574	626	678	730
	RVU Local Balanced VU (2 fans)	1	17	38	62	88	113	138	163	189	214
	<b>TOTAL VENTILATION</b>	1559	3734	4041	4310	4597	4883	5174	5469	5764	6059
	LFL (T12,T8h,T8t,T5,other)	224	322	289	218	150	110	91	72	55	42
	HID (HPM, HPS, MH)	37	106	94	65	50	28	14	7	4	2
	CFLni (all shapes)	25	94	82	79	64	32	17	10	4	3
	CFLi (retrofit for GLS, HL)	31	395	256	305	182	135	73	50	31	20
	GLS (DLS & NDLS)	330	264	222	153	90	53	31	18	11	6
	HL (DLS & NDLS, LV & MV)	62	486	604	614	378	194	103	56	31	19
	LED replacing LFL (retrofit & luminaire)	0	0	54	200	272	364	399	464	558	657
	LED replacing HID (retrofit & luminaire)	0	0	17	105	122	154	184	219	254	290
	LED replacing CFLni (retrofit & luminaire)	0	0	3	13	20	25	29	33	36	39
	LED replacing DLS (retrofit & luminaire)	0	0	12	35	40	24	17	14	13	13
	LED replacing NDLS (retrofit & luminaire)	0	4	28	195	157	108	84	68	59	56
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	709	1667	1547	1434	914	552	329	212	137	92
	SUBTOTAL LED	0	5	115	549	611	675	712	798	920	1056
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	709	1672	1661	1983	1524	1227	1041	1011	1057	1148

REV\_RETAIL\_BAU

db	REVENUE RETAIL BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
DP TV all types		8320	13320	7560	9360	10800	12420	12600	12600	12600	12600
DP Monitor		522	1108	621	621	621	621	621	621	621	621
DP Signage		0	72	315	720	540	540	540	540	540	540
<b>DP Electronic Displays, total</b>		<b>8842</b>	<b>14500</b>	<b>8496</b>	<b>10701</b>	<b>11961</b>	<b>13581</b>	<b>13761</b>	<b>13761</b>	<b>13761</b>	<b>13761</b>
SSTB		0	72	16	0	0	0	0	0	0	0
CSTB		0	271	332	357	361	352	383	413	444	474
<b>Total STB set top boxes (Complex &amp; Simple)</b>		<b>0</b>	<b>343</b>	<b>348</b>	<b>357</b>	<b>361</b>	<b>352</b>	<b>383</b>	<b>413</b>	<b>444</b>	<b>474</b>
VIDEO players/recorders		2	1529	1317	173	0	0	0	0	0	0
VIDEO projectors		4	295	250	102	44	0	0	0	0	0
VIDEO game consoles		0	2691	2274	1744	2065	2065	2065	2065	2065	2065
<b>Total VIDEO</b>		<b>6</b>	<b>4515</b>	<b>3842</b>	<b>2018</b>	<b>2109</b>	<b>2065</b>	<b>2065</b>	<b>2065</b>	<b>2065</b>	<b>2065</b>
ES tower 1-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 1-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket cloud		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket cloud		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket resilient trad.		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket resilient cloud		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket resilient trad.		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket resilient cloud		0	0	0	0	0	0	0	0	0	0
ES blade 1-socket traditional		0	0	0	0	0	0	0	0	0	0
ES blade 2-socket traditional		0	0	0	0	0	0	0	0	0	0
ES blade 2-socket cloud		0	0	0	0	0	0	0	0	0	0
ES blade 4-socket traditional		0	0	0	0	0	0	0	0	0	0
ES blade 4-socket cloud		0	0	0	0	0	0	0	0	0	0
<b>ES total traditional</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES total cloud</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES Enterprise Servers total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
DS Online 2		0	0	0	0	0	0	0	0	0	0
DS Online 3		0	0	0	0	0	0	0	0	0	0
DS Online 4		0	0	0	0	0	0	0	0	0	0
<b>DS Data Storage products total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES + DS total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
PC Desktop		1548	5159	3850	3500	3500	3500	3500	3500	3500	3500
PC Notebook		163	11760	5390	5064	5064	5064	5064	5064	5064	5064
PC Tablet/slate		0	741	11721	19047	24615	29303	30769	32234	33699	35164
PC Thin client		9	104	104	104	104	104	104	104	104	104
PC Workstation		43	434	434	434	434	434	434	434	434	434
<b>Total PC, electricity</b>		<b>1763</b>	<b>18199</b>	<b>21500</b>	<b>28149</b>	<b>33717</b>	<b>38405</b>	<b>39871</b>	<b>41336</b>	<b>42801</b>	<b>44266</b>
EP-Copier mono		761	305	183	77	57	37	16	0	0	0
EP-Copier colour		0	102	444	666	760	828	895	963	1031	1099
EP-printer mono		153	145	127	104	89	79	68	58	47	36
EP-printer colour		0	140	208	281	336	391	445	499	554	608
IJ SFD printer		263	419	292	206	152	130	103	76	49	22
IJ MFD printer		324	1048	1438	1661	1823	1986	2149	2312	2475	2637
<b>Total imaging equipment, electricity</b>		<b>1502</b>	<b>2160</b>	<b>2693</b>	<b>2995</b>	<b>3217</b>	<b>3450</b>	<b>3677</b>	<b>3908</b>	<b>4155</b>	<b>4401</b>
SB Home Gateway, on-mode power		0	668	861	1054	1247	1440	1634	1827	2020	2213
SB Home NAS, on-mode power		0	30	52	74	96	117	139	161	182	204
SB Home Phones (fixed), on-mode power		200	994	1192	1271	1271	1271	1271	1271	1271	1271
SB Office Phones (fixed), on-mode power		190	363	386	409	433	456	479	502	526	549
<b>Total SB (networked) StandBy (rest)</b>		<b>389</b>	<b>2054</b>	<b>2491</b>	<b>2809</b>	<b>3047</b>	<b>3285</b>	<b>3523</b>	<b>3761</b>	<b>3999</b>	<b>4237</b>
db		0	0	0	0	0	0	0	0	0	0
0.0 EPS ≤ 6W, low-V		0	0	0	0	0	0	0	0	0	0
0.3 EPS 6–10 W		0	0	0	0	0	0	0	0	0	0
0.6 EPS 10–12 W		0	0	0	0	0	0	0	0	0	0
0.5 EPS 15–20 W		0	0	0	0	0	0	0	0	0	0
1.0 EPS 20–30 W		0	0	0	0	0	0	0	0	0	0
0.8 EPS 30–65 W, multiple-V		0	0	0	0	0	0	0	0	0	0
1.0 EPS 30–65 W		0	0	0	0	0	0	0	0	0	0
1.0 EPS 65–120 W		0	0	0	0	0	0	0	0	0	0
0.5 EPS 65–120 W, multiple-V		0	0	0	0	0	0	0	0	0	0
0.0 EPS 12–15 W		0	0	0	0	0	0	0	0	0	0
<b>EPS, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>EPS, double counted subtracted</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
UPS below 1.5 kVA		39	78	81	98	116	133	149	163	174	181
UPS 1.5 to 5 kVA		49	98	102	124	145	167	187	205	218	227
UPS 5 to 10 kVA		17	34	35	43	51	58	65	71	76	79
UPS 10 to 200 kVA		73	144	150	183	215	247	277	302	323	336
<b>Total UPS - Uninterrupted Power Supplies</b>		<b>179</b>	<b>354</b>	<b>368</b>	<b>448</b>	<b>527</b>	<b>605</b>	<b>678</b>	<b>741</b>	<b>791</b>	<b>823</b>
<b>TOTAL ELECTRONICS</b>		<b>12681</b>	<b>42126</b>	<b>39738</b>	<b>47477</b>	<b>54939</b>	<b>61744</b>	<b>63957</b>	<b>65985</b>	<b>68015</b>	<b>70028</b>
<b>RF Household refrigerator and freezer</b>		<b>3198</b>	<b>3491</b>	<b>3546</b>	<b>3601</b>	<b>3655</b>	<b>3710</b>	<b>3765</b>	<b>3820</b>	<b>3875</b>	<b>3929</b>
CF open vertical chilled multi deck (RVC2)		0	0	0	0	0	0	0	0	0	0
CF open horizontal frozen island (RHF4)		0	0	0	0	0	0	0	0	0	0
CF other supermarket display (non-BCs)		0	0	0	0	0	0	0	0	0	0
CF Plug in one door beverage cooler		0	0	0	0	0	0	0	0	0	0
CF Plug in horizontal ice cream freezer		0	0	0	0	0	0	0	0	0	0
CF Spiral vending machine		0	0	0	0	0	0	0	0	0	0
<b>Total CF Commercial Refrigeration</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

REV\_RETAIL\_BAU

db	REVENUE RETAIL BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Storage cabinet Chilled Vertical (CV)	23	29	31	32	33	35	37	38	40	41
	PF Storage cabinet Frozen Vertical (FV)	12	15	16	17	18	18	19	20	21	22
	PF Storage cabinet Chilled Horizontal (CH)	5	6	6	7	7	7	8	8	8	8
	PF Storage cabinet Frozen Horizontal (FH)	4	5	5	5	5	5	6	6	6	6
	<b>PF Storage cabinets All types</b>	<b>43</b>	<b>56</b>	<b>58</b>	<b>60</b>	<b>63</b>	<b>66</b>	<b>69</b>	<b>72</b>	<b>75</b>	<b>78</b>
	PF Process Chiller AC MT S ≤ 300 kW	3	7	7	8	9	10	10	11	12	13
	PF Process Chiller AC MT L > 300 kW	3	6	7	8	8	9	10	11	12	12
	PF Process Chiller AC LT S ≤ 200 kW	3	5	6	6	7	8	8	9	10	10
	PF Process Chiller AC LT L > 200 kW	2	5	6	6	7	7	8	9	9	10
	PF Process Chiller WC MT S ≤ 300 kW	1	3	3	4	4	4	5	5	5	6
	PF Process Chiller WC MT L > 300 kW	2	4	5	5	6	6	7	8	8	9
	PF Process Chiller WC LT S ≤ 200 kW	1	3	3	3	4	4	5	5	5	6
	PF Process Chiller WC LT L > 200 kW	2	4	4	4	5	5	6	6	7	7
	<b>PF Process Chiller All MT&amp;LT</b>	<b>18</b>	<b>37</b>	<b>41</b>	<b>45</b>	<b>49</b>	<b>54</b>	<b>59</b>	<b>63</b>	<b>68</b>	<b>73</b>
	PF Condensing Unit MT S 0.2-1 kW	18	14	14	15	17	18	19	21	22	24
	PF Condensing Unit MT M 1-5 kW	38	30	31	33	36	39	42	45	48	52
	PF Condensing Unit MT L 5-20 kW	39	31	32	34	37	40	43	46	50	53
	PF Condensing Unit MT XL 20-50 kW	30	24	24	26	28	30	33	35	38	41
	PF Condensing Unit LT S 0.1-0.4 kW	3	2	2	3	3	3	3	4	4	4
	PF Condensing Unit LT M 0.4-2 kW	5	4	4	5	5	5	6	6	7	7
	PF Condensing Unit LT L 2-8 kW	15	12	12	13	14	15	16	17	18	20
	PF Condensing Unit LT XL 8-20 kW	13	10	10	11	12	13	14	15	16	17
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>160</b>	<b>127</b>	<b>130</b>	<b>140</b>	<b>151</b>	<b>163</b>	<b>175</b>	<b>189</b>	<b>204</b>	<b>219</b>
	<b>PF Professional Refrigeration, Total</b>	<b>125</b>	<b>143</b>	<b>151</b>	<b>161</b>	<b>173</b>	<b>185</b>	<b>198</b>	<b>211</b>	<b>224</b>	<b>238</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>3324</b>	<b>3634</b>	<b>3697</b>	<b>3762</b>	<b>3828</b>	<b>3895</b>	<b>3963</b>	<b>4031</b>	<b>4099</b>	<b>4168</b>
	COOK El. Hobs, Wh/ltr	999	2271	2435	2628	2772	2902	3025	3141	3249	3350
	COOK El. Ovens, kWh/a	2181	2591	2732	2965	2868	2889	2925	2962	2999	3036
	COOK Gas Hobs, % efficiency NCV	889	767	700	637	588	560	532	504	475	447
	COOK Gas Ovens, kWh prim, NCV	308	314	298	291	282	274	265	257	248	240
	COOK Range Hoods, kWh elec	529	647	680	715	752	790	828	867	905	943
	<b>Total CA Cooking Appliances</b>	<b>4906</b>	<b>6591</b>	<b>6846</b>	<b>7235</b>	<b>7262</b>	<b>7415</b>	<b>7576</b>	<b>7730</b>	<b>7877</b>	<b>8017</b>
	COFFEE Dripfilter (glass)	158	110	93	77	75	75	75	75	75	75
	COFFEE Dripfilter (thermos)	30	48	49	49	50	51	51	52	52	53
	COFFEE Dripfilter (full automatic)	0	80	90	100	111	121	132	142	153	163
	COFFEE Pad filter	0	184	201	218	236	253	270	287	305	322
	COFFEE Hard cap espresso	23	96	206	309	323	323	323	323	323	323
	COFFEE Semi-auto espresso	26	29	28	26	24	22	21	19	17	15
	COFFEE Fully-auto espresso	148	169	196	223	250	277	305	332	359	386
	<b>Total CM household Coffee Makers</b>	<b>385</b>	<b>716</b>	<b>863</b>	<b>1004</b>	<b>1070</b>	<b>1124</b>	<b>1177</b>	<b>1231</b>	<b>1284</b>	<b>1338</b>
	<b>TOTAL COOKING</b>	<b>5290</b>	<b>7307</b>	<b>7708</b>	<b>8239</b>	<b>8332</b>	<b>8538</b>	<b>8753</b>	<b>8960</b>	<b>9161</b>	<b>9354</b>
	<b>WM Household Washing Machine</b>	<b>1752</b>	<b>2550</b>	<b>2550</b>	<b>2742</b>	<b>2632</b>	<b>2632</b>	<b>2632</b>	<b>2632</b>	<b>2632</b>	<b>2632</b>
	<b>DW Household Dishwasher</b>	<b>752</b>	<b>1644</b>	<b>1906</b>	<b>2169</b>	<b>2431</b>	<b>2693</b>	<b>2955</b>	<b>3217</b>	<b>3480</b>	<b>3742</b>
	LD Household Laundry Drier vented el.	357	361	340	303	309	312	313	315	317	318
	LD Household Laundry Drier condens el.	202	756	885	994	1014	1022	1028	1034	1039	1045
	LD Household Laundry Drier vented gas	3	6	7	9	9	9	9	9	10	10
	<b>Total LD household Laundry Drier</b>	<b>562</b>	<b>1123</b>	<b>1232</b>	<b>1305</b>	<b>1331</b>	<b>1343</b>	<b>1350</b>	<b>1358</b>	<b>1365</b>	<b>1373</b>
	VC dom. Vacuum Cleaner	1705	5048	7080	8614	9511	10407	11304	12201	13097	13994
	VC nondom Vacuum Cleaner	122	125	132	138	145	152	160	167	174	181
	<b>Total VC Vacuum Cleaner</b>	<b>1827</b>	<b>5173</b>	<b>7212</b>	<b>8753</b>	<b>9656</b>	<b>10560</b>	<b>11463</b>	<b>12367</b>	<b>13271</b>	<b>14174</b>
	<b>TOTAL CLEANING</b>	<b>4892</b>	<b>10491</b>	<b>12901</b>	<b>14968</b>	<b>16051</b>	<b>17228</b>	<b>18401</b>	<b>19574</b>	<b>20748</b>	<b>21921</b>
0.5	FAN Axial<300Pa [247 W flow out]	39	128	147	166	166	166	166	166	166	166
0.5	FAN Axial>300Pa [489 W fluid-dyn out]	54	186	196	206	206	206	206	206	206	206
0.5	FAN Centr.FC [141 W flow out]	33	85	98	111	111	111	111	111	111	111
0.5	FAN Centr.BC-free [2120 W flow out]	19	47	53	59	66	67	68	69	71	72
0.5	FAN Centr.BC [2052 W flow out]	42	111	127	143	159	163	179	195	211	227
0.5	FAN Cross-flow [31 W flow out]	8	17	20	22	24	25	27	30	32	34
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>97</b>	<b>287</b>	<b>320</b>	<b>354</b>	<b>366</b>	<b>369</b>	<b>379</b>	<b>389</b>	<b>398</b>	<b>408</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	53	85	86	84	81	77	72	67	62	57
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	31	49	49	48	45	42	39	35	30	27
0.45	Medium (L) 3-ph 75-375 kW no VSD	24	36	35	33	30	26	22	17	17	17
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>109</b>	<b>170</b>	<b>170</b>	<b>165</b>	<b>156</b>	<b>146</b>	<b>133</b>	<b>119</b>	<b>109</b>	<b>102</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	21	61	73	84	95	108	126	147	173	203
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	15	45	54	62	70	80	94	110	128	143
0.45	Medium (L) 3-ph 75-375 kW with VSD	12	34	41	47	54	62	72	84	85	87
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>48</b>	<b>140</b>	<b>167</b>	<b>193</b>	<b>219</b>	<b>250</b>	<b>292</b>	<b>340</b>	<b>386</b>	<b>433</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>157</b>	<b>310</b>	<b>337</b>	<b>359</b>	<b>376</b>	<b>396</b>	<b>425</b>	<b>459</b>	<b>495</b>	<b>534</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	34	64	66	66	66	66	65	65	64	63
0.45	Small 1 ph 0.12-0.75 kW with VSD	5	44	52	55	58	62	66	70	74	79
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>39</b>	<b>107</b>	<b>119</b>	<b>121</b>	<b>124</b>	<b>127</b>	<b>131</b>	<b>134</b>	<b>138</b>	<b>142</b>

REV\_RETAIL\_BAU

db REVENUE RETAIL BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45 Small 3 ph 0.12-0.75 kW no VSD	19	31	32	33	32	32	32	31	31	30
0.45 Small 3 ph 0.12-0.75 kW with VSD	2	16	20	22	24	26	29	31	35	38
<b>0.45 Total Small 3-ph 0.12-0.75 kW</b>	<b>21</b>	<b>47</b>	<b>52</b>	<b>54</b>	<b>56</b>	<b>58</b>	<b>60</b>	<b>63</b>	<b>65</b>	<b>68</b>
0.45 Large 3-ph LV 375-1000 kW no VSD	11	14	13	12	12	12	12	11	11	10
0.45 Large 3-ph LV 375-1000kW with VSD	4	24	33	36	38	40	42	43	45	47
<b>0.45 Total Large 3-ph LV 375-1000 kW</b>	<b>15</b>	<b>38</b>	<b>45</b>	<b>48</b>	<b>50</b>	<b>52</b>	<b>53</b>	<b>55</b>	<b>56</b>	<b>58</b>
0.45 Explosion motors (S) 3-ph 0.75-7.5 kW	3	6	6	6	6	6	6	6	6	6
0.45 Explosion motors (M) 3-ph 7.5-75 kW	3	5	5	6	6	6	6	6	6	6
0.45 Explosion motors (L) 3-ph 75-375 kW	2	4	4	4	4	4	4	4	4	4
<b>0.45 Total Expl. 0.75-375 kW (no VSD)</b>	<b>9</b>	<b>15</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>
0.45 Brake motors (S) 3-ph 0.75-7.5 kW	4	7	8	8	8	8	8	8	8	8
0.45 Brake motors (M) 3-ph 7.5-75 kW	4	6	7	7	7	7	7	7	7	7
0.45 Brake motors (L) 3-ph 75-375 kW	3	5	5	5	5	5	5	5	5	5
<b>0.45 Total Brake 0.75-375 kW (no VSD)</b>	<b>11</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
0.45 8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45 8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45 8-pole motors (L) 3-ph 75-375 kW	0	0	0	0	0	0	0	0	0	0
<b>0.45 Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>0.45 1-phase motors &gt;0.75 kW (no VSD)</b>	<b>76</b>	<b>133</b>	<b>138</b>	<b>141</b>	<b>141</b>	<b>141</b>	<b>140</b>	<b>140</b>	<b>143</b>	<b>146</b>
<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>180</b>	<b>368</b>	<b>400</b>	<b>418</b>	<b>431</b>	<b>446</b>	<b>466</b>	<b>488</b>	<b>514</b>	<b>542</b>
<b>WP Water pumps</b>	<b>131</b>	<b>177</b>	<b>191</b>	<b>205</b>	<b>220</b>	<b>236</b>	<b>251</b>	<b>267</b>	<b>282</b>	<b>297</b>
CP Fixed Speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
CP Variable speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
CP Pistons 2-64 l/s	0	0	0	0	0	0	0	0	0	0
<b>Total CP Standard Air Compressors</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL INDUSTRY COMPONENTS</b>	<b>408</b>	<b>832</b>	<b>911</b>	<b>977</b>	<b>1017</b>	<b>1050</b>	<b>1095</b>	<b>1143</b>	<b>1194</b>	<b>1248</b>
TRAFO Distribution, kWh/a	51	80	86	92	99	106	114	121	129	136
TRAFO Industry oil	26	43	46	49	53	57	61	65	69	73
TRAFO Industry dry	13	20	21	23	25	26	28	30	32	34
TRAFO Power	204	327	351	378	406	437	468	500	531	563
TRAFO DER oil	0	2	4	6	10	17	25	34	42	50
TRAFO DER dry	0	14	24	39	65	107	157	208	259	310
TRAFO Small	6	6	6	6	6	6	6	6	6	6
<b>TOTAL ENERGY SECTOR</b>	<b>299</b>	<b>492</b>	<b>538</b>	<b>593</b>	<b>663</b>	<b>756</b>	<b>859</b>	<b>963</b>	<b>1067</b>	<b>1171</b>
Tyres C1, replacement for cars	4411	5917	6552	7430	8408	9496	9496	9496	9496	9496
Tyres C1, OEM for cars	1328	1769	2091	2237	2532	2860	2860	2860	2860	2860
<b>Tyres C1, total</b>	<b>5740</b>	<b>7686</b>	<b>8643</b>	<b>9668</b>	<b>10940</b>	<b>12356</b>	<b>12356</b>	<b>12356</b>	<b>12356</b>	<b>12356</b>
Tyres C2, replacement for vans	765	969	972	1090	1223	1369	1369	1369	1369	1369
Tyres C2, OEM for vans	161	174	218	230	258	289	289	289	289	289
<b>Tyres C2, total</b>	<b>927</b>	<b>1142</b>	<b>1190</b>	<b>1320</b>	<b>1481</b>	<b>1658</b>	<b>1658</b>	<b>1658</b>	<b>1658</b>	<b>1658</b>
Tyres C3, replacement for trucks/busses	1341	1317	1595	2027	2325	2662	2662	2662	2662	2662
Tyres C3, OEM for trucks/busses	374	310	435	565	648	742	742	742	742	742
<b>Tyres C3, total</b>	<b>1715</b>	<b>1627</b>	<b>2030</b>	<b>2593</b>	<b>2973</b>	<b>3404</b>	<b>3404</b>	<b>3404</b>	<b>3404</b>	<b>3404</b>
<b>Tyres, total C1+C2+C3</b>	<b>8381</b>	<b>10456</b>	<b>11864</b>	<b>13580</b>	<b>15394</b>	<b>17418</b>	<b>17418</b>	<b>17418</b>	<b>17418</b>	<b>17418</b>
<b>TRANSPORT SECTOR</b>	<b>8381</b>	<b>10456</b>	<b>11864</b>	<b>13580</b>	<b>15394</b>	<b>17418</b>	<b>17418</b>	<b>17418</b>	<b>17418</b>	<b>17418</b>
<b>GENERAL TOTAL (in m euro 2015)</b>	<b>41364</b>	<b>87572</b>	<b>90734</b>	<b>104490</b>	<b>115675</b>	<b>126625</b>	<b>131050</b>	<b>135467</b>	<b>139933</b>	<b>144391</b>
GENERAL TOTAL (in bn euro 2015)	41	88	91	104	116	127	131	135	140	144
<b>SUMMARY BAU</b>										
<b>retail revenue (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WATER HEATING</b>	<b>0.9</b>	<b>1.3</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>
<b>SPACE HEATING</b>	<b>2.8</b>	<b>4.6</b>	<b>5.1</b>	<b>5.7</b>	<b>6.1</b>	<b>6.6</b>	<b>6.9</b>	<b>7.3</b>	<b>7.7</b>	<b>8.0</b>
<b>SPACE COOLING</b>	<b>0.2</b>	<b>0.9</b>	<b>1.2</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>
<b>VENTILATION</b>	<b>1.6</b>	<b>3.7</b>	<b>4.0</b>	<b>4.3</b>	<b>4.6</b>	<b>4.9</b>	<b>5.2</b>	<b>5.5</b>	<b>5.8</b>	<b>6.1</b>
<b>LIGHTING</b>	<b>0.7</b>	<b>1.7</b>	<b>1.7</b>	<b>2.0</b>	<b>1.5</b>	<b>1.2</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>
<b>ELECTRONICS</b>	<b>12.7</b>	<b>42.1</b>	<b>39.7</b>	<b>47.5</b>	<b>54.9</b>	<b>61.7</b>	<b>64.0</b>	<b>66.0</b>	<b>68.0</b>	<b>70.0</b>
<b>FOOD PRESERVATION</b>	<b>3.3</b>	<b>3.6</b>	<b>3.7</b>	<b>3.8</b>	<b>3.8</b>	<b>3.9</b>	<b>4.0</b>	<b>4.0</b>	<b>4.1</b>	<b>4.2</b>
<b>COOKING</b>	<b>5.3</b>	<b>7.3</b>	<b>7.7</b>	<b>8.2</b>	<b>8.3</b>	<b>8.5</b>	<b>8.8</b>	<b>9.0</b>	<b>9.2</b>	<b>9.4</b>
<b>CLEANING</b>	<b>4.9</b>	<b>10.5</b>	<b>12.9</b>	<b>15.0</b>	<b>16.1</b>	<b>17.2</b>	<b>18.4</b>	<b>19.6</b>	<b>20.7</b>	<b>21.9</b>
INDUSTRY COMPONENTS	0.4	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2
<b>ENERGY SECTOR</b>	<b>0.3</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>
<b>TRANSPORT SECTOR</b>	<b>8.4</b>	<b>10.5</b>	<b>11.9</b>	<b>13.6</b>	<b>15.4</b>	<b>17.4</b>	<b>17.4</b>	<b>17.4</b>	<b>17.4</b>	<b>17.4</b>
<b>TOTAL in bn euro 2015</b>	<b>41</b>	<b>88</b>	<b>91</b>	<b>104</b>	<b>116</b>	<b>127</b>	<b>131</b>	<b>135</b>	<b>140</b>	<b>144</b>
<b>Revenues for VSDs only (without motor)</b>										
VSD - Very Small 0.12 - 0.75 kW 1-phase	5	36	44	46	48	51	55	58	62	66
VSD - Very Small 0.12 - 0.75 kW 3-phase	2	12	15	16	17	19	21	23	26	29
VSD - Small 0.75 - 7.5 kW 3-phase	15	44	52	60	67	77	90	106	124	146
VSD - Medium 7.5 - 75kW 3-phase	11	31	37	43	48	55	65	76	89	99
VSD - Large 75 - 375kW 3-phase	6	18	21	24	27	31	37	43	44	46
VSD - Very Large 375 - 1,000kW 3-phase	3	15	21	23	24	25	26	28	29	31
<b>Total revenues, VSDs only (BAU)</b>	<b>41</b>	<b>156</b>	<b>189</b>	<b>211</b>	<b>233</b>	<b>259</b>	<b>294</b>	<b>334</b>	<b>375</b>	<b>416</b>

REV\_RETAIL\_ECO

db	REVENUE RETAIL ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	529	643	1032	1188	1366	1349	1331	1313	1295	1277
	<b>CH Central Heating combi, water heat</b>	376	655	1003	1426	1554	1682	1811	1939	2066	2192
	<b>TOTAL WATER HEATING</b>	905	1298	2035	2613	2920	3032	3142	3252	3361	3469
	<b>CH Central Heating boiler, space heat</b>	1962	2962	5215	6695	8400	9590	10938	12369	13883	15479
	SFB Wood Manual [18 kW]	22	13	12	9	5	5	4	4	3	3
	SFB Wood Direct Draft [20 kW]	1	37	38	41	45	53	61	72	84	99
	SFB Coal [25 kW]	8	4	0	0	0	0	0	0	0	0
	SFB Pellets [25 kW]	0	9	15	15	15	16	18	20	22	24
	SFB Wood chips [160 kW]	0	6	6	7	8	9	10	11	12	13
	<b>Total Solid Fuel Boiler</b>	31	69	72	73	74	83	94	106	121	139
	CHAE-S (≤ 400 kW)	29	121	133	147	162	177	193	208	223	236
	CHAE-L (> 400 kW)	6	21	21	22	23	24	25	26	27	28
	CHWE-S (≤ 400 kW)	3	11	12	13	14	16	17	19	20	21
	CHWE-M (> 400 kW; ≤ 1500 kW)	3	10	10	11	11	11	12	12	13	13
	CHWE-L (> 1500 kW)	2	6	7	7	7	7	8	8	8	9
	CHF	0	0	1	1	1	1	1	1	1	2
	HT PCH-AE-S	14	23	24	26	27	28	29	30	31	32
	HT PCH-AE-L	11	18	20	21	21	22	23	24	25	26
	HT PCH-WE-S	3	5	5	6	6	6	6	7	7	7
	HT PCH-WE-M	12	20	21	22	23	24	25	26	27	28
	HT PCH-WE-L	2	4	4	4	4	5	5	5	5	5
	AC rooftop	13	43	43	33	19	5	5	5	5	5
	AC splits	23	83	87	84	81	78	75	72	69	66
	AC VRF	0	188	246	358	453	546	636	718	786	836
	ACF	0	0	1	1	1	1	1	1	1	2
	<b>SubTotal AHC Air Cooling</b>	121	552	634	754	854	952	1061	1162	1248	1315
	AC rooftop (rev)	8	26	25	20	11	3	0	0	0	0
	AC splits (rev)	15	53	56	54	52	50	48	46	44	42
	AC VRF (rev)	0	161	200	305	371	426	472	507	529	535
	ACF (rev)	0	1	1	2	2	2	3	3	3	3
	AHF	45	29	28	28	27	25	23	20	19	18
	AHE	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC Air Heating (rev double)</b>	68	271	309	410	464	507	545	577	595	599
	<b>Total AHC Air Heating &amp; Cooling</b>	166	582	661	782	881	978	1084	1182	1268	1334
	LH open fireplace [8 kW]	118	172	173	215	235	225	217	209	202	194
	LH closed fireplace/inset [8 kW]	74	202	225	295	317	309	299	288	277	267
	LH wood stove [8 kW]	81	95	105	139	149	145	140	135	129	124
	LH coal stove [8 kW]	25	19	17	19	15	10	8	8	8	8
	LH cooker [10 kW]	69	138	167	215	228	224	216	208	206	206
	LH SHR stove [8 kW]	75	104	129	156	173	191	195	195	195	195
	LH pellet stove [8 kW]	0	78	98	118	126	135	137	137	137	137
	LH open fire gas, NCV [4.2 kW]	4	6	7	8	8	8	8	8	8	8
	LH closed fire gas, NCV [4.2 kW]	22	24	25	27	28	28	27	27	27	27
	LH flueless fuel heater, NCV [1.5 kW]	8	16	15	14	13	11	11	11	11	11
	LH elec.portable [1 kW]	19	23	24	24	25	26	27	27	27	27
	LH elec.convecteur [1 kW]	137	167	172	177	185	194	195	195	195	195
	LH elec.storage [2.75 kW]	16	19	22	25	26	26	25	24	23	22
	LH elec.underfloor [0.62 kW]	28	35	37	38	39	40	40	40	40	40
	LH luminous heaters [20 kW]	2	3	3	3	3	3	3	3	3	3
	LH tube heaters [30 kW]	2	3	3	3	3	3	3	3	3	3
	<b>LH total</b>	679	1103	1222	1478	1575	1579	1551	1516	1490	1467
	RAC (cooling demand), all types <12 kW	42	390	604	774	853	865	858	850	842	835
	RAC (heating demand), reversible <12kW	12	289	532	685	755	766	760	754	748	742
	<b>Total Room Air Conditioner</b>	54	679	1136	1459	1609	1631	1618	1605	1591	1576
1	<b>CIRC Circulator pumps &lt;2.5 kW</b>	75	120	153	155	157	148	133	119	109	102
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	2753	4693	7350	9340	11268	12524	13888	15323	16838	18426
	<b>TOTAL SPACE COOLING</b>	164	942	1237	1528	1707	1817	1918	2012	2091	2150
	NRVU avg (sales wt.)	1368	3200	3359	3529	3724	3919	4114	4309	4504	4699
	RVU Central Unidir. VU (1 fan)	171	383	573	522	548	571	593	613	631	648
	RVU Central Balanced VU (2 fans)	19	134	403	501	544	585	622	657	688	730
	RVU Local Balanced VU (2 fans)	1	17	38	62	88	113	138	163	189	214
	<b>TOTAL VENTILATION</b>	1559	3734	4373	4614	4904	5188	5468	5742	6012	6291
	LFL (T12,T8h,T8t,T5,other)	224	321	233	170	52	30	16	11	6	4
	HID (HPM, HPS, MH)	37	106	75	46	29	11	3	1	0	0
	CFLni (all shapes)	25	94	71	51	31	9	3	1	0	0
	CFLi (retrofit for GLS, HL)	31	541	174	93	0	0	0	0	0	0
	GLS (DLS & NDLS)	330	136	12	0	0	0	0	0	0	0
	HL (DLS & NDLS, LV & MV)	62	554	646	130	0	0	0	0	0	0
	LED replacing LFL (retrofit & luminaire)	0	0	98	336	587	543	522	589	702	806
	LED replacing HID (retrofit & luminaire)	0	0	171	113	169	199	230	264	300	340
	LED replacing CFLni (retrofit & luminaire)	0	0	19	28	29	33	36	38	43	47
	LED replacing DLS (retrofit & luminaire)	0	14	92	60	49	11	12	14	15	17
	LED replacing NDLS (retrofit & luminaire)	0	8	285	423	186	107	56	58	64	71
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	709	1754	1211	492	113	50	22	13	7	4
	SUBTOTAL LED	0	22	666	959	1021	893	856	964	1124	1281
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	709	1776	1877	1451	1134	943	878	977	1131	1284

REV\_RETAIL\_ECO

db	REVENUE RETAIL ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
DP TV all types		8320	13320	7560	9360	10800	12420	12600	12600	12600	12600
DP Monitor		522	1108	621	621	621	621	621	621	621	621
DP Signage		0	72	315	720	540	540	540	540	540	540
<b>DP Electronic Displays, total</b>		<b>8842</b>	<b>14500</b>	<b>8496</b>	<b>10701</b>	<b>11961</b>	<b>13581</b>	<b>13761</b>	<b>13761</b>	<b>13761</b>	<b>13761</b>
SSTB		0	72	16	0	0	0	0	0	0	0
CSTB		0	271	341	357	361	352	383	413	444	474
<b>Total STB set top boxes</b>		<b>0</b>	<b>343</b>	<b>358</b>	<b>357</b>	<b>361</b>	<b>352</b>	<b>383</b>	<b>413</b>	<b>444</b>	<b>474</b>
VIDEO players/recorders		2	1529	1317	173	0	0	0	0	0	0
VIDEO projectors		4	295	250	102	44	0	0	0	0	0
VIDEO game consoles		0	2691	2274	1744	2065	2065	2065	2065	2065	2065
<b>Total VIDEO</b>		<b>6</b>	<b>4515</b>	<b>3842</b>	<b>2018</b>	<b>2109</b>	<b>2065</b>	<b>2065</b>	<b>2065</b>	<b>2065</b>	<b>2065</b>
ES tower 1-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 1-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket cloud		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket traditional		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket cloud		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket resilient trad.		0	0	0	0	0	0	0	0	0	0
ES rack 2-socket resilient cloud		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket resilient trad.		0	0	0	0	0	0	0	0	0	0
ES rack 4-socket resilient cloud		0	0	0	0	0	0	0	0	0	0
ES blade 1-socket traditional		0	0	0	0	0	0	0	0	0	0
ES blade 2-socket traditional		0	0	0	0	0	0	0	0	0	0
ES blade 2-socket cloud		0	0	0	0	0	0	0	0	0	0
ES blade 4-socket traditional		0	0	0	0	0	0	0	0	0	0
ES blade 4-socket cloud		0	0	0	0	0	0	0	0	0	0
<b>ES total traditional</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES total cloud</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES Enterprise Servers total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
DS Online 2		0	0	0	0	0	0	0	0	0	0
DS Online 3		0	0	0	0	0	0	0	0	0	0
DS Online 4		0	0	0	0	0	0	0	0	0	0
<b>DS Data Storage products total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ES + DS total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
PC Desktop		1548	5159	3850	3500	3500	3500	3500	3500	3500	3500
PC Notebook		163	11760	5390	5064	5064	5064	5064	5064	5064	5064
PC Tablet/slate		0	741	11721	19047	24615	29303	30769	32234	33699	35164
PC Thin client		9	104	104	104	104	104	104	104	104	104
PC Workstation		43	434	434	434	434	434	434	434	434	434
<b>Total PC, electricity</b>		<b>1763</b>	<b>18199</b>	<b>21500</b>	<b>28149</b>	<b>33717</b>	<b>38405</b>	<b>39871</b>	<b>41336</b>	<b>42801</b>	<b>44266</b>
EP-Copier mono		761	305	183	77	57	37	16	0	0	0
EP-Copier colour		0	102	444	666	760	828	895	963	1031	1099
EP-printer mono		153	145	127	104	89	79	68	58	47	36
EP-printer colour		0	140	208	281	336	391	445	499	554	608
IJ SFD printer		263	419	292	206	152	130	103	76	49	22
IJ MFD printer		324	1048	1438	1661	1823	1986	2149	2312	2475	2637
<b>Total imaging equipment, electricity</b>		<b>1502</b>	<b>2160</b>	<b>2693</b>	<b>2995</b>	<b>3217</b>	<b>3450</b>	<b>3677</b>	<b>3908</b>	<b>4155</b>	<b>4401</b>
SB Home Gateway, on-mode power		0	668	861	1054	1247	1440	1634	1827	2020	2213
SB Home NAS, on-mode power		0	30	52	74	96	117	139	161	182	204
SB Home Phones (fixed), on-mode power		200	994	1192	1271	1271	1271	1271	1271	1271	1271
SB Office Phones (fixed), on-mode power		190	363	386	409	433	456	479	502	526	549
<b>Total SB (networked) StandBy (rest)</b>		<b>389</b>	<b>2054</b>	<b>2491</b>	<b>2809</b>	<b>3047</b>	<b>3285</b>	<b>3523</b>	<b>3761</b>	<b>3999</b>	<b>4237</b>
db											
0.0 EPS ≤ 6W, low-V		0	0	0	0	0	0	0	0	0	0
0.3 EPS 6–10 W		0	0	0	0	0	0	0	0	0	0
0.6 EPS 10–12 W		0	0	0	0	0	0	0	0	0	0
0.5 EPS 15–20 W		0	0	0	0	0	0	0	0	0	0
1.0 EPS 20–30 W		0	0	0	0	0	0	0	0	0	0
0.8 EPS 30–65 W, multiple-V		0	0	0	0	0	0	0	0	0	0
1.0 EPS 30-65 W		0	0	0	0	0	0	0	0	0	0
1.0 EPS 65–120 W		0	0	0	0	0	0	0	0	0	0
0.5 EPS 65–120 W, multiple-V		0	0	0	0	0	0	0	0	0	0
0.0 EPS 12–15 W		0	0	0	0	0	0	0	0	0	0
<b>EPS, total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>EPS, double counted subtracted</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
UPS below 1.5 kVA		39	78	81	98	116	133	149	163	174	181
UPS 1.5 to 5 kVA		49	98	102	124	145	167	187	205	218	227
UPS 5 to 10 kVA		17	34	35	43	51	58	65	71	76	79
UPS 10 to 200 kVA		73	144	150	183	215	247	277	302	323	336
<b>Total UPS - Uninterrupted Power Supplies</b>		<b>179</b>	<b>354</b>	<b>368</b>	<b>448</b>	<b>527</b>	<b>605</b>	<b>678</b>	<b>741</b>	<b>791</b>	<b>823</b>
<b>TOTAL ELECTRONICS</b>		<b>12681</b>	<b>42126</b>	<b>39748</b>	<b>47477</b>	<b>54939</b>	<b>61744</b>	<b>63957</b>	<b>65985</b>	<b>68015</b>	<b>70028</b>
<b>RF Household refrigerator and freezer</b>		<b>3198</b>	<b>4006</b>	<b>4339</b>	<b>4524</b>	<b>5164</b>	<b>4958</b>	<b>5429</b>	<b>5596</b>	<b>5744</b>	<b>5873</b>
CF open vertical chilled multi deck (RVC2)		0	0	0	0	0	0	0	0	0	0
CF open horizontal frozen island (RHF4)		0	0	0	0	0	0	0	0	0	0
CF other supermarket display (non-BCs)		0	0	0	0	0	0	0	0	0	0
CF Plug in one door beverage cooler		0	0	0	0	0	0	0	0	0	0
CF Plug in horizontal ice cream freezer		0	0	0	0	0	0	0	0	0	0
CF Spiral vending machine		0	0	0	0	0	0	0	0	0	0
<b>Total CF Commercial Refrigeration</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

REV\_RETAIL\_ECO

db	REVENUE RETAIL ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Storage cabinet Chilled Vertical (CV)	23	29	31	35	35	35	37	38	40	41
	PF Storage cabinet Frozen Vertical (FV)	12	15	16	18	18	18	19	20	21	22
	PF Storage cabinet Chilled Horizontal (CH)	5	6	6	7	7	7	8	8	8	8
	PF Storage cabinet Frozen Horizontal (FH)	4	5	5	5	5	5	6	6	6	6
	<b>PF Storage cabinets All types</b>	<b>43</b>	<b>56</b>	<b>58</b>	<b>65</b>	<b>65</b>	<b>66</b>	<b>69</b>	<b>72</b>	<b>75</b>	<b>78</b>
	PF Process Chiller AC MT S ≤ 300 kW	3	7	7	8	9	10	10	11	12	13
	PF Process Chiller AC MT L > 300 kW	3	6	7	8	8	9	10	11	12	12
	PF Process Chiller AC LT S ≤ 200 kW	3	5	6	7	7	8	8	9	10	10
	PF Process Chiller AC LT L > 200 kW	2	5	6	6	7	7	8	9	9	10
	PF Process Chiller WC MT S ≤ 300 kW	1	3	3	4	4	4	5	5	5	6
	PF Process Chiller WC MT L > 300 kW	2	4	5	5	6	6	7	8	8	9
	PF Process Chiller WC LT S ≤ 200 kW	1	3	3	4	4	4	5	5	5	6
	PF Process Chiller WC LT L > 200 kW	2	4	4	4	5	5	6	6	7	7
	<b>PF Process Chiller All MT&amp;LT</b>	<b>18</b>	<b>37</b>	<b>41</b>	<b>46</b>	<b>49</b>	<b>54</b>	<b>59</b>	<b>63</b>	<b>68</b>	<b>73</b>
	PF Condensing Unit MT S 0.2-1 kW	18	14	14	16	17	18	19	21	22	24
	PF Condensing Unit MT M 1-5 kW	38	30	31	34	36	39	42	45	48	52
	PF Condensing Unit MT L 5-20 kW	39	31	32	37	37	40	43	46	50	53
	PF Condensing Unit MT XL 20-50 kW	30	24	24	28	29	30	33	35	38	41
	PF Condensing Unit LT S 0.1-0.4 kW	3	2	2	3	3	3	3	4	4	4
	PF Condensing Unit LT M 0.4-2 kW	5	4	4	5	5	5	6	6	7	7
	PF Condensing Unit LT L 2-8 kW	15	12	12	14	14	15	16	17	18	20
	PF Condensing Unit LT XL 8-20 kW	13	10	10	12	12	13	14	15	16	17
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>160</b>	<b>127</b>	<b>130</b>	<b>148</b>	<b>152</b>	<b>163</b>	<b>175</b>	<b>189</b>	<b>204</b>	<b>219</b>
	<b>PF Professional Refrigeration, Total</b>	<b>125</b>	<b>143</b>	<b>151</b>	<b>170</b>	<b>176</b>	<b>185</b>	<b>198</b>	<b>211</b>	<b>224</b>	<b>238</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>3324</b>	<b>4150</b>	<b>4489</b>	<b>4694</b>	<b>5339</b>	<b>5143</b>	<b>5627</b>	<b>5807</b>	<b>5968</b>	<b>6111</b>
	COOK El. Hobs, Wh/ltr	999	2271	2435	2738	2883	3013	3136	3252	3359	3459
	COOK El. Ovens, kWh/a	2181	2591	2769	3116	3009	2906	2925	2962	2999	3036
	COOK Gas Hobs, % efficiency NCV	889	767	700	673	613	560	532	504	475	447
	COOK Gas Ovens, kWh prim, NCV	308	314	317	401	386	372	357	343	330	317
	COOK Range Hoods, kWh elec	529	647	680	889	1036	1045	1051	1055	1057	1057
	<b>Total CA Cooking Appliances</b>	<b>4906</b>	<b>6591</b>	<b>6901</b>	<b>7817</b>	<b>7928</b>	<b>7896</b>	<b>8002</b>	<b>8116</b>	<b>8221</b>	<b>8316</b>
	COFFEE Dripfilter (glass)	158	110	105	87	81	77	75	75	75	75
	COFFEE Dripfilter (thermos)	30	48	49	49	50	51	51	52	52	53
	COFFEE Dripfilter (full automatic)	0	80	90	100	111	121	132	142	153	163
	COFFEE Pad filter	0	184	201	218	236	253	270	287	305	322
	COFFEE Hard cap espresso	23	96	206	309	323	323	323	323	323	323
	COFFEE Semi-auto espresso	26	29	28	26	24	22	21	19	17	15
	COFFEE Fully-auto espresso	148	169	196	223	250	277	305	332	359	386
	<b>Total CM household Coffee Makers</b>	<b>385</b>	<b>716</b>	<b>875</b>	<b>1014</b>	<b>1076</b>	<b>1125</b>	<b>1177</b>	<b>1231</b>	<b>1284</b>	<b>1338</b>
	<b>TOTAL COOKING</b>	<b>5290</b>	<b>7307</b>	<b>7775</b>	<b>8831</b>	<b>9003</b>	<b>9022</b>	<b>9179</b>	<b>9346</b>	<b>9505</b>	<b>9654</b>
	<b>WM Household Washing Machine</b>	<b>1752</b>	<b>3076</b>	<b>3178</b>	<b>3506</b>	<b>3313</b>	<b>3152</b>	<b>2999</b>	<b>2854</b>	<b>2715</b>	<b>2632</b>
	<b>DW Household Dishwasher</b>	<b>752</b>	<b>2182</b>	<b>2532</b>	<b>2822</b>	<b>3081</b>	<b>3322</b>	<b>3547</b>	<b>3756</b>	<b>3948</b>	<b>4125</b>
	LD Household Laundry Drier vented el.	357	361	340	303	309	312	313	315	317	318
	LD Household Laundry Drier condens el.	202	756	961	1145	1164	1142	1111	1081	1051	1045
	LD Household Laundry Drier vented gas	3	6	7	9	9	9	9	9	10	10
	<b>Total LD household Laundry Drier</b>	<b>562</b>	<b>1123</b>	<b>1309</b>	<b>1456</b>	<b>1482</b>	<b>1462</b>	<b>1434</b>	<b>1405</b>	<b>1377</b>	<b>1373</b>
	VC dom. Vacuum Cleaner	1705	5048	7303	8858	9511	10407	11304	12201	13097	13994
	VC nondom Vacuum Cleaner	122	125	135	142	145	152	160	167	174	181
	<b>Total VC Vacuum Cleaner</b>	<b>1827</b>	<b>5173</b>	<b>7438</b>	<b>9000</b>	<b>9656</b>	<b>10560</b>	<b>11463</b>	<b>12367</b>	<b>13271</b>	<b>14174</b>
	<b>TOTAL CLEANING</b>	<b>4892</b>	<b>11555</b>	<b>14456</b>	<b>16785</b>	<b>17531</b>	<b>18497</b>	<b>19443</b>	<b>20381</b>	<b>21311</b>	<b>22304</b>
	0.5 FAN Axial<300Pa [247 W flow out]	39	128	183	230	220	210	201	192	184	176
	0.5 FAN Axial>300Pa [489 W fluid-dyn out]	54	186	196	215	206	206	206	206	206	206
	0.5 FAN Centr.FC [141 W flow out]	33	85	126	175	167	159	152	145	138	132
	0.5 FAN Centr.BC-free [2120 W flow out]	19	47	65	72	77	75	73	71	71	72
	0.5 FAN Centr.BC [2052 W flow out]	42	111	178	204	217	211	222	231	240	247
	0.5 FAN Cross-flow [31 W flow out]	8	17	56	74	79	77	80	83	86	88
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>97</b>	<b>287</b>	<b>402</b>	<b>485</b>	<b>483</b>	<b>469</b>	<b>467</b>	<b>465</b>	<b>462</b>	<b>461</b>
	0.45 Medium (S) 3-ph 0.75-7.5 kW no VSD	53	86	92	88	89	85	82	78	74	70
	0.45 Medium (M) 3-ph 7.5-75 kW no VSD	31	50	47	43	42	40	37	35	32	31
	0.45 Medium (L) 3-ph 75-375 kW no VSD	24	36	32	28	27	24	22	20	19	19
	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>109</b>	<b>172</b>	<b>171</b>	<b>159</b>	<b>158</b>	<b>150</b>	<b>141</b>	<b>133</b>	<b>126</b>	<b>120</b>
	0.45 Medium (S) 3-ph 0.75-7.5 kW with VSD	21	62	95	161	173	177	184	194	205	216
	0.45 Medium (M) 3-ph 7.5-75 kW with VSD	15	46	85	115	122	124	129	136	144	147
	0.45 Medium (L) 3-ph 75-375 kW with VSD	12	35	62	75	80	82	85	89	90	90
	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>48</b>	<b>143</b>	<b>242</b>	<b>352</b>	<b>374</b>	<b>384</b>	<b>399</b>	<b>419</b>	<b>438</b>	<b>454</b>
	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>157</b>	<b>314</b>	<b>413</b>	<b>511</b>	<b>532</b>	<b>533</b>	<b>540</b>	<b>552</b>	<b>564</b>	<b>574</b>
	0.45 Small 1 ph 0.12-0.75 kW no VSD	34	64	66	69	85	83	80	78	75	73
	0.45 Small 1 ph 0.12-0.75 kW with VSD	5	44	52	56	64	65	68	72	76	81
	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>39</b>	<b>107</b>	<b>119</b>	<b>125</b>	<b>149</b>	<b>147</b>	<b>148</b>	<b>150</b>	<b>152</b>	<b>154</b>



REV\_RETAIL\_ECO

db	REVENUE RETAIL ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	Small 3 ph 0.12-0.75 kW no VSD	19	31	32	34	40	39	38	37	35	34
0.45	Small 3 ph 0.12-0.75 kW with VSD	2	16	20	22	26	27	30	33	36	39
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>21</b>	<b>47</b>	<b>52</b>	<b>56</b>	<b>66</b>	<b>66</b>	<b>67</b>	<b>69</b>	<b>71</b>	<b>73</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	11	14	13	13	14	13	13	12	11	11
0.45	Large 3-ph LV 375-1000kW with VSD	4	24	33	37	40	41	42	44	46	48
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>15</b>	<b>38</b>	<b>45</b>	<b>50</b>	<b>53</b>	<b>54</b>	<b>55</b>	<b>56</b>	<b>57</b>	<b>58</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	3	6	6	6	8	8	8	8	8	8
0.45	Explosion motors (M) 3-ph 7.5-75 kW	3	5	5	6	7	7	7	7	7	6
0.45	Explosion motors (L) 3-ph 75-375 kW	2	4	4	4	5	5	5	5	5	5
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>9</b>	<b>15</b>	<b>15</b>	<b>16</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>19</b>	<b>19</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	4	7	8	8	10	10	10	10	10	10
0.45	Brake motors (M) 3-ph 7.5-75 kW	4	6	7	7	9	9	9	8	8	8
0.45	Brake motors (L) 3-ph 75-375 kW	3	5	5	5	6	6	6	6	6	6
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>11</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>24</b>	<b>24</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	1	1	1	1	1	1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>76</b>	<b>133</b>	<b>138</b>	<b>142</b>	<b>159</b>	<b>160</b>	<b>160</b>	<b>161</b>	<b>162</b>	<b>162</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>180</b>	<b>371</b>	<b>442</b>	<b>507</b>	<b>553</b>	<b>554</b>	<b>559</b>	<b>568</b>	<b>578</b>	<b>586</b>
	<b>WP Water pumps</b>	<b>131</b>	<b>178</b>	<b>191</b>	<b>205</b>	<b>220</b>	<b>236</b>	<b>251</b>	<b>267</b>	<b>282</b>	<b>297</b>
	CP Fixed Speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
	CP Variable speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
	CP Pistons 2-64 l/s	0	0	0	0	0	0	0	0	0	0
	<b>Total CP Standard Air Compressors</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>408</b>	<b>835</b>	<b>1034</b>	<b>1197</b>	<b>1256</b>	<b>1259</b>	<b>1278</b>	<b>1299</b>	<b>1322</b>	<b>1344</b>
	TRAFO Distribution, kWh/a	51	80	106	114	122	131	140	150	159	168
	TRAFO Industry oil	26	43	70	75	81	87	93	99	105	111
	TRAFO Industry dry	13	20	29	31	33	36	38	41	43	46
	TRAFO Power	204	327	351	378	406	437	468	500	531	563
	TRAFO DER oil	0	2	6	11	18	29	43	57	70	84
	TRAFO DER dry	0	14	31	51	85	140	206	273	339	406
	TRAFO Small	6	6	6	6	6	6	6	6	6	6
	<b>TOTAL ENERGY SECTOR</b>	<b>299</b>	<b>492</b>	<b>599</b>	<b>665</b>	<b>750</b>	<b>865</b>	<b>994</b>	<b>1124</b>	<b>1254</b>	<b>1384</b>
	Tyres C1, replacement for cars	4411	6162	7524	9030	10239	11443	11443	11443	11443	11443
	Tyres C1, OEM for cars	1328	1769	2091	2658	3083	3446	3446	3446	3446	3446
	<b>Tyres C1, total</b>	<b>5740</b>	<b>7931</b>	<b>9615</b>	<b>11687</b>	<b>13323</b>	<b>14889</b>	<b>14889</b>	<b>14889</b>	<b>14889</b>	<b>14889</b>
	Tyres C2, replacement for vans	765	969	1014	1261	1460	1640	1640	1640	1640	1640
	Tyres C2, OEM for vans	161	174	218	239	302	346	346	346	346	346
	<b>Tyres C2, total</b>	<b>927</b>	<b>1142</b>	<b>1232</b>	<b>1500</b>	<b>1762</b>	<b>1986</b>	<b>1986</b>	<b>1986</b>	<b>1986</b>	<b>1986</b>
	Tyres C3, replacement for trucks/busses	1341	1317	2322	2685	3091	3445	3445	3445	3445	3445
	Tyres C3, OEM for trucks/busses	374	310	435	587	861	960	960	960	960	960
	<b>Tyres C3, total</b>	<b>1715</b>	<b>1627</b>	<b>2757</b>	<b>3272</b>	<b>3952</b>	<b>4406</b>	<b>4406</b>	<b>4406</b>	<b>4406</b>	<b>4406</b>
	<b>Tyres, total C1+C2+C3</b>	<b>8381</b>	<b>10700</b>	<b>13604</b>	<b>16460</b>	<b>19038</b>	<b>21281</b>	<b>21281</b>	<b>21281</b>	<b>21281</b>	<b>21281</b>
	<b>TRANSPORT SECTOR</b>	<b>8381</b>	<b>10700</b>	<b>13604</b>	<b>16460</b>	<b>19038</b>	<b>21281</b>	<b>21281</b>	<b>21281</b>	<b>21281</b>	<b>21281</b>
	<b>GENERAL TOTAL (in m euro 2015)</b>	<b>41364</b>	<b>89608</b>	<b>98578</b>	<b>115656</b>	<b>129790</b>	<b>141315</b>	<b>147054</b>	<b>152531</b>	<b>158090</b>	<b>163726</b>
	GENERAL TOTAL (in bn euro 2015)	41	90	99	116	130	141	147	153	158	164
	<b>SUMMARY ECO</b>										
	<b>Retail revenue (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>0.9</b>	<b>1.3</b>	<b>2.0</b>	<b>2.6</b>	<b>2.9</b>	<b>3.0</b>	<b>3.1</b>	<b>3.3</b>	<b>3.4</b>	<b>3.5</b>
	<b>SPACE HEATING</b>	<b>2.8</b>	<b>4.7</b>	<b>7.3</b>	<b>9.3</b>	<b>11.3</b>	<b>12.5</b>	<b>13.9</b>	<b>15.3</b>	<b>16.8</b>	<b>18.4</b>
	<b>SPACE COOLING</b>	<b>0.2</b>	<b>0.9</b>	<b>1.2</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.1</b>
	<b>VENTILATION</b>	<b>1.6</b>	<b>3.7</b>	<b>4.4</b>	<b>4.6</b>	<b>4.9</b>	<b>5.2</b>	<b>5.5</b>	<b>5.7</b>	<b>6.0</b>	<b>6.3</b>
	<b>LIGHTING</b>	<b>0.7</b>	<b>1.8</b>	<b>1.9</b>	<b>1.5</b>	<b>1.1</b>	<b>0.9</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>
	<b>ELECTRONICS</b>	<b>12.7</b>	<b>42.1</b>	<b>39.7</b>	<b>47.5</b>	<b>54.9</b>	<b>61.7</b>	<b>64.0</b>	<b>66.0</b>	<b>68.0</b>	<b>70.0</b>
	<b>FOOD PRESERVATION</b>	<b>3.3</b>	<b>4.1</b>	<b>4.5</b>	<b>4.7</b>	<b>5.3</b>	<b>5.1</b>	<b>5.6</b>	<b>5.8</b>	<b>6.0</b>	<b>6.1</b>
	<b>COOKING</b>	<b>5.3</b>	<b>7.3</b>	<b>7.8</b>	<b>8.8</b>	<b>9.0</b>	<b>9.0</b>	<b>9.2</b>	<b>9.3</b>	<b>9.5</b>	<b>9.7</b>
	<b>CLEANING</b>	<b>4.9</b>	<b>11.6</b>	<b>14.5</b>	<b>16.8</b>	<b>17.5</b>	<b>18.5</b>	<b>19.4</b>	<b>20.4</b>	<b>21.3</b>	<b>22.3</b>
	INDUSTRY COMPONENTS	0.4	0.8	1.0	1.2	1.3	1.3	1.3	1.3	1.3	1.3
	<b>ENERGY SECTOR</b>	<b>0.3</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>
	<b>TRANSPORT SECTOR</b>	<b>8.4</b>	<b>10.7</b>	<b>13.6</b>	<b>16.5</b>	<b>19.0</b>	<b>21.3</b>	<b>21.3</b>	<b>21.3</b>	<b>21.3</b>	<b>21.3</b>
	<b>TOTAL in bn euro 2015</b>	<b>41</b>	<b>90</b>	<b>99</b>	<b>116</b>	<b>130</b>	<b>141</b>	<b>147</b>	<b>153</b>	<b>158</b>	<b>164</b>



## REV\_RETAIL\_ECO

Retail revenue ECO-BAU (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	-	-	0.7	1.1	1.4	1.4	1.5	1.6	1.7	1.8
SPACE HEATING	-	0.1	2.2	3.7	5.1	6.0	6.9	8.0	9.2	10.4
SPACE COOLING	-	-	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0
VENTILATION	-	-	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
LIGHTING	-	0.1	0.2	0.5	0.4	0.3	0.2	0.0	0.1	0.1
ELECTRONICS	-	-	0.0	-	-	-	-	-	-	-
FOOD PRESERVATION	-	0.5	0.8	0.9	1.5	1.2	1.7	1.8	1.9	1.9
COOKING	-	-	0.1	0.6	0.7	0.5	0.4	0.4	0.3	0.3
CLEANING	-	1.1	1.6	1.8	1.5	1.3	1.0	0.8	0.6	0.4
INDUSTRY COMPONENTS	-	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1
ENERGY SECTOR	-	-	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
TRANSPORT SECTOR	-	0.2	1.7	2.9	3.6	3.9	3.9	3.9	3.9	3.9
<b>TOTAL in bn euro 2015</b>	<b>0.0</b>	<b>2.0</b>	<b>7.8</b>	<b>11.2</b>	<b>14.1</b>	<b>14.7</b>	<b>16.0</b>	<b>17.1</b>	<b>18.2</b>	<b>19.3</b>

### Revenues for VSDs only (without motor)

VSD - Very Small 0.12 - 0.75 kW 1-phase	5	36	44	47	51	52	55	58	62	66
VSD - Very Small 0.12 - 0.75 kW 3-phase	2	12	15	16	18	19	21	23	26	29
VSD - Small 0.75 - 7.5 kW 3-phase	15	44	66	107	113	116	121	129	138	147
VSD - Medium 7.5 - 75kW 3-phase	11	32	57	75	79	81	84	90	96	99
VSD - Large 75 - 375kW 3-phase	6	18	30	35	37	38	40	43	44	46
VSD - Very Large 375 - 1,000kW 3-phase	3	15	21	23	24	25	26	28	29	31
<b>Total revenues, VSDs only (ECO)</b>	<b>41</b>	<b>157</b>	<b>231</b>	<b>302</b>	<b>323</b>	<b>331</b>	<b>348</b>	<b>372</b>	<b>395</b>	<b>417</b>

REV\_WHOLE\_BAU

db	REVENUE WHOLESALE BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	<b>599</b>	<b>729</b>	<b>721</b>	<b>775</b>	<b>860</b>	<b>867</b>	<b>856</b>	<b>844</b>	<b>833</b>	<b>821</b>
	<b>CH Central Heating combi, water heat</b>	<b>401</b>	<b>699</b>	<b>754</b>	<b>839</b>	<b>864</b>	<b>887</b>	<b>915</b>	<b>963</b>	<b>1012</b>	<b>1061</b>
	<b>TOTAL WATER HEATING</b>	<b>1000</b>	<b>1428</b>	<b>1475</b>	<b>1615</b>	<b>1724</b>	<b>1754</b>	<b>1771</b>	<b>1808</b>	<b>1845</b>	<b>1882</b>
	<b>CH Central Heating boiler, space heat</b>	<b>2093</b>	<b>3045</b>	<b>3255</b>	<b>3465</b>	<b>3805</b>	<b>4144</b>	<b>4484</b>	<b>4823</b>	<b>5163</b>	<b>5502</b>
	SFB Wood Manual [18 kW]	22	13	9	5	3	3	3	3	2	2
	SFB Wood Direct Draft [20 kW]	1	37	38	41	38	47	55	65	76	90
	SFB Coal [25 kW]	8	4	0	0	0	0	0	0	0	0
	SFB Pellets [25 kW]	0	9	15	15	15	16	18	20	22	24
	SFB Wood chips [160 kW]	0	6	6	7	8	9	10	11	12	13
	<b>Total Solid Fuel Boiler</b>	<b>31</b>	<b>69</b>	<b>68</b>	<b>68</b>	<b>64</b>	<b>75</b>	<b>86</b>	<b>98</b>	<b>112</b>	<b>130</b>
	CHAE-S (≤ 400 kW)	29	121	133	147	162	177	193	208	223	236
	CHAE-L (> 400 kW)	6	21	21	22	23	24	25	26	27	28
	CHWE-S (≤ 400 kW)	3	11	12	13	14	16	17	19	20	21
	CHWE-M (> 400 kW; ≤ 1500 kW)	3	10	10	11	11	11	12	12	13	13
	CHWE-L (> 1500 kW)	2	6	7	7	7	7	8	8	8	9
	CHF	0	0	1	1	1	1	1	1	1	2
	HT PCH-AE-S	14	23	24	26	27	28	29	30	31	32
	HT PCH-AE-L	11	18	20	21	21	22	23	24	25	26
	HT PCH-WE-S	3	5	5	6	6	6	6	7	7	7
	HT PCH-WE-M	12	20	21	22	23	24	25	26	27	28
	HT PCH-WE-L	2	4	4	4	4	5	5	5	5	5
	AC rooftop	13	43	43	33	19	5	5	5	5	5
	AC splits	23	83	87	84	81	78	75	72	69	66
	AC VRF	0	188	246	358	453	546	636	718	786	836
	ACF	0	0	1	1	1	1	1	1	1	2
	<b>SubTotal AHC Air Cooling</b>	<b>121</b>	<b>552</b>	<b>634</b>	<b>753</b>	<b>854</b>	<b>952</b>	<b>1061</b>	<b>1162</b>	<b>1248</b>	<b>1315</b>
	AC rooftop (rev)	8	26	25	20	11	3	0	0	0	0
	AC splits (rev)	15	53	56	54	52	50	48	46	44	42
	AC VRF (rev)	0	161	200	305	371	426	472	507	529	535
	ACF (rev)	0	1	1	2	2	2	3	3	3	3
	AHF	45	29	28	26	25	23	22	20	19	18
	AHE	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>68</b>	<b>271</b>	<b>309</b>	<b>407</b>	<b>461</b>	<b>505</b>	<b>545</b>	<b>577</b>	<b>595</b>	<b>599</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>166</b>	<b>582</b>	<b>661</b>	<b>780</b>	<b>879</b>	<b>976</b>	<b>1083</b>	<b>1182</b>	<b>1268</b>	<b>1334</b>
	LH open fireplace [8 kW]	100	146	146	147	146	146	145	145	145	145
	LH closed fireplace/inset [8 kW]	63	171	190	210	213	216	216	216	216	216
	LH wood stove [8 kW]	68	80	89	98	99	100	101	101	101	101
	LH coal stove [8 kW]	21	16	15	13	10	7	6	6	6	6
	LH cooker [10 kW]	58	117	141	165	170	174	175	175	175	175
	LH SHR stove [8 kW]	63	88	110	131	146	162	165	165	165	165
	LH pellet stove [8 kW]	0	66	83	100	107	114	116	116	116	116
	LH open fire gas, NCV [4.2 kW]	4	5	6	7	7	7	7	7	7	7
	LH closed fire gas, NCV [4.2 kW]	18	21	21	22	22	23	23	23	23	23
	LH flueless fuel heater, NCV [1.5 kW]	7	14	13	12	11	9	9	9	9	9
	LH elec.portable [1 kW]	16	19	20	21	21	22	23	23	23	23
	LH elec.convector [1 kW]	116	141	146	150	157	164	165	165	165	165
	LH elec.storage [2.75 kW]	13	16	17	17	18	19	19	19	19	19
	LH elec.underfloor [0.62 kW]	24	29	30	31	33	34	34	34	34	34
	LH luminous heaters [20 kW]	2	3	3	3	3	3	3	3	3	3
	LH tube heaters [30 kW]	2	3	3	3	3	3	3	3	3	3
	<b>LH total</b>	<b>575</b>	<b>934</b>	<b>1032</b>	<b>1130</b>	<b>1165</b>	<b>1201</b>	<b>1208</b>	<b>1208</b>	<b>1208</b>	<b>1208</b>
	RAC (cooling demand), all types <12 kW	48	442	633	793	865	873	873	888	902	917
	RAC (heating demand), reversible <12kW	13	328	558	702	765	774	774	788	801	815
	<b>Total Room Air Conditioner</b>	<b>62</b>	<b>770</b>	<b>1192</b>	<b>1495</b>	<b>1630</b>	<b>1647</b>	<b>1648</b>	<b>1676</b>	<b>1704</b>	<b>1732</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>188</b>	<b>277</b>	<b>294</b>	<b>312</b>	<b>330</b>	<b>326</b>	<b>308</b>	<b>290</b>	<b>272</b>	<b>254</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>2781</b>	<b>4647</b>	<b>5223</b>	<b>5772</b>	<b>6261</b>	<b>6699</b>	<b>7097</b>	<b>7494</b>	<b>7880</b>	<b>8254</b>
	<b>TOTAL SPACE COOLING</b>	<b>169</b>	<b>994</b>	<b>1267</b>	<b>1547</b>	<b>1718</b>	<b>1826</b>	<b>1934</b>	<b>2049</b>	<b>2151</b>	<b>2232</b>
	NRVU avg (sales wt.)	1368	3200	3347	3529	3724	3919	4114	4309	4504	4699
	RVU Central Unidir. VU (1 fan)	161	360	310	282	296	309	327	349	370	392
	RVU Central Balanced VU (2 fans)	18	126	307	394	443	492	541	589	638	687
	RVU Local Balanced VU (2 fans)	1	16	36	59	82	106	130	154	178	201
	<b>TOTAL VENTILATION</b>	<b>1548</b>	<b>3702</b>	<b>4000</b>	<b>4264</b>	<b>4546</b>	<b>4826</b>	<b>5112</b>	<b>5401</b>	<b>5690</b>	<b>5979</b>
	LFL (T12,T8h,T8t,T5,other)	228	328	295	223	153	112	94	74	57	44
	HID (HPM, HPS, MH)	37	106	94	65	50	28	14	7	4	2
	CFLni (all shapes)	30	111	98	94	76	38	20	11	5	3
	CFLi (retrofit for GLS, HL)	34	439	285	340	204	151	82	56	35	23
	GLS (DLS & NDLS)	353	283	237	164	96	56	33	19	11	7
	HL (DLS & NDLS, LV & MV)	69	530	656	668	413	214	113	62	35	21
	LED replacing LFL (retrofit & luminaire)	0	1	58	203	274	367	402	467	561	661
	LED replacing HID (retrofit & luminaire)	0	0	17	105	122	154	184	219	254	290
	LED replacing CFLni (retrofit & luminaire)	0	0	4	13	21	27	30	34	37	40
	LED replacing DLS (retrofit & luminaire)	0	0	14	43	48	28	20	16	14	14
	LED replacing NDLS (retrofit & luminaire)	0	6	36	242	194	130	99	80	68	63
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	752	1797	1665	1554	992	599	356	230	147	99
	SUBTOTAL LED	0	7	129	606	659	706	735	817	935	1069
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>752</b>	<b>1804</b>	<b>1794</b>	<b>2160</b>	<b>1651</b>	<b>1305</b>	<b>1091</b>	<b>1047</b>	<b>1082</b>	<b>1167</b>

REV\_WHOLE\_BAU

db	REVENUE WHOLESALE BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	DP TV all types	1040	1665	945	1170	1350	1553	1575	1575	1575	1575
	DP Monitor	300	638	357	357	357	357	357	357	357	357
	DP Signage	0	90	394	900	675	675	675	675	675	675
	<b>DP Electronic Displays, total</b>	<b>1340</b>	<b>2393</b>	<b>1696</b>	<b>2427</b>	<b>2382</b>	<b>2585</b>	<b>2607</b>	<b>2607</b>	<b>2607</b>	<b>2607</b>
	SSTB	0	360	81	0	0	0	0	0	0	0
	CSTB	0	1353	1658	1787	1807	1762	1914	2066	2219	2371
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>1713</b>	<b>1739</b>	<b>1787</b>	<b>1807</b>	<b>1762</b>	<b>1914</b>	<b>2066</b>	<b>2219</b>	<b>2371</b>
	VIDEO players/recorders	0	191	165	22	0	0	0	0	0	0
	VIDEO projectors	13	884	750	305	132	0	0	0	0	0
	VIDEO game consoles	0	345	292	224	265	265	265	265	265	265
	<b>Total VIDEO</b>	<b>13</b>	<b>1421</b>	<b>1207</b>	<b>550</b>	<b>397</b>	<b>265</b>	<b>265</b>	<b>265</b>	<b>265</b>	<b>265</b>
	ES tower 1-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 1-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket cloud	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket cloud	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket resilient trad.	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket resilient cloud	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket resilient trad.	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket resilient cloud	0	0	0	0	0	0	0	0	0	0
	ES blade 1-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES blade 2-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES blade 2-socket cloud	0	0	0	0	0	0	0	0	0	0
	ES blade 4-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES blade 4-socket cloud	0	0	0	0	0	0	0	0	0	0
	<b>ES total traditional</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ES total cloud</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ES Enterprise Servers total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	DS Online 2	0	0	0	0	0	0	0	0	0	0
	DS Online 3	0	0	0	0	0	0	0	0	0	0
	DS Online 4	0	0	0	0	0	0	0	0	0	0
	<b>DS Data Storage products total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ES + DS total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	PC Desktop	180	600	448	407	407	407	407	407	407	407
	PC Notebook	19	1367	627	589	589	589	589	589	589	589
	PC Tablet/slate	0	93	1465	2381	3077	3663	3846	4029	4212	4396
	PC Thin client	11	130	130	130	130	130	130	130	130	130
	PC Workstation	50	499	499	499	499	499	499	499	499	499
	<b>Total PC, electricity</b>	<b>260</b>	<b>2690</b>	<b>3169</b>	<b>4006</b>	<b>4702</b>	<b>5288</b>	<b>5471</b>	<b>5654</b>	<b>5838</b>	<b>6021</b>
	EP-Copier mono	381	153	92	39	28	18	8	0	0	0
	EP-Copier colour	0	51	222	333	380	414	448	482	516	549
	EP-printer mono	77	73	64	52	44	40	34	29	23	18
	EP-printer colour	0	70	104	140	168	195	222	250	277	304
	IJ SFD printer	20	31	22	15	11	10	8	6	4	2
	IJ MFD printer	24	79	108	125	137	149	161	173	186	198
	<b>Total imaging equipment, electricity</b>	<b>501</b>	<b>457</b>	<b>611</b>	<b>704</b>	<b>769</b>	<b>826</b>	<b>881</b>	<b>939</b>	<b>1005</b>	<b>1071</b>
	SB Home Gateway, on-mode power	0	1669	2152	2635	3118	3601	4084	4567	5050	5533
	SB Home NAS, on-mode power	0	152	260	369	478	586	695	803	912	1020
	SB Home Phones (fixed), on-mode power	15	75	89	95	95	95	95	95	95	95
	SB Office Phones (fixed), on-mode power	127	242	257	273	288	304	319	335	350	366
	<b>Total SB (networked) StandBy (rest)</b>	<b>141</b>	<b>2138</b>	<b>2759</b>	<b>3372</b>	<b>3979</b>	<b>4586</b>	<b>5193</b>	<b>5800</b>	<b>6407</b>	<b>7014</b>
db											
0.0	EPS ≤ 6W, low-V	3	44	31	21	15	8	4	2	1	0
0.3	EPS 6–10 W	19	259	278	295	310	325	334	342	351	359
0.6	EPS 10–12 W	0	214	255	273	275	277	278	280	282	284
0.5	EPS 15–20 W	0	1	6	11	12	13	14	15	16	16
1.0	EPS 20–30 W	1	31	32	29	28	26	24	22	20	18
0.8	EPS 30–65 W, multiple-V	0	0	0	4	6	9	11	14	17	20
1.0	EPS 30-65 W	0	0	0	5	12	21	21	21	21	21
1.0	EPS 65–120 W	0	23	23	17	10	0	0	0	0	0
0.5	EPS 65–120 W, multiple-V	0	142	51	15	15	15	15	15	15	15
0.0	EPS 12–15 W	1	23	47	57	57	58	58	58	58	58
	<b>EPS, total</b>	<b>24</b>	<b>737</b>	<b>722</b>	<b>727</b>	<b>740</b>	<b>752</b>	<b>759</b>	<b>768</b>	<b>779</b>	<b>791</b>
	<b>EPS, double counted subtracted</b>	<b>17</b>	<b>406</b>	<b>405</b>	<b>410</b>	<b>416</b>	<b>422</b>	<b>425</b>	<b>430</b>	<b>437</b>	<b>444</b>
	UPS below 1.5 kVA	10	19	20	25	29	33	37	41	43	45
	UPS 1.5 to 5 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 5 to 10 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 10 to 200 kVA	0	0	0	0	0	0	0	0	0	0
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>10</b>	<b>19</b>	<b>20</b>	<b>25</b>	<b>29</b>	<b>33</b>	<b>37</b>	<b>41</b>	<b>43</b>	<b>45</b>
	<b>TOTAL ELECTRONICS</b>	<b>2282</b>	<b>11235</b>	<b>11607</b>	<b>13281</b>	<b>14482</b>	<b>15766</b>	<b>16794</b>	<b>17803</b>	<b>18821</b>	<b>19838</b>
	<b>RF Household refrigerator and freezer</b>	<b>240</b>	<b>262</b>	<b>266</b>	<b>270</b>	<b>274</b>	<b>278</b>	<b>282</b>	<b>286</b>	<b>291</b>	<b>295</b>
	CF open vertical chilled multi deck (RVC2)	93	102	101	102	104	106	107	109	111	112
	CF open horizontal frozen island (RHF4)	11	12	12	12	12	13	13	13	13	13
	CF other supermarket display (non-BCs)	214	254	268	278	289	299	309	320	331	343
	CF Plug in one door beverage cooler	182	221	220	228	236	244	252	260	269	278
	CF Plug in horizontal ice cream freezer	75	91	91	94	97	101	104	107	111	115
	CF Spiral vending machine	119	90	74	76	79	82	86	89	92	96
	<b>Total CF Commercial Refrigeration</b>	<b>694</b>	<b>770</b>	<b>765</b>	<b>791</b>	<b>818</b>	<b>844</b>	<b>871</b>	<b>899</b>	<b>927</b>	<b>957</b>

REV\_WHOLE\_BAU

db	REVENUE WHOLESALE BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Storage cabinet Chilled Vertical (CV)	45	59	62	64	67	70	73	76	79	82
	PF Storage cabinet Frozen Vertical (FV)	24	31	32	33	35	37	38	40	41	43
	PF Storage cabinet Chilled Horizontal (CH)	9	12	13	13	14	14	15	16	16	17
	PF Storage cabinet Frozen Horizontal (FH)	7	9	10	10	10	11	11	12	12	13
	<b>PF Storage cabinets All types</b>	<b>86</b>	<b>111</b>	<b>116</b>	<b>120</b>	<b>126</b>	<b>132</b>	<b>138</b>	<b>144</b>	<b>149</b>	<b>155</b>
	PF Process Chiller AC MT S ≤ 300 kW	7	13	14	16	18	19	21	23	24	26
	PF Process Chiller AC MT L > 300 kW	6	12	14	15	17	18	20	21	23	25
	PF Process Chiller AC LT S ≤ 200 kW	5	11	12	13	14	16	17	18	20	21
	PF Process Chiller AC LT L > 200 kW	5	10	11	12	13	15	16	17	19	20
	PF Process Chiller WC MT S ≤ 300 kW	3	6	6	7	8	9	9	10	11	12
	PF Process Chiller WC MT L > 300 kW	4	9	10	11	12	13	14	15	16	17
	PF Process Chiller WC LT S ≤ 200 kW	3	6	6	7	8	8	9	10	11	11
	PF Process Chiller WC LT L > 200 kW	4	7	8	9	10	10	11	12	13	14
	<b>PF Process Chiller All MT&amp;LT</b>	<b>37</b>	<b>74</b>	<b>81</b>	<b>90</b>	<b>99</b>	<b>108</b>	<b>117</b>	<b>127</b>	<b>136</b>	<b>145</b>
	PF Condensing Unit MT S 0.2-1 kW	35	28	29	31	33	36	39	42	45	48
	PF Condensing Unit MT M 1-5 kW	76	60	62	67	72	77	83	90	97	104
	PF Condensing Unit MT L 5-20 kW	78	62	64	68	74	79	86	92	99	107
	PF Condensing Unit MT XL 20-50 kW	60	48	49	52	56	61	66	71	76	82
	PF Condensing Unit LT S 0.1-0.4 kW	6	5	5	5	6	6	7	7	8	8
	PF Condensing Unit LT M 0.4-2 kW	11	9	9	9	10	11	12	13	14	15
	PF Condensing Unit LT L 2-8 kW	29	23	24	25	27	30	32	34	37	40
	PF Condensing Unit LT XL 8-20 kW	25	20	21	22	24	26	28	30	32	35
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>320</b>	<b>255</b>	<b>261</b>	<b>281</b>	<b>302</b>	<b>326</b>	<b>351</b>	<b>378</b>	<b>407</b>	<b>439</b>
	<b>PF Professional Refrigeration, Total</b>	<b>250</b>	<b>287</b>	<b>302</b>	<b>322</b>	<b>346</b>	<b>371</b>	<b>396</b>	<b>422</b>	<b>448</b>	<b>476</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>1185</b>	<b>1319</b>	<b>1333</b>	<b>1384</b>	<b>1438</b>	<b>1493</b>	<b>1549</b>	<b>1607</b>	<b>1666</b>	<b>1728</b>
	COOK El. Hobs, Wh/Itr	75	170	183	197	208	218	227	236	244	251
	COOK El. Ovens, kWh/a	164	194	205	222	215	217	219	222	225	228
	COOK Gas Hobs, % efficiency NCV	67	58	52	48	44	42	40	38	36	34
	COOK Gas Ovens, kWh prim, NCV	23	24	22	22	21	21	20	19	19	18
	COOK Range Hoods, kWh elec	40	49	51	54	56	59	62	65	68	71
	<b>Total CA Cooking Appliances</b>	<b>368</b>	<b>494</b>	<b>513</b>	<b>543</b>	<b>545</b>	<b>556</b>	<b>568</b>	<b>580</b>	<b>591</b>	<b>601</b>
	COFFEE Dripfilter (glass)	12	8	7	6	6	6	6	6	6	6
	COFFEE Dripfilter (thermos)	2	4	4	4	4	4	4	4	4	4
	COFFEE Dripfilter (full automatic)	0	6	7	8	8	9	10	11	11	12
	COFFEE Pad filter	0	14	15	16	18	19	20	22	23	24
	COFFEE Hard cap espresso	2	7	15	23	24	24	24	24	24	24
	COFFEE Semi-auto espresso	2	2	2	2	2	2	2	1	1	1
	COFFEE Fully-auto espresso	11	13	15	17	19	21	23	25	27	29
	<b>Total CM household Coffee Makers</b>	<b>29</b>	<b>54</b>	<b>65</b>	<b>75</b>	<b>80</b>	<b>84</b>	<b>88</b>	<b>92</b>	<b>96</b>	<b>100</b>
	<b>TOTAL COOKING</b>	<b>397</b>	<b>548</b>	<b>578</b>	<b>618</b>	<b>625</b>	<b>640</b>	<b>656</b>	<b>672</b>	<b>687</b>	<b>702</b>
	<b>WM Household Washing Machine</b>	<b>131</b>	<b>191</b>	<b>191</b>	<b>206</b>	<b>197</b>	<b>197</b>	<b>197</b>	<b>197</b>	<b>197</b>	<b>197</b>
	<b>DW Household Dishwasher</b>	<b>56</b>	<b>123</b>	<b>143</b>	<b>163</b>	<b>182</b>	<b>202</b>	<b>222</b>	<b>241</b>	<b>261</b>	<b>281</b>
	LD Household Laundry Drier vented el.	27	27	26	23	23	23	23	24	24	24
	LD Household Laundry Drier condens el.	15	57	66	75	76	77	77	78	78	78
	LD Household Laundry Drier vented gas	0	0	1	1	1	1	1	1	1	1
	<b>Total LD household Laundry Drier</b>	<b>42</b>	<b>84</b>	<b>92</b>	<b>98</b>	<b>100</b>	<b>101</b>	<b>101</b>	<b>102</b>	<b>102</b>	<b>103</b>
	VC dom. Vacuum Cleaner	128	379	531	646	713	781	848	915	982	1050
	VC nondom Vacuum Cleaner	162	167	176	184	194	203	213	222	232	241
	<b>Total VC Vacuum Cleaner</b>	<b>290</b>	<b>546</b>	<b>707</b>	<b>831</b>	<b>907</b>	<b>984</b>	<b>1061</b>	<b>1137</b>	<b>1214</b>	<b>1290</b>
	<b>TOTAL CLEANING</b>	<b>520</b>	<b>945</b>	<b>1133</b>	<b>1297</b>	<b>1387</b>	<b>1484</b>	<b>1581</b>	<b>1678</b>	<b>1775</b>	<b>1871</b>
0.5	FAN Axial<300Pa [247 W flow out]	90	294	337	381	381	381	381	381	381	381
0.5	FAN Axial>300Pa [489 W fluid-dyn out]	124	428	451	475	475	475	475	475	475	475
0.5	FAN Centr.FC [141 W flow out]	77	195	225	255	255	255	255	255	255	255
0.5	FAN Centr.BC-free [2120 W flow out]	44	107	122	136	151	154	157	160	163	165
0.5	FAN Centr.BC [2052 W flow out]	96	255	292	330	367	374	411	449	486	523
0.5	FAN Cross-flow [31 W flow out]	18	40	45	51	56	57	63	68	74	79
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>224</b>	<b>659</b>	<b>737</b>	<b>814</b>	<b>842</b>	<b>848</b>	<b>871</b>	<b>894</b>	<b>916</b>	<b>939</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	122	195	197	194	186	177	166	154	144	131
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	72	113	113	110	105	98	90	80	70	63
0.45	Medium (L) 3-ph 75-375 kW no VSD	56	83	81	76	69	60	51	39	39	39
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>250</b>	<b>391</b>	<b>391</b>	<b>380</b>	<b>359</b>	<b>335</b>	<b>307</b>	<b>274</b>	<b>252</b>	<b>233</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	48	140	167	193	218	249	290	339	397	466
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	35	104	124	143	162	185	216	252	294	328
0.45	Medium (L) 3-ph 75-375 kW with VSD	27	79	94	109	124	142	165	192	197	201
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>110</b>	<b>323</b>	<b>384</b>	<b>445</b>	<b>504</b>	<b>576</b>	<b>671</b>	<b>783</b>	<b>888</b>	<b>995</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>360</b>	<b>713</b>	<b>775</b>	<b>825</b>	<b>864</b>	<b>911</b>	<b>978</b>	<b>1057</b>	<b>1139</b>	<b>1229</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	77	146	152	152	152	151	150	148	147	145
0.45	Small 1 ph 0.12-0.75 kW with VSD	12	100	120	126	134	142	151	161	171	181
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>90</b>	<b>246</b>	<b>273</b>	<b>279</b>	<b>286</b>	<b>293</b>	<b>301</b>	<b>309</b>	<b>318</b>	<b>327</b>

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db	REVENUE WHOLESALE BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	Small 3 ph 0.12-0.75 kW no VSD	43	72	75	75	75	74	73	72	71	70
0.45	Small 3 ph 0.12-0.75 kW with VSD	5	37	45	50	54	60	66	72	79	87
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>47</b>	<b>109</b>	<b>120</b>	<b>125</b>	<b>129</b>	<b>134</b>	<b>139</b>	<b>144</b>	<b>151</b>	<b>157</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	26	33	29	28	28	28	27	26	25	24
0.45	Large 3-ph LV 375-1000kW with VSD	9	55	76	83	87	92	96	100	104	108
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>35</b>	<b>88</b>	<b>104</b>	<b>111</b>	<b>116</b>	<b>120</b>	<b>123</b>	<b>126</b>	<b>129</b>	<b>132</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	8	13	14	14	14	14	14	14	14	15
0.45	Explosion motors (M) 3-ph 7.5-75 kW	7	12	12	13	13	13	13	13	13	13
0.45	Explosion motors (L) 3-ph 75-375 kW	5	9	9	9	10	10	10	10	10	10
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>20</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>37</b>	<b>37</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	10	17	17	18	18	18	18	18	18	18
0.45	Brake motors (M) 3-ph 7.5-75 kW	9	15	16	16	16	16	16	16	16	16
0.45	Brake motors (L) 3-ph 75-375 kW	6	11	12	12	12	12	12	12	12	12
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>24</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>45</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>47</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	1	1	1	1	1	1	1	1
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>176</b>	<b>305</b>	<b>317</b>	<b>324</b>	<b>324</b>	<b>323</b>	<b>323</b>	<b>322</b>	<b>328</b>	<b>336</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>414</b>	<b>847</b>	<b>919</b>	<b>961</b>	<b>991</b>	<b>1026</b>	<b>1071</b>	<b>1123</b>	<b>1182</b>	<b>1247</b>
	<b>WP Water pumps</b>	<b>300</b>	<b>408</b>	<b>439</b>	<b>472</b>	<b>507</b>	<b>542</b>	<b>578</b>	<b>613</b>	<b>648</b>	<b>684</b>
	CP Fixed Speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
	CP Variable speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
	CP Pistons 2-64 l/s	0	0	0	0	0	0	0	0	0	0
	<b>Total CP Standard Air Compressors</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>938</b>	<b>1915</b>	<b>2095</b>	<b>2246</b>	<b>2340</b>	<b>2416</b>	<b>2519</b>	<b>2630</b>	<b>2747</b>	<b>2870</b>
	TRAF0 Distribution, kWh/a	51	80	86	92	99	106	114	121	129	136
	TRAF0 Industry oil	26	43	46	49	53	57	61	65	69	73
	TRAF0 Industry dry	13	20	21	23	25	26	28	30	32	34
	TRAF0 Power	204	327	351	378	406	437	468	500	531	563
	TRAF0 DER oil	0	2	4	6	10	17	25	34	42	50
	TRAF0 DER dry	0	14	24	39	65	107	157	208	259	310
	TRAF0 Small	6	6	6	6	6	6	6	6	6	6
	<b>TOTAL ENERGY SECTOR</b>	<b>299</b>	<b>492</b>	<b>538</b>	<b>593</b>	<b>663</b>	<b>756</b>	<b>859</b>	<b>963</b>	<b>1067</b>	<b>1171</b>
	Tyres C1, replacement for cars	1470	1972	2184	2477	2803	3165	3165	3165	3165	3165
	Tyres C1, OEM for cars	443	590	697	746	844	953	953	953	953	953
	<b>Tyres C1, total</b>	<b>1913</b>	<b>2562</b>	<b>2881</b>	<b>3223</b>	<b>3647</b>	<b>4119</b>	<b>4119</b>	<b>4119</b>	<b>4119</b>	<b>4119</b>
	Tyres C2, replacement for vans	255	323	324	363	408	456	456	456	456	456
	Tyres C2, OEM for vans	54	58	73	77	86	96	96	96	96	96
	<b>Tyres C2, total</b>	<b>309</b>	<b>381</b>	<b>397</b>	<b>440</b>	<b>494</b>	<b>553</b>	<b>553</b>	<b>553</b>	<b>553</b>	<b>553</b>
	Tyres C3, replacement for trucks/busses	447	439	532	676	775	887	887	887	887	887
	Tyres C3, OEM for trucks/busses	125	103	145	188	216	247	247	247	247	247
	<b>Tyres C3, total</b>	<b>572</b>	<b>542</b>	<b>677</b>	<b>864</b>	<b>991</b>	<b>1135</b>	<b>1135</b>	<b>1135</b>	<b>1135</b>	<b>1135</b>
	<b>Tyres, total C1+C2+C3</b>	<b>2794</b>	<b>3485</b>	<b>3955</b>	<b>4527</b>	<b>5131</b>	<b>5806</b>	<b>5806</b>	<b>5806</b>	<b>5806</b>	<b>5806</b>
	<b>TRANSPORT SECTOR</b>	<b>2794</b>	<b>3485</b>	<b>3955</b>	<b>4527</b>	<b>5131</b>	<b>5806</b>	<b>5806</b>	<b>5806</b>	<b>5806</b>	<b>5806</b>
	<b>GENERAL TOTAL (in m euro 2015)</b>	<b>14665</b>	<b>32513</b>	<b>34996</b>	<b>39303</b>	<b>41966</b>	<b>44771</b>	<b>46769</b>	<b>48957</b>	<b>51217</b>	<b>53501</b>
	<b>GENERAL TOTAL (in bn euro 2015)</b>	<b>15</b>	<b>33</b>	<b>35</b>	<b>39</b>	<b>42</b>	<b>45</b>	<b>47</b>	<b>49</b>	<b>51</b>	<b>54</b>
	<b>SUMMARY BAU</b>										
	<b>Wholesale revenue BAU (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>1.0</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>1.8</b>	<b>1.8</b>	<b>1.8</b>	<b>1.9</b>
	<b>SPACE HEATING</b>	<b>2.8</b>	<b>4.6</b>	<b>5.2</b>	<b>5.8</b>	<b>6.3</b>	<b>6.7</b>	<b>7.1</b>	<b>7.5</b>	<b>7.9</b>	<b>8.3</b>
	<b>SPACE COOLING</b>	<b>0.2</b>	<b>1.0</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.2</b>	<b>2.2</b>
	<b>VENTILATION</b>	<b>1.5</b>	<b>3.7</b>	<b>4.0</b>	<b>4.3</b>	<b>4.5</b>	<b>4.8</b>	<b>5.1</b>	<b>5.4</b>	<b>5.7</b>	<b>6.0</b>
	<b>LIGHTING</b>	<b>0.8</b>	<b>1.8</b>	<b>1.8</b>	<b>2.2</b>	<b>1.7</b>	<b>1.3</b>	<b>1.1</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>
	<b>ELECTRONICS</b>	<b>2.3</b>	<b>11.2</b>	<b>11.6</b>	<b>13.3</b>	<b>14.5</b>	<b>15.8</b>	<b>16.8</b>	<b>17.8</b>	<b>18.8</b>	<b>19.8</b>
	<b>FOOD PRESERVATION</b>	<b>1.2</b>	<b>1.3</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>
	<b>COOKING</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
	<b>CLEANING</b>	<b>0.5</b>	<b>0.9</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>
	<b>INDUSTRY COMPONENTS</b>	<b>0.9</b>	<b>1.9</b>	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>	<b>2.4</b>	<b>2.5</b>	<b>2.6</b>	<b>2.7</b>	<b>2.9</b>
	<b>ENERGY SECTOR</b>	<b>0.3</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>
	<b>TRANSPORT SECTOR</b>	<b>2.8</b>	<b>3.5</b>	<b>4.0</b>	<b>4.5</b>	<b>5.1</b>	<b>5.8</b>	<b>5.8</b>	<b>5.8</b>	<b>5.8</b>	<b>5.8</b>
	<b>TOTAL in bn euro 2015</b>	<b>15</b>	<b>33</b>	<b>35</b>	<b>39</b>	<b>42</b>	<b>45</b>	<b>47</b>	<b>49</b>	<b>51</b>	<b>54</b>
	<b>Revenues for VSDs only (without motor, m euros)</b>										
	VSD - Very Small 0.12 - 0.75 kW 1-phase	11	84	100	105	111	118	126	134	142	152
	VSD - Very Small 0.12 - 0.75 kW 3-phase	3	28	34	36	40	44	49	54	60	66
	VSD - Small 0.75 - 7.5 kW 3-phase	34	100	119	137	155	177	208	244	286	336
	VSD - Medium 7.5 - 75kW 3-phase	25	72	85	98	111	127	149	174	205	229
	VSD - Large 75 - 375kW 3-phase	14	41	48	56	63	72	84	99	102	105
	VSD - Very Large 375 - 1,000kW 3-phase	6	35	48	52	55	58	61	64	67	71
	<b>Total revenues, VSDs only (BAU)</b>	<b>93</b>	<b>359</b>	<b>435</b>	<b>485</b>	<b>535</b>	<b>595</b>	<b>676</b>	<b>769</b>	<b>862</b>	<b>957</b>

REV\_WHOLE\_ECO

db	REVENUE WHOLESALE ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	<b>599</b>	<b>729</b>	<b>1170</b>	<b>1346</b>	<b>1549</b>	<b>1529</b>	<b>1509</b>	<b>1489</b>	<b>1468</b>	<b>1447</b>
	<b>CH Central Heating combi, water heat</b>	<b>401</b>	<b>699</b>	<b>1070</b>	<b>1521</b>	<b>1657</b>	<b>1795</b>	<b>1932</b>	<b>2068</b>	<b>2204</b>	<b>2338</b>
	<b>TOTAL WATER HEATING</b>	<b>1000</b>	<b>1428</b>	<b>2239</b>	<b>2867</b>	<b>3206</b>	<b>3324</b>	<b>3441</b>	<b>3557</b>	<b>3672</b>	<b>3785</b>
	<b>CH Central Heating boiler, space heat</b>	<b>2093</b>	<b>3159</b>	<b>5562</b>	<b>7142</b>	<b>8960</b>	<b>10229</b>	<b>11667</b>	<b>13194</b>	<b>14808</b>	<b>16511</b>
	SFB Wood Manual [18 kW]	22	13	12	9	5	5	4	4	3	3
	SFB Wood Direct Draft [20 kW]	1	37	38	41	45	53	61	72	84	99
	SFB Coal [25 kW]	8	4	0	0	0	0	0	0	0	0
	SFB Pellets [25 kW]	0	9	15	15	15	16	18	20	22	24
	SFB Wood chips [160 kW]	0	6	6	7	8	9	10	11	12	13
	<b>Total Solid Fuel Boiler</b>	<b>31</b>	<b>69</b>	<b>72</b>	<b>73</b>	<b>74</b>	<b>83</b>	<b>94</b>	<b>106</b>	<b>121</b>	<b>139</b>
	CHAE-S (≤ 400 kW)	29	121	133	147	162	177	193	208	223	236
	CHAE-L (> 400 kW)	6	21	21	22	23	24	25	26	27	28
	CHWE-S (≤ 400 kW)	3	11	12	13	14	16	17	19	20	21
	CHWE-M (> 400 kW; ≤ 1500 kW)	3	10	10	11	11	11	12	12	13	13
	CHWE-L (> 1500 kW)	2	6	7	7	7	7	8	8	8	9
	CHF	0	0	1	1	1	1	1	1	1	2
	HT PCH-AE-S	14	23	24	26	27	28	29	30	31	32
	HT PCH-AE-L	11	18	20	21	21	22	23	24	25	26
	HT PCH-WE-S	3	5	5	6	6	6	6	7	7	7
	HT PCH-WE-M	12	20	21	22	23	24	25	26	27	28
	HT PCH-WE-L	2	4	4	4	4	5	5	5	5	5
	1 AC rooftop	13	43	43	33	19	5	5	5	5	5
	1 AC splits	23	83	87	84	81	78	75	72	69	66
	1 AC VRF	0	188	246	358	453	546	636	718	786	836
	ACF	0	0	1	1	1	1	1	1	1	2
	<b>SubTotal AHC Air Cooling</b>	<b>121</b>	<b>552</b>	<b>634</b>	<b>754</b>	<b>854</b>	<b>952</b>	<b>1061</b>	<b>1162</b>	<b>1248</b>	<b>1315</b>
	1 AC rooftop (rev)	8	26	25	20	11	3	0	0	0	0
	AC splits (rev)	15	53	56	54	52	50	48	46	44	42
	1 AC VRF (rev)	0	161	200	305	371	426	472	507	529	535
	1 ACF (rev)	0	1	1	2	2	2	3	3	3	3
	1 AHF	45	29	28	28	27	25	23	20	19	18
	AHE	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>68</b>	<b>271</b>	<b>309</b>	<b>410</b>	<b>464</b>	<b>507</b>	<b>545</b>	<b>577</b>	<b>595</b>	<b>599</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>166</b>	<b>582</b>	<b>661</b>	<b>782</b>	<b>881</b>	<b>978</b>	<b>1084</b>	<b>1182</b>	<b>1268</b>	<b>1334</b>
	LH open fireplace [8 kW]	100	146	146	182	199	191	184	177	171	165
	LH closed fireplace/inset [8 kW]	63	171	190	250	268	262	253	244	235	226
	LH wood stove [8 kW]	68	80	89	117	126	123	119	114	110	105
	LH coal stove [8 kW]	21	16	15	16	13	8	7	7	7	6
	LH cooker [10 kW]	58	117	141	182	193	190	183	176	175	175
	LH SHR stove [8 kW]	63	88	110	132	147	162	165	165	165	165
	LH pellet stove [8 kW]	0	66	83	100	107	114	116	116	116	116
	LH open fire gas, NCV [4.2 kW]	4	5	6	7	7	7	7	7	7	7
	LH closed fire gas, NCV [4.2 kW]	18	21	21	23	24	24	23	23	23	23
	LH flueless fuel heater, NCV [1.5 kW]	7	14	13	12	11	9	9	9	9	9
	LH elec.portable [1 kW]	16	19	20	21	21	22	23	23	23	23
	LH elec.convactor [1 kW]	116	141	146	150	157	164	165	165	165	165
	LH elec.storage [2.75 kW]	13	16	19	22	22	22	21	20	19	19
	LH elec.underfloor [0.62 kW]	24	29	31	33	33	34	34	34	34	34
	LH luminous heaters [20 kW]	2	3	3	3	3	3	3	3	3	3
	LH tube heaters [30 kW]	2	3	3	3	3	3	3	3	3	3
	<b>LH total</b>	<b>575</b>	<b>934</b>	<b>1035</b>	<b>1251</b>	<b>1334</b>	<b>1337</b>	<b>1313</b>	<b>1284</b>	<b>1262</b>	<b>1242</b>
	RAC (cooling demand), all types <12 kW	48	442	684	878	967	980	972	963	955	946
	RAC (heating demand), reversible <12kW	13	328	603	776	856	869	862	855	848	841
	<b>Total Room Air Conditioner</b>	<b>62</b>	<b>770</b>	<b>1288</b>	<b>1654</b>	<b>1823</b>	<b>1849</b>	<b>1834</b>	<b>1818</b>	<b>1803</b>	<b>1787</b>
<b>1</b>	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>188</b>	<b>300</b>	<b>383</b>	<b>388</b>	<b>393</b>	<b>369</b>	<b>332</b>	<b>297</b>	<b>272</b>	<b>254</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>2781</b>	<b>4761</b>	<b>7581</b>	<b>9652</b>	<b>11687</b>	<b>13024</b>	<b>14481</b>	<b>16016</b>	<b>17635</b>	<b>19332</b>
	<b>TOTAL SPACE COOLING</b>	<b>169</b>	<b>994</b>	<b>1318</b>	<b>1631</b>	<b>1821</b>	<b>1933</b>	<b>2033</b>	<b>2125</b>	<b>2203</b>	<b>2261</b>
	NRVU avg (sales wt.)	1368	3200	3359	3529	3724	3919	4114	4309	4504	4699
	RVU Central Unidir. VU (1 fan)	161	360	539	491	515	538	558	577	594	610
	RVU Central Balanced VU (2 fans)	18	126	379	471	512	551	586	618	648	687
	RVU Local Balanced VU (2 fans)	1	16	36	59	82	106	130	154	178	201
	<b>TOTAL VENTILATION</b>	<b>1548</b>	<b>3702</b>	<b>4313</b>	<b>4550</b>	<b>4834</b>	<b>5113</b>	<b>5388</b>	<b>5658</b>	<b>5924</b>	<b>6197</b>
	LFL (T12,T8h,T8t,T5,other)	228	328	239	174	53	30	17	11	7	4
	HID (HPM, HPS, MH)	37	106	75	46	29	11	3	1	0	0
	CFLni (all shapes)	30	111	85	61	36	11	3	1	0	0
	CFLi (retrofit for GLS, HL)	34	602	194	104	0	0	0	0	0	0
	GLS (DLS & NDLS)	353	146	12	0	0	0	0	0	0	0
	HL (DLS & NDLS, LV & MV)	69	603	697	145	1	0	0	0	0	0
	LED replacing LFL (retrofit & luminaire)	0	1	101	340	594	552	532	595	706	813
	LED replacing HID (retrofit & luminaire)	0	0	171	113	169	199	230	264	300	340
	LED replacing CFLni (retrofit & luminaire)	0	0	21	29	32	36	38	40	44	50
	LED replacing DLS (retrofit & luminaire)	0	17	114	72	56	12	14	15	16	18
	LED replacing NDLS (retrofit & luminaire)	0	10	368	525	222	125	63	65	71	79
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	752	1896	1303	530	118	52	23	14	7	4
	SUBTOTAL LED	0	28	775	1079	1073	924	877	979	1138	1299
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>752</b>	<b>1925</b>	<b>2078</b>	<b>1609</b>	<b>1192</b>	<b>976</b>	<b>899</b>	<b>993</b>	<b>1145</b>	<b>1303</b>

REV\_WHOLE\_ECO

db	REVENUE WHOLESALE ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	DP TV all types	1040	1665	945	1170	1350	1553	1575	1575	1575	1575
	DP Monitor	300	638	357	357	357	357	357	357	357	357
	DP Signage	0	90	394	900	675	675	675	675	675	675
	<b>DP Electronic Displays, total</b>	<b>1340</b>	<b>2393</b>	<b>1696</b>	<b>2427</b>	<b>2382</b>	<b>2585</b>	<b>2607</b>	<b>2607</b>	<b>2607</b>	<b>2607</b>
	SSTB	0	360	81	0	0	0	0	0	0	0
	CSTB	0	1353	1707	1787	1807	1762	1914	2066	2219	2371
	<b>Total STB set top boxes (Complex &amp; Simple)</b>	<b>0</b>	<b>1713</b>	<b>1788</b>	<b>1787</b>	<b>1807</b>	<b>1762</b>	<b>1914</b>	<b>2066</b>	<b>2219</b>	<b>2371</b>
	VIDEO players/recorders	0	191	165	22	0	0	0	0	0	0
	VIDEO projectors	13	884	750	305	132	0	0	0	0	0
	VIDEO game consoles	0	345	292	224	265	265	265	265	265	265
	<b>Total VIDEO</b>	<b>13</b>	<b>1421</b>	<b>1207</b>	<b>550</b>	<b>397</b>	<b>265</b>	<b>265</b>	<b>265</b>	<b>265</b>	<b>265</b>
	ES tower 1-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 1-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket cloud	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket cloud	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket resilient trad.	0	0	0	0	0	0	0	0	0	0
	ES rack 2-socket resilient cloud	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket resilient trad.	0	0	0	0	0	0	0	0	0	0
	ES rack 4-socket resilient cloud	0	0	0	0	0	0	0	0	0	0
	ES blade 1-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES blade 2-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES blade 2-socket cloud	0	0	0	0	0	0	0	0	0	0
	ES blade 4-socket traditional	0	0	0	0	0	0	0	0	0	0
	ES blade 4-socket cloud	0	0	0	0	0	0	0	0	0	0
	<b>ES total traditional</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ES total cloud</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ES Enterprise Servers total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	DS Online 2	0	0	0	0	0	0	0	0	0	0
	DS Online 3	0	0	0	0	0	0	0	0	0	0
	DS Online 4	0	0	0	0	0	0	0	0	0	0
	<b>DS Data Storage products total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>ES + DS total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	PC Desktop	180	600	448	407	407	407	407	407	407	407
	PC Notebook	19	1367	627	589	589	589	589	589	589	589
	PC Tablet/slate	0	93	1465	2381	3077	3663	3846	4029	4212	4396
	PC Thin client	11	130	130	130	130	130	130	130	130	130
	PC Workstation	50	499	499	499	499	499	499	499	499	499
	<b>Total PC, electricity</b>	<b>260</b>	<b>2690</b>	<b>3169</b>	<b>4006</b>	<b>4702</b>	<b>5288</b>	<b>5471</b>	<b>5654</b>	<b>5838</b>	<b>6021</b>
	EP-Copier mono	381	153	92	39	28	18	8	0	0	0
	EP-Copier colour	0	51	222	333	380	414	448	482	516	549
	EP-printer mono	77	73	64	52	44	40	34	29	23	18
	EP-printer colour	0	70	104	140	168	195	222	250	277	304
	IJ SFD printer	20	31	22	15	11	10	8	6	4	2
	IJ MFD printer	24	79	108	125	137	149	161	173	186	198
	<b>Total imaging equipment, electricity</b>	<b>501</b>	<b>457</b>	<b>611</b>	<b>704</b>	<b>769</b>	<b>826</b>	<b>881</b>	<b>939</b>	<b>1005</b>	<b>1071</b>
	SB Home Gateway, on-mode power	0	1669	2152	2635	3118	3601	4084	4567	5050	5533
	SB Home NAS, on-mode power	0	152	260	369	478	586	695	803	912	1020
	SB Home Phones (fixed), on-mode power	15	75	89	95	95	95	95	95	95	95
	SB Office Phones (fixed), on-mode power	127	242	257	273	288	304	319	335	350	366
	<b>Total SB (networked) StandBy (rest)</b>	<b>141</b>	<b>2138</b>	<b>2759</b>	<b>3372</b>	<b>3979</b>	<b>4586</b>	<b>5193</b>	<b>5800</b>	<b>6407</b>	<b>7014</b>
db											
0.0	EPS ≤ 6W, low-V	3	45	36	27	19	10	4	2	1	0
0.3	EPS 6–10 W	19	260	279	296	310	325	334	342	351	359
0.6	EPS 10–12 W	0	215	255	273	275	277	278	280	282	284
0.5	EPS 15–20 W	0	1	6	12	13	14	14	15	16	16
1.0	EPS 20–30 W	1	31	34	32	30	28	25	22	20	18
0.8	EPS 30–65 W, multiple-V	0	0	0	4	6	9	11	14	17	20
1.0	EPS 30-65 W	0	0	0	5	12	21	21	21	21	21
1.0	EPS 65–120 W	0	24	23	18	10	0	0	0	0	0
0.5	EPS 65–120 W, multiple-V	0	142	51	15	15	15	15	15	15	15
0.0	EPS 12–15 W	1	23	47	57	57	58	58	58	58	58
	<b>EPS, total</b>	<b>24</b>	<b>741</b>	<b>731</b>	<b>739</b>	<b>747</b>	<b>756</b>	<b>760</b>	<b>769</b>	<b>779</b>	<b>791</b>
	<b>EPS, double counted subtracted</b>	<b>17</b>	<b>408</b>	<b>410</b>	<b>417</b>	<b>421</b>	<b>424</b>	<b>426</b>	<b>431</b>	<b>437</b>	<b>444</b>
	UPS below 1.5 kVA	10	19	20	25	29	33	37	41	43	45
	UPS 1.5 to 5 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 5 to 10 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 10 to 200 kVA	0	0	0	0	0	0	0	0	0	0
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>10</b>	<b>19</b>	<b>20</b>	<b>25</b>	<b>29</b>	<b>33</b>	<b>37</b>	<b>41</b>	<b>43</b>	<b>45</b>
	<b>TOTAL ELECTRONICS</b>	<b>2282</b>	<b>11237</b>	<b>11661</b>	<b>13288</b>	<b>14486</b>	<b>15769</b>	<b>16795</b>	<b>17803</b>	<b>18821</b>	<b>19838</b>
	<b>RF Household refrigerator and freezer</b>	<b>240</b>	<b>300</b>	<b>325</b>	<b>339</b>	<b>387</b>	<b>372</b>	<b>407</b>	<b>420</b>	<b>431</b>	<b>440</b>
	CF open vertical chilled multi deck (RVC2)	93	102	106	136	137	133	128	124	120	116
	CF open horizontal frozen island (RHF4)	11	12	12	13	12	13	13	13	13	13
	CF other supermarket display (non-BCs)	214	254	270	297	296	299	309	320	331	343
	CF Plug in one door beverage cooler	182	221	220	250	254	250	252	260	269	278
	CF Plug in horizontal ice cream freezer	75	91	91	94	97	101	104	107	111	115
	CF Spiral vending machine	119	90	74	77	79	82	86	89	92	96
	<b>Total CF Commercial Refrigeration</b>	<b>694</b>	<b>770</b>	<b>773</b>	<b>868</b>	<b>877</b>	<b>877</b>	<b>892</b>	<b>914</b>	<b>937</b>	<b>960</b>



db	REVENUE WHOLESALE ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	PF Storage cabinet Chilled Vertical (CV)	45	59	62	69	69	70	73	76	79	82
	PF Storage cabinet Frozen Vertical (FV)	24	31	32	36	36	37	38	40	41	43
	PF Storage cabinet Chilled Horizontal (CH)	9	12	13	14	14	14	15	16	16	17
	PF Storage cabinet Frozen Horizontal (FH)	7	9	10	11	11	11	11	12	12	13
	<b>PF Storage cabinets All types</b>	<b>86</b>	<b>111</b>	<b>116</b>	<b>131</b>	<b>130</b>	<b>132</b>	<b>138</b>	<b>144</b>	<b>149</b>	<b>155</b>
	PF Process Chiller AC MT S ≤ 300 kW	7	13	14	17	18	19	21	23	24	26
	PF Process Chiller AC MT L > 300 kW	6	12	14	15	17	18	20	21	23	25
	PF Process Chiller AC LT S ≤ 200 kW	5	11	12	13	14	16	17	18	20	21
	PF Process Chiller AC LT L > 200 kW	5	10	11	12	13	15	16	17	19	20
	PF Process Chiller WC MT S ≤ 300 kW	3	6	6	7	8	9	9	10	11	12
	PF Process Chiller WC MT L > 300 kW	4	9	10	11	12	13	14	15	16	17
	PF Process Chiller WC LT S ≤ 200 kW	3	6	6	7	8	8	9	10	11	11
	PF Process Chiller WC LT L > 200 kW	4	7	8	9	10	10	11	12	13	14
	<b>PF Process Chiller All MT&amp;LT</b>	<b>37</b>	<b>74</b>	<b>81</b>	<b>91</b>	<b>99</b>	<b>108</b>	<b>117</b>	<b>127</b>	<b>136</b>	<b>145</b>
	PF Condensing Unit MT S 0.2-1 kW	35	28	29	32	33	36	39	42	45	48
	PF Condensing Unit MT M 1-5 kW	76	60	62	69	72	77	83	90	97	104
	PF Condensing Unit MT L 5-20 kW	78	62	64	73	75	79	86	92	99	107
	PF Condensing Unit MT XL 20-50 kW	60	48	49	56	57	61	66	71	76	82
	PF Condensing Unit LT S 0.1-0.4 kW	6	5	5	6	6	6	7	7	8	8
	PF Condensing Unit LT M 0.4-2 kW	11	9	9	10	10	11	12	13	14	15
	PF Condensing Unit LT L 2-8 kW	29	23	24	27	28	30	32	34	37	40
	PF Condensing Unit LT XL 8-20 kW	25	20	21	24	24	26	28	30	32	35
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>320</b>	<b>255</b>	<b>261</b>	<b>297</b>	<b>304</b>	<b>326</b>	<b>351</b>	<b>378</b>	<b>407</b>	<b>439</b>
	<b>PF Professional Refrigeration, Total</b>	<b>250</b>	<b>287</b>	<b>302</b>	<b>341</b>	<b>351</b>	<b>371</b>	<b>396</b>	<b>422</b>	<b>448</b>	<b>476</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>1185</b>	<b>1358</b>	<b>1400</b>	<b>1548</b>	<b>1616</b>	<b>1620</b>	<b>1695</b>	<b>1755</b>	<b>1816</b>	<b>1877</b>
	COOK El. Hobs, Wh/ltr	75	170	183	205	216	226	235	244	252	259
	COOK El. Ovens, kWh/a	164	194	208	234	226	218	219	222	225	228
	COOK Gas Hobs, % efficiency NCV	67	58	52	50	46	42	40	38	36	34
	COOK Gas Ovens, kWh prim, NCV	23	24	24	30	29	28	27	26	25	24
	COOK Range Hoods, kWh elec	40	49	51	67	78	78	79	79	79	79
	<b>Total CA Cooking Appliances</b>	<b>368</b>	<b>494</b>	<b>518</b>	<b>586</b>	<b>595</b>	<b>592</b>	<b>600</b>	<b>609</b>	<b>617</b>	<b>624</b>
	COFFEE Dripfilter (glass)	12	8	8	7	6	6	6	6	6	6
	COFFEE Dripfilter (thermos)	2	4	4	4	4	4	4	4	4	4
	COFFEE Dripfilter (full automatic)	0	6	7	8	8	9	10	11	11	12
	COFFEE Pad filter	0	14	15	16	18	19	20	22	23	24
	COFFEE Hard cap espresso	2	7	15	23	24	24	24	24	24	24
	COFFEE Semi-auto espresso	2	2	2	2	2	2	2	1	1	1
	COFFEE Fully-auto espresso	11	13	15	17	19	21	23	25	27	29
	<b>Total CM household Coffee Makers</b>	<b>29</b>	<b>54</b>	<b>66</b>	<b>76</b>	<b>81</b>	<b>84</b>	<b>88</b>	<b>92</b>	<b>96</b>	<b>100</b>
	<b>TOTAL COOKING</b>	<b>397</b>	<b>548</b>	<b>583</b>	<b>662</b>	<b>675</b>	<b>677</b>	<b>688</b>	<b>701</b>	<b>713</b>	<b>724</b>
	<b>WM Household Washing Machine</b>	<b>131</b>	<b>231</b>	<b>238</b>	<b>263</b>	<b>248</b>	<b>236</b>	<b>225</b>	<b>214</b>	<b>204</b>	<b>197</b>
	<b>DW Household Dishwasher</b>	<b>56</b>	<b>164</b>	<b>190</b>	<b>212</b>	<b>231</b>	<b>249</b>	<b>266</b>	<b>282</b>	<b>296</b>	<b>309</b>
	LD Household Laundry Drier vented el.	27	27	26	23	23	23	23	24	24	24
	LD Household Laundry Drier condens el.	15	57	72	86	87	86	83	81	79	78
	LD Household Laundry Drier vented gas	0	0	1	1	1	1	1	1	1	1
	<b>Total LD household Laundry Drier</b>	<b>42</b>	<b>84</b>	<b>98</b>	<b>109</b>	<b>111</b>	<b>110</b>	<b>108</b>	<b>105</b>	<b>103</b>	<b>103</b>
	VC dom. Vacuum Cleaner	128	379	548	664	713	781	848	915	982	1050
	VC nondom Vacuum Cleaner	162	167	180	190	194	203	213	222	232	241
	<b>Total VC Vacuum Cleaner</b>	<b>290</b>	<b>546</b>	<b>727</b>	<b>854</b>	<b>907</b>	<b>984</b>	<b>1061</b>	<b>1137</b>	<b>1214</b>	<b>1290</b>
	<b>TOTAL CLEANING</b>	<b>520</b>	<b>1024</b>	<b>1254</b>	<b>1438</b>	<b>1498</b>	<b>1579</b>	<b>1659</b>	<b>1738</b>	<b>1817</b>	<b>1900</b>
	0.5 FAN Axial<300Pa [247 W flow out]	90	294	421	529	506	483	462	442	423	404
	0.5 FAN Axial>300Pa [489 W fluid-dyn out]	124	428	451	494	475	475	475	475	475	475
	0.5 FAN Centr.FC [141 W flow out]	77	195	290	402	383	366	349	333	318	304
	0.5 FAN Centr.BC-free [2120 W flow out]	44	107	149	167	176	172	167	163	163	165
	0.5 FAN Centr.BC [2052 W flow out]	96	255	408	469	499	486	511	532	551	567
	0.5 FAN Cross-flow [31 W flow out]	18	40	129	171	181	177	185	192	198	203
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>224</b>	<b>659</b>	<b>924</b>	<b>1116</b>	<b>1110</b>	<b>1079</b>	<b>1075</b>	<b>1069</b>	<b>1064</b>	<b>1059</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	122	197	212	203	204	197	188	179	170	162
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	72	114	109	99	97	92	86	80	74	72
0.45	Medium (L) 3-ph 75-375 kW no VSD	56	83	73	65	61	56	50	46	44	43
0.45	<b>Total 3-ph 0.75-375 kW no VSD</b>	<b>250</b>	<b>395</b>	<b>394</b>	<b>367</b>	<b>362</b>	<b>344</b>	<b>324</b>	<b>305</b>	<b>289</b>	<b>276</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	48	142	218	371	398	408	424	447	471	497
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	35	105	196	265	280	286	298	314	331	339
0.45	Medium (L) 3-ph 75-375 kW with VSD	27	81	142	173	183	188	196	204	207	208
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>110</b>	<b>328</b>	<b>556</b>	<b>809</b>	<b>861</b>	<b>882</b>	<b>917</b>	<b>964</b>	<b>1008</b>	<b>1044</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>360</b>	<b>723</b>	<b>950</b>	<b>1176</b>	<b>1224</b>	<b>1226</b>	<b>1241</b>	<b>1269</b>	<b>1297</b>	<b>1320</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	77	146	152	159	195	190	184	179	174	168
0.45	Small 1 ph 0.12-0.75 kW with VSD	12	100	120	130	147	149	156	166	175	185
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>90</b>	<b>246</b>	<b>273</b>	<b>288</b>	<b>342</b>	<b>339</b>	<b>341</b>	<b>345</b>	<b>349</b>	<b>354</b>



REV\_WHOLE\_ECO

db	REVENUE WHOLESALE ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
0.45	Small 3 ph 0.12-0.75 kW no VSD	43	72	75	78	91	89	86	84	81	79
0.45	Small 3 ph 0.12-0.75 kW with VSD	5	37	45	51	60	63	68	75	82	90
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>47</b>	<b>109</b>	<b>120</b>	<b>129</b>	<b>151</b>	<b>152</b>	<b>155</b>	<b>159</b>	<b>163</b>	<b>168</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	26	33	29	30	32	30	29	28	26	25
0.45	Large 3-ph LV 375-1000kW with VSD	9	55	76	85	91	94	98	101	105	109
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>35</b>	<b>88</b>	<b>104</b>	<b>115</b>	<b>123</b>	<b>125</b>	<b>127</b>	<b>129</b>	<b>131</b>	<b>134</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	8	13	14	14	19	19	19	19	18	18
0.45	Explosion motors (M) 3-ph 7.5-75 kW	7	12	12	13	16	16	16	15	15	15
0.45	Explosion motors (L) 3-ph 75-375 kW	5	9	9	10	12	12	11	11	11	11
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>20</b>	<b>34</b>	<b>35</b>	<b>38</b>	<b>47</b>	<b>47</b>	<b>46</b>	<b>45</b>	<b>44</b>	<b>44</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	10	17	17	18	24	24	24	23	23	23
0.45	Brake motors (M) 3-ph 7.5-75 kW	9	15	16	17	20	20	20	19	19	19
0.45	Brake motors (L) 3-ph 75-375 kW	6	11	12	12	15	14	14	14	14	13
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>24</b>	<b>43</b>	<b>44</b>	<b>47</b>	<b>59</b>	<b>58</b>	<b>57</b>	<b>56</b>	<b>55</b>	<b>54</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	1	1	1	1	1	1	1	1
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>176</b>	<b>305</b>	<b>317</b>	<b>327</b>	<b>365</b>	<b>367</b>	<b>369</b>	<b>371</b>	<b>372</b>	<b>374</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>414</b>	<b>852</b>	<b>1015</b>	<b>1167</b>	<b>1272</b>	<b>1274</b>	<b>1286</b>	<b>1307</b>	<b>1328</b>	<b>1348</b>
	<b>WP Water pumps</b>	<b>300</b>	<b>408</b>	<b>439</b>	<b>472</b>	<b>507</b>	<b>542</b>	<b>578</b>	<b>613</b>	<b>648</b>	<b>684</b>
	CP Fixed Speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
	CP Variable speed 5-1280 l/s	0	0	0	0	0	0	0	0	0	0
	CP Pistons 2-64 l/s	0	0	0	0	0	0	0	0	0	0
	<b>Total CP Standard Air Compressors</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL INDUSTRY COMPONENTS</b>	<b>938</b>	<b>1920</b>	<b>2378</b>	<b>2754</b>	<b>2889</b>	<b>2896</b>	<b>2938</b>	<b>2989</b>	<b>3041</b>	<b>3091</b>
	TRAF0 Distribution, kWh/a	51	80	106	114	122	131	140	150	159	168
	TRAF0 Industry oil	26	43	70	75	81	87	93	99	105	111
	TRAF0 Industry dry	13	20	29	31	33	36	38	41	43	46
	TRAF0 Power	204	327	351	378	406	437	468	500	531	563
	TRAF0 DER oil	0	2	6	11	18	29	43	57	70	84
	TRAF0 DER dry	0	14	31	51	85	140	206	273	339	406
	TRAF0 Small	6	6	6	6	6	6	6	6	6	6
	<b>TOTAL ENERGY SECTOR</b>	<b>299</b>	<b>492</b>	<b>599</b>	<b>665</b>	<b>750</b>	<b>865</b>	<b>994</b>	<b>1124</b>	<b>1254</b>	<b>1384</b>
	Tyres C1, replacement for cars	1470	2054	2508	3010	3413	3814	3814	3814	3814	3814
	Tyres C1, OEM for cars	443	590	697	886	1028	1149	1149	1149	1149	1149
	<b>Tyres C1, total</b>	<b>1913</b>	<b>2644</b>	<b>3205</b>	<b>3896</b>	<b>4441</b>	<b>4963</b>	<b>4963</b>	<b>4963</b>	<b>4963</b>	<b>4963</b>
	Tyres C2, replacement for vans	255	323	338	420	487	547	547	547	547	547
	Tyres C2, OEM for vans	54	58	73	80	101	115	115	115	115	115
	<b>Tyres C2, total</b>	<b>309</b>	<b>381</b>	<b>411</b>	<b>500</b>	<b>587</b>	<b>662</b>	<b>662</b>	<b>662</b>	<b>662</b>	<b>662</b>
	Tyres C3, replacement for trucks/busses	447	439	774	895	1030	1148	1148	1148	1148	1148
	Tyres C3, OEM for trucks/busses	125	103	145	196	287	320	320	320	320	320
	<b>Tyres C3, total</b>	<b>572</b>	<b>542</b>	<b>919</b>	<b>1091</b>	<b>1317</b>	<b>1469</b>	<b>1469</b>	<b>1469</b>	<b>1469</b>	<b>1469</b>
	<b>Tyres, total C1+C2+C3</b>	<b>2794</b>	<b>3567</b>	<b>4535</b>	<b>5487</b>	<b>6346</b>	<b>7094</b>	<b>7094</b>	<b>7094</b>	<b>7094</b>	<b>7094</b>
	<b>TRANSPORT SECTOR</b>	<b>2794</b>	<b>3567</b>	<b>4535</b>	<b>5487</b>	<b>6346</b>	<b>7094</b>	<b>7094</b>	<b>7094</b>	<b>7094</b>	<b>7094</b>
	<b>GENERAL TOTAL (in m euro 2015)</b>	<b>14665</b>	<b>32955</b>	<b>39940</b>	<b>46150</b>	<b>51000</b>	<b>54867</b>	<b>58105</b>	<b>61553</b>	<b>65134</b>	<b>68786</b>
	GENERAL TOTAL (in bn euro 2015)	15	33	40	46	51	55	58	62	65	69
	<b>SUMMARY ECO</b>										
	<b>Wholesale revenue (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
	<b>WATER HEATING</b>	<b>1.0</b>	<b>1.4</b>	<b>2.2</b>	<b>2.9</b>	<b>3.2</b>	<b>3.3</b>	<b>3.4</b>	<b>3.6</b>	<b>3.7</b>	<b>3.8</b>
	<b>SPACE HEATING</b>	<b>2.8</b>	<b>4.8</b>	<b>7.6</b>	<b>9.7</b>	<b>11.7</b>	<b>13.0</b>	<b>14.5</b>	<b>16.0</b>	<b>17.6</b>	<b>19.3</b>
	<b>SPACE COOLING</b>	<b>0.2</b>	<b>1.0</b>	<b>1.3</b>	<b>1.6</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>
	<b>VENTILATION</b>	<b>1.5</b>	<b>3.7</b>	<b>4.3</b>	<b>4.5</b>	<b>4.8</b>	<b>5.1</b>	<b>5.4</b>	<b>5.7</b>	<b>5.9</b>	<b>6.2</b>
	<b>LIGHTING</b>	<b>0.8</b>	<b>1.9</b>	<b>2.1</b>	<b>1.6</b>	<b>1.2</b>	<b>1.0</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>
	<b>ELECTRONICS</b>	<b>2.3</b>	<b>11.2</b>	<b>11.7</b>	<b>13.3</b>	<b>14.5</b>	<b>15.8</b>	<b>16.8</b>	<b>17.8</b>	<b>18.8</b>	<b>19.8</b>
	<b>FOOD PRESERVATION</b>	<b>1.2</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>1.8</b>	<b>1.9</b>
	<b>COOKING</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
	<b>CLEANING</b>	<b>0.5</b>	<b>1.0</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>
	INDUSTRY COMPONENTS	0.9	1.9	2.4	2.8	2.9	2.9	2.9	3.0	3.0	3.1
	<b>ENERGY SECTOR</b>	<b>0.3</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>
	<b>TRANSPORT SECTOR</b>	<b>2.8</b>	<b>3.6</b>	<b>4.5</b>	<b>5.5</b>	<b>6.3</b>	<b>7.1</b>	<b>7.1</b>	<b>7.1</b>	<b>7.1</b>	<b>7.1</b>
	<b>TOTAL in bn euro 2015</b>	<b>15</b>	<b>33</b>	<b>40</b>	<b>46</b>	<b>51</b>	<b>55</b>	<b>58</b>	<b>62</b>	<b>65</b>	<b>69</b>

## REV\_WHOLE\_ECO

Wholesale revenue ECO-BAU (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	0.0	0.0	0.8	1.3	1.5	1.6	1.7	1.7	1.8	1.9
SPACE HEATING	0.0	0.1	2.4	3.9	5.4	6.3	7.4	8.5	9.8	11.1
SPACE COOLING	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
VENTILATION	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
LIGHTING	0.0	0.1	0.3	-0.6	-0.5	-0.3	-0.2	-0.1	0.1	0.1
ELECTRONICS	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FOOD PRESERVATION	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1
COOKING	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
CLEANING	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
INDUSTRY COMPONENTS	0.0	0.0	0.3	0.5	0.5	0.5	0.4	0.4	0.3	0.2
ENERGY SECTOR	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
TRANSPORT SECTOR	0.0	0.1	0.6	1.0	1.2	1.3	1.3	1.3	1.3	1.3
<b>TOTAL in bn euro 2015</b>	<b>0.0</b>	<b>0.4</b>	<b>4.9</b>	<b>6.8</b>	<b>9.0</b>	<b>10.1</b>	<b>11.3</b>	<b>12.6</b>	<b>13.9</b>	<b>15.3</b>

### Revenues for VSDs only (without motor, m euros)

VSD - Very Small 0.12 - 0.75 kW 1-phase	11	84	100	107	118	120	126	134	142	152
VSD - Very Small 0.12 - 0.75 kW 3-phase	3	28	34	37	42	45	49	54	60	66
VSD - Small 0.75 - 7.5 kW 3-phase	34	101	151	245	261	266	279	297	317	338
VSD - Medium 7.5 - 75kW 3-phase	25	73	130	172	181	185	194	207	221	229
VSD - Large 75 - 375kW 3-phase	14	41	69	81	86	89	93	99	102	105
VSD - Very Large 375 - 1,000kW 3-phase	6	35	48	52	55	58	61	64	67	71
<b>Total revenues, VSDs only (ECO)</b>	<b>93</b>	<b>362</b>	<b>532</b>	<b>694</b>	<b>743</b>	<b>762</b>	<b>801</b>	<b>855</b>	<b>909</b>	<b>960</b>

REV\_INST\_BAU

db	REVENUE INSTALL BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	<b>1560</b>	<b>1897</b>	<b>1875</b>	<b>2018</b>	<b>2238</b>	<b>2258</b>	<b>2228</b>	<b>2198</b>	<b>2167</b>	<b>2137</b>
	<b>CH Central Heating combi, water heat</b>	<b>1226</b>	<b>2136</b>	<b>2306</b>	<b>2565</b>	<b>2642</b>	<b>2711</b>	<b>2796</b>	<b>2945</b>	<b>3094</b>	<b>3243</b>
	<b>TOTAL WATER HEATING</b>	<b>2786</b>	<b>4033</b>	<b>4181</b>	<b>4583</b>	<b>4880</b>	<b>4968</b>	<b>5024</b>	<b>5143</b>	<b>5261</b>	<b>5379</b>
	<b>CH Central Heating boiler, space heat</b>	<b>6289</b>	<b>9150</b>	<b>9782</b>	<b>10413</b>	<b>11433</b>	<b>12453</b>	<b>13473</b>	<b>14493</b>	<b>15513</b>	<b>16533</b>
	SFB Wood Manual [18 kW]	310	187	126	74	44	41	38	35	33	30
	SFB Wood Direct Draft [20 kW]	7	306	319	339	316	393	461	539	631	754
	SFB Coal [25 kW]	87	38	5	4	4	3	3	3	2	2
	SFB Pellets [25 kW]	0	87	135	135	135	149	165	182	201	221
	SFB Wood chips [160 kW]	0	19	19	23	27	29	32	36	40	44
	<b>Total Solid Fuel Boiler</b>	<b>404</b>	<b>638</b>	<b>604</b>	<b>576</b>	<b>525</b>	<b>616</b>	<b>698</b>	<b>795</b>	<b>907</b>	<b>1052</b>
	CHAE-S (≤ 400 kW)	105	440	484	534	591	647	703	758	811	861
	CHAE-L (> 400 kW)	23	76	79	81	85	88	91	95	98	101
	CHWE-S (≤ 400 kW)	6	26	28	31	34	38	41	44	47	50
	CHWE-M (> 400 kW; ≤ 1500 kW)	7	23	24	25	26	27	28	29	31	32
	CHWE-L (> 1500 kW)	3	9	10	10	10	11	11	12	12	12
	CHF	0	2	2	3	3	4	4	5	5	6
	HT PCH-AE-S	52	84	90	95	99	103	107	111	115	119
	HT PCH-AE-L	41	67	72	76	79	82	86	89	92	95
	HT PCH-WE-S	11	18	20	21	22	23	23	24	25	26
	HT PCH-WE-M	29	47	51	54	56	58	61	63	65	67
	HT PCH-WE-L	3	5	6	6	6	7	7	7	7	8
	AC rooftop	96	312	315	241	140	37	37	37	37	37
	AC splits	97	354	370	357	345	331	318	306	294	281
	AC VRF	0	1132	1478	2152	2722	3286	3822	4316	4729	5028
	ACF	0	2	2	3	3	4	4	5	5	6
	<b>SubTotal AHC Air Cooling</b>	<b>474</b>	<b>2597</b>	<b>3029</b>	<b>3688</b>	<b>4221</b>	<b>4744</b>	<b>5344</b>	<b>5900</b>	<b>6374</b>	<b>6730</b>
	AC rooftop (rev)	59	192	184	148	83	21	0	0	0	0
	AC splits (rev)	65	227	237	229	221	213	205	197	189	181
	AC VRF (rev)	0	966	1200	1837	2233	2564	2838	3049	3179	3216
	ACF (rev)	0	4	5	6	7	8	10	11	12	12
	AHF	297	195	183	172	163	154	145	136	127	118
	AHE	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>422</b>	<b>1584</b>	<b>1810</b>	<b>2393</b>	<b>2707</b>	<b>2960</b>	<b>3197</b>	<b>3392</b>	<b>3506</b>	<b>3527</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>772</b>	<b>2794</b>	<b>3213</b>	<b>3862</b>	<b>4385</b>	<b>4899</b>	<b>5490</b>	<b>6038</b>	<b>6502</b>	<b>6849</b>
	LH open fireplace [8 kW]	331	483	486	489	486	483	482	482	482	482
	LH closed fireplace/inset [8 kW]	202	547	611	674	683	691	693	693	693	693
	LH wood stove [8 kW]	156	184	204	224	227	230	231	231	231	231
	LH coal stove [8 kW]	71	55	51	46	34	23	21	21	21	21
	LH cooker [10 kW]	114	230	278	326	334	342	344	344	344	344
	LH SHR stove [8 kW]	988	1380	1713	2046	2288	2529	2579	2579	2579	2579
	LH pellet stove [8 kW]	0	106	133	161	172	184	186	186	186	186
	LH open fire gas, NCV [4.2 kW]	14	21	23	25	25	25	25	25	25	25
	LH closed fire gas, NCV [4.2 kW]	74	84	86	89	91	93	94	94	94	94
	LH flueless fuel heater, NCV [1.5 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.portable [1 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.convectoor [1 kW]	268	327	337	347	363	379	382	382	382	382
	LH elec.storage [2.75 kW]	21	25	26	27	28	29	30	30	30	30
	LH elec.underfloor [0.62 kW]	158	193	199	205	215	224	226	226	226	226
	LH luminous heaters [20 kW]	5	7	7	7	7	7	7	7	7	7
	LH tube heaters [30 kW]	5	7	7	7	7	7	7	7	7	7
	<b>LH total</b>	<b>2410</b>	<b>3647</b>	<b>4160</b>	<b>4673</b>	<b>4960</b>	<b>5246</b>	<b>5305</b>	<b>5305</b>	<b>5305</b>	<b>5305</b>
	RAC (cooling demand), all types <12 kW	251	2303	3301	4136	4507	4552	4552	4628	4704	4780
	RAC (heating demand), reversible <12kW	70	1709	2910	3657	3989	4033	4036	4107	4178	4249
	<b>Total Room Air Conditioner</b>	<b>321</b>	<b>4013</b>	<b>6212</b>	<b>7792</b>	<b>8496</b>	<b>8585</b>	<b>8588</b>	<b>8735</b>	<b>8881</b>	<b>9028</b>
<b>1</b>	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>9596</b>	<b>16728</b>	<b>19265</b>	<b>21711</b>	<b>23614</b>	<b>25308</b>	<b>26710</b>	<b>28092</b>	<b>29409</b>	<b>30666</b>
	<b>TOTAL SPACE COOLING</b>	<b>725</b>	<b>4901</b>	<b>6331</b>	<b>7824</b>	<b>8728</b>	<b>9296</b>	<b>9896</b>	<b>10528</b>	<b>11078</b>	<b>11510</b>
	NRVU avg (sales wt.)	18489	43255	45247	47702	50339	52976	55613	58250	60887	63524
	RVU Central Unidir. VU (1 fan)	519	1164	1002	913	958	1000	1058	1127	1197	1267
	RVU Central Balanced VU (2 fans)	50	348	847	1087	1222	1356	1491	1625	1760	1895
	RVU Local Balanced VU (2 fans)	1	7	15	25	35	45	55	65	76	86
	<b>TOTAL VENTILATION</b>	<b>19058</b>	<b>44774</b>	<b>47111</b>	<b>49728</b>	<b>52554</b>	<b>55377</b>	<b>58217</b>	<b>61068</b>	<b>63919</b>	<b>66771</b>
	LFL (T12,T8h,T8t,T5,other)	1554	2254	2030	1539	1048	778	630	479	372	289
	HID (HPM, HPS, MH)	153	380	328	223	172	95	47	24	12	7
	CFLni (all shapes)	100	374	352	331	252	129	55	22	9	4
	CFLi (retrofit for GLS, HL)	20	259	172	209	131	98	56	39	25	16
	GLS (DLS & NDLS)	624	507	419	289	168	98	58	34	20	11
	HL (DLS & NDLS, LV & MV)	73	318	377	421	283	157	89	51	29	17
	LED replacing LFL (retrofit & luminaire)	0	0	26	213	571	991	1088	1262	1522	1799
	LED replacing HID (retrofit & luminaire)	0	0	4	40	88	141	166	197	228	259
	LED replacing CFLni (retrofit & luminaire)	0	0	7	52	150	259	295	350	404	431
	LED replacing DLS (retrofit & luminaire)	0	0	4	42	84	74	61	56	55	57
	LED replacing NDLS (retrofit & luminaire)	0	0	6	195	277	304	289	264	252	258
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	2524	4091	3679	3013	2054	1356	933	648	466	344
	SUBTOTAL LED	0	0	47	543	1170	1769	1899	2129	2460	2804
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>2524</b>	<b>4091</b>	<b>3727</b>	<b>3556</b>	<b>3224</b>	<b>3125</b>	<b>2833</b>	<b>2777</b>	<b>2927</b>	<b>3149</b>

REV\_INST\_BAU

db	REVENUE INSTALL BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total DP Electronic Displays</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total STB set top boxes</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total VIDEO</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total ES + DS (Servers, data Storage)</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total PC (Personal Computers)</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total imaging equipment</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total SB (networked) StandBy</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total EPS (External power supplies)</b>	0	0	0	0	0	0	0	0	0	0
	UPS below 1.5 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 1.5 to 5 kVA	68	134	139	169	199	229	256	280	299	311
	UPS 5 to 10 kVA	7	14	15	18	21	24	27	29	31	32
	UPS 10 to 200 kVA	9	17	18	22	26	30	33	37	39	41
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>83</b>	<b>165</b>	<b>172</b>	<b>209</b>	<b>246</b>	<b>282</b>	<b>316</b>	<b>346</b>	<b>369</b>	<b>384</b>
	<b>TOTAL ELECTRONICS</b>	<b>83</b>	<b>165</b>	<b>172</b>	<b>209</b>	<b>246</b>	<b>282</b>	<b>316</b>	<b>346</b>	<b>369</b>	<b>384</b>
	<b>RF Household refrigerator and freezer</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	CF open vertical chilled multi deck (RVC2)	29	31	31	31	32	32	33	33	34	34
	CF open horizontal frozen island (RHF4)	3	4	4	4	4	4	4	4	4	4
	CF other supermarket display (non-BCs)	94	112	118	122	127	131	136	141	146	151
	CF Plug in one door beverage cooler	0	0	0	0	0	0	0	0	0	0
	CF Plug in horizontal ice cream freezer	0	0	0	0	0	0	0	0	0	0
	CF Spiral vending machine	0	0	0	0	0	0	0	0	0	0
	<b>Total CF Commercial Refrigeration</b>	<b>126</b>	<b>146</b>	<b>152</b>	<b>157</b>	<b>163</b>	<b>168</b>	<b>173</b>	<b>178</b>	<b>184</b>	<b>189</b>
	<b>PF Storage cabinets All types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>126</b>	<b>146</b>	<b>152</b>	<b>157</b>	<b>163</b>	<b>168</b>	<b>173</b>	<b>178</b>	<b>184</b>	<b>189</b>
	<b>TOTAL COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL CLEANING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.5	FAN Axial<300Pa [247 W flow out]	43	142	163	184	184	184	184	184	184	184
0.5	FAN Axial>300Pa [489 W fluid-dyn out]	45	155	164	172	172	172	172	172	172	172
0.5	FAN Centr.FC [141 W flow out]	22	57	65	74	74	74	74	74	74	74
0.5	FAN Centr.BC-free [2120 W flow out]	19	47	53	59	66	67	68	69	71	72
0.5	FAN Centr.BC [2052 W flow out]	42	111	127	143	159	163	179	195	211	227
0.5	FAN Cross-flow [31 W flow out]	6	14	16	18	20	21	23	25	27	29
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>89</b>	<b>263</b>	<b>294</b>	<b>325</b>	<b>338</b>	<b>340</b>	<b>350</b>	<b>360</b>	<b>369</b>	<b>379</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	141	226	228	225	216	205	193	179	166	152
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	42	65	66	64	61	57	52	47	40	37
0.45	Medium (L) 3-ph 75-375 kW no VSD	10	15	15	14	12	11	9	7	7	7
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>193</b>	<b>307</b>	<b>308</b>	<b>303</b>	<b>289</b>	<b>273</b>	<b>254</b>	<b>233</b>	<b>214</b>	<b>196</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	88	258	308	355	403	459	536	625	733	860
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	57	168	200	232	263	300	350	408	477	532
0.45	Medium (L) 3-ph 75-375 kW with VSD	30	88	105	122	139	159	185	215	220	225
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>176</b>	<b>514</b>	<b>613</b>	<b>709</b>	<b>804</b>	<b>918</b>	<b>1070</b>	<b>1248</b>	<b>1429</b>	<b>1616</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>369</b>	<b>821</b>	<b>922</b>	<b>1012</b>	<b>1093</b>	<b>1190</b>	<b>1324</b>	<b>1480</b>	<b>1643</b>	<b>1812</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	84	159	166	165	165	164	163	161	160	158
0.45	Small 1 ph 0.12-0.75 kW with VSD	24	200	240	252	267	284	302	320	340	361
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>108</b>	<b>359</b>	<b>406</b>	<b>417</b>	<b>432</b>	<b>448</b>	<b>464</b>	<b>482</b>	<b>500</b>	<b>519</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	53	89	93	94	93	92	91	90	88	87
0.45	Small 3 ph 0.12-0.75 kW with VSD	9	72	88	96	105	115	127	140	153	169
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>62</b>	<b>161</b>	<b>181</b>	<b>189</b>	<b>198</b>	<b>207</b>	<b>218</b>	<b>229</b>	<b>242</b>	<b>255</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	7	9	8	7	7	7	7	7	7	6
0.45	Large 3-ph LV 375-1000kW with VSD	13	77	106	116	122	129	134	140	146	152
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>20</b>	<b>86</b>	<b>113</b>	<b>124</b>	<b>130</b>	<b>136</b>	<b>141</b>	<b>146</b>	<b>152</b>	<b>158</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	9	15	16	16	16	16	16	16	17	17
0.45	Explosion motors (M) 3-ph 7.5-75 kW	4	7	7	7	7	7	7	7	7	8
0.45	Explosion motors (L) 3-ph 75-375 kW	1	2	2	2	2	2	2	2	2	2
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>14</b>	<b>24</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>26</b>	<b>26</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	11	19	20	20	20	20	20	20	21	21
0.45	Brake motors (M) 3-ph 7.5-75 kW	5	9	9	9	9	9	9	9	9	9
0.45	Brake motors (L) 3-ph 75-375 kW	1	2	2	2	2	2	2	2	2	2
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>17</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>33</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>181</b>	<b>314</b>	<b>327</b>	<b>333</b>	<b>333</b>	<b>333</b>	<b>332</b>	<b>331</b>	<b>338</b>	<b>346</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>424</b>	<b>987</b>	<b>1103</b>	<b>1173</b>	<b>1234</b>	<b>1305</b>	<b>1396</b>	<b>1500</b>	<b>1613</b>	<b>1733</b>

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db REVENUE INSTALL BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WP Water pumps</b>	<b>599</b>	<b>814</b>	<b>875</b>	<b>940</b>	<b>1011</b>	<b>1081</b>	<b>1152</b>	<b>1222</b>	<b>1293</b>	<b>1363</b>
CP Fixed Speed 5-1280 l/s	17	15	14	15	16	16	17	18	19	19
CP Variable speed 5-1280 l/s	0	6	10	11	11	12	12	13	13	14
CP Pistons 2-64 l/s	5	6	6	7	7	8	8	9	9	10
<b>Total CP Standard Air Compressors</b>	<b>23</b>	<b>28</b>	<b>31</b>	<b>33</b>	<b>34</b>	<b>36</b>	<b>38</b>	<b>39</b>	<b>41</b>	<b>43</b>
TOTAL INDUSTRY COMPONENTS	1134	2091	2302	2472	2617	2762	2935	3122	3317	3519
<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>GENERAL TOTAL (in m euro 2015)</b>	<b>36033</b>	<b>76931</b>	<b>83242</b>	<b>90241</b>	<b>96025</b>	<b>101287</b>	<b>106104</b>	<b>111253</b>	<b>116463</b>	<b>121566</b>
GENERAL TOTAL (in bn euro 2015)	36	77	83	90	96	101	106	111	116	122
<b>SUMMARY BAU</b>										
<b>INSTALL excl. VAT (bn euro 2015)</b>	<b>1990</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
<b>WATER HEATING</b>	<b>2.8</b>	<b>4.0</b>	<b>4.2</b>	<b>4.6</b>	<b>4.9</b>	<b>5.0</b>	<b>5.0</b>	<b>5.1</b>	<b>5.3</b>	<b>5.4</b>
<b>SPACE HEATING</b>	<b>9.6</b>	<b>16.7</b>	<b>19.3</b>	<b>21.7</b>	<b>23.6</b>	<b>25.3</b>	<b>26.7</b>	<b>28.1</b>	<b>29.4</b>	<b>30.7</b>
<b>SPACE COOLING</b>	<b>0.7</b>	<b>4.9</b>	<b>6.3</b>	<b>7.8</b>	<b>8.7</b>	<b>9.3</b>	<b>9.9</b>	<b>10.5</b>	<b>11.1</b>	<b>11.5</b>
<b>VENTILATION</b>	<b>19.1</b>	<b>44.8</b>	<b>47.1</b>	<b>49.7</b>	<b>52.6</b>	<b>55.4</b>	<b>58.2</b>	<b>61.1</b>	<b>63.9</b>	<b>66.8</b>
<b>LIGHTING</b>	<b>2.5</b>	<b>4.1</b>	<b>3.7</b>	<b>3.6</b>	<b>3.2</b>	<b>3.1</b>	<b>2.8</b>	<b>2.8</b>	<b>2.9</b>	<b>3.1</b>
<b>ELECTRONICS</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>
<b>FOOD PRESERVATION</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>COOKING</b>	-	-	-	-	-	-	-	-	-	-
<b>CLEANING</b>	-	-	-	-	-	-	-	-	-	-
INDUSTRY COMPONENTS	1.1	2.1	2.3	2.5	2.6	2.8	2.9	3.1	3.3	3.5
<b>ENERGY SECTOR</b>	-	-	-	-	-	-	-	-	-	-
<b>TRANSPORT SECTOR</b>	-	-	-	-	-	-	-	-	-	-
<b>TOTAL in bn euro 2015</b>	<b>36</b>	<b>77</b>	<b>83</b>	<b>90</b>	<b>96</b>	<b>101</b>	<b>106</b>	<b>111</b>	<b>116</b>	<b>122</b>
<u>Revenues for VSDs only (without motor)</u>										
VSD - Very Small 0.12 - 0.75 kW 1-phase	23	182	218	228	241	257	273	291	310	330
VSD - Very Small 0.12 - 0.75 kW 3-phase	8	60	73	79	87	96	106	117	130	143
VSD - Small 0.75 - 7.5 kW 3-phase	75	218	260	299	337	384	451	530	622	730
VSD - Medium 7.5 - 75kW 3-phase	54	156	186	214	241	275	323	379	445	497
VSD - Large 75 - 375kW 3-phase	30	88	105	121	137	156	183	215	222	228
VSD - Very Large 375 - 1,000kW 3-phase	13	74	100	109	114	120	126	133	140	147
<b>Total revenues, VSDs only (BAU)</b>	<b>203</b>	<b>778</b>	<b>941</b>	<b>1049</b>	<b>1159</b>	<b>1289</b>	<b>1463</b>	<b>1665</b>	<b>1868</b>	<b>2075</b>

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db	REVENUE INSTALL ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	<b>1560</b>	<b>1897</b>	<b>3045</b>	<b>3503</b>	<b>4031</b>	<b>3980</b>	<b>3928</b>	<b>3874</b>	<b>3821</b>	<b>3766</b>
	<b>CH Central Heating combi, water heat</b>	<b>1226</b>	<b>2136</b>	<b>3270</b>	<b>4649</b>	<b>5067</b>	<b>5486</b>	<b>5905</b>	<b>6323</b>	<b>6737</b>	<b>7147</b>
	<b>TOTAL WATER HEATING</b>	<b>2786</b>	<b>4033</b>	<b>6314</b>	<b>8152</b>	<b>9098</b>	<b>9466</b>	<b>9833</b>	<b>10197</b>	<b>10558</b>	<b>10914</b>
	<b>CH Central Heating boiler, space heat</b>	<b>6289</b>	<b>9492</b>	<b>16714</b>	<b>21459</b>	<b>26922</b>	<b>30736</b>	<b>35058</b>	<b>39645</b>	<b>44496</b>	<b>49613</b>
	SFB Wood Manual [18 kW]	310	187	169	132	76	66	58	51	44	39
	SFB Wood Direct Draft [20 kW]	7	306	320	344	375	439	514	602	704	825
	SFB Coal [25 kW]	87	38	5	4	4	3	3	3	2	2
	SFB Pellets [25 kW]	0	87	135	135	141	149	165	182	201	221
	SFB Wood chips [160 kW]	0	19	20	24	27	29	32	36	40	44
	<b>Total Solid Fuel Boiler</b>	<b>404</b>	<b>638</b>	<b>648</b>	<b>640</b>	<b>622</b>	<b>687</b>	<b>771</b>	<b>872</b>	<b>991</b>	<b>1131</b>
	CHAE-S (≤ 400 kW)	105	440	484	534	591	647	703	758	811	861
	CHAE-L (> 400 kW)	23	76	79	81	85	88	91	95	98	101
	CHWE-S (≤ 400 kW)	6	26	28	31	34	38	41	44	47	50
	CHWE-M (> 400 kW; ≤ 1500 kW)	7	23	24	25	26	27	28	29	31	32
	CHWE-L (> 1500 kW)	3	9	10	10	10	11	11	12	12	12
	CHF	0	2	2	3	4	4	4	5	5	6
	HT PCH-AE-S	52	84	90	95	99	103	107	111	115	119
	HT PCH-AE-L	41	67	72	76	79	82	86	89	92	95
	HT PCH-WE-S	11	18	20	21	22	23	23	24	25	26
	HT PCH-WE-M	29	47	51	54	56	58	61	63	65	67
	HT PCH-WE-L	3	5	6	6	6	7	7	7	7	8
	AC rooftop	96	312	315	241	140	37	37	37	37	37
	AC splits	97	354	370	357	345	331	318	306	294	281
	AC VRF	0	1132	1478	2152	2722	3286	3822	4316	4729	5028
	ACF	0	2	2	3	4	4	4	5	5	6
	<b>SubTotal AHC Air Cooling</b>	<b>474</b>	<b>2597</b>	<b>3029</b>	<b>3689</b>	<b>4222</b>	<b>4745</b>	<b>5345</b>	<b>5900</b>	<b>6374</b>	<b>6730</b>
	AC rooftop (rev)	59	192	184	148	83	21	0	0	0	0
	AC splits (rev)	65	227	237	229	221	213	205	197	189	181
	AC VRF (rev)	0	966	1200	1837	2233	2564	2838	3049	3179	3216
	ACF (rev)	0	4	5	6	7	8	10	11	12	12
	AHF	297	195	183	189	180	167	150	136	127	118
	AHE	0	0	0	0	0	0	0	0	0	0
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>422</b>	<b>1584</b>	<b>1810</b>	<b>2409</b>	<b>2724</b>	<b>2973</b>	<b>3203</b>	<b>3392</b>	<b>3506</b>	<b>3527</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>772</b>	<b>2794</b>	<b>3213</b>	<b>3878</b>	<b>4402</b>	<b>4912</b>	<b>5496</b>	<b>6038</b>	<b>6502</b>	<b>6849</b>
	LH open fireplace [8 kW]	331	483	486	603	661	633	609	588	566	546
	LH closed fireplace/inset [8 kW]	202	547	611	801	860	839	811	781	753	725
	LH wood stove [8 kW]	156	184	204	269	290	282	272	261	251	241
	LH coal stove [8 kW]	71	55	51	54	43	28	24	24	23	22
	LH cooker [10 kW]	114	230	278	358	380	374	360	346	344	344
	LH SHR stove [8 kW]	988	1380	1713	2058	2293	2529	2579	2579	2579	2579
	LH pellet stove [8 kW]	0	106	133	161	172	184	186	186	186	186
	LH open fire gas, NCV [4.2 kW]	14	21	23	26	27	26	25	25	25	25
	LH closed fire gas, NCV [4.2 kW]	74	84	86	93	97	96	94	94	94	94
	LH flueless fuel heater, NCV [1.5 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.portable [1 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.convactor [1 kW]	268	327	337	347	363	379	382	382	382	382
	LH elec.storage [2.75 kW]	21	25	29	34	34	34	33	31	30	30
	LH elec.underfloor [0.62 kW]	158	193	204	215	218	224	226	226	226	226
	LH luminous heaters [20 kW]	5	7	7	8	8	7	7	7	7	7
	LH tube heaters [30 kW]	5	7	7	8	7	7	7	7	7	7
	<b>LH total</b>	<b>2410</b>	<b>3647</b>	<b>4168</b>	<b>5035</b>	<b>5453</b>	<b>5642</b>	<b>5615</b>	<b>5535</b>	<b>5471</b>	<b>5413</b>
	RAC (cooling demand), all types <12 kW	251	2303	3567	4575	5041	5110	5066	5022	4977	4930
	RAC (heating demand), reversible <12kW	70	1709	3145	4045	4463	4527	4492	4457	4420	4382
	<b>Total Room Air Conditioner</b>	<b>321</b>	<b>4013</b>	<b>6712</b>	<b>8620</b>	<b>9504</b>	<b>9637</b>	<b>9559</b>	<b>9479</b>	<b>9397</b>	<b>9313</b>
<b>1</b>	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>9596</b>	<b>17070</b>	<b>26485</b>	<b>33589</b>	<b>40183</b>	<b>44565</b>	<b>49139</b>	<b>53901</b>	<b>58885</b>	<b>64066</b>
	<b>TOTAL SPACE COOLING</b>	<b>725</b>	<b>4901</b>	<b>6597</b>	<b>8264</b>	<b>9263</b>	<b>9854</b>	<b>10411</b>	<b>10922</b>	<b>11351</b>	<b>11660</b>
	<b>NRVU avg (sales wt.)</b>	<b>18489</b>	<b>43255</b>	<b>45410</b>	<b>47702</b>	<b>50339</b>	<b>52976</b>	<b>55613</b>	<b>58250</b>	<b>60887</b>	<b>63524</b>
	RVU Central Unidir. VU (1 fan)	519	1164	1742	1588	1667	1739	1805	1866	1921	1971
	RVU Central Balanced VU (2 fans)	50	348	1046	1299	1413	1519	1616	1705	1787	1895
	RVU Local Balanced VU (2 fans)	1	7	15	25	35	45	55	65	76	86
	<b>TOTAL VENTILATION</b>	<b>19058</b>	<b>44774</b>	<b>48214</b>	<b>50615</b>	<b>53454</b>	<b>56279</b>	<b>59089</b>	<b>61886</b>	<b>64670</b>	<b>67475</b>
	LFL (T12,T8h,T8t,T5,other)	1554	2254	1622	1209	391	221	116	70	43	26
	HID (HPM, HPS, MH)	153	380	263	159	98	38	12	4	1	0
	CFLni (all shapes)	100	374	305	209	109	30	5	1	0	0
	CFLi (retrofit for GLS, HL)	20	355	120	66	0	0	0	0	0	0
	GLS (DLS & NDLS)	624	258	17	0	0	0	0	0	0	0
	HL (DLS & NDLS, LV & MV)	73	352	379	124	0	0	0	0	0	0
	LED replacing LFL (retrofit & luminaire)	0	0	66	450	1170	1244	1207	1396	1677	1916
	LED replacing HID (retrofit & luminaire)	0	0	57	59	121	157	179	205	232	263
	LED replacing CFLni (retrofit & luminaire)	0	0	55	152	198	289	314	352	409	430
	LED replacing DLS (retrofit & luminaire)	0	2	48	96	89	33	37	42	47	53
	LED replacing NDLS (retrofit & luminaire)	0	0	78	544	337	258	160	175	198	224
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	2524	3973	2705	1765	598	289	132	75	44	27
	SUBTOTAL LED	0	2	304	1301	1916	1981	1896	2169	2563	2886
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>2524</b>	<b>3975</b>	<b>3009</b>	<b>3066</b>	<b>2514</b>	<b>2270</b>	<b>2028</b>	<b>2244</b>	<b>2608</b>	<b>2912</b>

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db	REVENUE INSTALL ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>Total DP Electronic Displays</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total STB set top boxes</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total VIDEO</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total ES + DS (Servers, data Storage)</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total PC (Personal Computers)</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total imaging equipment</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total SB (networked) StandBy</b>	0	0	0	0	0	0	0	0	0	0
	<b>Total EPS (External power supplies)</b>	0	0	0	0	0	0	0	0	0	0
	UPS below 1.5 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 1.5 to 5 kVA	68	134	139	169	199	229	256	280	299	311
	UPS 5 to 10 kVA	7	14	15	18	21	24	27	29	31	32
	UPS 10 to 200 kVA	9	17	18	22	26	30	33	37	39	41
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>83</b>	<b>165</b>	<b>172</b>	<b>209</b>	<b>246</b>	<b>282</b>	<b>316</b>	<b>346</b>	<b>369</b>	<b>384</b>
	<b>TOTAL ELECTRONICS</b>	<b>83</b>	<b>165</b>	<b>172</b>	<b>209</b>	<b>246</b>	<b>282</b>	<b>316</b>	<b>346</b>	<b>369</b>	<b>384</b>
	<b>RF Household refrigerator and freezer</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	CF open vertical chilled multi deck (RVC2)	29	31	32	42	42	41	39	38	37	35
	CF open horizontal frozen island (RHF4)	3	4	4	4	4	4	4	4	4	4
	CF other supermarket display (non-BCs)	94	112	119	131	130	131	136	141	146	151
	CF Plug in one door beverage cooler	0	0	0	0	0	0	0	0	0	0
	CF Plug in horizontal ice cream freezer	0	0	0	0	0	0	0	0	0	0
	CF Spiral vending machine	0	0	0	0	0	0	0	0	0	0
	<b>Total CF Commercial Refrigeration</b>	<b>126</b>	<b>146</b>	<b>155</b>	<b>176</b>	<b>176</b>	<b>179</b>	<b>179</b>	<b>183</b>	<b>187</b>	<b>190</b>
	<b>PF Storage cabinets All types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>126</b>	<b>146</b>	<b>155</b>	<b>176</b>	<b>176</b>	<b>176</b>	<b>179</b>	<b>183</b>	<b>187</b>	<b>190</b>
	<b>TOTAL COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL CLEANING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	0.5 FAN Axial<300Pa [247 W flow out]	43	142	203	255	244	234	223	214	204	195
	0.5 FAN Axial>300Pa [489 W fluid-dyn out]	45	155	164	179	172	172	172	172	172	172
	0.5 FAN Centr.FC [141 W flow out]	22	57	84	116	111	106	101	97	92	88
	0.5 FAN Centr.BC-free [2120 W flow out]	19	47	65	72	77	75	73	71	71	72
	0.5 FAN Centr.BC [2052 W flow out]	42	111	178	204	217	211	222	231	240	247
	0.5 FAN Cross-flow [31 W flow out]	6	14	47	62	66	64	67	70	72	74
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>89</b>	<b>263</b>	<b>370</b>	<b>445</b>	<b>443</b>	<b>431</b>	<b>429</b>	<b>427</b>	<b>425</b>	<b>424</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	141	229	246	235	237	228	218	208	198	187
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	42	66	63	57	56	53	50	46	43	42
0.45	Medium (L) 3-ph 75-375 kW no VSD	10	15	13	12	11	10	9	8	8	8
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>193</b>	<b>310</b>	<b>322</b>	<b>304</b>	<b>304</b>	<b>291</b>	<b>277</b>	<b>262</b>	<b>249</b>	<b>237</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	88	262	403	685	734	752	782	824	869	916
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	57	171	318	429	454	464	482	508	536	549
0.45	Medium (L) 3-ph 75-375 kW with VSD	30	90	158	194	205	210	219	228	231	233
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>176</b>	<b>523</b>	<b>879</b>	<b>1307</b>	<b>1393</b>	<b>1427</b>	<b>1483</b>	<b>1560</b>	<b>1636</b>	<b>1698</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>369</b>	<b>833</b>	<b>1201</b>	<b>1611</b>	<b>1697</b>	<b>1718</b>	<b>1760</b>	<b>1823</b>	<b>1884</b>	<b>1935</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	84	159	166	173	212	206	200	195	189	183
0.45	Small 1 ph 0.12-0.75 kW with VSD	24	200	240	258	292	297	312	330	349	370
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>108</b>	<b>359</b>	<b>406</b>	<b>431</b>	<b>504</b>	<b>504</b>	<b>512</b>	<b>524</b>	<b>538</b>	<b>552</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	53	89	93	97	113	110	107	104	101	98
0.45	Small 3 ph 0.12-0.75 kW with VSD	9	72	88	98	115	122	132	145	158	173
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>62</b>	<b>161</b>	<b>181</b>	<b>195</b>	<b>229</b>	<b>232</b>	<b>240</b>	<b>249</b>	<b>259</b>	<b>271</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	7	9	8	8	8	8	8	7	7	6
0.45	Large 3-ph LV 375-1000kW with VSD	13	77	106	118	127	132	137	142	147	153
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>20</b>	<b>86</b>	<b>113</b>	<b>126</b>	<b>135</b>	<b>140</b>	<b>144</b>	<b>149</b>	<b>154</b>	<b>160</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	9	15	16	17	22	22	22	22	21	21
0.45	Explosion motors (M) 3-ph 7.5-75 kW	4	7	7	8	9	9	9	9	9	9
0.45	Explosion motors (L) 3-ph 75-375 kW	1	2	2	2	2	2	2	2	2	2
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>14</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>34</b>	<b>34</b>	<b>33</b>	<b>33</b>	<b>32</b>	<b>32</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	11	19	20	21	28	28	27	27	27	26
0.45	Brake motors (M) 3-ph 7.5-75 kW	5	9	9	10	12	12	11	11	11	11
0.45	Brake motors (L) 3-ph 75-375 kW	1	2	2	2	3	3	3	3	2	2
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>17</b>	<b>30</b>	<b>31</b>	<b>33</b>	<b>42</b>	<b>42</b>	<b>41</b>	<b>41</b>	<b>40</b>	<b>39</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	1	1	1	1	1	1	1	1	1
0.45	8-pole motors (M) 3-ph 7.5-75 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (L) 3-ph 75-375 kW	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>181</b>	<b>314</b>	<b>327</b>	<b>337</b>	<b>375</b>	<b>378</b>	<b>380</b>	<b>382</b>	<b>383</b>	<b>384</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>424</b>	<b>994</b>	<b>1256</b>	<b>1518</b>	<b>1660</b>	<b>1676</b>	<b>1711</b>	<b>1761</b>	<b>1811</b>	<b>1856</b>

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db REVENUE INSTALL ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WP Water pumps</b>	599	814	875	940	1011	1081	1152	1222	1293	1363
CP Fixed Speed 5-1280 l/s	17	15	15	16	17	18	18	19	19	20
CP Variable speed 5-1280 l/s	0	6	10	11	12	12	12	13	13	14
CP Pistons 2-64 l/s	5	6	7	9	9	10	10	10	11	11
<b>Total CP Standard Air Compressors</b>	<b>23</b>	<b>28</b>	<b>32</b>	<b>36</b>	<b>38</b>	<b>39</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>45</b>
TOTAL INDUSTRY COMPONENTS	1134	2098	2533	2939	3152	3228	3333	3452	3572	3688
<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>GENERAL TOTAL (in m euro 2015)</b>	<b>36033</b>	<b>77163</b>	<b>93478</b>	<b>107011</b>	<b>118086</b>	<b>126120</b>	<b>134329</b>	<b>143132</b>	<b>152199</b>	<b>161290</b>
GENERAL TOTAL (in bn euro 2015)	36	77	93	107	118	126	134	143	152	161

SUMMARY ECO

INSTALL excl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	<b>2.8</b>	<b>4.0</b>	<b>6.3</b>	<b>8.2</b>	<b>9.1</b>	<b>9.5</b>	<b>9.8</b>	<b>10.2</b>	<b>10.6</b>	<b>10.9</b>
<b>SPACE HEATING</b>	<b>9.6</b>	<b>17.1</b>	<b>26.5</b>	<b>33.6</b>	<b>40.2</b>	<b>44.6</b>	<b>49.1</b>	<b>53.9</b>	<b>58.9</b>	<b>64.1</b>
<b>SPACE COOLING</b>	<b>0.7</b>	<b>4.9</b>	<b>6.6</b>	<b>8.3</b>	<b>9.3</b>	<b>9.9</b>	<b>10.4</b>	<b>10.9</b>	<b>11.4</b>	<b>11.7</b>
<b>VENTILATION</b>	<b>19.1</b>	<b>44.8</b>	<b>48.2</b>	<b>50.6</b>	<b>53.5</b>	<b>56.3</b>	<b>59.1</b>	<b>61.9</b>	<b>64.7</b>	<b>67.5</b>
<b>LIGHTING</b>	<b>2.5</b>	<b>4.0</b>	<b>3.0</b>	<b>3.1</b>	<b>2.5</b>	<b>2.3</b>	<b>2.0</b>	<b>2.2</b>	<b>2.6</b>	<b>2.9</b>
<b>ELECTRONICS</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>
<b>FOOD PRESERVATION</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
<b>COOKING</b>	-	-	-	-	-	-	-	-	-	-
<b>CLEANING</b>	-	-	-	-	-	-	-	-	-	-
INDUSTRY COMPONENTS	1.1	2.1	2.5	2.9	3.2	3.2	3.3	3.5	3.6	3.7
<b>ENERGY SECTOR</b>	-	-	-	-	-	-	-	-	-	-
<b>TRANSPORT SECTOR</b>	-	-	-	-	-	-	-	-	-	-
<b>TOTAL in bn euro 2015</b>	<b>36</b>	<b>77</b>	<b>93</b>	<b>107</b>	<b>118</b>	<b>126</b>	<b>134</b>	<b>143</b>	<b>152</b>	<b>161</b>

INSTALL excl. VAT, ECO-BAU (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	-	-	<b>2.1</b>	<b>3.6</b>	<b>4.2</b>	<b>4.5</b>	<b>4.8</b>	<b>5.1</b>	<b>5.3</b>	<b>5.5</b>
<b>SPACE HEATING</b>	-	<b>0.3</b>	<b>7.2</b>	<b>11.9</b>	<b>16.6</b>	<b>19.3</b>	<b>22.4</b>	<b>25.8</b>	<b>29.5</b>	<b>33.4</b>
<b>SPACE COOLING</b>	-	-	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>
<b>VENTILATION</b>	-	-	<b>1.1</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>
<b>LIGHTING</b>	-	-	<b>0.1</b>	<b>0.7</b>	<b>0.5</b>	<b>0.7</b>	<b>0.9</b>	<b>0.8</b>	<b>0.5</b>	<b>0.3</b>
<b>ELECTRONICS</b>	-	-	-	-	-	-	-	-	-	-
<b>FOOD PRESERVATION</b>	-	-	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>COOKING</b>	-	-	-	-	-	-	-	-	-	-
<b>CLEANING</b>	-	-	-	-	-	-	-	-	-	-
INDUSTRY COMPONENTS	-	0.0	0.2	0.5	0.5	0.5	0.4	0.3	0.3	0.2
<b>ENERGY SECTOR</b>	-	-	-	-	-	-	-	-	-	-
<b>TRANSPORT SECTOR</b>	-	-	-	-	-	-	-	-	-	-
<b>TOTAL in bn euro 2015</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>17</b>	<b>22</b>	<b>25</b>	<b>28</b>	<b>32</b>	<b>36</b>	<b>40</b>

Revenues for VSDs only (without motor, m euros)

VSD - Very Small 0.12 - 0.75 kW 1-phase	23	182	218	233	256	260	273	291	310	330
VSD - Very Small 0.12 - 0.75 kW 3-phase	8	60	73	81	92	97	106	117	130	143
VSD - Small 0.75 - 7.5 kW 3-phase	75	220	328	533	567	579	606	646	689	736
VSD - Medium 7.5 - 75kW 3-phase	54	158	283	373	394	403	421	449	479	497
VSD - Large 75 - 375kW 3-phase	30	90	149	177	187	192	202	215	222	228
VSD - Very Large 375 - 1,000kW 3-phase	13	74	100	109	114	120	126	133	140	147
<b>Total revenues, VSDs only (ECO)</b>	<b>203</b>	<b>784</b>	<b>1151</b>	<b>1505</b>	<b>1610</b>	<b>1651</b>	<b>1735</b>	<b>1852</b>	<b>1970</b>	<b>2080</b>



db	REVENUE MAINTENANCE BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	WH dedicated Water Heater	5749	6672	6860	7007	7155	7307	7459	7611	7763	7915
	CH Central Heating combi, water heat	1356	2608	2845	3028	3220	3429	3639	3848	4057	4267
	<b>TOTAL WATER HEATING</b>	<b>7105</b>	<b>9280</b>	<b>9706</b>	<b>10035</b>	<b>10375</b>	<b>10736</b>	<b>11098</b>	<b>11459</b>	<b>11821</b>	<b>12182</b>
	CH Central Heating boiler, space heat	13322	21372	23059	24706	26445	28548	30950	33602	36288	38975
	SFB Wood Manual [18 kW]	293	129	110	89	64	41	27	20	18	16
	SFB Wood Direct Draft [20 kW]	3	46	92	137	172	179	191	217	262	318
	SFB Coal [25 kW]	85	35	27	18	10	4	2	2	2	2
	SFB Pellets [25 kW]	0	13	25	37	48	56	61	65	71	78
	SFB Wood chips [160 kW]	0	5	6	7	7	7	8	9	10	11
	<b>Total Solid Fuel Boiler</b>	<b>381</b>	<b>228</b>	<b>260</b>	<b>288</b>	<b>302</b>	<b>288</b>	<b>289</b>	<b>313</b>	<b>363</b>	<b>426</b>
	CHAE-S (≤ 400 kW)	233	977	1232	1445	1602	1761	1935	2115	2296	2473
	CHAE-L (> 400 kW)	58	208	254	294	321	333	345	357	370	384
	CHWE-S (≤ 400 kW)	19	82	104	121	134	147	162	177	192	206
	CHWE-M (> 400 kW; ≤ 1500 kW)	25	94	115	134	147	153	159	165	172	178
	CHWE-L (> 1500 kW)	13	47	58	67	73	77	79	83	86	89
	CHF	0	8	14	21	26	31	37	43	48	53
	HT PCH-AE-S	117	208	234	257	275	288	301	313	325	337
	HT PCH-AE-L	115	203	228	251	268	281	294	305	317	329
	HT PCH-WE-S	25	45	50	55	59	62	65	67	70	73
	HT PCH-WE-M	112	199	224	246	263	276	288	300	311	323
	HT PCH-WE-L	12	23	26	28	31	33	34	36	37	39
	AC rooftop	117	466	511	499	422	285	156	80	59	59
	AC splits	242	1028	1125	1160	1163	1131	1088	1047	1007	966
	AC VRF	1	1098	1772	2676	3541	4638	5729	6721	7657	8472
	ACF	0	3	5	7	9	11	13	15	17	19
	<b>SubTotal AHC Air Cooling</b>	<b>1088</b>	<b>4687</b>	<b>5952</b>	<b>7261</b>	<b>8332</b>	<b>9507</b>	<b>10683</b>	<b>11824</b>	<b>12963</b>	<b>13999</b>
	AC rooftop (rev)	72	289	314	301	252	168	84	26	2	0
	AC splits (rev)	175	709	776	801	803	782	753	725	697	669
	AC VRF (rev)	1	966	1538	2276	3009	3882	4676	5225	5670	5975
	ACF (rev)	0	5	10	14	18	22	26	30	34	37
	AHF	108	107	98	92	86	81	76	72	68	63
	AHE	1	2	2	1	1	1	1	1	1	1
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>357</b>	<b>2079</b>	<b>2738</b>	<b>3485</b>	<b>4169</b>	<b>4937</b>	<b>5616</b>	<b>6079</b>	<b>6471</b>	<b>6746</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>1197</b>	<b>4796</b>	<b>6052</b>	<b>7354</b>	<b>8419</b>	<b>9589</b>	<b>10761</b>	<b>11897</b>	<b>13032</b>	<b>14063</b>
	LH open fireplace [8 kW]	159	233	253	269	281	288	290	290	289	289
	LH closed fireplace/inset [8 kW]	80	218	272	326	376	415	440	454	460	462
	LH wood stove [8 kW]	114	134	141	150	160	168	176	182	184	185
	LH coal stove [8 kW]	78	51	48	45	41	36	30	25	21	18
	LH cooker [10 kW]	155	313	373	444	509	554	575	583	586	586
	LH SHR stove [8 kW]	62	87	96	110	126	144	163	178	188	194
	LH pellet stove [8 kW]	0	59	90	120	145	164	176	182	184	184
	LH open fire gas, NCV [4.2 kW]	19	31	34	37	40	42	43	44	44	44
	LH closed fire gas, NCV [4.2 kW]	120	136	140	144	149	153	156	159	160	161
	LH flueless fuel heater, NCV [1.5 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.portable [1 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.convactor [1 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.storage [2.75 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.underfloor [0.62 kW]	0	0	0	0	0	0	0	0	0	0
	LH luminous heaters [20 kW]	30	37	38	39	40	40	40	40	40	40
	LH tube heaters [30 kW]	30	36	38	39	39	40	40	40	40	40
	<b>LH total</b>	<b>848</b>	<b>1336</b>	<b>1523</b>	<b>1723</b>	<b>1904</b>	<b>2043</b>	<b>2130</b>	<b>2176</b>	<b>2196</b>	<b>2202</b>
	RAC (cooling demand), all types <12 kW	73	621	758	893	1105	1238	1298	1326	1348	1370
	RAC (heating demand), reversible <12kW	21	359	538	742	969	1096	1150	1176	1196	1217
	<b>Total Room Air Conditioner</b>	<b>94</b>	<b>980</b>	<b>1297</b>	<b>1635</b>	<b>2074</b>	<b>2334</b>	<b>2449</b>	<b>2502</b>	<b>2545</b>	<b>2587</b>
1	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>14927</b>	<b>25374</b>	<b>28118</b>	<b>30944</b>	<b>33790</b>	<b>36912</b>	<b>40135</b>	<b>43346</b>	<b>46515</b>	<b>49565</b>
	<b>TOTAL SPACE COOLING</b>	<b>1162</b>	<b>5308</b>	<b>6711</b>	<b>8154</b>	<b>9437</b>	<b>10746</b>	<b>11982</b>	<b>13150</b>	<b>14312</b>	<b>15369</b>
	NRVU avg (sales wt.)	890	2941	3418	3813	4118	4345	4576	4810	5045	5280
	RVU Central Unidir. VU (1 fan)	139	274	309	303	290	287	300	321	343	365
	RVU Central Balanced VU (2 fans)	7	92	183	324	476	613	703	777	852	926
	RVU Local Balanced VU (2 fans)	1	11	23	44	73	108	145	182	219	257
	<b>TOTAL VENTILATION</b>	<b>1036</b>	<b>3319</b>	<b>3934</b>	<b>4484</b>	<b>4956</b>	<b>5353</b>	<b>5723</b>	<b>6091</b>	<b>6459</b>	<b>6828</b>
	LFL (T12,T8h,T8t,T5,other)	476	789	881	937	909	770	596	463	361	282
	HID (HPM, HPS, MH)	249	587	648	654	545	357	184	96	51	28
	CFLni (all shapes)	242	1010	1086	1089	969	625	274	116	48	20
	CFLi (retrofit for GLS, HL)	73	934	1206	1221	1055	884	593	391	251	167
	GLS (DLS & NDLS)	687	570	476	341	199	116	68	40	23	14
	HL (DLS & NDLS, LV & MV)	124	574	697	791	630	358	205	119	69	41
	LED replacing LFL (retrofit & luminaire)	0	0	3	55	214	500	840	1162	1478	1799
	LED replacing HID (retrofit & luminaire)	0	0	3	82	288	586	882	1110	1314	1516
	LED replacing CFLni (retrofit & luminaire)	0	0	4	85	359	878	1426	1807	2128	2442
	LED replacing DLS (retrofit & luminaire)	0	0	3	66	231	441	605	749	886	1026
	LED replacing NDLS (retrofit & luminaire)	0	0	6	258	908	1622	2398	3079	3724	4357
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	1852	4464	4993	5033	4306	3109	1921	1224	804	550
	SUBTOTAL LED	0	0	19	545	2000	4025	6151	7908	9529	11140
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>1852</b>	<b>4464</b>	<b>5012</b>	<b>5578</b>	<b>6306</b>	<b>7134</b>	<b>8072</b>	<b>9133</b>	<b>10333</b>	<b>11691</b>

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db	REVENUE MAINTENANCE BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	DP TV all types	162	275	322	375	392	459	511	528	528	528
	DP Monitor	11	139	105	79	79	79	79	79	79	79
	DP Signage	0	1	6	19	27	27	27	27	27	27
	<b>DP Electronic Displays, total</b>	<b>173</b>	<b>415</b>	<b>433</b>	<b>473</b>	<b>499</b>	<b>565</b>	<b>618</b>	<b>634</b>	<b>634</b>	<b>634</b>
	<b>Total STB set top boxes</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total VIDEO</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total ES + DS (Servers, data Storage)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total PC (Personal Computers)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total imaging equipment</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total SB (networked) StandBy</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total EPS (External power supplies)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	UPS below 1.5 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 1.5 to 5 kVA	45	97	105	117	139	163	185	206	224	237
	UPS 5 to 10 kVA	13	28	32	35	41	48	55	61	66	71
	UPS 10 to 200 kVA	258	579	643	704	820	965	1109	1244	1362	1455
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>315</b>	<b>705</b>	<b>780</b>	<b>855</b>	<b>1000</b>	<b>1175</b>	<b>1349</b>	<b>1511</b>	<b>1652</b>	<b>1762</b>
	<b>TOTAL ELECTRONICS</b>	<b>488</b>	<b>1119</b>	<b>1213</b>	<b>1329</b>	<b>1498</b>	<b>1740</b>	<b>1966</b>	<b>2145</b>	<b>2286</b>	<b>2396</b>
	<b>RF Household refrigerator and freezer</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	CF open vertical chilled multi deck (RVC2)	188	224	230	231	232	236	240	244	248	251
	CF open horizontal frozen island (RHF4)	21	25	26	26	26	27	27	28	28	28
	CF other supermarket display (non-BCs)	603	745	806	851	884	917	950	983	1018	1053
	CF Plug in one door beverage cooler	178	215	222	224	232	240	248	257	265	274
	CF Plug in horizontal ice cream freezer	57	69	71	72	75	77	80	82	85	88
	CF Spiral vending machine	48	59	46	38	38	39	41	42	44	45
	<b>Total CF Commercial Refrigeration</b>	<b>1096</b>	<b>1336</b>	<b>1402</b>	<b>1442</b>	<b>1488</b>	<b>1536</b>	<b>1586</b>	<b>1636</b>	<b>1687</b>	<b>1741</b>
	<b>PF Storage cabinets All types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>1096</b>	<b>1336</b>	<b>1402</b>	<b>1442</b>	<b>1488</b>	<b>1536</b>	<b>1586</b>	<b>1636</b>	<b>1687</b>	<b>1741</b>
	<b>TOTAL COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL CLEANING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	0.5 FAN Axial<300Pa [247 W flow out]	156	428	503	561	617	652	662	662	662	662
	0.5 FAN Axial>300Pa [489 W fluid-dyn out]	215	634	727	769	801	820	826	826	826	826
	0.5 FAN Centr.FC [141 W flow out]	133	281	342	381	412	437	444	444	444	444
	0.5 FAN Centr.BC-free [2120 W flow out]	76	159	188	207	227	248	262	270	276	281
	0.5 FAN Centr.BC [2052 W flow out]	139	314	376	414	456	500	539	579	629	682
	0.5 FAN Cross-flow [31 W flow out]	31	55	63	73	84	92	99	106	115	124
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>375</b>	<b>935</b>	<b>1099</b>	<b>1202</b>	<b>1299</b>	<b>1375</b>	<b>1416</b>	<b>1444</b>	<b>1475</b>	<b>1510</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0	0	0	0	0	0	0	0	0	0
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	483	649	690	711	708	687	656	615	564	504
0.45	Medium (L) 3-ph 75-375 kW no VSD	292	379	396	404	397	376	343	300	261	235
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>775</b>	<b>1028</b>	<b>1086</b>	<b>1115</b>	<b>1105</b>	<b>1063</b>	<b>999</b>	<b>916</b>	<b>825</b>	<b>740</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	76	192	242	297	355	418	490	576	676	788
0.45	Medium (L) 3-ph 75-375 kW with VSD	67	171	215	266	321	382	449	527	603	659
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>143</b>	<b>363</b>	<b>457</b>	<b>563</b>	<b>676</b>	<b>799</b>	<b>939</b>	<b>1103</b>	<b>1279</b>	<b>1447</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>918</b>	<b>1391</b>	<b>1542</b>	<b>1678</b>	<b>1781</b>	<b>1862</b>	<b>1938</b>	<b>2019</b>	<b>2103</b>	<b>2187</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0	0	0	0	0	0	0	0	0	0
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0	0	0	0	0	0	0	0	0	0
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	118	144	141	133	125	119	117	117	116	115
0.45	Large 3-ph LV 375-1000kW with VSD	9	48	72	99	123	140	149	157	165	174
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>127</b>	<b>192</b>	<b>212</b>	<b>232</b>	<b>248</b>	<b>259</b>	<b>267</b>	<b>274</b>	<b>281</b>	<b>288</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	Explosion motors (M) 3-ph 7.5-75 kW	30	44	49	52	54	56	57	59	60	62
0.45	Explosion motors (L) 3-ph 75-375 kW	17	25	28	30	32	33	34	35	36	37
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>47</b>	<b>69</b>	<b>76</b>	<b>82</b>	<b>86</b>	<b>89</b>	<b>91</b>	<b>94</b>	<b>96</b>	<b>99</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	Brake motors (M) 3-ph 7.5-75 kW	37	55	61	65	68	70	72	74	75	77
0.45	Brake motors (L) 3-ph 75-375 kW	21	32	35	38	40	41	42	44	45	46
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>59</b>	<b>87</b>	<b>95</b>	<b>103</b>	<b>108</b>	<b>111</b>	<b>114</b>	<b>117</b>	<b>120</b>	<b>123</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	2	2	3	3	3	3	3	3	3
0.45	8-pole motors (L) 3-ph 75-375 kW	1	1	1	2	2	2	2	2	2	2
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>634</b>	<b>958</b>	<b>1062</b>	<b>1154</b>	<b>1225</b>	<b>1279</b>	<b>1328</b>	<b>1379</b>	<b>1433</b>	<b>1486</b>

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db	REVENUE MAINTENANCE BAU (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	WP Water pumps	1115	1517	1634	1756	1888	2026	2168	2309	2451	2592
	CP Fixed Speed 5-1280 l/s	363	785	706	639	640	661	683	705	726	749
	CP Variable speed 5-1280 l/s	0	87	186	274	323	339	351	362	373	385
	CP Pistons 2-64 l/s	91	115	113	113	117	121	125	129	133	137
	<b>Total CP Standard Air Compressors</b>	<b>454</b>	<b>987</b>	<b>1004</b>	<b>1026</b>	<b>1080</b>	<b>1122</b>	<b>1160</b>	<b>1197</b>	<b>1233</b>	<b>1270</b>
	TOTAL INDUSTRY COMPONENTS	2579	4397	4798	5139	5491	5802	6072	6329	6592	6858
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>GENERAL TOTAL (in m euro 2015)</b>	<b>30244</b>	<b>54597</b>	<b>60893</b>	<b>67105</b>	<b>73341</b>	<b>79959</b>	<b>86633</b>	<b>93287</b>	<b>100004</b>	<b>106630</b>
	GENERAL TOTAL (in bn euro 2015)	30	55	61	67	73	80	87	93	100	107

SUMMARY

MAINTENANCE BAU excl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
WATER HEATING	7.1	9.3	9.7	10.0	10.4	10.7	11.1	11.5	11.8	12.2
SPACE HEATING	14.9	25.4	28.1	30.9	33.8	36.9	40.1	43.3	46.5	49.6
SPACE COOLING	1.2	5.3	6.7	8.2	9.4	10.7	12.0	13.1	14.3	15.4
VENTILATION	1.0	3.3	3.9	4.5	5.0	5.4	5.7	6.1	6.5	6.8
LIGHTING	1.9	4.5	5.0	5.6	6.3	7.1	8.1	9.1	10.3	11.7
ELECTRONICS	0.5	1.1	1.2	1.3	1.5	1.7	2.0	2.1	2.3	2.4
FOOD PRESERVATION	1.1	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7
COOKING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CLEANING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INDUSTRY COMPONENTS	2.6	4.4	4.8	5.1	5.5	5.8	6.1	6.3	6.6	6.9
ENERGY SECTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRANSPORT SECTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>TOTAL in bn euro 2015</b>	<b>30</b>	<b>55</b>	<b>61</b>	<b>67</b>	<b>73</b>	<b>80</b>	<b>87</b>	<b>93</b>	<b>100</b>	<b>107</b>

Revenues for VSDs only (without motor, m euros)

VSD - Very Small 0.12 - 0.75 kW 1-phase	0	0	0	0	0	0	0	0	0	0
VSD - Very Small 0.12 - 0.75 kW 3-phase	0	0	0	0	0	0	0	0	0	0
VSD - Small 0.75 - 7.5 kW 3-phase	0	0	0	0	0	0	0	0	0	0
VSD - Medium 7.5 - 75kW 3-phase	17	42	53	65	78	92	108	126	148	173
VSD - Large 75 - 375kW 3-phase	16	40	51	63	76	90	106	124	142	156
VSD - Very Large 375 - 1,000kW 3-phase	1	4	6	8	10	12	13	13	14	15
<b>Total revenues, VSDs only (BAU)</b>	<b>33</b>	<b>87</b>	<b>110</b>	<b>136</b>	<b>164</b>	<b>194</b>	<b>226</b>	<b>264</b>	<b>305</b>	<b>343</b>

db	REVENUE MAINTENANCE ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WH dedicated Water Heater</b>	<b>5749</b>	<b>6672</b>	<b>6860</b>	<b>7007</b>	<b>7155</b>	<b>7307</b>	<b>7459</b>	<b>7611</b>	<b>7763</b>	<b>7915</b>
	<b>CH Central Heating combi, water heat</b>	<b>1356</b>	<b>2608</b>	<b>2845</b>	<b>3028</b>	<b>3220</b>	<b>3429</b>	<b>3639</b>	<b>3848</b>	<b>4057</b>	<b>4267</b>
	<b>TOTAL WATER HEATING</b>	<b>7105</b>	<b>9280</b>	<b>9706</b>	<b>10035</b>	<b>10375</b>	<b>10736</b>	<b>11098</b>	<b>11459</b>	<b>11821</b>	<b>12182</b>
	<b>CH Central Heating boiler, space heat</b>	<b>13322</b>	<b>21372</b>	<b>23059</b>	<b>24706</b>	<b>26445</b>	<b>28548</b>	<b>30950</b>	<b>33602</b>	<b>36288</b>	<b>38975</b>
	SFB Wood Manual [18 kW]	293	129	110	89	64	41	27	20	18	16
	SFB Wood Direct Draft [20 kW]	3	46	92	137	172	179	191	217	262	318
	SFB Coal [25 kW]	85	35	27	18	10	4	2	2	2	2
	SFB Pellets [25 kW]	0	13	25	37	48	56	61	65	71	78
	SFB Wood chips [160 kW]	0	5	6	7	7	7	8	9	10	11
	<b>Total Solid Fuel Boiler</b>	<b>381</b>	<b>228</b>	<b>260</b>	<b>288</b>	<b>302</b>	<b>288</b>	<b>289</b>	<b>313</b>	<b>363</b>	<b>426</b>
	CHAE-S (≤ 400 kW)	233	977	1232	1445	1602	1761	1935	2115	2296	2473
	CHAE-L (> 400 kW)	58	208	254	294	321	333	345	357	370	384
	CHWE-S (≤ 400 kW)	19	82	104	121	134	147	162	177	192	206
	CHWE-M (> 400 kW; ≤ 1500 kW)	25	94	115	134	147	153	159	165	172	178
	CHWE-L (> 1500 kW)	13	47	58	67	73	77	79	83	86	89
	CHF	0	8	14	21	26	31	37	43	48	53
	HT PCH-AE-S	117	208	234	257	275	288	301	313	325	337
	HT PCH-AE-L	115	203	228	251	268	281	294	305	317	329
	HT PCH-WE-S	25	45	50	55	59	62	65	67	70	73
	HT PCH-WE-M	112	199	224	246	263	276	288	300	311	323
	HT PCH-WE-L	12	23	26	28	31	33	34	36	37	39
	AC rooftop	117	466	511	499	422	285	156	80	59	59
	AC splits	242	1028	1125	1160	1163	1131	1088	1047	1007	966
	AC VRF	1	1098	1772	2676	3541	4638	5729	6721	7657	8472
	ACF	0	3	5	7	9	11	13	15	17	19
	<b>SubTotal AHC Air Cooling</b>	<b>1088</b>	<b>4687</b>	<b>5952</b>	<b>7261</b>	<b>8332</b>	<b>9507</b>	<b>10683</b>	<b>11824</b>	<b>12963</b>	<b>13999</b>
	AC rooftop (rev)	72	289	314	301	252	168	84	26	2	0
	AC splits (rev)	175	709	776	801	803	782	753	725	697	669
	AC VRF (rev)	1	966	1538	2276	3009	3882	4676	5225	5670	5975
	ACF (rev)	0	5	10	14	18	22	26	30	34	37
	AHF	108	107	98	92	86	81	76	72	68	63
	AHE	1	2	2	1	1	1	1	1	1	1
	<b>SubTotal AHC Air Heating (rev double)</b>	<b>357</b>	<b>2079</b>	<b>2738</b>	<b>3485</b>	<b>4169</b>	<b>4937</b>	<b>5616</b>	<b>6079</b>	<b>6471</b>	<b>6746</b>
	<b>Total AHC Air Heating &amp; Cooling</b>	<b>1197</b>	<b>4796</b>	<b>6052</b>	<b>7354</b>	<b>8419</b>	<b>9589</b>	<b>10761</b>	<b>11897</b>	<b>13032</b>	<b>14063</b>
	LH open fireplace [8 kW]	159	233	253	269	281	288	290	290	289	289
	LH closed fireplace/inset [8 kW]	80	218	272	326	376	415	440	454	460	462
	LH wood stove [8 kW]	114	134	141	150	160	168	176	182	184	185
	LH coal stove [8 kW]	78	51	48	45	41	36	30	25	21	18
	LH cooker [10 kW]	155	313	373	444	509	554	575	583	586	586
	LH SHR stove [8 kW]	62	87	96	110	126	144	163	178	188	194
	LH pellet stove [8 kW]	0	59	90	120	145	164	176	182	184	184
	LH open fire gas, NCV [4.2 kW]	19	31	34	37	40	42	43	44	44	44
	LH closed fire gas, NCV [4.2 kW]	120	136	140	144	149	153	156	159	160	161
	LH flueless fuel heater, NCV [1.5 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.portable [1 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.convactor [1 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.storage [2.75 kW]	0	0	0	0	0	0	0	0	0	0
	LH elec.underfloor [0.62 kW]	0	0	0	0	0	0	0	0	0	0
	LH luminous heaters [20 kW]	30	37	38	39	40	40	40	40	40	40
	LH tube heaters [30 kW]	30	36	38	39	39	40	40	40	40	40
	<b>LH total</b>	<b>848</b>	<b>1336</b>	<b>1523</b>	<b>1723</b>	<b>1904</b>	<b>2043</b>	<b>2130</b>	<b>2176</b>	<b>2196</b>	<b>2202</b>
	RAC (cooling demand), all types <12 kW	73	621	758	893	1105	1238	1298	1326	1348	1370
	RAC (heating demand), reversible <12kW	21	359	538	742	969	1096	1150	1176	1196	1217
	<b>Total Room Air Conditioner</b>	<b>94</b>	<b>980</b>	<b>1297</b>	<b>1635</b>	<b>2074</b>	<b>2334</b>	<b>2449</b>	<b>2502</b>	<b>2545</b>	<b>2587</b>
<b>1</b>	<b>CIRC Circulator pumps &lt;2.5 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL SPACE HEATING (incl. rev.AC)</b>	<b>14927</b>	<b>25374</b>	<b>28118</b>	<b>30944</b>	<b>33790</b>	<b>36912</b>	<b>40135</b>	<b>43346</b>	<b>46515</b>	<b>49565</b>
	<b>TOTAL SPACE COOLING</b>	<b>1162</b>	<b>5308</b>	<b>6711</b>	<b>8154</b>	<b>9437</b>	<b>10746</b>	<b>11982</b>	<b>13150</b>	<b>14312</b>	<b>15369</b>
	NRVU avg (sales wt.)	890	2941	3418	3813	4118	4345	4576	4810	5045	5280
	RVU Central Unidir. VU (1 fan)	139	274	309	303	290	287	300	321	343	365
	RVU Central Balanced VU (2 fans)	7	92	183	324	476	613	703	777	852	926
	RVU Local Balanced VU (2 fans)	1	11	23	44	73	108	145	182	219	257
	<b>TOTAL VENTILATION</b>	<b>1036</b>	<b>3319</b>	<b>3934</b>	<b>4484</b>	<b>4956</b>	<b>5353</b>	<b>5723</b>	<b>6091</b>	<b>6459</b>	<b>6828</b>
	LFL (T12,T8h,T8t,TS,other)	476	785	869	879	641	362	183	101	61	37
	HID (HPM, HPS, MH)	249	587	563	488	353	178	65	22	8	3
	CFLni (all shapes)	242	1010	1046	839	523	218	53	9	2	0
	CFLi (retrofit for GLS, HL)	73	1150	1465	1145	421	112	0	0	0	0
	GLS (DLS & NDLS)	687	356	34	0	0	0	0	0	0	0
	HL (DLS & NDLS, LV & MV)	124	618	727	411	26	0	0	0	0	0
	LED replacing LFL (retrofit & luminaire)	0	0	9	106	474	900	1245	1514	1767	2030
	LED replacing HID (retrofit & luminaire)	0	0	92	253	486	771	1008	1192	1366	1551
	LED replacing CFLni (retrofit & luminaire)	0	0	44	334	805	1285	1647	1914	2174	2462
	LED replacing DLS (retrofit & luminaire)	0	1	63	279	570	669	757	857	969	1097
	LED replacing NDLS (retrofit & luminaire)	0	0	68	876	2050	2689	3169	3586	4057	4590
	SUBTOTAL non-LED (excl. SPL, ctrl, sb)	1852	4507	4705	3762	1964	870	301	132	70	40
	SUBTOTAL LED	0	1	275	1849	4384	6313	7825	9062	10333	11730
	<b>TOTAL LIGHTING (excl. SPL, ctrl)</b>	<b>1852</b>	<b>4509</b>	<b>4981</b>	<b>5611</b>	<b>6349</b>	<b>7183</b>	<b>8127</b>	<b>9195</b>	<b>10403</b>	<b>11770</b>

db	REVENUE MAINTENANCE ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	DP TV all types	162	275	322	375	392	459	511	528	528	528
	DP Monitor	11	139	105	79	79	79	79	79	79	79
	DP Signage	0	1	6	19	27	27	27	27	27	27
	<b>DP Electronic Displays, total</b>	<b>173</b>	<b>415</b>	<b>433</b>	<b>473</b>	<b>499</b>	<b>565</b>	<b>618</b>	<b>634</b>	<b>634</b>	<b>634</b>
	<b>Total STB set top boxes</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total VIDEO</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total ES + DS (Servers, data Storage)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total PC (Personal Computers)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total imaging equipment</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total SB (networked) StandBy</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Total EPS (External power supplies)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	UPS below 1.5 kVA	0	0	0	0	0	0	0	0	0	0
	UPS 1.5 to 5 kVA	45	97	105	117	139	163	185	206	224	237
	UPS 5 to 10 kVA	13	28	32	35	41	48	55	61	66	71
	UPS 10 to 200 kVA	258	579	643	704	820	965	1109	1244	1362	1455
	<b>Total UPS - Uninterrupted Power Supplies</b>	<b>315</b>	<b>705</b>	<b>780</b>	<b>855</b>	<b>1000</b>	<b>1175</b>	<b>1349</b>	<b>1511</b>	<b>1652</b>	<b>1762</b>
	<b>TOTAL ELECTRONICS</b>	<b>488</b>	<b>1119</b>	<b>1213</b>	<b>1329</b>	<b>1498</b>	<b>1740</b>	<b>1966</b>	<b>2145</b>	<b>2286</b>	<b>2396</b>
	<b>RF Household refrigerator and freezer</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	CF open vertical chilled multi deck (RVC2)	188	224	230	231	232	236	240	244	248	251
	CF open horizontal frozen island (RHF4)	21	25	26	26	26	27	27	28	28	28
	CF other supermarket display (non-BCs)	603	745	806	851	884	917	950	983	1018	1053
	CF Plug in one door beverage cooler	178	215	222	224	232	240	248	257	265	274
	CF Plug in horizontal ice cream freezer	57	69	71	72	75	77	80	82	85	88
	CF Spiral vending machine	48	59	46	38	38	39	41	42	44	45
	<b>Total CF Commercial Refrigeration</b>	<b>1096</b>	<b>1336</b>	<b>1402</b>	<b>1442</b>	<b>1488</b>	<b>1536</b>	<b>1586</b>	<b>1636</b>	<b>1687</b>	<b>1741</b>
	<b>PF Storage cabinets All types</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Process Chiller All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.6	<b>PF Condensing Unit, All MT&amp;LT</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>PF Professional Refrigeration, Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL FOOD PRESERVATION</b>	<b>1096</b>	<b>1336</b>	<b>1402</b>	<b>1442</b>	<b>1488</b>	<b>1536</b>	<b>1586</b>	<b>1636</b>	<b>1687</b>	<b>1741</b>
	<b>TOTAL COOKING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL CLEANING</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	0.5 FAN Axial<300Pa [247 W flow out]	156	428	503	561	617	652	662	662	662	662
	0.5 FAN Axial>300Pa [489 W fluid-dyn out]	215	634	727	769	801	820	826	826	826	826
	0.5 FAN Centr.FC [141 W flow out]	133	281	342	381	412	437	444	444	444	444
	0.5 FAN Centr.BC-free [2120 W flow out]	76	159	188	207	227	248	262	270	276	281
	0.5 FAN Centr.BC [2052 W flow out]	139	314	376	414	456	500	539	579	629	682
	0.5 FAN Cross-flow [31 W flow out]	31	55	63	73	84	92	99	106	115	124
	<b>Total FAN, industrial (excl. box &amp; roof fans)</b>	<b>375</b>	<b>935</b>	<b>1099</b>	<b>1202</b>	<b>1299</b>	<b>1375</b>	<b>1416</b>	<b>1444</b>	<b>1475</b>	<b>1510</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW no VSD	0	0	0	0	0	0	0	0	0	0
0.45	Medium (M) 3-ph 7.5-75 kW no VSD	483	648	668	603	522	500	491	481	469	459
0.45	Medium (L) 3-ph 75-375 kW no VSD	292	379	383	354	312	270	255	241	231	226
0.45	<b>Total 3ph 0.75-375 kW no VSD</b>	<b>775</b>	<b>1027</b>	<b>1051</b>	<b>957</b>	<b>834</b>	<b>771</b>	<b>746</b>	<b>723</b>	<b>700</b>	<b>685</b>
0.45	Medium (S) 3-ph 0.75-7.5 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	Medium (M) 3-ph 7.5-75 kW with VSD	76	193	270	435	593	657	701	748	798	845
0.45	Medium (L) 3-ph 75-375 kW with VSD	67	171	231	332	432	519	564	604	642	672
0.45	<b>Total 3-ph 0.75-375 kW with VSD</b>	<b>143</b>	<b>364</b>	<b>501</b>	<b>767</b>	<b>1025</b>	<b>1176</b>	<b>1265</b>	<b>1352</b>	<b>1440</b>	<b>1517</b>
0.45	<b>Total 3-ph 0.75-375 kW w/wo VSD</b>	<b>918</b>	<b>1391</b>	<b>1552</b>	<b>1724</b>	<b>1859</b>	<b>1947</b>	<b>2011</b>	<b>2075</b>	<b>2139</b>	<b>2202</b>
0.45	Small 1 ph 0.12-0.75 kW no VSD	0	0	0	0	0	0	0	0	0	0
0.45	Small 1 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 1-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.45	Small 3 ph 0.12-0.75 kW no VSD	0	0	0	0	0	0	0	0	0	0
0.45	Small 3 ph 0.12-0.75 kW with VSD	0	0	0	0	0	0	0	0	0	0
0.45	<b>Total Small 3-ph 0.12-0.75 kW</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
0.45	Large 3-ph LV 375-1000 kW no VSD	118	144	141	133	125	119	117	117	116	115
0.45	Large 3-ph LV 375-1000kW with VSD	9	48	72	99	123	140	149	157	165	174
0.45	<b>Total Large 3-ph LV 375-1000 kW</b>	<b>127</b>	<b>192</b>	<b>212</b>	<b>232</b>	<b>248</b>	<b>259</b>	<b>267</b>	<b>274</b>	<b>281</b>	<b>288</b>
0.45	Explosion motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	Explosion motors (M) 3-ph 7.5-75 kW	30	44	49	52	54	56	57	59	60	62
0.45	Explosion motors (L) 3-ph 75-375 kW	17	25	28	30	32	33	34	35	36	37
0.45	<b>Total Expl. 0.75-375 kW (no VSD)</b>	<b>47</b>	<b>69</b>	<b>76</b>	<b>82</b>	<b>86</b>	<b>89</b>	<b>91</b>	<b>94</b>	<b>96</b>	<b>99</b>
0.45	Brake motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	Brake motors (M) 3-ph 7.5-75 kW	37	55	61	65	68	70	72	74	75	77
0.45	Brake motors (L) 3-ph 75-375 kW	21	32	35	38	40	41	42	44	45	46
0.45	<b>Total Brake 0.75-375 kW (no VSD)</b>	<b>59</b>	<b>87</b>	<b>95</b>	<b>103</b>	<b>108</b>	<b>111</b>	<b>114</b>	<b>117</b>	<b>120</b>	<b>123</b>
0.45	8-pole motors (S) 3-ph 0.75-7.5 kW	0	0	0	0	0	0	0	0	0	0
0.45	8-pole motors (M) 3-ph 7.5-75 kW	1	2	2	3	3	3	3	3	3	3
0.45	8-pole motors (L) 3-ph 75-375 kW	1	1	1	2	2	2	2	2	2	2
0.45	<b>Total 8-pole 0.75-375 kW (no VSD)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
0.45	<b>1-phase motors &gt;0.75 kW (no VSD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>MT Elec. Motors LV 0.12-1000 kW</b>	<b>634</b>	<b>958</b>	<b>1067</b>	<b>1180</b>	<b>1268</b>	<b>1326</b>	<b>1368</b>	<b>1410</b>	<b>1453</b>	<b>1495</b>

REV\_MAINT\_ECO

db	REVENUE MAINTENANCE ECO (m euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
	<b>WP Water pumps</b>	<b>1115</b>	<b>1517</b>	<b>1634</b>	<b>1756</b>	<b>1888</b>	<b>2026</b>	<b>2168</b>	<b>2309</b>	<b>2451</b>	<b>2592</b>
	CP Fixed Speed 5-1280 l/s	363	785	706	639	640	661	683	705	726	749
	CP Variable speed 5-1280 l/s	0	87	186	274	323	339	351	362	373	385
	CP Pistons 2-64 l/s	91	115	113	113	117	121	125	129	133	137
	<b>Total CP Standard Air Compressors</b>	<b>454</b>	<b>987</b>	<b>1004</b>	<b>1026</b>	<b>1080</b>	<b>1122</b>	<b>1160</b>	<b>1197</b>	<b>1233</b>	<b>1270</b>
	TOTAL INDUSTRY COMPONENTS	2579	4397	4804	5164	5535	5848	6112	6359	6612	6867
	<b>TOTAL ENERGY SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TRANSPORT SECTOR</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>GENERAL TOTAL (in m euro 2015)</b>	<b>30244</b>	<b>54641</b>	<b>60867</b>	<b>67163</b>	<b>73427</b>	<b>80055</b>	<b>86728</b>	<b>93380</b>	<b>100094</b>	<b>106718</b>
	GENERAL TOTAL (in bn euro 2015)	30	55	61	67	73	80	87	93	100	107

SUMMARY

MAINTENANCE ECO excl. VAT (bn euro 2015)	1990	2010	2015	2020	2025	2030	2035	2040	2045	2050
<b>WATER HEATING</b>	<b>7.1</b>	<b>9.3</b>	<b>9.7</b>	<b>10.0</b>	<b>10.4</b>	<b>10.7</b>	<b>11.1</b>	<b>11.5</b>	<b>11.8</b>	<b>12.2</b>
<b>SPACE HEATING</b>	<b>14.9</b>	<b>25.4</b>	<b>28.1</b>	<b>30.9</b>	<b>33.8</b>	<b>36.9</b>	<b>40.1</b>	<b>43.3</b>	<b>46.5</b>	<b>49.6</b>
<b>SPACE COOLING</b>	<b>1.2</b>	<b>5.3</b>	<b>6.7</b>	<b>8.2</b>	<b>9.4</b>	<b>10.7</b>	<b>12.0</b>	<b>13.1</b>	<b>14.3</b>	<b>15.4</b>
<b>VENTILATION</b>	<b>1.0</b>	<b>3.3</b>	<b>3.9</b>	<b>4.5</b>	<b>5.0</b>	<b>5.4</b>	<b>5.7</b>	<b>6.1</b>	<b>6.5</b>	<b>6.8</b>
<b>LIGHTING</b>	<b>1.9</b>	<b>4.5</b>	<b>5.0</b>	<b>5.6</b>	<b>6.3</b>	<b>7.2</b>	<b>8.1</b>	<b>9.2</b>	<b>10.4</b>	<b>11.8</b>
<b>ELECTRONICS</b>	<b>0.5</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>2.0</b>	<b>2.1</b>	<b>2.3</b>	<b>2.4</b>
<b>FOOD PRESERVATION</b>	<b>1.1</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>
<b>COOKING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>CLEANING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
INDUSTRY COMPONENTS	2.6	4.4	4.8	5.2	5.5	5.8	6.1	6.4	6.6	6.9
<b>ENERGY SECTOR</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>TRANSPORT SECTOR</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>TOTAL in bn euro 2015</b>	<b>30</b>	<b>55</b>	<b>61</b>	<b>67</b>	<b>73</b>	<b>80</b>	<b>87</b>	<b>93</b>	<b>100</b>	<b>107</b>

Revenues for VSDs only (without motor, m euros)

VSD - Very Small 0.12 - 0.75 kW 1-phase	0	0	0	0	0	0	0	0	0	0
VSD - Very Small 0.12 - 0.75 kW 3-phase	0	0	0	0	0	0	0	0	0	0
VSD - Small 0.75 - 7.5 kW 3-phase	0	0	0	0	0	0	0	0	0	0
VSD - Medium 7.5 - 75kW 3-phase	17	42	59	95	130	144	154	164	175	186
VSD - Large 75 - 375kW 3-phase	16	40	55	78	102	123	133	143	151	159
VSD - Very Large 375 - 1,000kW 3-phase	1	4	6	8	10	12	13	13	14	15
<b>Total revenues, VSDs only (ECO)</b>	<b>33</b>	<b>87</b>	<b>120</b>	<b>182</b>	<b>243</b>	<b>279</b>	<b>300</b>	<b>320</b>	<b>341</b>	<b>359</b>

## ANNEX B: Status of measures per 1.10.2018

**Ecodesign, Energy Labelling, Energy Star & Voluntary Agreements [status 1.10.2018]**

<b>Framework Directives</b>		<i>repealed</i>	<b>ED</b>	<b>EL</b>	<b>ES</b>	<b>status</b>
	Ecodesign [ED]	Dir 2005/32/EC	Dir 2009/125/EC			rev.
	Energy Labelling [EL]	Dir 92/75/EEC Dir 2010/30		Reg 2017/1369		
	Energy Star [ES]	Dec 2001/469 Reg 2422/2001 Dec 2003/269			Reg 106/2008 Dec 2013/107	
<b>Lot</b>	<b>Product</b>	<i>repealed</i>	<b>ED</b>	<b>EL</b>	<b>ES (*)/ VA etc.</b>	
<b>Space- and water heating/cooling</b>						
<b>2</b>	WH dedicated Water Heater		CR 814/2013	CDR 812/2013		rev.
<b>1</b>	CH Central Heating boiler (incl. combi)	Dir 92/42/EEC Dir 2004/8 (CHP)	CR 813/2013	CDR 811/2013		rev.
<b>15</b>	SFB Solid Fuel Boilers		CR 2015/1189	CDR 2015/1187		
<b>21 /E6</b>	AHC Air Cooling & Heating (>12 kW)		CR 2016/2281			
<b>20</b>	LH Local Heaters		CR 2015/1185 CR 2015/1188	CDR 2015/1186		
<b>10</b>	RAC Room Air Conditioner (<12 kW)	CD 2002/31	CR 206/2012	CDR 626/2011		rev.
<b>11</b>	CIRC Circulator pumps (<2.5 kW)		CR 641/2009, am 622/2012			rev.
<b>E6 /10</b>	VU Ventilation Units		CR 1253/2014			
<b>Lighting</b>						
<b>8 /9 /19</b>	LS Light Sources	CD 98/11	am. 2015/1428	CDR 874/2012		WD 2017
	Tertiary sector (LFL, HID, ballast)	Dir 2000/55 (ballasts, MEPS)	CR 245/2009, am 347/2010			
	NDLS Non Directional LS		CR 244/2009, am 859/2009			
	DLS Directional LS		CR 1194/2012			
<b>Electronics</b>						
<b>5</b>	DP electronic DisPlays		CR 642/2009, am 801/2013	CDR 1062/2010	Cd 2016/1756* (displays 7.0)	WD 2018/10 IA 2018/07
<b>18</b>	STB set top boxes (Complex & Simple)		CR 107/2009 (SSTB)		VA v4.0 2015 (CSTB) COM 2012 (684)	rev. [SSTB] VA: <a href="http://cstb.eu">http://cstb.eu</a>
<b>E3</b>	VIDEO recorders, players, games				VA v1.0 2015 (game consoles) COM 2015 (178)	<a href="http://www.efficientgaming.eu/">www.efficientgaming.eu/</a>
<b>E9</b>	Enterprise servers & Data Storage products				Cd 2014/202* (ES v2.0)	WD 2018/7 IA 2017/10
<b>3</b>	PC Personal Computers		CR 617/2013		Cd 2015/1402* (computers 6.1)	rev. completed 2017
<b>4</b>	EP & IJ imaging equipment				Cd 2014/202* (Im.Eq. v2.0) VA v5.2 2015 (Im.Eq.) COM 2013 (23)	<a href="http://www.eurovaprint.eu">www.eurovaprint.eu</a>
<b>6 /26</b>	SB (networked) Stand-By		CR 1275/2008, am 801/2013			rev. completed 2017
<b>7</b>	EPS External Power Supplies		CR 278/2009			WD 2018/10 IA 2018/6
<b>27</b>	UPS Uninterruptable Power Supplies				Cd 2014/202* (UPS v1.0)	prep. study completed 6/2014
<b>Food preservation</b>						
<b>13</b>	RF Household Refrigerators & freezers	CD 2003/66 (label) Dir 96/57 (MEPS)	CR 643/2009	CDR 1060/2010		WD 2018/10 IA 2018/04
<b>12</b>	CF Commercial Refrigeration					WD 2014; IA 2015
<b>E1</b>	PF Professional Refrigeration		CR 2015/1095	CDR 2015/1094		
<b>Cooking</b>						
<b>22 /23</b>	CA Cooking Appliances	CD 2002/40	CR 66/2014	CDR 65/2014		
<b>25</b>	CM household Coffee Makers		in CR 801/2013			
<b>Cleaning</b>						
<b>14</b>	WM household Washing Machine	CD 95/12 (WM) CD 96/60 (W-drier)	CR 1015/2010 cor(2010/L 298/p.87)	CDR 1061/2010		rev. 2015
<b>14</b>	DW Household Dishwashers	CD 97/17	CR 1016/2010	CDR 1059/2013		rev. 2015
<b>16</b>	LD household Laundry Drier	CD 95/13	CR 932/2012	CDR 392/2012		
<b>17</b>	VC Vacuum Cleaners		CR 666/2013	CDR 665/2013		rev. 2016 durability

## ANNEX B: MEASURES

Lot	Product	repealed	ED	EL	ES (*)/ VA etc.
<b>Industrial components</b>					
11	FAN Industrial Fans (>125W)		CR 327/2011		draft IA 2016
11	MT Industrial motors (0.75-375 kW)		CR 640/2009, amendment 4/2014		rev. with Lot 30
30	MT Industrial & Special motors (0.12-1000 kW)				WD 2018; IA 2017
11	WP Water pumps		CR 547/2012		rev. 2016, incl. also Lot 28 & 29
28	Wastewater Pumps				rev. 2016
29	Pool- & aquarium pumps				rev. 2016
31	CP Standard Air Compressors				WD draft 10/2014; IA draft 9/2015; additional PS completed 2017
<b>Energy sector</b>					
E2	TRAFO Utility Transformers		CR 548/2014		rev. completed 2017
<b>Transportation sector</b>					
T	TYRE Tyres (replacement and OEM)			Reg. 1222/2009	WD 2018 IA 2018
<b>Other (No measures; no data inserted in EIA)</b>					
24	Professional dishwashers Professional washing machines and driers		Awaiting completion of standardization (expected 8/2019) following Mandate M/539 in C(2015)8756		
32	Windows		Windows themselves do not use energy but they are ErP with influence on space heating/cooling and lighting in buildings. Prep. study and CF in 2015; WP 16-19 states Impact Assessment is ongoing, but seems unlikely that Ecodesign or Labelling measures will be implemented.		
33	Smart Appliances		Prep. study completed autumn 2017; Consultation Forum expected Q4/2018. See <a href="http://www.eco-smartappliances.eu">http://www.eco-smartappliances.eu</a> for details		
35	Power Generating equipment		Product group has been abandoned for Ecodesign and Energy Labelling		
36	Thermal Insulation		Product group has been abandoned for Ecodesign and Energy Labelling		
37	Lighting Systems		Prep. study completed December 2016. Topic 'on hold'. See <a href="http://ecodesign-lightingsystems.eu/">http://ecodesign-lightingsystems.eu/</a> for details.		
38	Building Automation Control Systems		Scoping study finished July 2018. See <a href="https://ecodesignbacs.eu/documents">https://ecodesignbacs.eu/documents</a> for details		
39	Refrigerated Containers		Prep. study expected to start in 2019		
n/a	Electric Kettles		Prep. study expected to start in 2019		
ENTR 4	Industrial furnaces and ovens		Product group has been abandoned for Ecodesign and Energy Labelling		
ENTR 5	Machine tools (Welding Equipment)		Impact Assessment positive in 2018; expected vote in winter 2018/2019		
ENTR 7	Steam boilers		Product group has been abandoned for Ecodesign and Energy Labelling		
ENTR 8	Power Cables		Product group has been abandoned for Ecodesign and Energy Labelling		
GROW10	PV panels and inverters		Preparatory study started in October 2017 and is expected to be completed in 2019. See <a href="http://susproc.jrc.ec.europa.eu/solar_photovoltaics/index.html">http://susproc.jrc.ec.europa.eu/solar_photovoltaics/index.html</a> for details.		
GROW11	Lifts		Preparatory study started September 2017 and is expected to be completed in summer 2019. See <a href="https://www.eco-lifts.eu/eco-lifts-en/index.php">https://www.eco-lifts.eu/eco-lifts-en/index.php</a> for details		
GROW12	Hand dryers		Preparatory study started September 2018 and is expected to be completed in 2020. See <a href="http://www.ecohanddryers.eu/">http://www.ecohanddryers.eu/</a> for details.		
GROW13	Large Storage Batteries (not part of WP16-19)		Preparatory study started September 2017 and is expected to be completed in May 2019. See <a href="https://ecodesignbatteries.eu/">https://ecodesignbatteries.eu/</a> for details		
ENV	Taps and Shower heads (water-related products)		No regulation, but Voluntary waterlabel by industry; no data inserted in EIA Prep. study 2012-2014; update started June 2017. Stakeholder meeting Autumn 2018. See <a href="http://www.europeanwaterlabel.eu/thelabel.asp">http://www.europeanwaterlabel.eu/thelabel.asp</a> and <a href="http://susproc.jrc.ec.europa.eu/taps_and_showers/">http://susproc.jrc.ec.europa.eu/taps_and_showers/</a> for details		
ENV	High-Pressure cleaners		Prep. study first draft report December 2018. See <a href="http://susproc.jrc.ec.europa.eu/HighPressureCleaners">http://susproc.jrc.ec.europa.eu/HighPressureCleaners</a> for details		
n/a	Medical equipment		COCIR Self-Regulatory Initiative, SRI v3 2013. SRI not formally endorsed by EC as a VA in Ecodesign context; therefore not included in EIA. See <a href="https://www.cocir.org/initiatives/ecodesign-initiative.html">https://www.cocir.org/initiatives/ecodesign-initiative.html</a> for details and annual reports.		

Source with links and full references on ED and EL: [www.eup-network.de](http://www.eup-network.de)

Source with links and full references on ES: <http://www.eu-energystar.org/en/254.shtml>

**Acronyms:** Dir=Directive of European Parliament and Council; Reg=Regulation of European Parliament and Council; Dec=Council Decision; CD=Commission Directive; CR=Commission Regulation; CDR=Commission Delegated Regulation; Cd=Commission Decision; cor=Corrigendum; WD=Commission Working Document (draft measure); VA=Voluntary Agreement, under Ecodesign; VA?=draft VA; am=amendment; app=approved by the RegCom; rev=preparations for review ongoing; prep.=preparatory study ongoing; MEPS=Minimum energy Efficiency Performance Standards.

Legislation published in the Official Journal (OJ) before December 2009 has the suffix (for Directives) or prefix (for Commission Regulations) or suffix (for Directives and other) 'EC'. Legislation published after December 2009 ('post Lisbon') has the prefix or suffix 'EU'.



## ANNEX C: Studies per 1.10.2018

**Preparatory studies, IA reports and communications (COM)**

<b>Working Programmes (WP) and Methodology studies</b>			<b>WPs</b>	
	1st WP study (--> WP 2009-2011)	EPTA with PE, NTUA, Nov. 2007		COM(2008) 660
	amended WP study (--> WP 2012-2014)	VHK, Dec. 2011		SWD(2012)434
	WP 2016-2019			COM(2016) 773
	Methodology for EuP (MEEuP, old)	VHK, Nov. 2005		
	Methodology for ErP (MEErP, new)	VHK, Nov. 2011		

<b>Lot</b>	<b>Product</b>	<b>Preparatory study, author(s) and year of publication</b>		<b>EC IA reports</b>	<b>COM, Guide on tests &amp; calculations</b>
<b>Space- and water heating/cooling</b>					
2	WH dedicated Water Heater	VHK with BRGC, Sept. 2007 started 2017	rev. VHK	SWD(2013)294 SWD(2013)295 SEC(2013)445	draft COM 2013
1	CH Central Heating boiler (incl. combi)	VHK with BRGC, Sept. 2007 started 2017	rev. VHK	SWD(2013)296 SWD(2013)297 SEC(2013)446	draft COM 2013
15	SFB Solid Fuel Boilers	BIOIS/AEA, Jan. 2010		SWD(2015)0092 SWD(2015)0093 SEC(2015)0182	
21 /E6	AHC Air Cooling & Heating (>12 kW)	Armines, Sept. 2011 (Lot E6, AC); BIOIS, July 2012 (Lot 21)		SWD(2016)421 SWD(2016)422 SEC(2016)0500	
20	LH Local Heaters	BIOIS, June 2012		SWD(2015)0090 SWD(2015)0091 SEC(2015)0181	
10	RAC Room Air Conditioner (<12 kW) & comfort fans	Armines, March 2009 Armines/VMAS started 2017	rev.	SWD(2012)34 SWD(2012)35 SEC(2012)157	
11	CIRC Circulator pumps (<2.5 kW)	AEA, Feb. 2008 VMAS expected 2017	rev.	SEC(2009)1016 SEC(2009)1017 SEC(2009)1018	
E6 /10	VU Ventilation Units	Armines, Mar.2009 (Lot 10, residential) VHK, June 2012 (Lot E6, non-residential)		SWD(2014)0222 SWD(2014)0223 SEC(2014)0410	
<b>Lighting</b>					
8 /9 /19	LS Light Sources	rev. VHK Oct. 2015		Draft IA 2017	
	Tertiary sector (LFL, HID, ballast)	VITO, Jan-April 2007		SEC(2009)324	COM(2010/C 92/04)
	NDLS Non Directional LS	VITO, Oct. 2009		SEC(2009)327	
	DLS Directional LS	VITO, Oct. 2009		SWD(2012)419	
37	Lighting Systems	VITO et al, completed 12/2016			
<b>Electronics</b>					
5	DP electronic DisPlays	Fh IZM, Aug. 2007 Aug. 2012 review		SEC(2009)1011 IA 2018	Guide 2009
18	STB set top boxes (Complex & Simple)	MVV/BH, Dec.2007 [SSTB]; BIOIS/Fh IZM, Dec. 2008 [CSTB]		SEC(2009)114 SWD(2012)391 (VA)	
E3	VIDEO recorders, players, games	AEA/ Intertek, Nov. 2010		SWD(2015)89 [VA]	
E9	Enterprise servers & Data Storage products	BIOIS/Fh IZM, June 2015 Intertek, TA study Standards, 2016		IA 2017	
3	PC Personal Computers	IVF, Aug. 2007 review study VITO/VMAS 2017		SWD(2013)218 SWD(2013)219 SEC(2013)354	
4	EP & IJ imaging equipment	Fh IZM, May 2008		SWD(2013)14 SWD(2013)15 SEC(2013)74	
6 /26	SB (networked) Stand-By	Fh IZM, Oct. 2007 VHK/VMAS 2017	rev.	SEC(2008)3070 SEC(2008)3071 SEC(2008)3072	COM(2012/C 394/05)
7	EPS External Power Supplies	BIOIS/Fh IZM, Jan. 2007 rev. VMAS 2012/3 additional rev. VMAS 2014/3		SEC(2009)434 SEC(2009)435 SEC(2009)436	COM(2013/C 130/05)
27	Uninterruptable Power Supplies (UPS)	Ricardo-AEA, June 2014			
<b>Food preservation</b>					
13	RF Household Refrigerators & freezers	ISIS/ENEA, March 2008 VHK/Armines 2016	rev.	SEC(2009)1020 SEC(2009)1021 SEC(2009)1022 IA 2018	corr(2010/C 272/08)
12	CF Commercial Refrigeration	BIOIS, Dec. 2007; update JRC 2014		Draft IA 2015	
E1	PF Professional Refrigeration	BIOIS, July 2011		SWD(2015)0097 SWD(2015)0096 SEC(2015)0196	

## ANNEX C: STUDIES

### Cooking

<b>22 /23</b>	CA Cooking Appliances	BIOIS/ERA, Aug. 2011 (hobs, ovens); Armines, Mar.2009 (hoods)		SWD(2014)3 SWD(2014)4 SEC(2014)43	
<b>25</b>	CM household Coffee Makers	BIOIS/ARTS, July 2011			

### Cleaning

<b>14</b>	WM household Washing Machine	ENEA/UniBonn, March 2010 JRC 2017	rev.	SEC(2010)1352 SEC(2010)1353 SEC(2010)1354	
<b>14</b>	DW Household Dishwashers	ENEA/UniBonn, March 2010 rev. JRC 2017		SEC(2010)1356 SEC(2010)1357 SEC(2010)1358	
<b>16</b>	LD household Laundry Drier	PWC, March 2008		SWD(2012)289 SWD(2012)290 SEC(2012)556	
<b>17</b>	VC Vacuum Cleaners	AEA, Feb. 2009 VHK June 2016, durability aspects	rev.	SWD(2013)240 SWD(2013)241 SEC(2013)385	

### Industrial components

<b>11</b>	FAN Industrial Fans (>125W)	Fh ISI, Feb. 2008 VHK, March 2015	rev.	SEC(2011)384 SEC(2011)385 SEC(2011)386 Draft IA 2016	
<b>11</b>	MT Industrial motors (0.75-375 kW)	ISR, Feb. 2008		SEC(2009)1013 SEC(2009)2014 SEC(2009)2015	
<b>30</b>	MT Industrial & Special motors (0.12-1000 kW)	ISR, Mar. 2014		IA (2017)	
<b>11</b>	WP Water pumps	AEA, Feb. 2008 VMAS/VHK 2016 all pumps	rev.	SWD(2012)178 SWD(2012)179 SEC(2012)392	
<b>28</b>	Wastewater Pumps	BIOIS/ Atkins, Jan/Feb 2014			
<b>29</b>	Pool- & aquarium pumps	BIOIS/ Atkins, Jan/Feb 2014			
<b>31</b>	CP Standard Air Compressors	VHK, apr. 2014 follow-up study low-pressure and oil-free, June 2017	VHK,	Draft IA (2015) Draft WD, 2014	

### Energy sector

<b>E2</b>	TRAFO Utility Transformers	VITO/ BIOIS, Jan. 2011 VITO, July 2017	rev.	SWD(2014)0162 SWD(2014)0161	
<b>E8</b>	Power cables	VITO, 2015			

### Transportation sector

<b>T</b>	TYRE Tyres (Replacement and OEM)	EPEC, July 2008 VMAS, March 2016	rev.	SEC(2008)2860 SEC(2008)2061 SEC(2008)2805 SWD(2018)188 SWD(2018)189 SEC(2018)234	
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### Other (see also sheet 'Measures')

<b>E4</b>	Industrial furnaces and ovens	BIOIS/ ERA, Sept. 2012			
<b>E5</b>	Machine tools	Fh IZM, Aug. 2012			
<b>E7</b>	Steam boilers	PwC/Fh ISI/NTUA, Oct. 2014			
<b>24</b>	Professional dishwashers	BIOIS/Öko/Ö-Q, May 2011			
	Professional washing machines and driers	BIOIS/Öko, May 2011			
<b>32</b>	Windows	ift/VHK/VITO, June 2015			
<b>33</b>	Smart Grid Appliances	VITO et al, ongoing, expected 12/2017			
<b>V1</b>	Taps and shower heads	IPTS, 2014->			

All prep. studies can be downloaded from [www.eup-network.de](http://www.eup-network.de) or [www.ecee.com](http://www.ecee.com)

All IA studies can be downloaded from <http://ec.europa.eu/smart-regulation/impact>

Commission Communications can be found on the European Union Eurlex website

### Contractor acronyms (alphabetically)

<b>AEA</b>	AEA Technology, Didcot, UK (now: <b>Ricardo-AEA</b> )
<b>ARTS</b>	Association de Recherche, Technologie et Sciences, Paris, FR
<b>Atkins</b>	WS Atkins, UK
<b>BH</b>	Bob Harrison, private consultant, UK
<b>BIOIS</b>	Bio Intelligence Services, Paris, FR (now: <b>Deloitte</b> )
<b>BRGC</b>	BRG Consult, London, UK
<b>ENEA</b>	ENEA, Ispra, IT
<b>EPEC</b>	EPEC p/a GHK Consulting, Brussels, BE
<b>EPTA</b>	EPTA, Athens, GR
<b>ERA</b>	ERA Technology, Surrey, UK
<b>Fh ISI</b>	Fraunhofer Institute Systems and Innovation Research, Karlsruhe, DE
<b>Fh IZM</b>	Fraunhofer Institut für Zuverlässigkeit und Mikro-integration, Berlin, DE
<b>ift</b>	ift Rosenheim, DE
<b>Intertek</b>	Intertek, UK
<b>IPTS</b>	EC, JRC, IPTS, Seville, ES
<b>ISIS</b>	ISIS, Rome, IT
<b>ISR</b>	ISR-University of Coimbra, PO
<b>NTUA</b>	University of Athens, GR
<b>Öko</b>	Öko-Institut e.V., Freiburg, DE

## ANNEX C: STUDIES

<b>Ö-Q</b>	Büro Q-quadrat, DE
<b>PE</b>	PE International, DE
<b>PWC</b>	Price Waterhouse Coopers, Neuilly-sur-Seine, FR
<b>VHK</b>	Van Holsteijn en Kemna, Delft, NL
<b>VITO</b>	VITO, Mol, BE
<b>VMAS</b>	Viegand Maagøe, Copenhagen, DK
<b>WI</b>	Wuppertal Institute, Wuppertal, DE

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## ANNEX D: Product groups and defined base cases per 1.10.2018

Lot nr.	acronym
1	<p><b>CHC Boilers and combiboilers (Regulation)</b></p> <ul style="list-style-type: none"> <li>Space heating CH boilers (rated heat output ≤ 400 kW)</li> <li>Combi-boiler instantaneous, (water heating side)</li> <li>Combi-boiler with Cylinder (water heating side)</li> </ul>
2	<p><b>WH Dedicated water heaters (WH) (Regulation)</b></p> <p>Total dedicated WHs (aggregate from:)</p> <ul style="list-style-type: none"> <li><i>ESWH (Electric Storage Water Heater)</i></li> <li><i>EIWH (Electric Instantaneous Water Heater)</i></li> <li><i>HP (Heat pump water heater, electric)</i></li> <li><i>GIWH (Gas- or oil fired Instantaneous Water Heater)</i></li> <li><i>GSWH (Gas- or oil fired Storage Water Heater)</i></li> <li><i>SOL (Solar water heater, with electric back-up)</i></li> <li><i>storage tank standing loss</i></li> </ul>
3	<p><b>PC Computers, Lot 3 (Regulation under review 2013, Energy Star)</b></p> <ul style="list-style-type: none"> <li>Desktops</li> <li>Laptops</li> <li>Tablets</li> <li>Thin clients</li> <li>Workstations</li> </ul>
4	<p><b>EI Imaging equipment, Lot 4 (Voluntary Agreement, Energy Star)</b></p> <ul style="list-style-type: none"> <li>EP-Copier mono (Electro Photographic a.k.a. 'laser')</li> <li>EP-Copier colour</li> <li>EP-printer mono (including Multi-Functional Devices MFDs)</li> <li>EP-printer colour (including MFD)</li> <li>IJ SFD printer (Inkjet, Single Functional Device)</li> <li>IJ MFD printer</li> </ul>
5	<p><b>DP Electronic Displays, Lot 5 (Proposal due for voting winter 2018-2019)</b></p> <ul style="list-style-type: none"> <li>Standard TV (NoNA, no network availability)</li> <li>TV with low network availability (LoNA)</li> <li>Smart TV, with high network availability (HiNA)</li> <li>Computer monitors</li> <li>Signage displays</li> </ul>
6	<p><b>SB Standby and off-mode losses of EuPs, Lot 6 (Regulation, under review 2013)</b></p> <p>Total (aggregate from)</p> <ul style="list-style-type: none"> <li>EPS (mobile phone)</li> <li>Lighting</li> <li>Radio</li> <li>Electric toothbrush</li> <li>Oven</li> <li>Cordless phone</li> <li>TV+ (included in Lot 5)</li> <li>Washing machine</li> <li>DVD</li> <li>Audio minisystem</li> <li>Fax machine</li> <li>PC+ (office) (included in Lot 3?)</li> <li>PC+ (home) (included in Lot 3?)</li> <li>Laser printer (included in Lot 4 duty cycle)</li> <li>Inkjet printer (included in Lot 4)</li> </ul>

- 7 EPS External Power Supplies, Lot 7** (Proposal due for voting winter 2018-2019)
- a. 5W low voltage (e.g. mobile phone and rechargeable grooming products)  
 b. 10W normal voltage (e.g. tablets, smart phones etc.)  
 c. 12W normal voltage (e.g. small network equipment and set-top boxes etc.)  
 d. 18W normal voltage (e.g. portable devices and portable game consoles etc.)  
 e. 30W normal voltage (e.g. notebook computer)  
 f. 36W multiple voltage output (e.g. multi-device universal chargers etc.)  
 g. 65W normal voltage (e.g. high-end notebooks computers)  
 h. 120W normal voltage (e.g. high-end notebook computers)  
 i. 120W Multiple voltage output (e.g. stationary game consoles)  
 j. 15 W normal voltage (e.g. loudspeakers and sound systems)
- EIA name:  
 EPS ≤ 6W, low-V  
 EPS 6–10 W  
 EPS 10–12 W  
 EPS 15–20 W  
 EPS 20–30 W  
 EPS 30–65 W, multiple-V  
 EPS 30-65 W  
 EPS 65–120 W  
 EPS 65–120 W, multiple-V  
 EPS 12–15 W
- 8/9 LS Tertiary Lighting, Lot 8–9** (Regulation, review 2016, MELISA model)
- LFL T12 (Linear Fluorescent Lamps diameter 38 mm, incl. ballast) (res & nres)  
 LFL T8h (Linear Fluorescent Lamps diameter 26 mm, halophosphor, incl. ballast) (res & nres)  
 LFL T8t (Linear Fluorescent Lamps diameter 26 mm, triphosphor, incl. ballast) (res & nres)  
 LFL T5 new (14-80 W) (Linear Fluorescent Lamps diameter 16 mm, incl. electronic ballast) (res & nres)  
 LFL X (other Linear Fluorescent Lamps incl. T5 old 4-13 W, special FL, incl. ballast) (res & nres)  
 LED replacing LFL incl. control gear (retrofit & luminaire) (res & nres)  
 HPM (High-Pressure Mercury lamps, incl. ballast (nres only)  
 HPS (High-Pressure Sodium lamps, incl. ballast (nres only)  
 MH (Metal-Halide lamps, incl. ballast) (nres only)  
 LED replacing HID incl. control gear (retrofit & luminaire) (nres only)  
 CFLni (Compact Fluorescent Lamp without integrated control gear), incl. control gear (res & nres)  
 LED replacing CFLni incl. control gear (retrofit & luminaire) (res & nres)
- EIA  
 aggregated  
 BC: LFL
- EIA  
 aggregated  
 BC: HID
- EIA: CFLni
- 10 RAC Room air conditioning appliances (RAC), Lot 10** (Regulation)
- RAC split packages avg. 3.5 kW  
 RAC split packages avg. 7.1 kW  
 RAC window/wall  
 RAC double ducts  
 RAC single ducts
- Residential ventilation and kitchen hoods Lot 10 (now in ENTR Lot 6 Ventilation for ventilation; in Lot 22/23 for hoods)*
- 11 MT Electric industrial motors (0.75-375 kW), Lot 11** (Regulation) (see also Lot 30)
- Medium 3-phase Induction Motors (S) 0.75-7.5 kW  
 Medium 3-phase Induction Motors (M) 7.5-75 kW  
 Medium 3-phase Induction Motors (L) 75-375 kW
- 11 FAN Industrial fans, Lot 11** (Regulation)
- Axial fan <300Pa  
 Axial fan >300Pa  
 Centrifugal FC (Forward Curved) fan  
 Centrifugal BC (Backward Curved) fan, freestanding  
 Centrifugal BC fan  
 Cross-flow fan  
 (jet-fan)
- 11 CIRC Circulators, Lot 11** (Regulation)
- Small stand-alone circulators  
 Large stand-alone circulators  
 Integrated boiler circulators  
 Drinking water circulators

- 11 WP Electric water pumps , Lot 11** (Regulation) (see also Lot 28/29)
- End Suction Own Bearings (ESOB), Small
  - End Suction Own Bearings (ESOB), Large
  - End Suction Close Coupled (ESCC), Small
  - End Suction Close Coupled (ESCC), Large
  - End Suction Close Coupled, Inline, (ESCCi), Small
  - End Suction Close Coupled, Inline, (ESCCi), Large
  - Submersible Multistage (MSS), Small
  - Submersible Multistage (MSS), Large
  - Vertical Multistage(MS), Small
  - Vertical Multistage(MS), Large
- 12 CF Commercial refrigerators and freezers, Lot 12** (JRC study, draft WD 2014)
- Remote open vertical chilled multi deck (RVC2)
  - Remote open horizontal frozen island (RHF4)
  - Other supermarket display cabinets (non-base cases)
  - Plug-in one door beverage cooler
  - Plug in horizontal ice cream freezer
  - Spiral vending machine
- 13 RF Domestic refrigerators and freezers, Lot 13** (Regulation, omnibus review 2013, review 2016, WD 2018)
- Total (aggregate from)
  - Domestic Refrigerators (incl. fridge-freezers)
  - Domestic Freezers
- 14 WM Domestic washing machines, Lot 14** (Regulation, omnibus review 2013)
- Domestic washing machines
- 14 DW Domestic dishwashers, Lot 14** (Regulation, omnibus review 2013)
- Domestic dishwashers
- 15 SFB Solid fuel small combustion installations, Lot 15** (Regulation)
- Small domestic man. Boiler (Wood logs): WOODMANB
  - Small domestic DD (DownDraft) gasifying boiler (Wood) WOODDB
  - Retort boiler (Coal) COALB
  - Pellet boiler (Pellets) PELLB
  - Non-domestic chip boiler (Wood chips) CHIPB
- 16 LD Domestic laundry driers (LD), Lot 16** (Regulation)
- LD electric vented
  - LD electric condensing
  - LD gas electric condensing
  - LD gas
- 17 VC Vacuum cleaners (VC), Lot 17** (Regulation)
- Domestic VCs
  - Non-domestic (dry vac) VCs
- 18 STB Complex set-top boxes (CSTB), Lot 18** (Voluntary Agreement)
- Basic CSTB with SD (Standard Definition signal)
  - CSTB with SD, HDD (Hard Disk Drive)
  - CSTB with SD, HDD, second tuner, return path
  - Basic CSTB with HD (High Definition signal)
  - CSTB with HD, HDD
  - CSTB with HD, HDD second tuner, return path
  - Triple play box
- 18 STB Simple set-top boxes (SSTB), Lot 18a** (Regulation, omnibus review 2013)
- SSTB
  - SSTB /PVR (Personal Video Recorder)

**19 LS Non-directional (NDLS) and Directional Light Sources (DLS) Lot 19** (Regulation, review 2016, MELISA model)

GLS R (General Lighting Service incandescent lamp, with reflector, DLS) (res & nres)	EIA aggregated BC : GLS
GLS X (General Lighting Service incandescent lamp, all other shapes, NDLS) (res & nres)	
HL LV R (Low Voltage Halogen Reflector lamps, MR11, MR16, etc., GU4, GU5.3 cap, DLS) (res & nres)	EIA aggregated BC : HL
HL MV X (Mains Voltage Halogen Reflector lamps, R- & PAR-lamps, etc. GU10 or E-cap, DLS) (res & nres)	
HL LV C (Low Voltage Halogen capsules, G4, GY6.35 caps, NDLS) (res & nres)	
HL MV C (Mains Voltage Halogen capsules, G9 cap, NDLS) (res & nres)	
HL MV E (Mains Voltage Halogen lamps, E-cap, substitute for GLS, NDLS) (res & nres)	
HL MV L (Mains Voltage Linear Halogen lamps, R7s cap, NDLS) (res & nres)	
CFLi (Compact Fluorescent Lamp with integrated control gear, substitute for HL & GLS, NDLS) (res & nres)	EIA: CFLi
LED replacing DLS, incl. control gear (retrofit & luminaire) (res & nres)	
LED replacing NDLS, incl. control gear (retrofit & luminaire) (res & nres)	

**20 LH Local room heating products, Lot 20** (Regulation)

Open fireplace (Wood)  
 Closed fireplace/inset (Wood)  
 Wood stove  
 Coal stove  
 Cooker  
 SHR (Slow Heat Release) stove  
 Pellet stove  
 Open fire gas  
 Closed fire gas  
 Flueless fuel heater  
 Elec.portable  
 Elec.convectector  
 Elec.storage  
 Elec.underfloor  
 Luminous heaters  
 Tube heaters

**Air heating & AC products, Lot 21 (+ENTR Lot 6 AC + ENTR Lot1 HT Chillers)** (draft WD, draft**21 AHC IA)****Cooling:**

Chiller, Air to water, Electric, Small (CHAE-S ( $\leq 400$  kW))  
 Chiller, Air to water, Electric, Large (CHAE-L ( $> 400$  kW))  
 Chiller, Water to water, Electric, Small (CHWE-S ( $\leq 400$  kW))  
 Chiller, Water to water, Electric, Medium (CHWE-M ( $> 400; \leq 1500$  kW))  
 Chiller, Water to water, Electric, Large (CHWE-L ( $\geq 1500$  kW))  
 Chiller, Fuel (CHF)  
 Air conditioner [splits] (AC splits)  
 Air conditioner [VRF] (AC VRF)  
 Air conditioner [rooftop] (AC rooftop)  
 Air conditioner, Fuel (ACF)  
 High Temperature Process Chiller, Air to water, Electric, Small (HT PCH-AE-S)  
 High Temperature Process Chiller, Air to water, Electric, Large (HT PCH-AE-L)  
 High Temperature Process Chiller, Water to water, Electric, Small (HT PCH-WE-S)  
 High Temperature Process Chiller, Water to water, Electric, Medium (HT PCH-WE-M)  
 High Temperature Process Chiller, Water to water, Electric, Large (HT PCH-WE-L)

**Heating:**

Air conditioner [splits, reversible] (AC splits (rev))  
 Air conditioner [VRF, reversible] (AC VRF (rev))  
 Air conditioner [rooftop, reversible] (AC rooftop (rev))  
 Air conditioner, Fuel [reversible] (ACF (rev))  
 Air Heater, Fuel (AHF)  
 Air Heater, Electric (AHE)

- 22 CA Domestic and commercial ovens, Lot 22** (with Lot 23 and hoods from Lot 10)
- 23 CA Domestic and commercial hobs and grills, Lot 23** (with Lot 22 and hoods from Lot 10) (RegCom approved draft)
- Electric hobs
  - Gas hobs
  - Electric ovens
  - Gas ovens
  - Range hoods
- 24 PW Professional washing machines (WM), dishwashers (DW) and driers (LD), Lot 24** (draft WD, limited IA)
- (currently 20 basecase in IA, but probably to reduce to 9 below)*
- WM Washer extractors
  - WM Tunnel washers
  - DW Water-change ware washer
  - DW One tank ware washers
  - DW Multiple tank ware washers
  - LD Condensing tumble drier
  - LD Air vented tumble drier
  - LD Cabinet drier
  - LD Pass-through drier
- 25 CM Household coffee machines, Lot 25** (only measures under the new generic standby regulation)
- Dripfilter coffeemaker
  - Pad filter coffeemaker
  - Hard cap coffeemaker
  - Semi-auto coffeemaker
  - Fully-auto coffeemaker
- 26 SB Displays** **Networked standby losses, Lot 26** (draft WD, for TVs the networked losses are in Electronic)
- Total (aggregate from)
- Complex TV (now included Lot 5)*
  - Home Gateway*
  - Compl. Player/Recorder (discussed/included? In ENTR Lot 3 or Lot 18 or 18a?)*
  - Game Consoles (included in ENTR Lot 3)*
  - Complex Set Top Box (included in Lot 18?)*
  - Home Notebook (included in Lot 3?)*
  - Home NAS (Networked Attached Storage)*
  - Home Desktop PC (included in Lot 3?)*
  - Home Phones*
  - Office Notebook (included in Lot 3?)*
  - Home Display (now included Lot 5)*
  - Office Desktop PC (included in Lot 3?)*
  - Office Display (now included Lot 5)*
  - Office IJ Printer/MFD (now included Lot 4?)*
  - Home EP Printer (now included Lot 4?)*
  - Office EP Printer (now included Lot 4?)*
  - Office Phones*
  - Home inkjet Printer (now included Lot 4?)*
  - Simple Set Top Box (discussed/included in Lot 18a?)*
  - Simple TV (now included Lot 5)*
  - Simple Player/Recorder (discussed/included? In ENTR Lot 3)*
- 27 UPS Uninterruptible power supplies (UPS), Lot 27**
- UPS below 1.5 kVA (BC1)
  - UPS 1.5 to 5 kVA (BC2)
  - UPS 5.1 to 10 kVA (BC3)
  - UPS 10.1 to 200 kVA (BC4)



- 28 WWP Pumps for waste waters, Lot 28** (prep. study ongoing, data incomplete)
- Centrifugal Submersible: Mixed flow & Axial pumps (BC2)
  - Centrifugal Submersible pump – Once a day operation (BC3)
  - Centrifugal Submersible domestic drainage pump<40mm passage (BC4)
  - Submersible dewatering pumps (BC5)
  - Centrifugal dry well pump (BC6)
  - Slurry pumps: Light duty (BC7A)
  - Slurry pumps: Heavy duty (BC7B)
- 29 PP Large pumps and pumps for pools, fountains, aquariums, Lot 29** (prep. study ongoing, incomplete)
- Swimming Pool pumps(integrated motor+pump)
  - Fountain, pond, aquarium, spa and counter-current pumps
  - End Suction water pumps(over 150kW-P2)
  - Submersible bore-hole pumps
  - Vertical multi-stage pumps
- 30 SMT Special motors, Lot 30** (prep.study completed, draft WD sept. 2014; draft IA aug. 2015)
- Medium 3-phase Induction motor (S) 0.75-7.5 kW no VSD (also considered in Lot 11)
  - Medium 3-phase Induction motor (M) 7.5-75 kW no VSD (also considered in Lot 11)
  - Medium 3-phase Induction motor (L) 75-375 kW no VSD (also considered in Lot 11)
  - Medium 3-phase Induction motor (S) 0.75-7.5 kW with VSD (also considered in Lot 11)
  - Medium 3-phase Induction motor (M) 7.5-75 kW with VSD (also considered in Lot 11)
  - Medium 3-phase Induction motor (L) 75-375 kW with VSD (also considered in Lot 11)
  - Small 1-phase Induction motor 0.12-0.75 kW no VSD
  - Small 3-phase Induction motor 0.12-0.75 kW no VSD
  - Small 1- or 3-phase Induction motor 0.12-0.75 kW with VSD
  - Large 3-phase Induction motor, < 1000 V, 375-1000kW no VSD
  - Large 3-phase Induction motor, < 1000 V, 375-1000kW with VSD
  - Explosion medium 3-phase Induction motor (S) 0.75-7.5 kW
  - Explosion medium 3-phase Induction motor (M) 7.5-75 kW
  - Explosion medium 3-phase Induction motor (L) 75-375 kW
  - Brake medium 3-phase Induction motor (S) 0.75-7.5 kW
  - Brake medium 3-phase Induction motor (M) 7.5-75 kW
  - Brake medium 3-phase Induction motor (L) 75-375 kW
  - 8-pole medium 3-phase Induction motor (S) 0.75-7.5 kW
  - 8-pole medium 3-phase Induction motor (M) 7.5-75 kW
  - 8-pole medium 3-phase Induction motor (L) 75-375 kW
  - Single phase Induction motor > 0.75 kW
  - Variable Speed Drives (VSD) for the above motors
  - Medium Voltage Induction motor, > 1000 V, 375-1000 kW (out of scope of WD; not in EIA)
  - Submersible borehole Induction motor 0.22 -22 kW (out of scope of WD; not in EIA)
  - Submersible borehole Induction motor 22 -550 kW (out of scope of WD; not in EIA)
  - Soft starters (out of scope of WD; not in EIA)
- 31 CP Compressors, Lot 31** (prep. study completed, draft WD and IA)
- Rotary Fixed Speed 5-1280 l/s
  - Rotary Variable speed 5-1280 l/s
  - Pistons 2-64 l/s
- 32 WD Windows, Lot 32** (prep. study completed)
- without (a) / with (b) shutters (or other window covering, shading devices):*
- Single (1a/1b)
  - Double IGU, standard (2a/2b)
  - Double IGU, lowE, argon (3a/3b)
  - Double IGU, lowE, argon, impr. (4a/4b)
  - Triple IGU, lowE, argon (5a/5b)
  - Triple IGU, lowE, argon, impr. (6a/6b)
  - Coupled (7a/7b)
  - Quadruple (8a/8b)
  - as 2a/2b, with solar control glazing (9a/9b)

as 4a/4b, with solar control glazing (10a/10b)

as 6a/6b, with solar control glazing (11a/11b)

### E1 PF Refrigerating and freezing equipment, ENTR Lot 1 (HT Chillers now in Lot 21\_6)

#### **Professional refrigerated storage cabinets:**

PF Storage cabinet Chilled Vertical (CV, 600 litres net volume)

PF Storage cabinet Frozen Vertical (FV, 600 litres net volume)

PF Storage cabinet Chilled Horizontal (CH, 300 litres net volume)

PF Storage cabinet Frozen Horizontal (FH, 200 litres net volume)

*Blast cabinets (only information requirements in CR 2015/1095, no energy efficiency effects: not included in EIA)*

*Walk in cold rooms (not in scope of CR 2015/1095: not included in EIA)*

#### **Process chillers (only Low- and Medium-Temperature; HT chillers moved to Lot 21):**

PF Process Chiller AC MT S ≤ 300 kW (AC=Air-Cooled)

PF Process Chiller AC MT L > 300 kW

PF Process Chiller AC LT S ≤ 200 kW

PF Process Chiller AC LT L > 200 kW

PF Process Chiller WC MT S ≤ 300 kW (WC=Water-Cooled)

PF Process Chiller WC MT L > 300 kW

PF Process Chiller WC LT S ≤ 200 kW

PF Process Chiller WC LT L > 200 kW

#### **Condensing Units (only Low- and Medium-Temperature in scope of CR 2015/1095):**

PF Condensing Unit MT S 0.2-1 kW

PF Condensing Unit MT M 1-5 kW

PF Condensing Unit MT L 5-20 kW

PF Condensing Unit MT XL 20-50 kW

PF Condensing Unit LT S 0.1-0.4 kW

PF Condensing Unit LT M 0.4-2 kW

PF Condensing Unit LT L 2-8 kW

PF Condensing Unit LT XL 8-20 kW

LT & MT Condensing Units:

Partial double counting with other refrigeration products considered in EIA

### E2 TRAF0 Distribution and power transformers, ENTR Lot 2 (ongoing, some IA data)

Distrib.trafo 400 kVA, P0 750W, Pk 4600 W (BC1)

Industry trafo 1 MVA, P01700W, Pk 10500W (BC2)

Industry trafo 1.25 MVA, P0 2800W, Pk 13100W (BC3)

Power trafo 100 MVA, P0 40.5 kW, Pk 326 kW, prim. 132 kV, sec. 33 kV (BC4)

DER (Distributed Energy Resources) trafo (oil) 2 MVA, P0 3.1 kW, Pk 21 kW (BC5)

DER trafo (dry) 2 Mva, P0 4 kW, Pk 18 kW (BC6)

Separation trafo 16 kVA, P0 110 W, Pk 750 W (BC7)

### E3 VIDEO Sound and imaging equipment, ENTR Lot 3 (VA for game controles)

Game consoles

Video (DVD or Blu-ray) players with or without HDD (VP)

Video (DVD or Blu-ray) recorders with or without HDD (VR)

Video projectors

### E4 IO Industrial ovens, ENTR Lot 4 (prep.study complete, incomplete IA data, status?)

Laboratory ovens (BC1)

Industrial Batch Oven – Medium-sized-electric, MIBOe (BC2a)

Industrial Batch Oven– Medium-sized – gas, MIBOg (BC2b)

Industrial Continuous Oven– Medium-sized – electric, MICOe (BC3a)

Industrial Continuous Oven – Medium-sized – gas, MICOg (BC3b)

Industrial Batch Furnace –Medium-sized – electric, MIBFe (BC4a)

Industrial Batch Furnace – Medium-sized– gas, MIBFg (BC4b)

Industrial Continuous Furnace – Medium-sized– electric, MICFe (BC5a)

Industrial Continuous Furnace – Medium-sized-gas, MICFg (BC5b)

Large industrial furnace (large continuous brick kiln) (BC6)

Large industrial oven (large continuous drying oven for wet clay bricks and roof tiles) (BC7)

### E5 TOOL Machine tools, ENTR Lot 5 (prep study complete, IA data incomplete)

Numerically controlled machining centre, (BC1)

Numerically controlled deep drawing or bending machine tool, (BC2)

Laser cutting machine tool, (BC3)

Non-numerically controlled metal working drilling machine, (BC4)

Machine tool for woodworking, light stationary table saw, (BC5)

Machine tool for woodworking, horizontal panel saw, (BC6)  
 Machine tool for woodworking, throughfeed edge banding machine, (BC7)  
 Machine tool for woodworking, CNC machining centre (BC8)  
 Transportable welding equipment (BC9)

**E6 VU Ventilation units, ENTR Lot 6** (ACs incorporated in Lot 21; Ventilation with Lot 10. IA complete)

Residential ( R ) and Non-Residential ( NR ) Ventilation Units (VU):

RVU local exhaust with heat recovery (>30W)  
 RVU central exhaust  
 RVU central heat recovery  
 RVU local heat recovery  
 NRVU central exhaust (CEXH)  
 NRVU central heat recovery (CHRV)  
 NRVU Air Handling Unit, Small (AHU-S)  
 NRVU Air Handling Unit, Medium (AHU-M)  
 NRVU Air Handling Unit, Large (AHU-L)

**E7 STB Steam Boilers, ENTR Lot 7** (prep.study completed 2014)

Very small sized industrial steam boiler fired with natural gas, medium pressure (2.5 MWth) (BC1)  
 Very small sized industrial steam boiler fired with natural gas, high pressure (2.5 MWth) (BC2)  
 Small sized industrial steam boiler fired with natural gas, medium pressure (7 MWth) (BC3)  
 Small sized industrial steam boiler fired with natural gas, high pressure (7 MWth) (BC4)  
 Medium sized industrial steam boiler fired with natural gas, medium pressure (20 MWth) (BC5)  
 Medium sized industrial steam boiler fired with natural gas, high pressure (20 MWth) (BC6)  
 Large sized industrial steam boiler fired with natural gas, medium pressure (35 MWth) (BC7)  
 Large sized industrial steam boiler fired with natural gas, high pressure (35 MWth) (BC8)  
 Large sized industrial steam boiler, natural gas, medium pressure, water tube design (35 MWth) (BC9)  
 Large sized industrial steam boiler, natural gas, high pressure, water tube design (35 MWth) (BC10)

**E8 CAB Power Cables, ENTR Lot 8** (prep.study completed 2015)

*The base cases from the prep. study represent typical electric circuits in line with the market structure:*

distribution circuit in the services sector (BC1)  
 lighting circuit in the services sector (BC2)  
 socket-outlet circuit in the services sector (BC3)  
 dedicated circuit in the services sector (BC4)  
 distribution circuit in the industry sector (BC5)  
 lighting circuit in the industry sector (BC6)  
 socket-outlet circuit in the industry sector (BC7)  
 dedicated circuit in the industry sector (BC8, copper conductors)  
 dedicated circuit in the industry sector (BC9, aluminium conductors)

**E9 ES&DS Enterprise Servers and Data Storage Products, ENTR Lot 9** (proposal for regulation October 2018)

Servers (ES):  
 ES tower 1-socket traditional  
 ES rack 1-socket traditional  
 ES rack 2-socket traditional  
 ES rack 2-socket cloud  
 ES rack 4-socket traditional  
 ES rack 4-socket cloud  
 ES rack 2-socket resilient trad.  
 ES rack 2-socket resilient cloud  
 ES rack 4-socket resilient trad.  
 ES rack 4-socket resilient cloud  
 ES blade 1-socket traditional  
 ES blade 2-socket traditional  
 ES blade 2-socket cloud  
 ES blade 4-socket traditional  
 ES blade 4-socket cloud  
 Data Storage products (DS):  
 DS Online 2  
 DS Online 3  
 DS Online 4

- E0 MED Medical imaging equipment ENTR** (Voluntary agreement, IA data incomplete)
  - MR scanner
  - CT scanner
  - X-ray Angio
  
- V1 TAP Water taps and shower heads, Lot ENV 1** (Prep. Study projected to complete in 2015)
  - typical tap made of brass (average weight) used in domestic applications (BC1)
  - typical tap made of brass (average weight) used in non-domestic applications (BC2)
  - typical shower system (shower valve + shower outlet, average weight), domestic applications (BC3)
  - typical shower system (shower valve + shower outlet, average weight), non-domestic applications (BC4)
  
- V2 TOIL Toilets, Lot ENV 2** (pilot project aiming at Eco label and GPP criteria. Preliminary report with Key Findings, Jan. 2014, JRC/IPTS, <http://susproc.jrc.ec.europa.eu/toilets> )
  
- T TYRE Tyres** (Labelling Regulation, Proposal for Review 2018)
  - C1 tyres, replacement (mainly for cars in use)
  - C1 tyres, OEM (mainly for new cars sold)
  - C2 tyres, replacement (mainly for Light Commercial Vehicles, vans in use)
  - C2 tyres, OEM (mainly for new Light Commercial vehicles, vans sold)
  - C3 tyres, replacement (mainly for Heavy Commercial Vehicles, trucks/busses in use)
  - C3 tyres, OEM (mainly for new Heavy Commercial vehicles, trucks/busses sold)
  - (re-treaded C3 tyres are not included in the Impact Assessment analyses but will be subject to proposed Regulation once a suitable testing method to measure the performance of such tyres is added)

## ANNEX E: Ecodesign Impacts Accounting by Product Group (Key Facts)

Summary of Key Facts, quantitative data derived from impacts per parameter (Annex A) with explanatory texts added.

## Dedicated Water Heaters

The scope of the Ecodesign measures is water heaters with a rated heat output smaller than 400 kW, and hot water storage tanks with a storage volume smaller than 2000 litres, including those integrated in packages of water heater and solar devices. This includes electric storage (ESWH) and instantaneous (EIWH) water heaters, gas- and oil fired storage (GSWH) and instantaneous (GIWH) water heaters as well as solar-assisted water heaters (SOLWH). For efficiency and NQ<sub>2</sub> emission limits there is a category below 70 kW and above 70 kW.

Excluded are all combi water heaters and dedicated water heaters using gaseous or liquid biomass and solid fuels. Water heaters covered by the Industrial Emissions Directive 2010/75/EU, water heaters which do not meet at least the load profile with the smallest reference energy in the regulation, water heaters designed for making hot drinks and/or food only as well as certain replacement heat generators or their housing are also excluded. The scope of Energy Label regulation covers the same scope as the Ecodesign regulation but is limited to a rated heat output smaller than 70 kW and hot water storage tanks with a storage volume smaller than 2000 litres.

Design options for dedicated water heaters include improved insulation (storage WH), smart temperature control (anticipating user behaviour; e.g. storage WH), electronic ignition (electricity or water-pressure driven, for instantaneous gas WHs instead of pilot-flame), electronic instead of hydraulic temperature control for instantaneous electric WHs, heat pump storage WHs (ventilation exhaust air and/or outdoor air source; possibly with refrigerants like CO<sub>2</sub>), solar assisted WHs.

WH dedicated Water Heater	unit	1990	2010			2020			2030		
Sales volume	'000	9,855	10,918			11,398			11,878		
Stock of units in use	'000	136,218	158,079			166,018			173,129		
Effective heat output per unit	kWh/a	1,392	1,524			1,629			1,735		
EU effective heat output	TWh heat/a	190	241			270			300		
EU hot water (60 °C) use	M m <sup>3</sup> /a	3,251	4,130			4,636			5,150		
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>
Primary energy	TWh prim/a	722	801	801	0	825	647	-177	828	535	-293
o/w electricity	TWh elec/a	225	250	250	0	257	202	-55	258	167	-91
o/w fuel	TWh fuel/a	159	176	176	0	181	142	-39	182	118	-64
Final energy	TWh final/a	384	426	426	0	439	344	-94	440	285	-156
GWP emissions	MtCO <sub>2</sub> /a	146	140	140	0	136	107	-29	127	82	-45
Acquisition costs (incl. install)	bn €	5	6	6	0	7	12	5	8	13	6
Energy costs	bn €	52	54	54	0	61	48	-13	69	44	-24
Maintenance costs	bn €	6	8	8	0	8	8	0	8	8	0
Total running costs	bn €	58	62	62	0	69	56	-13	77	53	-24
Total expenditure	bn €	63	68	68	0	76	68	-8	84	66	-18
Revenue Industry	m €	1992	2422	2422	0	2577	4473	1897	2883	5081	2199
Revenue Wholesale	m €	599	729	729	0	775	1346	571	867	1529	662
Revenue Retail	m €	529	643	643	0	684	1188	504	765	1349	584
Revenue Installation	m €	1560	1897	1897	0	2018	3503	1485	2258	3980	1722
Revenue Maintenance (excl. VAT)	m €	5749	6672	6672	0	7007	7007	0	7307	7307	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	37	45	45	0	48	83	35	53	94	41
Jobs Wholesale	'000 jobs	2	3	3	0	3	5	2	3	6	2
Jobs Retail/ installation/ maintenance	'000 jobs	76	89	89	0	94	116	22	100	125	25
Jobs Total	'000 jobs	115	137	137	0	145	203	59	157	225	68

## (Combi) Boilers

The scope of the Ecodesign measures is space heaters and combination heaters with a rated heat output smaller than 400 kW, including those integrated in packages of space heater, temperature control and solar device or packages of combination heater, temperature control and solar devices. This includes gas- and oil fired central heating boilers, electric resistance boilers, heat pump boilers (electric and gas-fired) and micro-cogeneration boilers smaller than 50 kW all intended for space heating ('solo') or space- and water heating ('combi').

For seasonal efficiency and NO<sub>x</sub> emission limits there is a category below 70 kW (with an unconditional exemption for solo-boilers to 10 kW and combi-boilers to 30 kW) and above 70 kW.

Excluded are boilers for gaseous or liquid biomass, solid fuel boilers, certain replacement heat generators or their housing, micro-cogeneration boilers with a maximum electrical capacity of 50 kW or above, dedicated water heaters, air or steam heaters as well as heaters covered by the Industrial Emissions Directive 2010/75/EU.

The scope of Energy Label regulation covers the same scope as the Ecodesign regulation but is limited to a rated heat output smaller than 70 kW.

Design options for more efficient space heating with central heating boilers include condensing technology (secondary heat exchanger to extract extra heat from flue gases), pre-mix or otherwise fan-assisted burners, improved combustion control (e.g. O<sub>2</sub> sensors), lower radiation losses of the housing, improved efficiency and control of the integrated circulation pump, lower auxiliary electricity for the gas valves, CPU and a possible combustion fan, weather dependent boiler temperature control, temperature control with local emitters sensors/actuators ('smart home' systems), solar assistance, hybrid solutions with traditional boilers and electric heat pumps, full electric air/water/ground source heat pumps, gas-fired (ab)sorption heat pumps, fuel cells, efficient micro-cogeneration.

Design options for water heating with combi boilers are similar to those for dedicated water heaters but also include passive flue heat recovery devices (PFHRD), where the cold sanitary water temperature (colder than returning central heating water) allows to extract (and store) more heat from flue gases both during water- and space heating.

CHC Central Heating combi, water heating	unit	1990	2010				2020			2030		
Sales	'000	3,624	6,065				6,946			7,826		
Stock	'000	42,753	82,237				95,497			108,145		
Effective heat output per unit	kWh/a	2,492	2,293				2,340			2,400		
EU effective heat output	TWh heat/a	107	189				223			260		
EU hot water (60 °C) use	M m <sup>3</sup> /a	1,826	3,233				3,831			4,450		
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	
Primary energy	TWh prim/a	259	416	416	0	460	387	-74	514	340	-173	
o/w electricity	TWh elec/a	2	3	3	0	4	3	-1	4	3	-1	
o/w fuel	TWh fuel/a	254	408	408	0	451	379	-72	503	333	-170	
Final energy	TWh final/a	256	411	411	0	455	382	-73	507	336	-171	
GWP emissions	MtCO <sub>2</sub> /a	55	88	88	0	97	82	-16	108	72	-37	
Acquisition costs (incl. install)	bn €	4	7	7	0	8	15	7	9	17	9	
Energy costs	bn €	13	26	26	0	30	25	-5	39	26	-13	
Maintenance costs (incl. VAT)	bn €	2	3	3	0	3	3	0	4	4	0	
Total running costs	bn €	14	29	29	0	33	28	-5	42	29	-13	
Total expenditure	bn €	18	36	36	0	41	43	2	51	47	-4	
Revenue Industry	m €	1445	2518	2518	0	3024	5479	2455	3195	6467	3271	
Revenue Wholesale	m €	401	699	699	0	839	1521	681	887	1795	908	
Revenue Retail	m €	376	655	655	0	787	1426	639	831	1682	851	
Revenue Installation	m €	1226	2136	2136	0	2565	4649	2083	2711	5486	2775	
Revenue Maintenance (excl. VAT)	m €	1356	2608	2608	0	3028	3028	0	3429	3429	0	
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	27	47	47	0	56	101	45	59	120	61	
Jobs Wholesale	'000 jobs	1	3	3	0	3	6	3	3	7	3	
Jobs Retail/ installation/ maintenance	'000 jobs	30	54	54	0	64	93	29	70	109	39	
Jobs Total	'000 jobs	58	103	103	0	123	200	77	132	235	103	
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	
Primary energy	TWh prim/a	2467	2318	2265	-53	1960	1440	-519	1796	949	-848	
o/w electricity	TWh elec/a	102	126	123	-3	121	115	-7	120	117	-3	
o/w fuel	TWh fuel/a	2213	2004	1957	-47	1656	1154	-502	1496	657	-840	
Final energy	TWh final/a	2314	2130	2080	-50	1777	1269	-509	1616	773	-843	
GWP emissions	MtCO <sub>2</sub> /a	521	477	466	-11	398	289	-109	359	179	-179	
Acquisition costs (incl. install)	bn €	20	29	30	1	33	69	35	40	98	59	
Energy costs	bn €	125	145	142	-3	127	94	-33	134	72	-62	
Maintenance costs (incl. VAT)	bn €	15	24	24	0	28	28	0	32	32	0	
Total running costs	bn €	140	169	166	-3	154	121	-33	166	104	-62	
Total expenditure	bn €	160	198	196	-2	188	190	3	205	202	-3	
Revenue Industry	m €	7624	11093	11508	415	12624	26016	13392	15097	37262	22165	
Revenue Wholesale	m €	2093	3045	3159	114	3465	7142	3676	4144	10229	6085	
Revenue Retail	m €	1962	2855	2962	107	3249	6695	3447	3885	9590	5704	
Revenue Installation	m €	6289	9150	9492	342	10413	21459	11047	12453	30736	18283	
Revenue Maintenance (excl. VAT)	m €	13322	21372	21372	0	24706	24706	0	28548	28548	0	
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	141	205	213	8	234	482	248	280	690	410	
Jobs Wholesale	'000 jobs	8	11	12	0	13	26	14	15	38	23	
Jobs Retail/ installation/ maintenance	'000 jobs	212	327	332	5	375	531	155	440	697	257	
Jobs Total	'000 jobs	361	543	556	13	622	1039	417	735	1425	690	

## Solid Fuel Boilers

CR (EU) 2015/1189 regards ecodesign requirements for SFB and applies to solid fuel boilers with a rated heat output of 500 kilowatt ('kW') or less, including those integrated in packages of a solid fuel boiler, supplementary heaters, temperature controls and solar devices as defined in Article 2 of Delegated Regulation (EU) 2015/1187. The regulation does NOT apply to boilers generating heat exclusively for providing hot drinking or sanitary water; boilers for heating and distributing gaseous heat transfer media such as vapour or air; solid fuel cogeneration boilers with a maximum electrical capacity of 50 kW or more; non-woody biomass boilers. Minimum efficiency requirements apply from January 2015 and are expressed in terms of seasonal space heating energy efficiency, as defined more in detail in annex III of the regulation. The regulation also limits the emissions of particulate matter, organic gaseous compounds, carbon monoxide, and nitrogen oxides, but these emissions are currently not being accounted in EIA.

CDR (EU) 2015/1187 regards the energy labelling for SFB. It applies to solid fuel boilers with a rated heat output of 70 kW or less and packages of a solid fuel boiler with a rated heat output of 70 kW or less, supplementary heaters, temperature controls and solar devices. The exemptions are the same as listed above for the ecodesign regulation. Energy labels shall be applied from April 2017. Annex II of the regulation defines energy efficiency classes in terms of EEI. The EEI is defined in annex IX of the regulation and is similar to the seasonal space heating energy efficiency but with an additional (bonus) factor of 1.45 for biomass boilers.

SFB Solid Fuel Boilers	unit	1990			2010			2020			2030		
Sales	'000	294			438			362			365		
Stock	'000	8,906			5,292			6,633			6,636		
Effective heat output per unit	kWh/a	15,978			17,973			16,882			15,576		
EU effective heat output	TWh heat/a	142			95			112			103		
	Scenario	BAU			BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	454	168	168	0	170	162	-8	144	129	-15		
o/w electricity	TWh elec/a	0	0	0	0	0	0	0	0	0	0	0	0
o/w fuel	TWh fuel/a	454	168	168	0	170	162	-8	144	129	-15		
Final energy	TWh final/a	454	168	168	0	170	162	-8	144	129	-15		
GWP emissions	MtCO <sub>2</sub> /a	49	15	15	0	9	8	0	5	4	0		
Acquisition costs (incl. install)	bn €	2	3	3	0	3	3	0	3	3	0		
Energy costs	bn €	11	5	5	0	8	8	0	8	8	-1		
Maintenance costs (incl. VAT)	bn €	0	0	0	0	0	0	0	0	0	0		
Total running costs	bn €	12	6	6	0	8	8	0	9	8	-1		
Total expenditure	bn €	13	9	9	0	11	11	0	12	11	-1		
Revenue Industry	m €	813	1783	1783	0	1756	1890	134	1949	2138	189		
Revenue Wholesale	m €	31	69	69	0	68	73	5	75	83	7		
Revenue Retail	m €	31	69	69	0	68	73	5	75	83	7		
Revenue Installation	m €	404	638	638	0	576	640	64	616	687	71		
Revenue Maintenance (excl. VAT)	m €	381	228	228	0	288	288	0	288	288	0		
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	15	33	33	0	33	35	2	36	40	3		
Jobs Wholesale	'000 jobs	0	0	0	0	0	0	0	0	0	0		
Jobs Retail/ installation/ maintenance	'000 jobs	8	9	9	0	9	10	1	10	10	1		
Jobs Total	'000 jobs	23	42	42	0	42	45	3	46	50	4		

## Air Heating & Cooling

The draft regulation of September 2015 (not approved yet) regards air heating products with a rated heating capacity not exceeding 1 MW; cooling products with a rated cooling capacity not exceeding 2 MW; fan coil units; and high temperature process chillers.

The draft regulation does NOT apply to: products covered by CR (EU) 2015/1185 (Local Space Heaters); products covered by CR (EU) No 206/2012 (air conditioners and comfort fans); comfort chillers and high temperature process chillers (HTPCH) leaving chilled water temperatures of less than + 2 °C; products designed for using predominantly biomass fuels; products using solid fuels; products that supply heat or cold in combination with electric power ('cogeneration') by means of a fuel combustion or conversion process; products covered by Directive 2010/75/EU (industrial emissions - integrated pollution prevention and control); HTPCH that operate using exclusively evaporative condensing; custom-made HTPCH assembled on site and made on a one-off basis; HTPCH in which refrigeration is effected by an absorption process that uses heat as the energy source; and air heating and/or cooling products of which the primary function is the purpose of storing and merchandising perishable materials at specified temperatures by commercial, institutional or industrial facilities and of which space heating and/or space cooling is a secondary function.

The regulation sets minimum energy efficiency requirements starting from January 2018 (tier 1), with more stringent requirements applying from January 2021 (tier 2). These requirements are formulated in terms of minimum seasonal space heating energy efficiency and useful efficiencies for air heating and air cooling products (refer to primary energy), and in terms of seasonal energy performance ratio (SEPR) for high temperature process chillers (refers to electricity). For cooling products, lower efficiencies are allowed if the refrigerants used have a low Global Warming Potential (refrigerant leakage problem). The current EIA version takes into account the higher required energy efficiencies (for refrigerants with GWP > 150), and CO<sub>2</sub> emission accounting includes both the effects of energy related emissions and equivalent emissions due to refrigerant leakage or release at end-of-life. In addition the draft regulation sets limits on NO<sub>x</sub> emissions, but these are currently not accounted in EIA.

The data in EIA are based on the draft Impact Assessment of June 2015 and on the draft regulation of September 2015.

AHC central Air Cooling	unit	1990	2010			2020			2030		
Sales, Total Central Air Cooling	'000	146	595			697			769		
<i>o/w CH, comfort chillers</i>	'000	26	106			128			154		
<i>o/w AC, air conditioners</i>	'000	103	461			539			582		
<i>o/w HT PCH, high temp. process chillers</i>	'000	17	27			31			34		
Stock comfort chillers & reversibles	'000	1,735	7,538			9,957			11,380		
<i>o/w CH, comfort chillers</i>	'000	356	1,478			2,179			2,640		
<i>o/w AC, air conditioners</i>	'000	1,186	5,718			7,355			8,265		
<i>o/w HT PCH, high temp. process chillers</i>	'000	193	342			423			475		
Effective cooling output per unit, CH+AC	kWh cooling/a	34,291	25,463			24,113			21,754		
Effective cooling output per unit, HT PCH	kWh cooling/a	1,569,859	1,572,985			1,573,218			1,574,639		
EU effective cooling output, CH+AC	TWh cooling/a	53	183			230			237		
EU effective cooling output, HT PCH	TWh cooling/a	303	538			666			748		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	204	380	380	0	435	426	-9	438	404	-34
<i>o/w electricity</i>	TWh elec/a	82	152	152	0	174	170	-4	175	162	-14
<i>o/w fuel</i>	TWh fuel/a	0.0	0.1	0.1	0.0	0.3	0.2	0.0	0.3	0.2	-0.1
Final energy	TWh final/a	82	152	152	0	174	170	-4	176	162	-14
GWP emissions from energy & refrig. loss	MtCO <sub>2</sub> /a	42	70	70	0	77	76	-1	73	69	-5
<i>o/w GWP emissions from energy</i>	MtCO <sub>2</sub> /a	40	59	59	0	60	59	-1	52	47	-5
<i>o/w GWP emissions refrigerant loss</i>	MtCO <sub>2</sub> /a	2	11	11	0	17	17	0	21	21	0
Acquisition costs (incl. install)	bn €	2	8	8	0	11	11	0	14	14	0
Energy costs	bn €	13	22	22	0	28	27	-1	31	28	-2
Maintenance costs (incl. VAT)	bn €	1	5	5	0	7	7	0	10	10	0
Total running costs	bn €	14	27	27	0	35	34	-1	40	38	-2
Total expenditure	bn €	16	35	35	0	46	46	-1	55	52	-2
Revenue Industry	m €	963	4393	4393	0	5996	5998	2	7580	7581	1
Revenue Wholesale	m €	121	552	552	0	753	754	0	952	952	0
Revenue Retail	m €	121	552	552	0	753	754	0	952	952	0
Revenue Installation	m €	474	2597	2597	0	3688	3689	1	4744	4745	1
Revenue Maintenance (excl. VAT)	m €	1088	4687	4687	0	7261	7261	0	9507	9507	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	18	81	81	0	111	111	0	140	140	0
Jobs Wholesale	'000 jobs	0	2	2	0	3	3	0	4	4	0
Jobs Retail/ installation/ maintenance	'000 jobs	16	76	76	0	113	113	0	147	147	0
Jobs Total	'000 jobs	35	159	159	0	227	227	0	291	291	0



## ANNEX: KEY FACTS

AHC central Air Heating	unit	1990	2010			2020			2030		
Sales air heaters & reversible AC's	'000	210	426			486			507		
<i>o/w reversible AC (double with cooling)</i>	'000	74	334			404			433		
Stock	'000	2,459	5,706			6,710			7,373		
<i>o/w reversible AC (double with cooling)</i>	'000	846	4,048			5,315			6,133		
Effective heat output per unit	kWh heat/a	69,049	42,356			36,271			31,446		
EU effective heat output	TWh heat/a	170	242			243			232		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	260	291	291	0	259	238	-21	226	178	-48
<i>o/w electricity</i>	TWh elec/a	18	52	52	0	56	52	-4	54	44	-10
<i>o/w fuel</i>	TWh fuel/a	215	161	161	0	119	108	-10	92	69	-23
Final energy	TWh final/a	233	213	213	0	175	160	-15	145	112	-33
GWP emissions from energy	MtCO <sub>2</sub> /a	55	58	58	0	51	47	-4	44	35	-8
Acquisition costs (incl. install, excl. rev.AC)	bn €	0.7	0.5	0.5	0.0	0.4	0.5	0.0	0.4	0.4	0.0
Energy costs	bn €	11	16	16	0	15	14	-1	15	12	-3
Maintenance costs (incl. VAT, excl. rev.AC)	bn €	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0
Total running costs (excl. maint. rev AC)	bn €	11	16	16	0	15	14	-1	15	12	-3
Total expenditure (excl. acq & maint rev AC)	bn €	12	17	17	0	16	15	-1	16	13	-3
Revenue Industry (excl. rev. AC)	m €	358	236	236	0	208	228	20	186	202	16
Revenue Wholesale ( " )	m €	45	30	30	0	26	29	2	23	25	2
Revenue Retail ( " )	m €	45	30	30	0	26	29	2	23	25	2
Revenue Installation ( " )	m €	298	196	196	0	173	189	17	154	167	13
Revenue Maintenance ( " , excl. VAT)	m €	109	109	109	0	93	93	0	82	82	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	7	4	4	0	4	4	0	3	4	0
Jobs Wholesale	'000 jobs	0	0	0	0	0	0	0	0	0	0
Jobs Retail/ installation/ maintenance	'000 jobs	4	3	3	0	3	3	0	3	3	0
Jobs Total	'000 jobs	11	8	8	0	7	7	1	6	7	0

## Local Space Heaters

CR (EU) 2015/1185 provides ecodesign requirements for solid fuel local space heaters with a nominal heat output of 50 kW or less. Exemptions include non-woody biomass, outdoor use only, direct heat output less than 6% of combined direct and indirect heat output, not factory assembled, air heating products, sauna stoves. Minimum efficiency requirements under this regulation apply from January 2022 and are expressed in terms of seasonal space heating energy efficiency as further defined in Annex III of the regulation. The seasonal efficiency is the useful efficiency at nominal heat output (based on NCV, application of factor CC=2.5 for electricity), negatively corrected by -10% and for auxiliary electricity consumption and permanent pilot flames, and positively corrected for the effects of controls. The regulation also limits the emission of particulate matter (PM), organic gaseous compounds (OGCs), carbon monoxide (CO), and of nitrogen oxides (NOx), but these emissions are currently NOT accounted in the EIA.

CR (EU) 2015/1188 provides ecodesign requirements for domestic LSH with a nominal heat output of 50 kW or less and for commercial LSH (luminous or tube heater) with 120 kW or less that convert electricity or gaseous or liquid fuels directly into heat. Exemptions include vapour compression cycle, sorption cycle, purposes other than indoor space heating for human comfort, outdoor-use only, air heating products, sauna stoves, slave heaters. Minimum efficiency requirements under this regulation apply from January 2018 and are expressed in terms of seasonal space heating energy efficiency as further defined in Annex III of the regulation. The seasonal efficiency is the useful efficiency at nominal heat output (based on NCV, application of factor CC=2.5 for electricity, based on GCV for commercial LSH), negatively corrected by -10% and for auxiliary electricity consumption and permanent pilot flames, and positively corrected for the effects of controls and heat storage. For commercial LSH, the emission efficiency is also taken into account. The regulation also limits the emission of nitrogen oxides (NOx), but these emissions are currently NOT accounted in the EIA.

CDR (EU) 2015/1186 regards energy labelling for LSH with a nominal heat output of 50 kW or less. Exemptions include electric LSH, vapour compression cycle, sorption cycle, non-woody biomass, other than indoor heating for human comfort, outdoor-use only, LSH for which the direct heat output is less than 6 % of the combined direct and indirect heat output at nominal heat output (note: they will usually be regulated as 'boilers'), not factory assembled, luminous LSH, tube LSH, air heating products, sauna stoves. Energy labels shall be applied from January 2022 for solid fuel LSH and from January 2018 for other LSH (same dates as ecodesign). Energy efficiency classes are defined in annex II of the regulation in terms of EEI. The EEI are defined in annex VIII. They are similar to the seasonal space heating efficiency (with similar correction factors), but with application of a biomass label factor 1.45 for biomass LSH.

Design options mentioned in preparatory study at product level are: Closing combustion (glass front), balanced flue, premix, electric ignition (eliminating pilot flame), mechanical draft, single split reversible heat pump (substitute for electric convector), modulating (or 2 stage) power control. At component level they include: PI controller, programmable thermostat with setback functionality, absence detection, open window detection, automatic (electromechanical, electronic) charge control (for static storage heaters)

LH Local Heaters	unit	1990				2010			2020			2030	
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc		
Sales	'000	19,103	24,464			26,492			28,534				
Stock	'000	208,872	267,511			300,212			331,013				
Effective heat output per unit	kWh/a	955	891			886			870				
EU effective heat output	TWh heat/a	199	238			266			288				
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc		
Primary energy	TWh prim/a	575	603	603	0	622	572	-49	635	541	-94		
o/w electricity	TWh elec/a	169	168	168	0	165	149	-16	163	138	-25		
o/w fuel	TWh fuel/a	152	182	182	0	209	200	-9	226	196	-31		
Final energy	TWh final/a	321	350	350	0	374	349	-25	390	334	-56		
GWP emissions from energy	MtCO <sub>2</sub> /a	104	84	84	0	77	70	-7	69	58	-11		
Acquisition costs (incl. install)	bn €	9	14	14	0	18	20	2	19	21	2		
Energy costs	bn €	37	36	36	0	43	39	-4	49	42	-7		
Maintenance costs (incl. VAT)	bn €	1	2	2	0	2	2	0	2	2	0		
Total running costs	bn €	38	38	38	0	45	41	-4	51	44	-7		
Total expenditure	bn €	47	52	52	0	62	61	-2	71	65	-5		
Revenue Industry	m €	3979	6459	6459	0	7812	8652	840	8304	9242	938		
Revenue Wholesale	m €	575	934	934	0	1130	1251	121	1201	1337	136		
Revenue Retail	m €	679	1103	1103	0	1334	1478	143	1418	1579	160		
Revenue Installation	m €	2410	3647	3647	0	4673	5035	362	5246	5642	395		
Revenue Maintenance (excl. VAT)	m €	848	1336	1336	0	1723	1723	0	2043	2043	0		
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	74	120	120	0	145	160	16	154	171	17		
Jobs Wholesale	'000 jobs	2	3	3	0	4	5	0	4	5	1		
Jobs Retail/ installation/ maintenance	'000 jobs	41	63	63	0	80	85	6	89	96	6		
Jobs Total	'000 jobs	116	186	186	0	229	250	22	248	272	24		

## Room Air Conditioners

The ED and EL measures relate to electric mains-operated air conditioners with a rated capacity of  $\leq 12$  kW for cooling, or heating if the product has no cooling function, and comfort fans with an electric fan power input  $\leq 125$ W. Excluded are appliances that use non-electric energy sources and air conditioners of which the condenser-side or evaporator-side, or both, do not use air for heat transfer medium.

Design options for room air conditioners include inverter driven variable speed drives to adjust the performance of the appliance depending on (changing) operating conditions (outdoor and indoor air temperature), reduction of energy consumption of auxiliary functions like, standby, off-mode, reactivation function and use of refrigerants with lower Global Warming Potential.

RAC Room Air Conditioner	unit	1990	2010			2020			2030		
Sales	'000	394	4,705			9,089			10,359		
o/w reversible (also heat)	'000	111	3,491			8,036			9,178		
Stock	'000	4,730	49,470			82,524			117,785		
o/w reversible	'000	1,327	28,633			68,618			104,245		
Effective cooling output per unit	kWh cool/a	1,086	1,133			1,172			1,207		
Effective heat output per reversible unit	kWh heat/a	2,683	2,065			1,858			1,701		
EU effective cooling output	TWh cool/a	5	56			97			142		
EU effective heat output	TWh heat/a	4	59			128			177		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy total (100% electric)	TWh prim/a	10.8	102	102	0	165	139	-26	217	170	-47
Electricity total	TWh elec/a	4.3	41	41	0	66	56	-10	87	68	-19
o/w electricity cooling	TWh elec/a	2.5	18	18	0	25	21	-4	34	27	-7
o/w electricity heating	TWh elec/a	1.8	22	22	0	41	34	-6	53	41	-12
Final energy	TWh final/a	4	41	41	0	66	56	-10	87	68	-19
GWP emissions total	MtCO <sub>2</sub> /a	2.5	20.1	20.1	0.0	30.8	26.9	-3.9	37.7	31.3	-6.4
o/w GWP emissions electricity cooling	MtCO <sub>2</sub> /a	1.3	7.6	7.6	0.0	9.6	8.1	-1.5	11.6	9.3	-2.3
o/w GWP emissions electricity heating	MtCO <sub>2</sub> /a	0.9	9.1	9.1	0.0	15.5	13.1	-2.4	18.0	13.9	-4.1
o/w GWP emissions refrigerant loss	MtCO <sub>2</sub> /a	0.3	3.4	3.4	0.0	5.7	5.7	0.0	8.1	8.1	0.0
Acquisition costs (incl. install)	bn €	1	9	9	0	17	19	2	19	21	2
Energy costs total	bn €	1	7	7	0	12	10	-2	18	14	-4
o/w energy cooling	bn €	0	3	3	0	5	4	-1	7	6	-1
o/w energy heating	bn €	0	4	4	0	8	6	-1	11	8	-2
Maintenance costs (incl. VAT)	bn €	0	1	1	0	2	2	0	3	3	0
Total running costs	bn €	1	8	8	0	14	12	-2	20	17	-4
Total expenditure	bn €	2	17	17	0	31	31	0	39	38	-2
Revenue Industry	m €	217	2705	2705	0	5254	5812	558	5788	6497	709
Revenue Wholesale	m €	62	770	770	0	1495	1654	159	1647	1849	202
Revenue Retail	m €	54	679	679	0	1319	1459	140	1453	1631	178
Revenue Installation	m €	321	4013	4013	0	7792	8620	828	8585	9637	1051
Revenue Maintenance (excl. VAT)	m €	94	980	980	0	1635	1635	0	2334	2334	0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	4	50	50	0	97	108	10	107	120	13
Jobs Wholesale	'000 jobs	0	3	3	0	6	6	1	6	7	1
Jobs Retail/ installation/ maintenance	'000 jobs	5	57	57	0	108	117	10	124	136	12
Jobs Total	'000 jobs	9	110	110	0	210	231	21	237	263	26

## Circulators <2.5 kW

This Regulation addresses glandless standalone circulators and glandless circulators integrated in products. Excluded, except for certain product information requirements, are drinking water circulators and circulators integrated in products and placed on the market no later than 1 January 2020 as replacement for identical circulators integrated in products and placed on the market no later than 1 August 2015.

Design options for small circulators include more efficient (EC/DC permanent magnet) motors, variable speed drives, improved impeller design with lower hydraulic loss through smoother finish of stainless steel impellers, wider and optimised range of housings, intelligent controls.

Note: all presented data are double counted with space heating and not counted in EIA totals.

CIRC Circulator pumps <2.5 kW	unit	1990	2010			2020			2030		
Sales	'000	5,502	8,065			9,120			9,542		
Stock	'000	50,049	75,601			86,455			95,108		
Load per unit ( $W=Pa \cdot m^3/s$ ; $kWh=10^3 \cdot W \cdot h$ )	kWh flow/a	300	277			266			261		
EU load (1 TWh= $10^{12} \cdot W \cdot h$ )	TWh flow/a	44	18			8			2		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	40	52	51	-2	55	27	-28	59	27	-33
o/w electricity	TWh elec/a	16	21	20	-1	22	11	-11	24	11	-13
Final energy	TWh final/a	16	21	20	-1	22	11	-11	24	11	-13
GWP emissions	MtCO <sub>2</sub> /a	8	9	8	0	8	4	-4	8	4	-4
Acquisition costs (incl. install)	bn €	1	2	2	0	2	3	1	2	2	0
Energy costs	bn €	3	4	3	0	4	2	-2	5	2	-3
Total running costs	bn €	3	4	3	0	4	2	-2	5	2	-3
Total expenditure	bn €	4	5	5	0	6	5	-2	7	5	-2
Revenue Industry	m €	856	1262	1364	102	1419	1768	348	1485	1681	196
Revenue Wholesale	m €	188	277	300	22	312	388	77	326	369	43
Revenue Retail	m €	75	111	120	9	125	155	31	130	148	17
Revenue Installation	m €	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m €	0	0	0	0	0	0	0	0	0	0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	16	23	25	2	26	33	6	27	31	4
Jobs Wholesale	'000 jobs	1	1	1	0	1	1	0	1	1	0
Jobs Retail/ installation/ maintenance	'000 jobs	1	2	2	0	2	2	0	2	2	0
Jobs Total	'000 jobs	18	26	28	2	29	37	7	31	35	4

## Ventilation Units

VU's provide savings on space heating, as compared to natural ventilation, when they recuperate heat from the outgoing airflow and use this to pre-heat the incoming air. The total EU heat savings due to VU's are reported below on the lines labelled (4) in the unit-column. Due to these heat savings, space heating appliances need to produce less heat in output, i.e. their 'load' (=user demand for heat output) goes down. The BAU heat savings due to VU's have already been considered in the BAU load for space heating appliances and thus do not lead to additional savings. The difference between ECO and BAU heat savings due to VU's (column inc) is the positive effect of Ecodesign measures for VU's on space heating appliances. The BAU load for space heating appliances is reduced by this heat saving difference to obtain the ECO load for space heating appliances. The lower load implies that space heating appliances need less primary energy in input, so heat savings by VU's lead to energy savings on space heating appliances. The saved amount depends on the efficiency of the space heating appliance and therefore the heat saving effects of VU-Ecodesign have already been included in the ECO-scenario data for space heating appliances. The same is true for the reduction in emissions and energy costs related to these energy savings. As these savings on space heating appliances are due to measures taken on VU's, they are also reported here (sometimes approximately), but they are not considered when computing EIA totals, to avoid double counting.

To realize the heat savings discussed above, and in general to maintain indoor air quality, VU's consume electricity. The Ecodesign measures increase the energy efficiency of VU's and thus obtain savings on electricity consumption. These savings, and related reduction of emissions and electricity costs, are related only to VU's and are NOT already included in the data for space heating appliances. Electricity-related savings on VU's are taken into account when computing EIA-totals.

Consequently, data on energy, emissions and energy costs in the table below are split in electricity-related data (1) and heat-saving-related data (2). The sum of the two (3) provides the total impact of Ecodesign measures on VU's, but the heat-saving-related data (2) are already also included in those for space heating appliances.

VU Ventilation Units (res & nonres)	unit	1990	2010			2020			2030		
Sales	'000	1,315	3,212			3,660			4,492		
Stock	'000	19,456	43,634			56,423			65,933		
EU total mechanical ventilation	T m <sup>3</sup> /a	30	103			143			167		
o/w non-residential	T m <sup>3</sup> /a	4	49			75			92		
o/w residential	T m <sup>3</sup> /a	26	54			68			75		
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>
Heat Savings vs. Natural Ventilation	TWh heat/a (4)	-115	-508	-508	0	-696	-767	-71	-831	-988	-157
o/w non-residential	TWh heat/a (4)	-102	-477	-477	0	-645	-694	-49	-757	-868	-111
o/w residential	TWh heat/a (4)	-13	-31	-31	0	-52	-73	-21	-74	-120	-46
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>
Primary energy (elec. & heat effects)	TWh prim/a (3)	67	194	194	0	239	120	-119	256	26	-230
o/w electricity	TWh elec/a (1)	27	78	78	0	96	85	-11	102	77	-25
o/w fuel for space heating (due to ECO-VU heat savings vs. BAU-VU)	TWh prim/a (2)	0	0	0	0	0	-92	-92	0	-166	-166
Final energy (VU electricity only)	TWh final/a (1)	27	78	78	0	96	85	-11	102	77	-25
GWP emissions (from electricity)	MtCO <sub>2</sub> /a (1)	13	32	32	0	36	32	-4	35	26	-9
GWP emissions (from heat savings vs. BAU)	MtCO <sub>2</sub> /a (2)	0	0	0	0	0	-20	-20	0	-35	-35
Acquisition costs (incl. install)	bn €	34	80	80	0	90	93	3	101	104	3
Energy costs (from electricity)	bn € (1)	5	12	12	0	17	15	-2	20	15	-5
Energy costs (from heat savings vs. BAU)	bn € (2)	0	0	0	0	0	-5	-5	0	-10	-10
Maintenance costs (incl. VAT)	bn €	1	3	3	0	5	5	0	6	6	0
Running costs (from electricity + maint.)	bn € (1)	6	16	16	0	21	19	-2	26	20	-5
Total expenditure (from elec. + acq. + maint.)	bn € (1)	40	96	96	0	111	112	1	126	124	-2
Total expenditure (from heat savings vs. BAU)	bn € (2)	0	0	0	0	0	-5	-5	0	-10	-10
Revenue Industry	m €	11507	27179	27179	0	30543	31442	899	34205	35109	904
Revenue Wholesale	m €	1548	3702	3702	0	4264	4550	286	4826	5113	287
Revenue Retail	m €	1559	3734	3734	0	4310	4614	304	4883	5188	305
Revenue Installation	m €	19058	44774	44774	0	49728	50615	887	55377	56279	901
Revenue Maintenance (excl. VAT)	m €	1036	3319	3319	0	4484	4484	0	5353	5353	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	213	503	503	0	566	582	17	633	650	17
Jobs Wholesale	'000 jobs	6	14	14	0	16	17	1	18	19	1
Jobs Retail/ installation/ maintenance	'000 jobs	210	503	503	0	569	581	13	638	651	13
Jobs Total	'000 jobs	429	1020	1020	0	1150	1181	31	1289	1320	31

## ANNEX: KEY FACTS

### Light Sources

The BAU scenario is the projection for the situation without any measures taken in 2009-2012, so without the existing regulations 244/2009, 245/2009, 1194/2012 and 874/2012. Based on new data from the Lot 8/9/19 review study and the following IA study, the BAU scenario has been redefined during the IA study in November 2017/ April 2018, see details in that study.

The ECO scenario is the preferred option as presented by the European Commission in its Working Documents of July 2018. Ecodesign measures are introduced in 2021 and entail the phase-out of LFL T8 (2-,4- and 5-foot only), CFLni and all remaining halogen lamps except the smaller linear models with R7s cap. The Energy Label for light sources is rescaled to A-G with new border values for the efficiency classes (from 85 to 210 lm/W in steps of 25 lm/W).

Consequently the savings reported in EIA are the combined savings due to the existing regulations (244/2009, 245/2009, 1194/2012, 874/2012) and due to the new regulations that are expected to be voted at the end of 2018.

LS Light Sources	unit	1990				2010			2020			2030		
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Sales	m	2,112	2,799	2,353	-446	2,682	1,737	-945	1,578	650	-927			
Stock	m	5,576	10,119	10,045	-74	12,427	12,459	32	14,596	14,635	39			
EU output capacity in lm	Tlm	5.5	10.3	10.3	0.0	14.5	14.8	0.3	18.5	19.1	0.6			
EU accumulated operating hours total	Tlm	4.6	8.5	8.5	0.0	10.7	10.8	0.1	13.1	13.3	0.2			
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>			
Primary energy (incl. SPL, ctrl & sb)	TWh prim/a	690	1059	1014	-45	1175	938	-237	1023	740	-283			
<i>o/w electricity (incl. SPL, ctrl &amp; sb)</i>	<i>TWh elec/a</i>	<i>276</i>	<i>424</i>	<i>406</i>	<i>-18</i>	<i>470</i>	<i>375</i>	<i>-95</i>	<i>409</i>	<i>296</i>	<i>-113</i>			
<i>o/w fuel</i>	<i>TWh fuel/a</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>			
Final energy	TWh final/a	276	424	406	-18	470	375	-95	409	296	-113			
GWP emissions (incl. SPL, ctrl & sb)	MtCO <sub>2</sub> /a	138	174	166	-7	179	143	-36	139	101	-38			
Acquisition costs (incl. install) (excl. SPL, ctrl & sb)	bn €	7	14	14	0	18	17	0	13	12	-1			
<i>Energy costs (incl. SPL, ctrl &amp; sb)</i>	<i>bn €</i>	<i>49</i>	<i>67</i>	<i>64</i>	<i>-3</i>	<i>81</i>	<i>63</i>	<i>-18</i>	<i>77</i>	<i>55</i>	<i>-22</i>			
Energy costs (excl. SPL, ctrl & sb)	bn €	40	56	52	-3	72	54	-18	70	48	-22			
Maintenance costs (excl. SPL, ctrl & sb)	bn €	2	4	5	0	6	6	0	7	7	0			
Total running costs (excl. SPL, ctrl & sb)	bn €	42	60	57	-3	77	60	-18	77	55	-22			
Total expenditure (excl. SPL, ctrl & sb)	bn €	49	74	71	-3	95	77	-18	90	67	-23			
Revenue Industry	m €	2886	5676	5980	304	8863	10240	1377	7328	7573	245			
Revenue Wholesale	m €	752	1804	1925	121	2160	1609	-551	1305	976	-329			
Revenue Retail	m €	709	1672	1776	104	1983	1451	-532	1227	943	-284			
Revenue Installation	m €	2524	4091	3975	-117	3556	3066	-490	3125	2270	-855			
Revenue Maintenance (excl. VAT)	m €	1852	4464	4509	45	5578	5611	34	7134	7183	48			
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	53	105	111	6	164	190	25	136	140	5			
Jobs Wholesale	'000 jobs	3	7	7	0	8	6	-2	5	4	-1			
Jobs Retail/ installation/ maintenance	'000 jobs	51	105	106	1	115	103	-12	114	102	-12			
Jobs Total	'000 jobs	108	217	224	7	287	298	11	254	246	-9			

## Electronic Displays

Commission Regulation (EC) No 642/2009, OJ L 191/42, 23.7.2009, sets Ecodesign requirements for televisions (TV sets and TV monitors). Starting from 2010/2012, requirements regard the on-mode power, off-mode power and standby power. In addition, there are existing EU ENERGY STAR measures for computer monitors, which are also involved in the standby regulation (Commission Regulation (EC) No 1275/2008, OJ L339/49, 18.12.2008).

Commission Delegated Regulation (EU) No 1062/2010, OJ L 314/64, 30.11.2010, defines energy classes and energy labels for televisions. Classes are defined on a G to A+++ scale.

The new proposed regulation (Ref. Ares(2018)5173952 - 09/10/2018) extends the scope of Ecodesign to all Electronic Displays (DP), including also computer monitors and signage displays. Exempted are: DP with area ≤ 100 cm<sup>2</sup>; digital photo frames; projectors; all-in-one video conference systems; medical displays; DP where main function is status display or control or function activation; DP integrated or to be integrated exclusively into products whose main function is not displaying images. In addition energy efficiency and some functional requirements do not apply to: broadcast displays; professional displays; security displays; digital interactive whiteboards; digital signage displays (so only off-mode, standby and information and label requirements for these DP).

The BAU scenario in EIA represents the situation without any regulation (without CR 642/2009, 1062/2010, 1275/2008, Energy Star). This is different from the 2018 IA, where the BAU scenario used as reference includes these existing regulations.

The ECO scenario in EIA is the preferred Option 3 (Ambitious) of the 2018 IA document.

See sheet LoadNotes for further information.

DP Electronic Displays	unit	1990	2010			2020			2030		
Sales (TV+Monitor+Signage)	'000	36,000	99,400			70,000			86,000		
Stock (TV+Monitor+Signage)	'000	228,000	537,001			616,500			736,500		
Viewable area per TV	dm <sup>2</sup>	10	28			51			68		
Viewable area per Monitor	dm <sup>2</sup>	5	11			16			20		
Viewable area per Signage display	dm <sup>2</sup>	16	46			84			113		
EU total viewable area for all DPs	km <sup>2</sup>	22	122			287			469		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	84	235	235	0	310	250	-60	331	180	-151
<i>o/w on-mode electricity</i>	<i>TWh elec/a</i>	30	91	91	0	115	91	-24	119	59	-60
<i>o/w standby- and off-mode electricity</i>	<i>TWh elec/a</i>	4	3	3	0	9	9	0	13	13	-1
<i>total electricity (on-mode, off-mode, standby)</i>	<i>TWh elec/a</i>	34	94	94	0	124	100	-24	132	72	-60
Final energy	TWh final/a	34	94	94	0	124	100	-24	132	72	-60
GWP emissions	MtCO <sub>2</sub> /a	17	38	38	0	47	38	-9	45	24	-21
Acquisition costs (incl. install)	bn €	23	38	38	0.0	29	29	0.0	36	36	0.0
Energy costs	bn €	7	17	17	0.0	24	19	-4.8	29	15	-13.3
Maintenance costs (incl. VAT)	bn €	0.2	0.5	0.5	0.0	0.5	0.5	0.0	0.7	0.7	0.0
Total expenditure	bn €	30	55	55	0.0	54	49	-4.8	65	52	-13.3
Revenue Industry	m €	9267	15559	15559	0	12471	12471	0	15016	15016	0
Revenue Wholesale	m €	1340	2393	2393	0	2427	2427	0	2585	2585	0
Revenue Retail	m €	8842	14500	14500	0	10701	10701	0	13581	13581	0
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m€	173	415	415	0	473	473	0	565	565	0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	172	288	288	0	231	231	0	278	278	0
Jobs Wholesale	'000 jobs	5	9	9	0	9	9	0	10	10	0
Jobs Retail/ installation/ maintenance	'000 jobs	138	228	228	0	170	170	0	215	215	0
Jobs Total	'000 jobs	315	525	525	0	409	409	0	503	503	0

## Set Top Boxes

Simple set-top boxes don't exist anymore and are replaced by complex set-top boxes in all relevant applications, as shown in the Omnibus 2013 study and confirmed by the Commission in the CF of mid-2014. This is a perfectly normal evolution within the ITC market, but the consequence is that they don't contribute to the savings. All savings come from Complex set-top boxes.

STB Set Top Boxes	unit	1990	2010			2020			2030		
Sales	'000	0	60,049			44,117			43,501		
Stock	'000	0	178,589			219,581			216,233		
Unit average hours in 'on' mode per day	h/d	0.0	4.5			4.5			4.5		
EU billion hours in 'on'-mode per year	bn h 'on'/a	0.0	293			361			355		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	0	26	22	-4	48	37	-11	48	37	-11
<i>o/w electricity</i>	TWh elec/a	0	10	9	-1	19	15	-4	19	15	-4
<i>o/w fuel</i>	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	0	10	9	-1	19	15	-4	19	15	-4
GWP emissions	MtCO <sub>2</sub> /a	0	4	4	-1	7	6	-2	6	5	-2
Acquisition costs (incl. install)	bn €	0	7	7	0	7	7	0	7	7	0
Energy costs	bn €	0	2	2	0	4	3	-1	4	3	-1
Total expenditure	bn €	0	9	8	0	11	10	-1	11	10	-1
Revenue Industry	m €	0	3751	3751	0	3912	3912	0	3858	3858	0
Revenue Wholesale	m €	0	1713	1713	0	1787	1787	0	1762	1762	0
Revenue Retail	m €	0	343	343	0	357	357	0	352	352	0
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	0	69	69	0	72	72	0	71	71	0
Jobs Wholesale	'000 jobs	0	6	6	0	7	7	0	7	7	0
Jobs Retail/ installation/ maintenance	'000 jobs	0	5	5	0	6	6	0	5	5	0
Jobs Total	'000 jobs	0	81	81	0	85	85	0	83	83	0

## Video players/recorders/projectors games

Design options for game consoles include power management and reduction of power in the various states of standby, inactive/idle and active use as well as increasing hardware flexibility to perform less computationally intensive tasks with some of the processing resources disabled (e.g. media playback is often much higher in game consoles than in standalone media devices), reducing the duration and frequency of auto-wake events, implementing and improving auto power down functionality to enable the console to automatically enter a low power state (normally standby or networked standby) if there is no user input for a predefined time. Design options for video players/recorders include changing the architecture to make the hard disk drive (HDD) external to the product through the USB port (this reduces power consumption and enables sourcing of efficient HDDs), using energy-optimised SoC or similar chip sets (mass market only – not high end, which have multichip configurations), offering energy efficient quick-start modes, and quick-start not enabled as default. Design options for projectors include offering eco mode as standard available feature, using more efficient lighting modules (e.g. Phaser light sources), using optimised lens solutions, using efficient light path beam splitting optics.

The 2015 Voluntary Agreement (Self-Regulatory Initiative, SRI) regards only game-consoles. The SRI sets requirements for the auto-power down (APD) function and for the maximum power during console operation in navigation or media-playback mode. The power in gaming mode is currently not regulated but this will be reviewed in 2017. The SRI text also provides measurement procedures. In addition to the SRI, game consoles are also subject to CR 801/2013 (networked standby) and CR 1275/2008 annex II (standby). In the Impact Assessment, the standby savings are included both in the BAU and in the ECO scenario. EIA copied this approach, and consequently standby savings are not accounted in EIA. In the SRI text the standby savings are 1.1 TWh in 2020, in addition to SRI savings. Video recorders and players and projectors are not regulated in anyway and have zero savings (ECO=BAU).

VIDEO	unit	1990	2010			2020			2030		
Sales	'000	69	55,248			16,225			13,622		
Stock	'000	129	218,055			125,735			82,154		
Unit average hours in 'on' mode per day	h/d	1.5	1.4			1.7			2.0		
EU billion hours in 'on'-mode per year	bn h 'on'/a	0	110			77			60		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	0	22	22	0.0	32	29	-2.7	35	33	-2.7
<i>o/w electricity</i>	TWh elec/a	0	9	9	0.0	13	12	-1.1	14	13	-1.1
<i>o/w fuel</i>	TWh fuel/a	0	0	0	0.0	0	0	0.0	0	0	0.0
Final energy	TWh final/a	0	9	9	0.0	13	12	-1.1	14	13	-1.1
GWP emissions	MtCO <sub>2</sub> /a	0	4	4	0.0	5	4	-0.4	5	4	-0.4
Acquisition costs (incl. install)	bn €	0	14	14	0.0	6	6	0.0	5	5	0.0
Energy costs	bn €	0	2	2	0.0	3	2	-0.2	3	3	-0.2
Total expenditure	bn €	0	15	15	0.0	8	8	-0.2	9	8	-0.2
Revenue Industry	m €	27	5985	5985	0.0	2535	2535	0.0	2083	2083	0.0
Revenue Wholesale	m €	13	1421	1421	0.0	550	550	0.0	265	265	0.0
Revenue Retail	m €	6	4515	4515	0.0	2018	2018	0.0	2065	2065	0.0
Revenue Installation	m€	0	0	0	0.0	0	0	0.0	0	0	0.0
Revenue Maintenance (excl. VAT)	m€	0	0	0	0.0	0	0	0.0	0	0	0.0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	0	111	111	0	47	47	0	39	39	0
Jobs Wholesale	'000 jobs	0	5	5	0	2	2	0	1	1	0
Jobs Retail/ installation/ maintenance	'000 jobs	0	70	70	0	31	31	0	32	32	0
Jobs Total	'000 jobs	1	186	186	0	80	80	0	71	71	0

## Enterprise Servers (ES) and Data Storage Products (DS)

EIA data for ES&DS are based on a Commission Working Document (WD) containing the draft 'COMMISSION REGULATION (EU) .../... of XXX implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for servers and data storage products and amending Commission Regulation (EU) No 617/2013', Ref. Ares(2018)3524555 - 03/07/2018, on the associated Impact Assessment report (IA) of October 2017, and on the Excel files underlying that IA.

The EIA ECO scenario represents the situation where the proposals in the WD are accepted. This corresponds to policy option PO 3.2 of the IA.

The EIA BAU scenario represents the situation without new regulation (proposals of WD not accepted). This is the same BAU scenario considered in the IA.

Servers (ES) were previously regulated in CR 617/2013 on computers and computer servers, but that regulation has been ineffective in practice (no energy savings; see also remarks for computers). In addition, there is an Energy Star specification for ES, but only 28% of servers on the EU market is labelled Energy Star. ES and DS are also involved in the 'EU Code of Conduct (CoC) on Data Centre Energy Efficiency' (CoC), but effects of that code are beyond the scope of EIA. Moreover, the available studies do not provide data for a BAU scenario without the effects of CR 617/2013, Energy Star and CoC. Hence, the BAU scenario in EIA already includes the effects of CR 617/2013, Energy Star and CoC, and the difference BAU - ECO thus provides only the effects of the new proposed regulation.

To avoid regulation conflicts, the WD proposal amends CR 617/2013 such that ES in the scope of the new proposed regulation are removed from CR 617/2013. Small-scale servers, that are excluded from the new regulation, remain in the scope of CR 617/2013

A higher energy efficiency of ES and DS implies that these devices generate less heat, meaning that less cooling is required for the spaces in data centers where the equipment is installed. In addition the proposed regulation sets an information requirement on the operating conditions for ES and DS, in an attempt to stimulate manufacturers to increase the maximum operating temperature for the equipment (which would allow additional energy savings on space cooling).

In the IA, the energy savings are therefore reported for the equipment itself, and for the entire data center infrastructure. **EIA considers only the energy consumption and related emissions due to ES and DS, NOT those of the entire data centers.** This avoids double-counting issues: most cooling and air conditioning equipment is already taken into account in ENER Lot 21/ GROW Lot 6 (airco and HT chillers), UPS are already in ENER Lot 27 (no measures yet, but preliminary data already in EIA) and distribution transformers are already in GROW Lot 2 (regulation in place). Possibly there would also be an overlap with specific cooling solutions (e.g. water-cooled CPUs) in GROW Lot 1 on professional refrigeration.

For further information see also the LoadNotes sheet.

Data presented below do NOT include effects of ES&DS improvements on the infrastructure of data centers (e.g. space cooling)

Enterprise Servers and Data Storage	unit	1990				2010				2020				2030			
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Sales	'000	201		4,097		4,227						5,698					
Stock	'000	833		21,113		22,735						30,310					
EU demand for PSU output for ES & DS	TWh elec/a	2		43		47						70					
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Primary energy	TWh prim/a	6	137	137	0.0	140	135	-5.5	197	188	-8.3						
o/w electricity	TWh elec/a	3	55	55	0.0	56	54	-2.2	79	75	-3.3						
o/w fuel	TWh fuel/a	0	0	0	0.0	0	0	0.0	0	0	0.0						
Final energy	TWh final/a	3	55	55	0.0	56	54	-2.2	79	75	-3.3						
GWP emissions	MtCO <sub>2</sub> /a	1	22	22	0.0	21	21	-0.8	27	26	-1.1						
Acquisition costs	bn €	2	36	36	0.0	35	35	0.0	46	46	0.0						
Energy costs	bn €	0	8	8	0.0	9	9	-0.4	15	14	-0.6						
Total expenditure	bn €	2	44	44	0.0	44	44	-0.4	61	60	-0.6						
Revenue Industry	m€	1624	35528	35528	0	35107	35107	0	46380	46380	0						
Revenue Wholesale	m€	0	0	0	0	0	0	0	0	0	0						
Revenue Retail	m€	0	0	0	0	0	0	0	0	0	0						
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0						
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0						
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	30	658	658	0	650	650	0	859	859	0						
Jobs Wholesale	'000 jobs	0	0	0	0	0	0	0	0	0	0						
Jobs Retail/ installation/ maintenance	'000 jobs	0	0	0	0	0	0	0	0	0	0						
Jobs Total	'000 jobs	30	658	658	0	650	650	0	859	859	0						



## Computers

The ED regulation applies to computers that can be powered directly from the mains alternating current (AC) including via an external or internal power supply, which includes desktop computers, integrated desktop computers (AIO, 'All-in-One'), notebook computers (including tablet computers, slate computers and mobile thin clients), desktop thin clients, workstations, mobile workstations, small-scale servers and computer servers.

The regulation does not include blade system and components, server appliances, multi-node servers, computer servers with more than four processor sockets (now addressed in ENTR Lot 27), game consoles (addressed in ENTR Lot 3) and docking stations. Computers are also covered by EU ENERGY STAR measures, with the same scope as above.

Design options to reduce the power consumption of personal computers are Moore's Law (moving towards 14 nm technology in 2016-2017), solid state drives (instead of or in addition to hard-disks), improved power management, efficient power supplies, multi-core processors, adaptive clocks, etc. For notebook and tablet PCs the use of efficient display technology (LED/OLED backlighting, Moore's Law in image control) is relevant.

For PCs (Lot 3) the minimum requirements were based on the prep. study 2007 and for this fast-moving sector were not effective when introduced in 2013. Consequently ECO scenario data have been taken identical to BAU scenario data, and no savings are reported.

PC Personal Computers	unit	1990				2010			2020			2030	
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc		
Sales	'000	7,350	64,225			130,650			183,413				
Stock	'000	29,570	243,949			485,415			735,158				
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc		
Primary energy	TWh prim/a	36	76	76	0	20	20	0	14	14	0		
o/w electricity	TWh elec/a	15	31	31	0	8	8	0	6	6	0		
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0		
Final energy	TWh final/a	15	31	31	0	8	8	0	6	6	0		
GWP emissions	MtCO <sub>2</sub> /a	7	13	13	0	3	3	0	2	2	0		
Acquisition costs (incl. install)	bn €	4	44	44	0	70	70	0	96	96	0		
Energy costs	bn €	3	5	5	0	2	2	0	1	1	0		
Total expenditure	bn €	7	49	49	0	72	72	0	97	97	0		
Revenue Industry	m €	1753	18133	18133	0	28484	28484	0	38675	38675	0		
Revenue Wholesale	m €	260	2690	2690	0	4006	4006	0	5288	5288	0		
Revenue Retail	m €	1763	18199	18199	0	28149	28149	0	38405	38405	0		
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0		
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0		
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	32	336	336	0	528	528	0	716	716	0		
Jobs Wholesale	'000 jobs	1	10	10	0	15	15	0	20	20	0		
Jobs Retail/ installation/ maintenance	'000 jobs	27	281	281	0	434	434	0	593	593	0		
Jobs Total	'000 jobs	61	627	627	0	977	977	0	1329	1329	0		

## Imaging Equipment

The Voluntary Agreement on imaging equipment covers Electrophotography (EP), Inkjet (IJ, including high performance IJ) and Solid Ink (SI) copiers, multifunction devices (MFDs), printers and fax machines with a maximum speed of 66 images size A4 per minute (monochrome equipment) or 51 images size A4 per minute (for colour format equipment). This implies that very high speed and speciality equipment is not included, as well as equipment using other marking technologies (e.g. dot matrix).

Design options for imaging equipment include standard duplexing and N-print ability (paper saving), more efficient drying technology (EP), improved ink/ toner (lower melting temperature), reduced standby and ready-mode energy use (time-comfort optimisation), etc..

EP & IJ imaging equipment	unit	1990				2010				2020				2030			
Sales	'000	17,000				31,674				36,876				40,765			
Stock	'000	64,383				123,216				145,858				160,574			
Unit output, images per year (ipy)	ipy	11,217				6,221				5,867				5,804			
EU output, images per year (ipy)	bn ipy	722				767				856				932			
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Primary energy for electricity	TWh prim/a	56	19	13	-5	20	7	-13	23	7	-16						
o/w electricity	TWh elec/a	22	7	5	-2	8	3	-5	9	3	-6						
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0						
Final energy (electricity only)	TWh final/a	22	7	5	-2	8	3	-5	9	3	-6						
Primary energy for paper (toner negligible)	TWh prim/a	25	26	25	-1	29	25	-4	32	27	-5						
GWP emissions	MtCO <sub>2</sub> /a	13	4	4	-1	5	2	-2	5	2	-2						
o/w GWP energy	MtCO <sub>2</sub> /a	11	3	2	-1	3	1	-2	3	1	-2						
o/w GWP paper production	MtCO <sub>2</sub> /a	1	1	1	0	2	1	0	2	1	0						
Paper resources (1 kg=200 sheets)	Mt/a	2.2	2.4	2.3	-0.1	2.6	2.2	-0.4	2.9	2.4	-0.4						
Acquisition costs (incl. install)	bn €	6	7	7	0	10	10	0	12	12	0						
Energy costs	bn €	4	1	1	0	1	0	-1	2	1	-1						
Consumable resources	bn €	32	34	34	0	38	37	-1	41	40	-1						
o/w paper	bn €	6	6	6	0	7	6	-1	7	6	-1						
o/w toner	bn €	26	28	28	0	31	31	0	34	34	0						
Total running costs	bn €	36	35	34	-1	39	37	-2	43	41	-2						
Total expenditure	bn €	42	42	42	-1	49	47	-2	55	53	-2						
Revenue Industry	m €	3767	3907	3907	0	5822	5822	0	6790	6790	0						
Revenue Wholesale	m €	501	457	457	0	704	704	0	826	826	0						
Revenue Retail	m €	1502	2160	2160	0	2995	2995	0	3450	3450	0						
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0						
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0						
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	70	72	72	0	108	108	0	126	126	0						
Jobs Wholesale	'000 jobs	2	2	2	0	3	3	0	3	3	0						
Jobs Retail/ installation/ maintenance	'000 jobs	23	33	33	0	46	46	0	53	53	0						
Jobs Total	'000 jobs	95	107	107	0	157	157	0	182	182	0						

## Standby

This Regulation establishes ecodesign requirements related to standby and off mode, and networked standby, electric power consumption for the placing on the market of electrical and electronic household and office equipment. This Regulation shall not apply to electrical and electronic household and office equipment placed on the market with a low voltage external power supply to work as intended. Also note that for all equipment where the standby- and off-mode power is subject to specific, separate regulation, the generic standby regulation does not apply. Basically this means that - on the long run - only products like coffee makers, home gateways (modem, router, stand-alone or combined), networked storage (NAS) and DECT phones could be identified in the preparatory studies for which no separate regulation is foreseen.

Design options to reduce standby energy use include (improved) power management of the various standby states, reduction of standby through reduction of sensing frequency (only one check every x milliseconds for an external signal instead of continuous check). Specifically for coffeemakers the relevant design options include the use of a thermos recipient (drip filter) and the limitation of standby or keep warm times.

SB (networked) Stand-By (rest)	unit	1990				2010				2020				2030			
Sales	'000	10,481				67,927				97,703				121,048			
Stock	'000	29,461				363,710				542,212				667,320			
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Primary energy	TWh prim/a	4	47	47	0	65	63	-1	63	62	-1						
o/w electricity	TWh elec/a	2	19	19	0	26	25	-1	25	25	0						
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0						
Final energy	TWh final/a	2	19	19	0	26	25	-1	25	25	0						
GWP emissions	MtCO <sub>2</sub> /a	1	8	8	0	10	10	0	9	8	0						
Acquisition costs (incl. install)	bn €	1	11	11	0	17	17	0	21	21	0						
Energy costs	bn €	0	3	3	0	5	5	0	6	6	0						
Total expenditure	bn €	1	14	14	0	22	22	0	27	27	0						
Revenue Industry	m €	518	5158	5158	0	7846	7846	0	10254	10254	0						
Revenue Wholesale	m €	141	2138	2138	0	3372	3372	0	4586	4586	0						
Revenue Retail	m €	389	2054	2054	0	2809	2809	0	3285	3285	0						
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0						
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0						
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	10	96	96	0	145	145	0	190	190	0						
Jobs Wholesale	'000 jobs	1	8	8	0	12	12	0	17	17	0						
Jobs Retail/ installation/ maintenance	'000 jobs	6	32	32	0	43	43	0	51	51	0						
Jobs Total	'000 jobs	16	135	135	0	201	201	0	258	258	0						

## External Power Supplies

Electricity consumption by EPS occurs in active mode (during power conversion) and in no-load mode (EPS attached to power inlet but without primary load at the outlet). For the active mode, EIA considers only the EPS conversion losses: the remainder of the input energy is passed on by the EPS to the primary load, not 'consumed' by the EPS, and thus not counted in EIA (this is different from the approach in the 2018 Impact Assessment). Some primary products that use an EPS are also covered by Ecodesign regulations themselves (e.g. notebook computers, tablets, set-top boxes, NAS, gateways, game-consoles), and in several cases at least a part of the EPS losses is already taken into account there. The most relevant products for which this double counting does not apply are mobile phones, smart phones, rechargeable grooming products, loudspeakers and sound-systems. These double counted amounts of active EPS losses (overall approximately 55%) have NOT been removed in the data presented below (that give the full impact of the EPS regulation): they are removed only when summing EPS data with data of other EIA products, using preliminary estimated double counting factors, see e.g. ELEC sheets.

EPS electricity consumption in no-load mode is accounted in full in EIA, assuming there is no double counting for no-load.

In most cases, EPS are not sold separately, but bought by consumers together with the primary product for which they are intended. The 2018 Impact Assessment therefore uses equivalent representative purchase prices for the EPSs. This approach has been copied in EIA. The double counting factors are also applied to these monetary data, but data presented below are 'full' (double counted amounts not removed). The revenues accounted for 'industry' refer to those for the EPS-manufacturer. The wholesale revenues refer primarily to the EPS-part of revenues for the primary product manufacturer, which usually delivers the EPS together with the primary product. The 2018 IA did not consider retail revenues for EPSs, and this approach has been maintained in EIA.

The BAU scenario in EIA represents the situation without any regulation (without CR 278/2009). This is different from the 2018 IA, where the BAU scenario used as reference includes the effects of CR 278/2009. The ECO scenario in EIA corresponds to the PO2 policy option of the 2018 Impact Assessment, introducing more severe requirements for active efficiency and for maximum no-load power from April 2020, aligning EU requirements with those in force in the USA.

See sheet LoadNotes for further information.

includes double counted amounts

EPS External Power Supplies	unit	1990			2010			2020			2030		
Sales	'000	22,873			476,159			503,856			511,670		
Stock	'000	62,428			1,657,480			2,004,820			2,039,318		
EU demand for EPS output energy	TWh / a	0.3			41			57			58		
EU total EPS no-load hours	Th / a	0.2			4.1			4.3			4.4		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc		
Active mode electricity losses	TWh elec/a	0	13	12	-0.1	18	13	-4.9	17	11	-5.3		
No-load mode electricity consumption	TWh elec/a	0	2	2	0.0	2	1	-1.0	2	0	-1.1		
total electricity (active losses + no-load)	TWh elec/a	0	14	14	-0.2	20	14	-5.9	18	12	-6.4		
Final energy	TWh final/a	0	14	14	-0.2	20	14	-5.9	18	12	-6.4		
Primary energy	TWh prim/a	1	36	36	-0.4	49	34	-14.7	45	29	-15.9		
GWP emissions	MtCO <sub>2</sub> /a	0.1	5.9	5.8	-0.1	7.4	5.2	-2.2	6.2	4.0	-2.2		
Acquisition costs	bn €	0.2	5.0	5.0	0.0	4.9	5.0	0.1	5.1	5.1	0.0		
Energy costs, active mode	bn €	0.0	2.2	2.2	0.0	3.5	2.6	-1.0	3.6	2.5	-1.2		
Energy costs, no-load mode	bn €	0.0	0.3	0.3	0.0	0.3	0.1	-0.2	0.3	0.1	-0.2		
Maintenance costs	bn €	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total running costs	bn €	0.0	2.6	2.5	0.0	3.9	2.7	-1.2	4.0	2.6	-1.4		
Total expenditure	bn €	0.2	7.5	7.5	0.0	8.8	7.7	-1.1	9.1	7.7	-1.4		
Revenue Industry	m€	81	2471	2483	12	2437	2477	39	2521	2535	13		
Revenue Wholesale	m€	24	737	741	4	727	739	12	752	756	4		
Revenue Retail	m€	0	0	0	0	0	0	0	0	0	0		
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0		
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0		
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	1	46	46	0	45	46	1	47	47	0		
Jobs Wholesale	'000 jobs	0	3	3	0	3	3	0	3	3	0		
Jobs Retail/ installation/ maintenance	'000 jobs	0	0	0	0	0	0	0	0	0	0		
Jobs Total	'000 jobs	2	48	49	0	48	49	1	49	50	0		

## Uninterruptable Power Supplies (UPS)

The data for UPS in this EIA are based on the preparatory study. No Working Document or Impact Assessment were available (state February 2015). The ECO-scenario has been taken from the prep. study option (2), i.e. the transformerless MEPS scenario, with tier 1 in 2017 and tier 2 in 2019. Efficiencies are from prep.study consolidated final report table 102. This scenario seems to have been agreed with stakeholders but has no official status. EIA will be updated as soon as a regulation is adopted.

Scope: "A UPS is a combination of electronic power converters, switches and energy storage devices (such as batteries) constituting a power system for maintaining the continuity of power to a load in the case of input power failure." The prep. study considered models up to 200 kVA and primarily focused on AC input and AC output UPS, which dominate the market. A system providing electrical power, that supplements or is capable of continuously replacing the main source of grid power, is not a UPS (e.g. an engine or generator system). Portable devices designed to operate using battery power such as laptop computers are excluded. Possible exclusions of the scope mentioned in prep.study: medical applications, non-standard UPS for mission critical applications with high risks for human life/health, UPS which are like for like replacements in the same physical location/installation for existing UPS, where this replacement cannot be achieved without entailing disproportionate costs.

Design options for UPS include the use of improved components to obtain a high flat efficiency (high efficiency also at lower load levels) and/or a transformerless design, extended battery lifetime, management of redundancy (system aspect), multi-mode operation.

As regards energy consumption and related emissions, EIA considers only the energy losses due to UPS, i.e. the difference between electrical input and electrical output.

UPS Total	unit	1990	2010			2020			2030		
Sales	'000	728	1,441			1,823			2,463		
Stock	'000	3,425	7,392			8,840			12,199		
Average Output Load per unit	kW	1.88	1.92			1.94			1.94		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	14	31	31	0	36	25	-11	48	15	-34
o/w electricity	TWh elec/a	6	12	12	0	14	10	-4	19	6	-13
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	6	12	12	0	14	10	-4	19	6	-13
GWP emissions	MtCO <sub>2</sub> /a	2.8	5.0	5.0	0.0	5.4	3.7	-1.7	6.5	2.0	-4.6
Acquisition costs (incl. install)	bn €	0.6	1.1	1.1	0.0	1.5	1.5	0.0	2.0	2.0	0.0
Energy costs	bn €	1.0	1.9	1.9	0.0	2.4	1.7	-0.8	3.6	1.1	-2.6
Maintenance costs (incl. VAT)	bn €	0.3	0.7	0.7	0.0	0.9	0.9	0.0	1.2	1.2	0.0
Total running costs	bn €	1.3	2.6	2.6	0.0	3.3	2.5	-0.8	4.8	2.3	-2.6
Total expenditure	bn €	1.9	3.8	3.8	0.0	4.7	4.0	-0.8	6.8	4.2	-2.6
Revenue Industry	m €	308	610	610	0	772	772	0	1043	1043	0
Revenue Wholesale	m €	10	19	19	0	25	25	0	33	33	0
Revenue Retail	m €	179	354	354	0	448	448	0	605	605	0
Revenue Installation	m€	83	165	165	0	209	209	0	282	282	0
Revenue Maintenance (excl. VAT)	m€	315	705	705	0	855	855	0	1175	1175	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	6	11	11	0	14	14	0	19	19	0
Jobs Wholesale	'000 jobs	0	0	0	0	0	0	0	0	0	0
Jobs Retail/ installation/ maintenance	'000 jobs	6	14	14	0	17	17	0	23	23	0
Jobs Total	'000 jobs	12	25	25	0	31	31	0	42	42	0

## Household Refrigerators & Freezers

EIA calculates the savings of the latest revision ('ECO', 2018) versus the BAU at the time that the measures are first introduced (1995-'96 for domestic refrigerators). The Prep. study and IA study of the last revision calculate the incremental savings versus a different 'BAU' scenario, i.e. that already takes into account the impact of earlier/existing measures. Refrigerators have been revised three times (in 2001, in 2009-2010, and in 2016) and the latest prep. study and IA study of 2016-2018 calculates the increment versus the measures in place since 2009. This is much less than those versus the BAU 1995 that are reported in EIA. See further information on sheet LOADnotes.

RF Household Refrigeration	unit	1990	2010			2020			2030		
Sales	'000	17,588	19,196			19,799			20,402		
Stock	'000	269,340	299,289			309,540			319,188		
Reference SAEC (EEI=100)	kWh/a	468	526			563			602		
EU freezer net volume RF	M m <sup>3</sup> @ -18°C	12	17			20			24		
EU refrigerator net volume RF	M m <sup>3</sup> @ 5°C	43	60			72			84		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	344	347	260	-87	348	185	-163	347	125	-222
o/w electricity	TWh elec/a	138	139	104	-35	139	74	-65	139	50	-89
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	138	139	104	-35	139	74	-65	139	50	-89
GWP emissions	MtCO <sub>2</sub> /a	69	57	43	-14	53	28	-25	47	17	-30
Acquisition costs (incl. install)	bn €	8	9	10	1	9	11	2	9	12	3
Energy costs	bn €	28	25	19	-6	28	15	-13	31	11	-20
Total expenditure	bn €	36	34	29	-5	37	26	-11	40	24	-17
Revenue Industry	m €	3315	3618	4153	534	3732	4689	957	3846	5139	1294
Revenue Wholesale	m €	240	262	300	39	270	339	69	278	372	94
Revenue Retail	m €	3198	3491	4006	516	3601	4524	924	3710	4958	1248
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	61	67	77	10	69	87	18	71	95	24
Jobs Wholesale	'000 jobs	1	1	1	0	1	1	0	1	1	0
Jobs Retail/ installation/ maintenance	'000 jobs	49	54	62	8	56	70	14	57	77	19
Jobs Total	'000 jobs	112	122	140	18	126	158	32	130	173	44

## Commercial Refrigeration

The proposed regulation (WD 2014) applies to electric mains-operated refrigerated commercial display cabinets, including those sold for the refrigeration of items other than foodstuffs. 'Refrigerated commercial display cabinet' means an appliance intended for the functions of storage and display to and/or access to customers, of items at specified temperatures below the ambient temperature, with one or more compartments of chilled and/or frozen items, and are accessible directly through open sides or via one or more doors, and/or drawers. The proposed regulation excludes products covered by CR 2015/1095 (professional refrigeration cabinets; not for display but for storage) and by CR 643/2009 (household refrigerators). Other exclusions: Cabinets primarily powered by energy sources other than electricity; Cabinets that do not use a compression-type refrigerating cycle; The part of the refrigeration system, typically the condensing unit, placed outside the cabinet in remote cabinets (however the energy of the remote parts is taken into account, see also LoadNotes); Cabinets specifically designed for carrying out food processing; Cabinets primarily intended for refrigeration and storage of items, and not for display and sales; Cabinets specifically designed for the storage of medicines and scientific samples; Cabinets for the sale and display of live foodstuff; Wine storage appliances; Built-in cabinets; Vertical static-air cabinets; Saladettes. The proposed regulation also foresees energy labelling, with the same scope summarized above for the ecodesign regulation.

In line with the preparatory studies (BIOIS 2007; JRC 2014) and the IA 2015, EIA considers non-supermarket appliances (beverage coolers, ice cream freezers, vending machines) and supermarket display cabinets. Earlier studies only considered the supermarket remote base cases RVC2 and RHF4. However the proposed regulation applies to many other supermarket models as well. The IA presents tables for 'base cases only' (12 TWh/a savings in 2030) and tables 'including non-base cases' (19 TWh/a savings in 2030), showing a significant impact for the non-base cases. Consequently, it was agreed to include the non-base cases in the accounting, estimating some of the missing basic input data. The presented EIA data are based on the IA 2015 scenario 5.

CF Commercial Refrigeration	unit	1990	2010			2020			2030		
Sales	'000	1,474	1,726			1,785			1,908		
Stock	'000	12,960	15,700			16,266			17,376		
EU freezer net volume CF	M m <sup>3</sup> @ -18/-15	1.5	1.9			2.0			2.2		
EU refrigerator net volume CF	M m <sup>3</sup> @ -1/+7°C	8.3	10.1			10.6			11.2		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	170	168	168	0	149	133	-16	150	102	-47
o/w electricity	TWh elec/a	68	67	67	0	60	53	-6	60	41	-19
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	68	67	67	0	60	53	-6	60	41	-19
GWP emissions	MtCO <sub>2</sub> /a	48	45	45	0	42	40	-2	41	35	-6
Acquisition costs (incl. install)	bn €	2	3	3	0	3	3	0	3	3	0
Energy costs	bn €	12	11	11	0	10	9	-1	11	8	-4
Maintenance costs (incl. VAT)	bn €	1	1	1	0	1	1	0	2	2	0
Total running costs	bn €	13	12	12	0	12	11	-1	13	9	-4
Total expenditure	bn €	15	15	15	0	15	14	-1	16	13	-3
Revenue Industry	m €	1620	1798	1798	0	1846	2025	178	1969	2047	78
Revenue Wholesale	m €	694	770	770	0	791	868	76	844	877	34
Revenue Retail	m €	0	0	0	0	0	0	0	0	0	0
Revenue Installation	m €	126	146	146	0	157	176	19	168	176	8
Revenue Maintenance (excl. VAT)	m €	1096	1336	1336	0	1442	1442	0	1536	1536	0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	30	33	33	0	34	37	3	36	38	1
Jobs Wholesale	'000 jobs	3	3	3	0	3	3	0	3	3	0
Jobs Retail/ installation/ maintenance	'000 jobs	11	14	14	0	15	15	0	16	16	0
Jobs Total	'000 jobs	44	50	50	0	52	56	4	55	57	2

## Professional Refrigeration

CR 2015/1095 (ecodesign) covers professional refrigerated storage cabinets, blast cabinets, process chillers and condensing units. CR 2015/1094 (energy labelling) only applies to professional refrigerated storage cabinets. For blast cabinets the CR only provides information requirements that are assumed to have no energy efficiency effects. Walk-in cold rooms are not explicitly mentioned in the CR and consequently excluded from the scope. Consequently, blast cabinets and walk-in cold rooms are not included in EIA.

Professional refrigerated storage cabinets are for non-household, professional use in e.g. restaurants, canteens and catering applications. This distinguishes them from household refrigeration appliances that are covered by CR 643/2009, lot ENER 13. They are also distinguished from Commercial Refrigeration products (Lot ENER 12, regulation proposed in 2015) that primarily have a display/ sales function with access by customers, while the professional refrigeration (PF) products primarily have a storage function (not display) and are accessed by professionals (not by customers).

CR 2015/1095 excludes from the scope: professional refrigerated storage cabinets that are primarily powered by energy sources other than electricity; professional refrigerated storage cabinets operating with a remote condensing unit; open cabinets, where being open is a fundamental requirement for their primary functionality; cabinets specifically designed for food processing; cabinets specifically designed only for the purpose of thawing frozen foodstuffs in a controlled manner; saladettes; serve-over counters and other similar forms of cabinets primarily intended for display and sale of foodstuffs in addition to refrigeration and storage; cabinets that do not use a vapour compression refrigeration cycle; continuous-process blast equipment; custom-made professional refrigerated storage cabinets; built-in cabinets; roll-in and pass-through cabinets; static air cabinets; chest freezers.

**Process chillers** are in scope only if they are intended for operation at low-temperature (capable of delivering its rated cooling capacity at an indoor heat exchanger outlet temperature of – 25 °C, at standard rating conditions) or medium-temperature (-8 °C). Excluded from the scope: process chillers intended to operate at high temperature; process chillers exclusively using evaporative condensing; custom-made process chillers assembled on site, made on a one-off basis; absorption chillers. Note that high-temperature process chillers are considered separately in EIA under lot ENER 21-ENTR 6.

**Condensing units** are in scope only if they operate at low-temperature (capable of delivering its rated cooling capacity at a saturated evaporating temperature of – 35 °C;) or medium-temperature (-10 °C). Excluded from the scope: condensing units including an evaporator, which may be an integral evaporator, such as in monobloc units, or a remote evaporator, such as in split units; compressor packs or racks, which do not include a condenser; condensing units of which the condenser-side does not use air as heat transfer medium.

**Condensing units (CUs)** are not a complete refrigeration product, but a component (they need to be combined with an evaporator and an expansion device). Consequently many CUs are included in other refrigeration products that are also accounted in EIA, introducing the problem of **double counting of the energy consumed by CUs**. A dedicated study revealed that 60% of the CU-energy is double counted with the energy of other CF- and PF-products included in EIA. This double counting has been considered when computing the PF product group totals.

Note: double counted amounts for Condensing Units are not included in data presented below (except where explicitly indicated otherwise)

Professional refrigeration products	unit	1990	2010			2020			2030		
Sales	'000	1,108	1,035			1,134			1,289		
Stock	'000	9,173	8,758			9,137			10,349		
EU freezer net volume Storage cabinets	M m <sup>3</sup> @ -18C°	0.4	0.5			0.5			0.6		
EU refrigerator net volume Storage cabinets	M m <sup>3</sup> @ 5C°	0.9	1.2			1.3			1.4		
EU cooling demand LT&MT process chillers	TWhcool/a	42	93			125			154		
EU cooling demand LT&MT condensing units (60% double counting included)	TWhcool/a	182	145			146			169		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	148	188	188	0	224	214	-9	267	238	-28
o/w electricity	TWh elec/a	59	75	75	0	89	86	-4	107	95	-11
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	59	75	75	0	89	86	-4	107	95	-11
GWP emissions	MtCO <sub>2</sub> /a	33	34	34	0	37	35	-1	40	36	-4
o/w due to refrigerant leakage	MtCO <sub>2</sub> /a	3	3	3	0	3	3	0	3	3	0
Acquisition costs	bn €	1	1	1	0	2	2	0	2	2	0
Energy costs	bn €	9	10	10	0	13	12	-1	17	15	-2
Total expenditure	bn €	11	12	12	0	14	14	0	18	16	-2
Revenue Industry	m €	876	1004	1004	0	1128	1192	64	1297	1297	0
Revenue Wholesale	m €	250	287	287	0	322	341	18	371	371	0
Revenue Retail	m €	125	143	143	0	161	170	9	185	185	0
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	16	19	19	0	21	22	1	24	24	0
Jobs Wholesale	'000 jobs	1	1	1	0	1	1	0	1	1	0
Jobs Retail/ installation/ maintenance	'000 jobs	2	2	2	0	2	3	0	3	3	0
Jobs Total	'000 jobs	19	22	22	0	25	26	1	28	28	0

## Cooking Appliances

Design options for hobs include optimized burner and pot support (gas hobs), switch to more efficient heating technology (electric from solid plate to radiant to induction); mass-reduction (for solid plate electric hobs), use of smart electronic controls (gas, radiant and induction), use of pot sensors (automatic switch off when no pot present) (all types, automatic cooking (all types). Design options for ovens include Improvement of thermal insulation, reduction of thermal mass, optimized door design. For range hoods the design options include change of AC motor to EC motor, improvement of fan design, improvement interior design to lower the pressure drop, improvement of motor and fan control, air pollution, humidity and temperature sensors.

CA Cooking Appliances	unit	1990	2010			2020			2030		
Sales	'000	32,107	36,324			40,126			42,102		
Stock	'000	509,084	562,989			608,154			655,889		
EU load hobs, volume boiled water (food)	Mm <sup>3</sup> /a	0.25	0.29			0.31			0.33		
EU load ovens, no. of cycles (=ovendishes)	bn cyc/a	26	26			28			30		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	184	207	207	0	216	212	-3	229	214	-15
o/w electricity	TWh elec/a	54	67	67	0	72	71	-1	79	74	-5
o/w fuel	TWh fuel/a	49	39	39	0	35	35	0	31	30	-2
Final energy	TWh final/a	103	106	106	0	107	106	-2	110	104	-7
GWP emissions	MtCO <sub>2</sub> /a	37	35	35	0	34	34	-1	33	31	-2
Acquisition costs (incl. install)	bn €	12	16	16	0	18	20	1	19	20	1
Energy costs	bn €	13	15	15	0	17	17	0	20	19	-1
Total expenditure	bn €	26	31	31	0	35	36	1	39	39	0
Revenue Industry	m €	5216	6945	6945	0	7616	8232	616	7791	8299	509
Revenue Wholesale	m €	368	494	494	0	543	586	44	556	592	36
Revenue Retail	m €	4906	6591	6591	0	7235	7817	582	7415	7896	482
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	97	129	129	0	141	152	11	144	154	9
Jobs Wholesale	'000 jobs	1	2	2	0	2	2	0	2	2	0
Jobs Retail/ installation/ maintenance	'000 jobs	76	102	102	0	112	121	9	114	122	7
Jobs Total	'000 jobs	174	232	232	0	255	275	21	261	278	17

## Coffee Makers

CM household Coffee Makers	unit	1990	2010			2020			2030		
Sales	'000	22,138	26,262			27,365			29,045		
Stock	'000	127,442	156,621			162,465			171,709		
EU cups of coffee drunk in households	bn cups/a	279	343			356			376		
EU volume of coffee drunk in households	Mm <sup>3</sup> /a	0.037	0.043			0.042			0.044		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	28	27	27	0	24	20	-4	24	20	-4
o/w electricity	TWh elec/a	11	11	11	0	10	8	-2	10	8	-2
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	11	11	11	0	10	8	-2	10	8	-2
GWP emissions (from direct electricity)	MtCO <sub>2</sub> /a	6	4	4	0	4	3	-1	3	3	-1
Acquisition costs (incl. install)	bn €	1	2	2	0	3	3	0	3	3	0
Energy costs	bn €	2	2	2	0	2	2	0	2	2	0
Total running costs (excl. coffee, filters)	bn €	2	2	2	0	2	2	0	2	2	0
Total expenditure	bn €	3	4	4	0	5	4	0	5	5	0
Revenue Industry	m €	394	734	734	0	1030	1040	10	1153	1154	2
Revenue Wholesale	m €	29	54	54	0	75	76	1	84	84	0
Revenue Retail	m €	385	716	716	0	1004	1014	10	1124	1125	2
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	7	14	14	0	19	19	0	21	21	0
Jobs Wholesale	'000 jobs	0	0	0	0	0	0	0	0	0	0
Jobs Retail/ installation/ maintenance	'000 jobs	6	11	11	0	15	16	0	17	17	0
Jobs Total	'000 jobs	13	25	25	0	35	35	0	39	39	0



## Household Washing Machines

Design options for household washing machines include reduction of tub-drum clearances, improved thermal efficiency (lower transmission, radiation and conduction losses), improved motor (Switched Reluctance, DC) and drive (direct drive instead of belt-drive) efficiency, more effective mechanical action (vsd and smart control), optimising time-temperature trade-off, increasing drum load-to-volume ratio, using accurate and smart water level control, optimised programming of water level, rinsing and intermediate spinning, smart water inlet, circulation and application solutions (jet, bypass and recirculation, etc.), soil sensors (bio-sensors, turbidity sensors). Consumer options that have a large influence are the ever decreasing programme temperature and increased loading efficiency.

EIA calculates the savings of the latest revision ('ECO') versus the BAU at the time that the measures are first introduced. Prep. study and IA study of the last revision calculate the incremental savings versus a different 'BAU' scenario, i.e. that already takes into account the impact of earlier/existing measures. Consequently savings reported in EIA will be larger than those reported in the revision studies.

WM household Washing Machine	unit	1990		2010			2020			2030	
Sales	'000	9,045		13,164			14,151			13,585	
Stock	'000	121,605		186,757			201,809			205,768	
EU weight of laundry washed	Mt laundry/a	83		132			140			143	
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>
Primary energy	TWh prim/a	132	110	87	-24	99	59	-40	84	42	-42
o/w electricity	TWh elec/a	53	44	35	-9	40	24	-16	34	17	-17
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	53	44	35	-9	40	24	-16	34	17	-17
GWP emissions	MtCO <sub>2</sub> /a	26	18	14	-4	15	9	-6	11	6	-6
Acquisition costs (incl. install)	bn €	4	6	8	1	7	9	2	7	8	1
Energy costs	bn €	11	8	6	-2	8	5	-3	8	4	-4
Consumable resources	bn €	13	18	12	-6	21	11	-10	27	12	-15
Total running costs	bn €	23	26	19	-7	29	16	-13	35	16	-19
Total expenditure	bn €	28	32	26	-6	36	25	-11	41	24	-17
Revenue Industry	m €	1785	2598	3134	535	2793	3572	779	2681	3212	530
Revenue Wholesale	m €	131	191	231	39	206	263	57	197	236	39
Revenue Retail	m €	1752	2550	3076	525	2742	3506	765	2632	3152	520
Revenue Installation	m €	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m €	0	0	0	0	0	0	0	0	0	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	33	48	58	10	52	66	14	50	59	10
Jobs Wholesale	'000 jobs	0	1	1	0	1	1	0	1	1	0
Jobs Retail/ installation/ maintenance	'000 jobs	27	39	47	8	42	54	12	41	49	8
Jobs Total	'000 jobs	61	88	106	18	95	121	26	91	109	18

## Household Dishwashers

Design options for household dishwashers include improved thermal efficiency (less transmission, radiation and conduction losses through insulation, avoiding cold bridges, etc.), better pump efficiency and control (EC/DC motors, vsd), optimised time-temperature trade off, decreased water level (alternating valve already implemented, optimised spray arms), partial reuse of rinsing water (water saving), heat exchangers, drying without additional heat (optimised condensing technology), lower hot rinse temperature, increased program options, hot fill and fuel switch, turbidity and bio sensors (time and intensity optimisation).

EIA calculates the savings of the latest revision ('ECO') versus the BAU at the time that the measures are first introduced. Prep. study and IA study of the last revision calculate the incremental savings versus a different 'BAU' scenario, i.e. that already takes into account the impact of earlier/existing measures. Consequently savings reported in EIA will be larger than those reported in the revision studies.

DW Household Dishwashers	unit	1990		2010			2020			2030	
Sales	'000	3,216		7,034			9,280			11,524	
Stock	'000	36,816		83,213			115,611			149,295	
EU place settings (ps) washed	bn ps/a	52		154			225			291	
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>
Primary energy	TWh prim/a	32	58	46	-11	76	54	-22	93	63	-30
o/w electricity	TWh elec/a	13	23	19	-5	30	22	-9	37	25	-12
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	13	23	19	-5	30	22	-9	37	25	-12
GWP emissions	MtCO <sub>2</sub> /a	6	9	8	-2	12	8	-3	13	9	-4
Acquisition costs (incl. install)	bn €	2	4	5	1	5	7	2	7	8	2
Energy costs	bn €	3	4	3	-1	6	4	-2	8	6	-3
Consumable resources	bn €	1	3	3	-1	5	3	-2	8	5	-3
Total running costs	bn €	4	7	6	-1	11	8	-3	16	10	-6
Total expenditure	bn €	6	12	11	0	17	15	-2	23	19	-4
Revenue Industry	m €	776	1699	2254	556	2240	2914	674	2782	3432	650
Revenue Wholesale	m €	56	123	164	40	163	212	49	202	249	47
Revenue Retail	m €	752	1644	2182	538	2169	2822	653	2693	3322	629
Revenue Installation	m €	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m €	0	0	0	0	0	0	0	0	0	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	14	31	42	10	41	54	12	52	64	12
Jobs Wholesale	'000 jobs	0	0	1	0	1	1	0	1	1	0
Jobs Retail/ installation/ maintenance	'000 jobs	12	25	34	8	33	44	10	42	51	10
Jobs Total	'000 jobs	26	57	76	19	76	98	23	94	116	22



## Household Laundry Driers

Design options for household laundry driers include improved thermal efficiency (less transmission, radiation and conduction losses), optimised time-temperature trade off, optimised airflow-temperature trade-off, reduced drum clearances and optimised drum geometry, drum volume vs. load ratio, partial recirculating and in-/outgoing air heat exchangers (vented driers), humidity sensors/controls (instead of timer-control), improved fan efficiency (EC/DC motors, vsd, optimised impeller), fuel switch to gas-fired driers and last but not least heat pump (condensing) driers.

LD household Laundry Drier	unit	1990				2010				2020				2030			
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Sales	'000	2,783		5,268		5,932		6,103									
Stock	'000	23,505		63,037		72,160		78,167									
EU laundry dried	Mt laundry/a	13		47		60		65									
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>			
Primary energy	TWh prim/a	25	63	63	0	81	72	-9	87	65	-22						
o/w electricity	TWh elec/a	10	25	25	0	32	29	-4	35	26	-9						
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0						
Final energy	TWh final/a	10	25	25	0	33	29	-4	35	26	-9						
GWP emissions	MtCO <sub>2</sub> /a	5	10	10	0	12	11	-1	12	9	-3						
Acquisition costs (incl. install)	bn €	1	3	3	0	3	4	0	3	4	0						
Energy costs	bn €	2	5	5	0	7	6	-1	8	6	-2						
Total expenditure	bn €	3	7	7	0	10	10	0	11	10	-2						
Revenue Industry	m €	576	1152	1152	0	1339	1494	155	1378	1500	123						
Revenue Wholesale	m €	42	84	84	0	98	109	11	101	110	9						
Revenue Retail	m €	562	1123	1123	0	1305	1456	151	1343	1462	120						
Revenue Installation	m €	0	0	0	0	0	0	0	0	0	0						
Revenue Maintenance (excl. VAT)	m €	0	0	0	0	0	0	0	0	0	0						
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	11	21	21	0	25	28	3	26	28	2						
Jobs Wholesale	'000 jobs	0	0	0	0	0	0	0	0	0	0						
Jobs Retail/ installation/ maintenance	'000 jobs	9	17	17	0	20	22	2	21	23	2						
Jobs Total	'000 jobs	20	39	39	0	45	51	5	47	51	4						

## Vacuum Cleaners

Design options for vacuum cleaners include maximising fan and motor efficiency (reduce energy losses in fan/motor/drive from current 60-70% to 45% through improved fan case and impeller design), improving efficiency of airways (reduce energy loss of current 5-10% to the BAT level of 5%), increasing the filtration area surface to lower pressure loss, using better seals to reduce the current 10-20% leakage loss to 5%, improving nozzle design to reduce current pressure loss at the nozzle from current 15-25% to 10%, weight-reduction (may reduce product mass by up to 50%), using best materials options (e.g. foamed plastics), increasing product lifetime by using better and – probably – more materials (this option may counteract with the previous one).

VC Vacuum Cleaners	unit	1990				2010				2020				2030			
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Sales	'000	17,856		54,409		92,069		111,083									
Stock	'000	157,518		366,047		421,504		547,904									
EU surface vacumed	1000 km <sup>2</sup> /a	913		1,182		1,281		1,381									
	<b>Scenario</b>	<b>BAU</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>	<b>BAU</b>	<b>ECO</b>	<b>inc</b>			
Primary energy	TWh prim/a	33	54	54	0	74	35	-39	115	40	-74						
o/w electricity	TWh elec/a	13	22	22	0	30	14	-16	46	16	-30						
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0						
Final energy	TWh final/a	13	22	22	0	30	14	-16	46	16	-30						
GWP emissions	MtCO <sub>2</sub> /a	7	9	9	0	11	5	-6	16	5	-10						
Acquisition costs (incl. install)	bn €	5.1	13.5	13.5	0	22.5	23.1	0.6	27.0	27.0	0.0						
Energy costs	bn €	2.6	3.8	3.8	0	5.9	2.7	-3.1	10.2	3.5	-6.7						
Consumable resources (VC bags)	bn €	1.6	2.1	2.1	0	2.2	2.2	0.0	2.4	2.4	0.0						
Total running costs	bn €	4.2	5.9	5.9	0	8.1	5.0	-3.1	12.6	5.9	-6.7						
Total expenditure	bn €	9.2	19.3	19.3	0.0	30.6	28.1	-2.5	39.6	32.9	-6.7						
Revenue Industry	m €	2246	5633	5633	0	9286	9549	263	11155	11155	0						
Revenue Wholesale	m €	290	546	546	0	831	854	24	984	984	0						
Revenue Retail	m €	1827	5173	5173	0	8753	9000	248	10560	10560	0						
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0						
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0						
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	42	104	104	0	172	177	5	207	207	0						
Jobs Wholesale	'000 jobs	1	2	2	0	3	3	0	4	4	0						
Jobs Retail/ installation/ maintenance	'000 jobs	28	80	80	0	135	139	4	163	163	0						
Jobs Total	'000 jobs	71	186	186	0	310	319	9	373	373	0						

## Industrial Fans

Design options for Industrial fans to reduce energy consumption include improved aerodynamics for the impellers and adequate design for the job (axial, centrifugal, cross-flow), backwards curved instead or forwards curved fans, guide vanes, motor improvements (from AC to EC/DC), better transmission efficiency (direct drive, V-belts instead of flat belts), variable speed drives.

Note: data presented below do not include double counted amounts.

FAN Industrial Fans >125W	unit	1990				2010				2020				2030			
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Sales	'000	4,837	14,928			18,275			18,584								
Stock	'000	72,551	188,329			241,065			272,904								
Load per unit	kWh flow/ a	617	582			583			594								
EU load (W=Pa * m <sup>3</sup> /s ; TWh=10 <sup>12</sup> * W * h)	TWh flow/ a	45	110			141			162								
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc						
Primary energy	TWh prim/a	131	329	329	0	421	383	-39	482	396	-85						
o/w electricity	TWh elec/a	53	132	132	0	168	153	-15	193	159	-34						
o/w fuel	TWh fuel/a	0	0	0	0	0	0	0	0	0	0						
Final energy	TWh final/a	53	132	132	0	168	153	-15	193	159	-34						
GWP emissions	MtCO <sub>2</sub> /a	26	54	54	0	64	58	-6	66	54	-12						
Acquisition costs (incl. install)	bn €	1	3	3	0	4	5	1	4	5	1						
Energy costs	bn €	9	20	20	0	27	25	-2	34	28	-6						
Total expenditure	bn €	10	24	24	0	32	31	-1	40	35	-5						
Revenue Industry	m €	652	1921	1921	0	2370	3250	879	2470	3144	674						
Revenue Wholesale	m €	224	659	659	0	814	1116	302	848	1079	231						
Revenue Retail	m €	97	287	287	0	354	485	131	369	469	101						
Revenue Installation	m €	89	263	263	0	325	445	119	340	431	91						
Revenue Maintenance (excl. VAT)	m €	375	935	935	0	1202	1202	0	1375	1375	0						
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	12	36	36	0	44	60	16	46	58	12						
Jobs Wholesale	'000 jobs	1	2	2	0	3	4	1	3	4	1						
Jobs Retail/ installation/ maintenance	'000 jobs	6	16	16	0	20	23	3	22	24	2						
Jobs Total	'000 jobs	19	54	54	0	67	87	21	70	86	16						

## Industrial Motors

A first ecodesign preparatory study (Lot 11) was performed in 2008 and led to the existing CR (EC) No 640/2009 of 22 July 2009 (with corresponding Impact Assessment also from 2009). This regulation regards motors, including where integrated in other products. 'Motor' means an electric single speed, three-phase 50 Hz or 50/60 Hz, squirrel cage induction motor that has 2 to 6 poles, a rated voltage Un up to 1 000 V, a rated output PN between 0.75 kW and 375 kW and is rated on the basis of continuous duty operation. It excludes motors designed to operate wholly immersed in a liquid, motors completely integrated into a product (for example gear, pump, fan or compressor) of which the energy performance cannot be tested independently from the product, motors specifically designed to operate at altitudes exceeding 1 000 metres above sea-level, where ambient air temperatures exceed 40 °C, in maximum operating temperature above 400 °C, where ambient air temperatures are less than -15 °C for any motor or less than 0 °C for a motor with air cooling, where the water coolant temperature at the inlet to a product is less than 5 °C or exceeding 25 °C, in potentially explosive atmospheres as defined in Directive 94/9/EC of the European Parliament and of the Council and brake motors except as regards the information requirements of Annex I, points 2(3) to (6) and (12).

The more recent CR (EU) No 4/2014 of 6 January 2014 amends the 640/2009, in particular as regards the atmospheric conditions for the exempted motors: motors specified to operate exclusively at altitudes exceeding 4 000 metres above sea-level, where ambient air temperatures exceed 60 °C, in maximum operating temperature above 400 °C, where ambient air temperatures are less than -30 °C for any motor or less than 0 °C for a motor with water cooling, where the water coolant temperature at the inlet to a product is less than 0 °C or exceeding 32 °C.

A second ecodesign preparatory study (Lot 30) deals with special motors but also reconsiders the 'non-special' motors previously handled in the Lot 11 study and in the existing regulation. This second study is from March 2014, led to a Working Document in September 2014, and to a draft Impact Assessment in August 2015. Following RSB-comments, the WD and IA were rewritten in 2017 and the scenario analyses underlying the IA were updated. The effect of the use of VSDs was modelled in a more transparent and detailed manner.

The proposal in the 2017 WD extends the scope of regulation 640/2009 as amended by 4/2014. Single-phase motors are now also in scope and the power range is extended to 0.12-1000 kW. The scope extension includes 1-phase 0.12-0.75 kW, 3-phase 0.12-0.75 kW, 1-phase > 0.75 kW, large motors 375-1000 kW, explosion motors, brake motors and 8-pole motors. Direct Current (DC) motors and motors with mechanical commutators remain excluded. Medium voltage motors (> 1000 V) and submersible motors also remain excluded. The new WD does no longer explicitly encourage the use of VSDs, but minimum efficiency requirements are added for VSDs.

Design options for motor efficiency include reduction of primary and secondary resistances losses (a.k.a. 'Copper losses'), iron losses (dissipation of magnetic energy) and stray losses (dissipation of harmonic energies of the motor under load in the form of energies are dissipated as currents in the copper windings, harmonic flux components in the iron parts, leakage in the laminate core) and mechanical losses (friction motor bearings and cooling fan) mainly through the use of superior materials, larger copper (rather than aluminium) cross sections to reduce electrical resistance, use of brushless/electronically commutating (EC)/ DC permanent magnet technology, use of direct drives (instead of belt drive) and variable speed drives.

Note: data presented below do not include double counted amounts.

MT Electric Motors LV 0.12-1000 kW	unit Scenario	1990				2010				2020				2030			
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Sales	'000	29,031	42,794	42,794	0	46,755	46,755	0	48,667	48,667	0						
o/w motors with VSD	'000	977	4,003	4,021	18	5,607	7,478	1,871	7,025	8,604	1,578						
Stock	'000	246,331	363,124	363,124	0	419,773	419,773	0	443,551	443,551	0						
o/w motors with VSD	'000	6,053	28,026	28,048	22	43,614	52,838	9,224	55,666	71,883	16,217						
EU Load (TWh=10 <sup>12</sup> *W*h)	TWh output/a	822	1,170	1,170	0	1,343	1,304	-39	1,410	1,335	-75						
o/w motors with VSD	TWh output/a	54	161	161	0	272	330	59	386	499	113						
Stock Average Unit Load	kWh output/a	3,336	3,223	3,222	0	3,198	3,105	-93	3,179	3,009	-169						
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc						
Primary energy	TWh prim/a	1319	1837	1837	-1	2098	2019	-79	2196	2036	-159						
corresponding to electricity	TWh elec/a	527	735	735	0	839	808	-31	878	814	-64						
Final energy	TWh final/a	527	735	735	0	839	808	-31	878	814	-64						
GWP emissions	MtCO <sub>2</sub> /a	264	301	301	0	319	307	-12	299	277	-22						
Acquisition costs (incl. install)	bn €	2	5	5	0	5	7	1	6	7	1						
o/w for VSDs	bn €	1	2	2	0	3	5	1	4	5	1						
Energy costs	bn €	75	93	93	0	111	107	-4	128	119	-9						
Maintenance costs (incl. VAT)	bn €	1	1	1	0	1	1	0	1	1	0						
Total running costs	bn €	76	94	94	0	112	108	-4	130	120	-9						
Total expenditure	bn €	78	98	98	0	117	115	-3	135	128	-8						
Revenue Industry	m €	1206	2468	2483	15	2799	3398	599	2987	3711	724						
o/w for VSDs	m €	272	1047	1055	8	1413	2023	610	1734	2220	486						
Revenue Wholesale	m €	414	847	852	5	961	1167	206	1026	1274	248						
Revenue Retail	m €	180	368	371	2	418	507	89	446	554	108						
Revenue Installation (of extra VSD only)	m €	424	987	994	6	1173	1518	345	1305	1676	372						
Revenue Maintenance (excl. VAT)	m €	634	958	958	0	1154	1180	25	1279	1326	47						
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	22	46	46	0	52	63	11	55	69	13						
Jobs Wholesale	'000 jobs	2	3	3	0	4	4	1	4	5	1						
Jobs Retail/ installation/ maintenance	'000 jobs	13	24	24	0	28	33	5	31	36	6						
Jobs Total	'000 jobs	36	73	73	0	83	100	17	90	110	20						

## Water pumps

Design options for Industrial fans to reduce energy consumption include improved aerodynamics for the impellers and adequate design for the job (axial, centrifugal, cross-flow), backwards curved instead or forwards curved fans, guide vanes, motor improvements (from AC to EC/DC), better transmission efficiency (direct drive, V-belts instead of flat belts), variable speed drives.

WP Water pumps	unit	1990			2010			2020			2030	
Sales	'000	1,233			1,675			1,935			2,225	
Stock	'000	12,589			17,135			19,830			22,884	
Unit load (W=Pa * m <sup>3</sup> /s ; kWh=1000*W*h)	kWh flow/a	4,593			4,593			4,593			4,593	
EU load (TWh=10 <sup>12</sup> * W * h)	TWh flow/a	58			79			91			105	
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	
Primary energy (for 100% electricity)	TWh prim/a	220	296	295	0	342	334	-8	395	384	-11	
<i>o/w electricity</i>	<i>TWh elec/a</i>	<i>88</i>	<i>118</i>	<i>118</i>	<i>0</i>	<i>137</i>	<i>134</i>	<i>-3</i>	<i>158</i>	<i>153</i>	<i>-5</i>	
<i>o/w fuel</i>	<i>TWh fuel/a</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
Final energy	TWh final/a	88	118	118	0	137	134	-3	158	153	-5	
GWP emissions	MtCO <sub>2</sub> /a	44	49	48	0	52	51	-1	54	52	-2	
Acquisition costs (incl. install)	bn €	2	3	3	0	3	3	0	3	3	0	
Energy costs	bn €	14	17	17	0	21	21	-1	27	26	-1	
Maintenance costs (incl. VAT)	bn €	1	2	2	0	2	2	0	2	2	0	
Total running costs	bn €	15	19	19	0	23	23	-1	29	29	-1	
Total expenditure	bn €	17	21	21	0	26	26	-1	33	32	-1	
Revenue Industry	m €	875	1189	1189	1	1374	1374	0	1580	1580	0	
Revenue Wholesale	m €	300	408	408	0	472	472	0	542	542	0	
Revenue Retail	m €	131	177	178	0	205	205	0	236	236	0	
Revenue Installation	m €	599	814	814	0	940	940	0	1081	1081	0	
Revenue Maintenance (excl. VAT)	m €	1115	1517	1517	0	1756	1756	0	2026	2026	0	
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	16	22	22	0	25	25	0	29	29	0	
Jobs Wholesale	'000 jobs	1	2	2	0	2	2	0	2	2	0	
Jobs Retail/ installation/ maintenance	'000 jobs	18	24	24	0	28	28	0	32	32	0	
Jobs Total	'000 jobs	35	48	48	0	55	55	0	64	64	0	

## Standard Air Compressors

The data in EIA are based on the draft Working Document (WD) prepared for the C.F. of 23 October 2014 and on the last available version of the Impact Assessment (IA, September 2015). Option A with Averaged replacement scheme of the IA has been used, being most representative on the long term. The scope for regulation proposed in the WD is rotary standard air compressors with a volume flow rate between 5 to 1280 l/s and piston standard air compressors with a volume flow rate between 2 to 64 l/s, when driven by a three-phase electric motor. The proposed regulation does NOT apply to compressors designed to handle gas mixtures (or single constituent gases) other than filtered ambient air, such as hazardous gases; designed specifically to operate in potentially explosive atmospheres; designed to function where ambient temperatures exceed 40°C and/or where average inlet air temperatures are below -15°C or above 100°C.

The WD proposes ecodesign requirements in two tiers: tier 1 from January 2018 and tier 2 from January 2020. The requirements are formulated in terms of minimum isentropic efficiency that depends on volume flow rate ( $V_1$ ) and proportional loss factor ( $d$ ). A  $d$ -value of 0 represents the current average efficiency; a  $d$ -value of 100 the theoretical maximum efficiency (not attainable; current BAT has  $d=30$ ). The required value of ' $d$ ' is -5 in tier 1 and 0 in tier 2:

Standard air compressor type	Formula to calculate the <u>minimum</u> isentropic efficiency, depending on flow rate ( $V_1$ ) and proportional loss factor ( $d$ )
<b>Fixed speed rotary standard air compressor</b>	$(-0.928 \ln^2(V_1) + 13.911 \ln(V_1) + 27.110) + (100 - (-0.928 \ln^2(V_1) + 13.911 \ln(V_1) + 27.110)) * d/100$
<b>Variable speed rotary standard air compressor</b>	$(-1.549 \ln^2(V_1) + 21.573 \ln(V_1) + 0.905) + (100 - (-1.549 \ln^2(V_1) + 21.573 \ln(V_1) + 0.905)) * d/100$
<b>Piston standard air compressor</b>	$(8.931 \ln(V_1) + 31.477) + (100 - (8.931 \ln(V_1) + 31.477)) * d/100$

CP Standard Air Compressors	unit	1990	2010			2020			2030		
Sales	'000	101	106			113			121		
Stock	'000	685	1,167			1,141			1,229		
Avg. Unit load ( $W=Pa \cdot m^3/s; kWh=1000 \cdot W \cdot h$ )	kWh flow/a	20,728	31,765			31,854			31,502		
EU load ( $TWh=10^{12} \cdot W \cdot h$ )	TWh flow/a	14	37			36			39		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy (for 100% electricity)	TWh prim/a	63	147	147	0	143	141	-2	150	146	-4
<i>o/w electricity</i>	TWh elec/a	25	59	59	0	57	56	-1	60	58	-2
<i>o/w fuel</i>	TWh fuel/a	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	25	59	59	0	57	56	-1	60	58	-2
GWP emissions	MtCO <sub>2</sub> /a	13	24	24	0	22	21	0	20	20	-1
Acquisition costs (incl. install)	bn €	1	1	1	0	1	1	0	1	1	0
Energy costs	bn €	3	7	7	0	7	7	0	8	8	0
Maintenance costs (incl. VAT)	bn €	0	1	1	0	1	1	0	1	1	0
Total running costs	bn €	4	8	8	0	8	8	0	9	9	0
Total expenditure	bn €	4	9	9	0	9	9	0	10	10	0
Revenue Industry	m €	497	612	612	0	724	796	72	801	865	64
Revenue Wholesale	m €	0	0	0	0	0	0	0	0	0	0
Revenue Retail	m €	0	0	0	0	0	0	0	0	0	0
Revenue Installation	m €	23	28	28	0	33	36	4	36	39	3
Revenue Maintenance (excl. VAT)	m €	454	987	987	0	1026	1026	0	1122	1122	0
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	9	11	11	0	13	15	1	15	16	1
Jobs Wholesale	'000 jobs	0	0	0	0	0	0	0	0	0	0
Jobs Retail/ installation/ maintenance	'000 jobs	4	9	9	0	10	10	0	11	11	0
Jobs Total	'000 jobs	14	21	21	0	23	25	1	26	27	1

## Utility transformers

Utility transformers are used in the distribution of electricity. Consequently their energy consumption is already included in the electric power generation efficiency (CC=40%) and their acquisition costs can be assumed to be already included in some way in the electricity rates. Although the table below reports the full BAU and ECO energies and costs, in the Ecodesign Impact Accounting (for combination of the impacts of transformers with those of other products) the BAU energy and cost are set to zero as a reference and only the improvement over this reference is accounted as ECO impact. The same principle is NOT applied to Revenues and jobs, that are accounted in the totals in full.

TRAF0 Utility Transformers	unit	1990	2010			2020			2030		
Sales	'000	122	177			205			252		
Stock	'000	2,734	4,118			4,998			6,039		
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Primary energy	TWh prim/a	151	246	246	0	315	299	-16	405	358	-47
<i>o/w electricity</i>	<i>TWh elec/a</i>	60	98	98	0	126	120	-6	162	143	-19
<i>o/w fuel</i>	<i>TWh fuel/a</i>	0	0	0	0	0	0	0	0	0	0
Final energy	TWh final/a	0	0	0	0	0	0	0	0	0	0
GWP emissions	MtCO <sub>2</sub> /a	30	40	40	0	48	45	-2	55	49	-6
Acquisition costs (incl. install)	bn €	3	5	5	0	6	7	1	8	9	1
Energy costs	bn €	8	11	11	0	14	14	-1	20	18	-2
Total expenditure	bn €	11	16	16	0	20	20	0	28	27	-1
Revenue Industry	m €	2393	3933	3933	0	4745	5323	578	6045	6917	873
Revenue Wholesale	m €	299	492	492	0	593	665	72	756	865	109
Revenue Retail	m €	299	492	492	0	593	665	72	756	865	109
Revenue Installation	m€	0	0	0	0	0	0	0	0	0	0
Revenue Maintenance (excl. VAT)	m€	0	0	0	0	0	0	0	0	0	0
Jobs Industry (1/3), OEM (1/3) & services (1/3)	'000 jobs	44	73	73	0	88	99	11	112	128	16
Jobs Wholesale	'000 jobs	1	2	2	0	2	2	0	3	3	0
Jobs Retail/ installation/ maintenance	'000 jobs	5	8	8	0	9	10	1	12	13	2
Jobs Total	'000 jobs	50	82	82	0	99	111	12	126	145	18

## Tyres (replacement and OEM)

The EU adopted in 2009 two sets of rules relating to tyres:

1. The Tyre Labelling Regulation (TLR, Regulation (EC) No 1222/2009, OJ L 342 of 22.12.2009, p.46) harmonising the information on tyre parameters to be provided to end-users allowing them to make informed purchasing choices.

2. The Regulation on type-approval requirements for the general safety of motor vehicles ("General Safety Regulation" or GSR, Regulation (EC) No 661/2009, OJ L 200 of 31.7.2009, p.1) putting in place harmonised technical requirements that tyres must satisfy before they can be placed on the Union market.

The GSR puts in place minimum requirements for, amongst others, (i) the rolling resistance, (ii) external rolling noise and (iii) wet grip performance of tyres. These minimum requirements became applicable for all three parameters from 1 November 2012, with a second tier of more stringent requirements for the rolling resistance starting to apply on 1 November 2016 (with further requirements coming into application in 2018 and 2020).

The TLR was reviewed in 2016, leading to a proposal for a new TLR in 2018. The ECO-scenario in EIA reflects Policy Option 4 (PO4) as presented in the 2018 Impact Assessment (IA, SWD(2018)189). The BAU-scenario in EIA is without the TLR, but includes the GSR. Consequently EIA shows the savings of the PO4 policy option with respect to a scenario without any tyre labelling regulation. This is different from the IA, which compares PO4 with the situation including the existing TLR. Policy Option 4 includes e.g.: information campaigns to increase awareness of the label, improvements in enforcement, online labelling, mandatory labelling of tyres delivered with vehicles at all times (more clearly includes OEM tyres; incl. when leasing), label for C3 tyres, snow and ice performance on label, re-adjustment of label classes, tyre registration database, amendments to technical documentation, test methods, laboratory alignment procedure, extension of type approval process.

The TLR relates to C1, C2 and C3 tyre types, as defined in article 8 of the GSR. C1 tyres are used typically for passenger cars, C2 tyres for light commercial vehicles (LCVs, vans) and C3 tyres for heavy commercial vehicles (HCVs, trucks, busses).

In addition the 2018 IA makes a distinction between OEM tyres (mounted on new vehicles sold; often not selected by the vehicle buyer) and replacement tyres (selected by the vehicle user/owner). The reason for this additional distinction is that the existing TLR seems to have been less effective for OEM tyres, leading to a difference in average RRC (rolling resistance coefficient) for OEM and replacement tyres. For ease of traceability, EIA has maintained this distinction made in the IA.

The tyre efficiency in EIA is the fuel consumed by vehicles due to the rolling resistance of the tyres, expressed in 'L/100km/vehicle due to RRC'. The efficiency values are reported on sheets EFNBAU and EFNECO. The differences between BAU and ECO express the decrease in vehicle fuel losses due to the rolling resistance of tyres. The changes in fuel consumption derive from changes in RRC as explained on sheet 'LoadNotes'. That sheet also reports the underlying RRC values. In EIA, Energy, Emissions, Energy costs, Total User Expenses all relate to the fuel losses due to rolling resistance, not to the total fuel consumption of vehicles.

EIA concentrates on the energy impacts due to changes in RRC. The proposed TLR also has effects on Wet Grip and Noise emission of tyres. This leads to advantages in societal costs (less incidents, healthier people) that are not being reported in EIA. Wet Grip coefficients are reported near the bottom of sheets EFNBAU and EFNECO,

Tyres, total C1+C2+C3	unit	1990				2010				2020				2030			
		BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc			
Sales	mIn	311		371		406		499									
Stock	mIn	1,426		1,597		1,800		2,205									
EU distance travelled by vehicles	bn km/a	3,748		4,178		4,727		5,785									
	Scenario	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc						
Primary energy (fuel losses due to RRC)	TWh prim/a	977	733	728	-5	720	683	-37	759	693	-66						
<i>o/w fuel</i>	<i>TWh fuel/a</i>	977	733	728	-5	720	683	-37	759	693	-66						
Final energy (fuel losses due to RRC)	TWh final/a	977	733	728	-5	720	683	-37	759	693	-66						
GWP emissions	MtCO <sub>2</sub> /a	260	195	194	-1	191	182	-10	202	184	-18						
Acquisition costs	bn €	25	31	32	1	40	49	9	52	63	11						
Energy costs (for fuel losses due to RRC)	bn €	82	94	93	-1	93	88	-5	118	107	-11						
Total expenditure	bn €	107	125	125	0	133	136	4	170	170	1						
Revenue Industry	m €	11175	13941	14267	326	18107	21946	3839	23223	28375	5151						
Revenue Wholesale	m €	2794	3485	3567	82	4527	5487	960	5806	7094	1288						
Revenue Retail	m €	8381	10456	10700	245	13580	16460	2879	17418	21281	3863						
Revenue Installation	m €	0	0	0	0	0	0	0	0	0	0						
Revenue Maintenance (excl. VAT)	m €	0	0	0	0	0	0	0	0	0	0						
Jobs Industry (½), OEM (½) & services (½)	'000 jobs	207	258	264	6	335	406	71	430	525	95						
Jobs Wholesale	'000 jobs	10	13	13	0	17	20	4	22	26	5						
Jobs Retail/ installation/ maintenance	'000 jobs	129	161	165	4	210	254	44	269	328	60						
Jobs Total	'000 jobs	347	432	443	10	562	681	119	720	880	160						

## ANNEX F: Business Revenues (summary tables)

Quantitative data summarised from impacts per parameter (Annex A)

## Revenue

## Revenue Industry (in m €)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	1992	2422	2422	0	2577	4473	1897	2883	5081	2199
CHC Central Heating combi, water heating	1445	2518	2518	0	3024	5479	2455	3195	6467	3271
CH Central Heating boiler, space heating	7624	11093	11508	415	12624	26016	13392	15097	37262	22165
SFB Solid Fuel Boilers	813	1783	1783	0	1756	1890	134	1949	2138	189
AHC central Air Cooling	963	4393	4393	0	5996	5998	2	7580	7581	1
AHC central Air Heating (excl. reversible AC)	358	236	236	0	208	228	20	186	202	16
LH Local Heaters	3979	6459	6459	0	7812	8652	840	8304	9242	938
RAC Room Air Conditioner	217	2705	2705	0	5254	5812	558	5788	6497	709
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	11507	27179	27179	0	30543	31442	899	34205	35109	904
LS Light Sources	2886	5676	5980	304	8863	10240	1377	7328	7573	245
DP electronic DisPlays	9267	15559	15559	0	12471	12471	0	15016	15016	0
STB Set Top Boxes	0	3751	3751	0	3912	3912	0	3858	3858	0
VIDEO	27	5985	5985	0	2535	2535	0	2083	2083	0
ES+DS Enterprise Servers and Data Storage	1624	35528	35528	0	35107	35107	0	46380	46380	0
PC Personal Computers	1753	18133	18133	0	28484	28484	0	38675	38675	0
EP & IJ imaging equipment	3767	3907	3907	0	5822	5822	0	6790	6790	0
SB (networked) Stand-By (rest)	518	5158	5158	0	7846	7846	0	10254	10254	0
EPS External Power Supplies	81	2471	2483	12	2437	2477	39	2521	2535	13
UPS Uninterruptable Power Supplies	308	610	610	0	772	772	0	1043	1043	0
RF Household Refrigeration	3315	3618	4153	534	3732	4689	957	3846	5139	1294
CF Commercial Refrigeration	1620	1798	1798	0	1846	2025	178	1969	2047	78
PF Professional Refrigeration	876	1004	1004	0	1128	1192	64	1297	1297	0
CA Cooking Appliances	5216	6945	6945	0	7616	8232	616	7791	8299	509
CM household Coffee Makers	394	734	734	0	1030	1040	10	1153	1154	2
WM household Washing Machine	1785	2598	3134	535	2793	3572	779	2681	3212	530
DW Household Dishwashers	776	1699	2254	556	2240	2914	674	2782	3432	650
LD household Laundry Drier	576	1152	1152	0	1339	1494	155	1378	1500	123
VC Vacuum Cleaners	2246	5633	5633	0	9286	9549	263	11155	11155	0
FAN Industrial Fans >125W	652	1921	1921	0	2370	3250	879	2470	3144	674
MT Motors AC, LV, 0.12-1000 kW	1206	2468	2483	15	2799	3398	599	2987	3711	724
WP Water pumps	875	1189	1189	1	1374	1374	0	1580	1580	0
CP Standard air compressors	497	612	612	0	724	796	72	801	865	64
TRAFO Utility Transformers	2393	3933	3933	0	4745	5323	578	6045	6917	873
TYRE Replacement and OEM Tyres	11175	13941	14267	326	18107	21946	3839	23223	28375	5151
<b>TOTAL in bn euros</b>	<b>83</b>	<b>205</b>	<b>208</b>	<b>3</b>	<b>239</b>	<b>270</b>	<b>31</b>	<b>284</b>	<b>326</b>	<b>41</b>



## ANNEX F: Business Revenues

## Revenue Wholesale (in m €)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	599	729	729	0	775	1346	571	867	1529	662
CHC Central Heating combi, water heat	401	699	699	0	839	1521	681	887	1795	908
CH Central Heating boiler, space heat	2093	3045	3159	114	3465	7142	3676	4144	10229	6085
SFB Solid Fuel Boilers	31	69	69	0	68	73	5	75	83	7
AHC central Air Cooling	121	552	552	0	753	754	0	952	952	0
AHC central Air Heating (excl. reversible AC)	45	30	30	0	26	29	2	23	25	2
LH Local Heaters	575	934	934	0	1130	1251	121	1201	1337	136
RAC Room Air Conditioner	62	770	770	0	1495	1654	159	1647	1849	202
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	1548	3702	3702	0	4264	4550	286	4826	5113	287
LS Light Sources	752	1804	1925	121	2160	1609	-551	1305	976	-329
DP electronic DisPlays	1340	2393	2393	0	2427	2427	0	2585	2585	0
STB set top boxes (Complex & Simple)	0	1713	1713	0	1787	1787	0	1762	1762	0
VIDEO	13	1421	1421	0	550	550	0	265	265	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	260	2690	2690	0	4006	4006	0	5288	5288	0
EP & IJ imaging equipment	501	457	457	0	704	704	0	826	826	0
SB (networked) Stand-By (rest)	141	2138	2138	0	3372	3372	0	4586	4586	0
EPS External Power Supplies	24	737	741	4	727	739	12	752	756	4
UPS Uninterruptable Power Supplies	10	19	19	0	25	25	0	33	33	0
RF Household Refrigerators & freezers	240	262	300	39	270	339	69	278	372	94
Total CF Commercial Refrigeration	694	770	770	0	791	868	76	844	877	34
Total PF Professional Refrigeration (excl.)	250	287	287	0	322	341	18	371	371	0
Total CA Cooking Appliances	368	494	494	0	543	586	44	556	592	36
Total CM household Coffee Makers	29	54	54	0	75	76	1	84	84	0
WM household Washing Machine	131	191	231	39	206	263	57	197	236	39
DW Household Dishwashers	56	123	164	40	163	212	49	202	249	47
LD household Laundry Drier	42	84	84	0	98	109	11	101	110	9
VC Vacuum Cleaners	290	546	546	0	831	854	24	984	984	0
FAN Industrial Fans >125W (excl. box/ roof)	224	659	659	0	814	1116	302	848	1079	231
MT Motors AC, LV, 0.12-1000 kW	414	847	852	5	961	1167	206	1026	1274	248
WP Water pumps	300	408	408	0	472	472	0	542	542	0
CP Standard air compressors	0	0	0	0	0	0	0	0	0	0
TRAFO Utility Transformers	299	492	492	0	593	665	72	756	865	109
TYRE Replacement and OEM Tyres	2794	3485	3567	82	4527	5487	960	5806	7094	1288
<b>TOTAL in bn euros</b>	<b>15</b>	<b>33</b>	<b>33</b>	<b>0</b>	<b>39</b>	<b>46</b>	<b>7</b>	<b>45</b>	<b>55</b>	<b>10</b>

## ANNEX F: Business Revenues

## Revenue Retail (in m €)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	529	643	643	0	684	1188	504	765	1349	584
CHC Central Heating combi, water heat	376	655	655	0	787	1426	639	831	1682	851
CH Central Heating boiler, space heat	1962	2855	2962	107	3249	6695	3447	3885	9590	5704
SFB Solid Fuel Boilers	31	69	69	0	68	73	5	75	83	7
AHC central Air Cooling	121	552	552	0	753	754	0	952	952	0
AHC central Air Heating (excl. reversible AC)	45	30	30	0	26	29	2	23	25	2
LH Local Heaters	679	1103	1103	0	1334	1478	143	1418	1579	160
RAC Room Air Conditioner	54	679	679	0	1319	1459	140	1453	1631	178
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	1559	3734	3734	0	4310	4614	304	4883	5188	305
LS Light Sources	709	1672	1776	104	1983	1451	-532	1227	943	-284
DP electronic DisPlays	8842	14500	14500	0	10701	10701	0	13581	13581	0
STB set top boxes (Complex & Simple)	0	343	343	0	357	357	0	352	352	0
VIDEO	6	4515	4515	0	2018	2018	0	2065	2065	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	1763	18199	18199	0	28149	28149	0	38405	38405	0
EP & IJ imaging equipment	1502	2160	2160	0	2995	2995	0	3450	3450	0
SB (networked) Stand-By (rest)	389	2054	2054	0	2809	2809	0	3285	3285	0
EPS External Power Supplies	0	0	0	0	0	0	0	0	0	0
UPS Uninterruptable Power Supplies	179	354	354	0	448	448	0	605	605	0
RF Household Refrigerators & freezers	3198	3491	4006	516	3601	4524	924	3710	4958	1248
Total CF Commercial Refrigeration	0	0	0	0	0	0	0	0	0	0
Total PF Professional Refrigeration (excl.)	125	143	143	0	161	170	9	185	185	0
Total CA Cooking Appliances	4906	6591	6591	0	7235	7817	582	7415	7896	482
Total CM household Coffee Makers	385	716	716	0	1004	1014	10	1124	1125	2
WM household Washing Machine	1752	2550	3076	525	2742	3506	765	2632	3152	520
DW Household Dishwashers	752	1644	2182	538	2169	2822	653	2693	3322	629
LD household Laundry Drier	562	1123	1123	0	1305	1456	151	1343	1462	120
VC Vacuum Cleaners	1827	5173	5173	0	8753	9000	248	10560	10560	0
FAN Industrial Fans >125W (excl. box/ roof)	97	287	287	0	354	485	131	369	469	101
MT Motors AC, LV, 0.12-1000 kW	180	368	371	2	418	507	89	446	554	108
WP Water pumps	131	177	178	0	205	205	0	236	236	0
CP Standard air compressors	0	0	0	0	0	0	0	0	0	0
TRAFO Utility Transformers	299	492	492	0	593	665	72	756	865	109
TYRE Replacement and OEM Tyres	8381	10456	10700	245	13580	16460	2879	17418	21281	3863
<b>TOTAL in bn euros</b>	<b>41</b>	<b>87</b>	<b>89</b>	<b>2</b>	<b>104</b>	<b>115</b>	<b>11</b>	<b>126</b>	<b>141</b>	<b>15</b>

## ANNEX F: Business Revenues

## Revenue Installation (in m €)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	1560	1897	1897	0	2018	3503	1485	2258	3980	1722
CHC Central Heating combi, water heat	1226	2136	2136	0	2565	4649	2083	2711	5486	2775
CH Central Heating boiler, space heat	6289	9150	9492	342	10413	21459	11047	12453	30736	18283
SFB Solid Fuel Boilers	404	638	638	0	576	640	64	616	687	71
AHC central Air Cooling	474	2597	2597	0	3688	3689	1	4744	4745	1
AHC central Air Heating (excl. reversible AC)	298	196	196	0	173	189	17	154	167	13
LH Local Heaters	2410	3647	3647	0	4673	5035	362	5246	5642	395
RAC Room Air Conditioner	321	4013	4013	0	7792	8620	828	8585	9637	1051
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	19058	44774	44774	0	49728	50615	887	55377	56279	901
LS Light Sources	2524	4091	3975	-117	3556	3066	-490	3125	2270	-855
DP electronic DisPlays	0	0	0	0	0	0	0	0	0	0
STB set top boxes (Complex & Simple)	0	0	0	0	0	0	0	0	0	0
VIDEO	0	0	0	0	0	0	0	0	0	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	0	0	0	0	0	0	0	0	0	0
EP & IJ imaging equipment	0	0	0	0	0	0	0	0	0	0
SB (networked) Stand-By (rest)	0	0	0	0	0	0	0	0	0	0
EPS External Power Supplies	0	0	0	0	0	0	0	0	0	0
UPS Uninterruptable Power Supplies	83	165	165	0	209	209	0	282	282	0
RF Household Refrigerators & freezers	0	0	0	0	0	0	0	0	0	0
Total CF Commercial Refrigeration	126	146	146	0	157	176	19	168	176	8
Total PF Professional Refrigeration (excl.)	0	0	0	0	0	0	0	0	0	0
Total CA Cooking Appliances	0	0	0	0	0	0	0	0	0	0
Total CM household Coffee Makers	0	0	0	0	0	0	0	0	0	0
WM household Washing Machine	0	0	0	0	0	0	0	0	0	0
DW Household Dishwashers	0	0	0	0	0	0	0	0	0	0
LD household Laundry Drier	0	0	0	0	0	0	0	0	0	0
VC Vacuum Cleaners	0	0	0	0	0	0	0	0	0	0
FAN Industrial Fans >125W (excl. box/ roof)	89	263	263	0	325	445	119	340	431	91
MT Motors AC, LV, 0.12-1000 kW	424	987	994	6	1173	1518	345	1305	1676	372
WP Water pumps	599	814	814	0	940	940	0	1081	1081	0
CP Standard air compressors	23	28	28	0	33	36	4	36	39	3
TRAFO Utility Transformers	0	0	0	0	0	0	0	0	0	0
TYRE Replacement and OEM Tyres	0	0	0	0	0	0	0	0	0	0
<b>TOTAL in bn euros</b>	<b>36</b>	<b>76</b>	<b>76</b>	<b>0</b>	<b>88</b>	<b>105</b>	<b>17</b>	<b>98</b>	<b>123</b>	<b>25</b>

## ANNEX F: Business Revenues

## Revenue Maintenance (excl. VAT, in m€)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	5749	6672	6672	0	7007	7007	0	7307	7307	0
CHC Central Heating combi, water heat	1356	2608	2608	0	3028	3028	0	3429	3429	0
CH Central Heating boiler, space heat	13322	21372	21372	0	24706	24706	0	28548	28548	0
SFB Solid Fuel Boilers	381	228	228	0	288	288	0	288	288	0
AHC central Air Cooling	1088	4687	4687	0	7261	7261	0	9507	9507	0
AHC central Air Heating (excl. reversible AC)	109	109	109	0	93	93	0	82	82	0
LH Local Heaters	848	1336	1336	0	1723	1723	0	2043	2043	0
RAC Room Air Conditioner	94	980	980	0	1635	1635	0	2334	2334	0
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	1036	3319	3319	0	4484	4484	0	5353	5353	0
LS Light Sources	1852	4464	4509	45	5578	5611	34	7134	7183	48
DP electronic DisPlays	173	415	415	0	473	473	0	565	565	0
STB set top boxes (Complex & Simple)	0	0	0	0	0	0	0	0	0	0
VIDEO	0	0	0	0	0	0	0	0	0	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	0	0	0	0	0	0	0	0	0	0
EP & IJ imaging equipment	0	0	0	0	0	0	0	0	0	0
SB (networked) Stand-By (rest)	0	0	0	0	0	0	0	0	0	0
EPS External Power Supplies	0	0	0	0	0	0	0	0	0	0
UPS Uninterruptable Power Supplies	315	705	705	0	855	855	0	1175	1175	0
RF Household Refrigerators & freezers	0	0	0	0	0	0	0	0	0	0
Total CF Commercial Refrigeration	1096	1336	1336	0	1442	1442	0	1536	1536	0
Total PF Professional Refrigeration (excl.)	0	0	0	0	0	0	0	0	0	0
Total CA Cooking Appliances	0	0	0	0	0	0	0	0	0	0
Total CM household Coffee Makers	0	0	0	0	0	0	0	0	0	0
WM household Washing Machine	0	0	0	0	0	0	0	0	0	0
DW Household Dishwashers	0	0	0	0	0	0	0	0	0	0
LD household Laundry Drier	0	0	0	0	0	0	0	0	0	0
VC Vacuum Cleaners	0	0	0	0	0	0	0	0	0	0
FAN Industrial Fans >125W (excl. box/ roof)	375	935	935	0	1202	1202	0	1375	1375	0
MT Motors AC, LV, 0.12-1000 kW	634	958	958	0	1154	1180	25	1279	1326	47
WP Water pumps	1115	1517	1517	0	1756	1756	0	2026	2026	0
CP Standard air compressors	454	987	987	0	1026	1026	0	1122	1122	0
TRAFO Utility Transformers	0	0	0	0	0	0	0	0	0	0
TYRE Replacement and OEM Tyres	0	0	0	0	0	0	0	0	0	0
<b>TOTAL in bn euros</b>	<b>30</b>	<b>53</b>	<b>53</b>	<b>0</b>	<b>64</b>	<b>64</b>	<b>0</b>	<b>75</b>	<b>75</b>	<b>0</b>

## ANNEX F: Business Revenues

### Total Revenue by product group (in m€)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	10428	12363	12363	0	13061	17517	4456	14080	19246	5166
CHC Central Heating combi, water heat	4803	8615	8615	0	10243	16102	5859	11053	18859	7806
CH Central Heating boiler, space heat	31290	47516	48493	977	54456	86018	31562	64127	116364	52237
SFB Solid Fuel Boilers	1661	2787	2787	0	2756	2964	209	3004	3279	275
AHC central Air Cooling	2768	12782	12782	0	18453	18456	3	23736	23738	2
AHC central Air Heating (excl. reversible AC)	854	600	600	0	526	567	41	469	502	33
LH Local Heaters	8490	13480	13480	0	16672	18138	1466	18213	19842	1629
RAC Room Air Conditioner	747	9147	9147	0	17496	19180	1684	19808	21948	2140
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	34708	82709	82709	0	93329	95704	2375	104643	107042	2398
LS Light Sources	8722	17707	18164	457	22140	21977	-163	20119	18944	-1174
DP electronic DisPlays	19622	32866	32866	0	26072	26072	0	31747	31747	0
STB set top boxes (Complex & Simple)	0	5806	5806	0	6056	6056	0	5972	5972	0
VIDEO	46	11920	11920	0	5103	5103	0	4413	4413	0
ES+DS Enterprise Servers and Data Storage	1624	35528	35528	0	35107	35107	0	46380	46380	0
PC Personal Computers	3776	39022	39022	0	60639	60639	0	82368	82368	0
EP & IJ imaging equipment	5771	6524	6524	0	9521	9521	0	11067	11067	0
SB (networked) Stand-By (rest)	1049	9350	9350	0	14027	14027	0	18125	18125	0
EPS External Power Supplies	105	3208	3224	16	3164	3215	51	3274	3291	17
UPS Uninterruptable Power Supplies	895	1853	1853	0	2308	2308	0	3138	3138	0
RF Household Refrigerators & freezers	6753	7371	8459	1088	7602	9553	1950	7834	10469	2635
Total CF Commercial Refrigeration	3537	4051	4051	0	4238	4511	274	4517	4637	120
Total PF Professional Refrigeration (excl.)	1251	1434	1434	0	1611	1703	91	1853	1853	0
Total CA Cooking Appliances	10490	14030	14030	0	15394	16636	1241	15762	16788	1027
Total CM household Coffee Makers	808	1504	1504	0	2109	2130	21	2361	2364	4
WM household Washing Machine	3669	5340	6440	1100	5740	7342	1601	5511	6600	1089
DW Household Dishwashers	1584	3466	4600	1134	4571	5948	1376	5677	7003	1326
LD household Laundry Drier	1180	2360	2360	0	2742	3059	317	2821	3072	251
VC Vacuum Cleaners	4363	11352	11352	0	18869	19403	535	22699	22699	0
FAN Industrial Fans >125W (excl. box/ roof)	1438	4064	4064	0	5065	6497	1432	5402	6498	1096
MT Motors AC, LV, 0.12-1000 kW	2859	5629	5658	29	6505	7770	1264	7042	8541	1499
WP Water pumps	3020	4105	4107	1	4747	4747	0	5466	5466	0
CP Standard air compressors	974	1626	1626	0	1783	1858	75	1959	2026	67
TRAF0 Utility Transformers	2991	4916	4916	0	5931	6653	722	7556	8647	1091
TYRE Replacement and OEM Tyres	22350	27883	28535	652	36215	43893	7678	46447	56749	10303
<b>TOTAL in bn euros</b>	<b>205</b>	<b>453</b>	<b>458</b>	<b>5</b>	<b>534</b>	<b>600</b>	<b>66</b>	<b>629</b>	<b>720</b>	<b>91</b>

### Total Revenue by functional group (in bn €)

functional groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
<b>WATER HEATING</b>	<b>15</b>	<b>21</b>	<b>21</b>	<b>0</b>	<b>23</b>	<b>34</b>	<b>10</b>	<b>25</b>	<b>38</b>	<b>13</b>
<b>SPACE HEATING (excl. reversible AC)</b>	<b>43</b>	<b>69</b>	<b>70</b>	<b>1</b>	<b>83</b>	<b>117</b>	<b>34</b>	<b>96</b>	<b>151</b>	<b>55</b>
<b>SPACE COOLING</b>	<b>3</b>	<b>17</b>	<b>17</b>	<b>0</b>	<b>27</b>	<b>28</b>	<b>1</b>	<b>34</b>	<b>35</b>	<b>1</b>
<b>VENTILATION</b>	<b>35</b>	<b>83</b>	<b>83</b>	<b>0</b>	<b>93</b>	<b>96</b>	<b>2</b>	<b>105</b>	<b>107</b>	<b>2</b>
<b>LIGHTING</b>	<b>9</b>	<b>18</b>	<b>18</b>	<b>0</b>	<b>22</b>	<b>22</b>	<b>0</b>	<b>20</b>	<b>19</b>	<b>-1</b>
<b>ELECTRONICS</b>	<b>33</b>	<b>146</b>	<b>146</b>	<b>0</b>	<b>162</b>	<b>162</b>	<b>0</b>	<b>206</b>	<b>207</b>	<b>0</b>
<b>FOOD PRESERVATION</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>1</b>	<b>13</b>	<b>16</b>	<b>2</b>	<b>14</b>	<b>17</b>	<b>3</b>
<b>COOKING</b>	<b>11</b>	<b>16</b>	<b>16</b>	<b>0</b>	<b>18</b>	<b>19</b>	<b>1</b>	<b>18</b>	<b>19</b>	<b>1</b>
<b>CLEANING</b>	<b>11</b>	<b>23</b>	<b>25</b>	<b>2</b>	<b>32</b>	<b>36</b>	<b>4</b>	<b>37</b>	<b>39</b>	<b>3</b>
INDUSTRY COMPONENTS	8	15	15	0	18	21	3	20	23	3
<b>ENERGY SECTOR</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>7</b>	<b>1</b>	<b>8</b>	<b>9</b>	<b>1</b>
<b>TRANSPORT SECTOR</b>	<b>22</b>	<b>28</b>	<b>29</b>	<b>1</b>	<b>36</b>	<b>44</b>	<b>8</b>	<b>46</b>	<b>57</b>	<b>10</b>
<b>TOTAL in bn euros</b>	<b>205</b>	<b>453</b>	<b>458</b>	<b>5</b>	<b>534</b>	<b>600</b>	<b>66</b>	<b>629</b>	<b>720</b>	<b>91</b>

### Total Revenue by sector (in bn €)

sectors	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Industry	83	205	208	3	239	270	31	284	326	41
Wholesale	15	33	33	0	39	46	7	45	55	10
Retail	41	87	89	2	104	115	11	126	141	15
Installation	36	76	76	0	88	105	17	98	123	25
Maintenance	30	53	53	0	64	64	0	75	75	0
<b>TOTAL in bn euros</b>	<b>205</b>	<b>453</b>	<b>458</b>	<b>5</b>	<b>534</b>	<b>600</b>	<b>66</b>	<b>629</b>	<b>720</b>	<b>91</b>

## ANNEX G: Direct Employment Impacts (summary tables)

Quantitative data are summarised from impacts per parameter (Annex A). Direct employment relates to identifiable jobs in the added-value chain of the product, starting from and including first-level OEMs. It may not fully include small direct impacts from OEMs further upstream or --in as much as they are not included as a levy on the purchase price-- employment impacts in the waste and recycling industry. The possible effect of not including direct employment at this level of detail, for which typically no or very little data is available, is assumed to be small (<10%) and the effort not worthwhile.

The employment impact also does not include the indirect employment impacts of employees and companies spending their income on goods, services and taxes. This is a large impact. Depending on the product sector and depending on the methodology employed (input/output analysis, process analysis, etc.) the indirect employment effect may be a factor 3 to 7 higher than the direct employment effect. However, given the lack of consensus on the methodology --both with economists and the European institutions-- the MEEuP or MEErP methodology requires no such assessment, nor have most preparatory and IA studies ventured into this area for other reasons. The only exception is the 'Stage 6 review' of light sources (VHK 2013), where such an assessment by an external stakeholder (trade unions) has been included in the report.

## Jobs Industry (in 1000 jobs)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	37	45	45	0	48	83	35	53	94	41
CHC Central Heating combi, water heat	27	47	47	0	56	101	45	59	120	61
CH Central Heating boiler, space heat	141	205	213	8	234	482	248	280	690	410
SFB Solid Fuel Boilers	15	33	33	0	33	35	2	36	40	3
AHC central Air Cooling	18	81	81	0	111	111	0	140	140	0
AHC central Air Heating (excl. AC rev)	7	4	4	0	4	4	0	3	4	0
LH Local Heaters	74	120	120	0	145	160	16	154	171	17
RAC Room Air Conditioner	4	50	50	0	97	108	10	107	120	13
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	213	503	503	0	566	582	17	633	650	17
LS Light Sources	53	105	111	6	164	190	25	136	140	5
DP electronic Displays	172	288	288	0	231	231	0	278	278	0
STB set top boxes (Complex & Simple)	0	69	69	0	72	72	0	71	71	0
VIDEO	0	111	111	0	47	47	0	39	39	0
ES+DS Enterprise Servers and Data Storage	30	658	658	0	650	650	0	859	859	0
PC Personal Computers	32	336	336	0	528	528	0	716	716	0
EP & IJ imaging equipment	70	72	72	0	108	108	0	126	126	0
SB (networked) Stand-By (rest)	10	96	96	0	145	145	0	190	190	0
EPS External Power Supplies	1	46	46	0	45	46	1	47	47	0
UPS Uninterruptable Power Supplies	6	11	11	0	14	14	0	19	19	0
RF Household Refrigerators & freezers	61	67	77	10	69	87	18	71	95	24
Total CF Commercial Refrigeration	30	33	33	0	34	37	3	36	38	1
Total PF Professional Refrigeration (excl.)	16	19	19	0	21	22	1	24	24	0
Total CA Cooking Appliances	97	129	129	0	141	152	11	144	154	9
Total CM household Coffee Makers	7	14	14	0	19	19	0	21	21	0
WM household Washing Machine	33	48	58	10	52	66	14	50	59	10
DW Household Dishwashers	14	31	42	10	41	54	12	52	64	12
LD household Laundry Drier	11	21	21	0	25	28	3	26	28	2
VC Vacuum Cleaners	42	104	104	0	172	177	5	207	207	0
FAN Industrial Fans >125W (excl. box/ roof)	12	36	36	0	44	60	16	46	58	12
MT Motors AC, LV, 0.12-1000 kW	22	46	46	0	52	63	11	55	69	13
WP Water pumps	16	22	22	0	25	25	0	29	29	0
CP Standard air compressors	9	11	11	0	13	15	1	15	16	1
TRAFU Utility Transformers	44	73	73	0	88	99	11	112	128	16
TYRE Replacement and OEM Tyres	207	258	264	6	335	406	71	430	525	95
<b>TOTAL in 1000 jobs</b>	<b>1532</b>	<b>3793</b>	<b>3843</b>	<b>50</b>	<b>4429</b>	<b>5009</b>	<b>579</b>	<b>5265</b>	<b>6030</b>	<b>765</b>

## ANNEX G: Direct employment impacts

### Jobs Wholesale (in 1000 jobs)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	2	3	3	0	3	5	2	3	6	2
CHC Central Heating combi, water heat	1	3	3	0	3	6	3	3	7	3
CH Central Heating boiler, space heat	8	11	12	0	13	26	14	15	38	23
SFB Solid Fuel Boilers	0	0	0	0	0	0	0	0	0	0
AHC central Air Cooling	0	2	2	0	3	3	0	4	4	0
AHC central Air Heating (excl. AC rev)	0	0	0	0	0	0	0	0	0	0
LH Local Heaters	2	3	3	0	4	5	0	4	5	1
RAC Room Air Conditioner	0	3	3	0	6	6	1	6	7	1
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	6	14	14	0	16	17	1	18	19	1
LS Light Sources	3	7	7	0	8	6	-2	5	4	-1
DP electronic DisPlays	5	9	9	0	9	9	0	10	10	0
STB set top boxes (Complex & Simple)	0	6	6	0	7	7	0	7	7	0
VIDEO	0	5	5	0	2	2	0	1	1	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	1	10	10	0	15	15	0	20	20	0
EP & IJ imaging equipment	2	2	2	0	3	3	0	3	3	0
SB (networked) Stand-By (rest)	1	8	8	0	12	12	0	17	17	0
EPS External Power Supplies	0	3	3	0	3	3	0	3	3	0
UPS Uninterruptable Power Supplies	0	0	0	0	0	0	0	0	0	0
RF Household Refrigerators & freezers	1	1	1	0	1	1	0	1	1	0
Total CF Commercial Refrigeration	3	3	3	0	3	3	0	3	3	0
Total PF Professional Refrigeration (excl.)	1	1	1	0	1	1	0	1	1	0
Total CA Cooking Appliances	1	2	2	0	2	2	0	2	2	0
Total CM household Coffee Makers	0	0	0	0	0	0	0	0	0	0
WM household Washing Machine	0	1	1	0	1	1	0	1	1	0
DW Household Dishwashers	0	0	1	0	1	1	0	1	1	0
LD household Laundry Drier	0	0	0	0	0	0	0	0	0	0
VC Vacuum Cleaners	1	2	2	0	3	3	0	4	4	0
FAN Industrial Fans >125W (excl. box/ roof)	1	2	2	0	3	4	1	3	4	1
MT Motors AC, LV, 0.12-1000 kW	2	3	3	0	4	4	1	4	5	1
WP Water pumps	1	2	2	0	2	2	0	2	2	0
CP Standard air compressors	0	0	0	0	0	0	0	0	0	0
TRAFO Utility Transformers	1	2	2	0	2	2	0	3	3	0
TYRE Replacement and OEM Tyres	10	13	13	0	17	20	4	22	26	5
<b>TOTAL in 1000 jobs</b>	<b>54</b>	<b>121</b>	<b>122</b>	<b>2</b>	<b>145</b>	<b>171</b>	<b>25</b>	<b>165</b>	<b>203</b>	<b>37</b>

## ANNEX G: Direct employment impacts

### Jobs Retail (in 1000 jobs)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	8	10	10	0	11	18	8	12	21	9
CHC Central Heating combi, water heat	6	10	10	0	12	22	10	13	26	13
CH Central Heating boiler, space heat	30	44	46	2	50	103	53	60	148	88
SFB Solid Fuel Boilers	0	1	1	0	1	1	0	1	1	0
AHC central Air Cooling	2	9	9	0	12	12	0	15	15	0
AHC central Air Heating (excl. AC rev)	1	0	0	0	0	0	0	0	0	0
LH Local Heaters	10	17	17	0	21	23	2	22	24	2
RAC Room Air Conditioner	1	10	10	0	20	23	2	22	25	3
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	24	58	58	0	67	71	5	75	80	5
LS Light Sources	11	26	27	2	31	22	-8	19	15	-4
DP electronic DisPlays	136	224	224	0	165	165	0	210	210	0
STB set top boxes (Complex & Simple)	0	5	5	0	6	6	0	5	5	0
VIDEO	0	70	70	0	31	31	0	32	32	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	27	281	281	0	434	434	0	593	593	0
EP & IJ imaging equipment	23	33	33	0	46	46	0	53	53	0
SB (networked) Stand-By (rest)	6	32	32	0	43	43	0	51	51	0
EPS External Power Supplies	0	0	0	0	0	0	0	0	0	0
UPS Uninterruptable Power Supplies	3	5	5	0	7	7	0	9	9	0
RF Household Refrigerators & freezers	49	54	62	8	56	70	14	57	77	19
Total CF Commercial Refrigeration	0	0	0	0	0	0	0	0	0	0
Total PF Professional Refrigeration (excl.)	2	2	2	0	2	3	0	3	3	0
Total CA Cooking Appliances	76	102	102	0	112	121	9	114	122	7
Total CM household Coffee Makers	6	11	11	0	15	16	0	17	17	0
WM household Washing Machine	27	39	47	8	42	54	12	41	49	8
DW Household Dishwashers	12	25	34	8	33	44	10	42	51	10
LD household Laundry Drier	9	17	17	0	20	22	2	21	23	2
VC Vacuum Cleaners	28	80	80	0	135	139	4	163	163	0
FAN Industrial Fans >125W (excl. box/ roof)	2	4	4	0	5	7	2	6	7	2
MT Motors AC, LV, 0.12-1000 kW	3	6	6	0	6	8	1	7	9	2
WP Water pumps	2	3	3	0	3	3	0	4	4	0
CP Standard air compressors	0	0	0	0	0	0	0	0	0	0
TRAFU Utility Transformers	5	8	8	0	9	10	1	12	13	2
TYRE Replacement and OEM Tyres	129	161	165	4	210	254	44	269	328	60
<b>TOTAL in 1000 jobs</b>	<b>638</b>	<b>1348</b>	<b>1379</b>	<b>31</b>	<b>1607</b>	<b>1779</b>	<b>172</b>	<b>1947</b>	<b>2174</b>	<b>227</b>



## ANNEX G: Direct employment impacts

### Jobs Installation (in 1000 jobs)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	14	18	18	0	19	32	14	21	37	16
CHC Central Heating combi, water heat	11	20	20	0	24	43	19	25	51	26
CH Central Heating boiler, space heat	58	85	88	3	96	199	102	115	285	169
SFB Solid Fuel Boilers	4	6	6	0	5	6	1	6	6	1
AHC central Air Cooling	4	24	24	0	34	34	0	44	44	0
AHC central Air Heating (excl. AC rev)	3	2	2	0	2	2	0	1	2	0
LH Local Heaters	22	34	34	0	43	47	3	49	52	4
RAC Room Air Conditioner	3	37	37	0	72	80	8	79	89	10
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	176	415	415	0	460	469	8	513	521	8
LS Light Sources	23	38	37	-1	33	28	-5	29	21	-8
DP electronic DisPlays	0	0	0	0	0	0	0	0	0	0
STB set top boxes (Complex & Simple)	0	0	0	0	0	0	0	0	0	0
VIDEO	0	0	0	0	0	0	0	0	0	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	0	0	0	0	0	0	0	0	0	0
EP & IJ imaging equipment	0	0	0	0	0	0	0	0	0	0
SB (networked) Stand-By (rest)	0	0	0	0	0	0	0	0	0	0
EPS External Power Supplies	0	0	0	0	0	0	0	0	0	0
UPS Uninterruptable Power Supplies	1	2	2	0	2	2	0	3	3	0
RF Household Refrigerators & freezers	0	0	0	0	0	0	0	0	0	0
Total CF Commercial Refrigeration	1	1	1	0	1	2	0	2	2	0
Total PF Professional Refrigeration (excl.)	0	0	0	0	0	0	0	0	0	0
Total CA Cooking Appliances	0	0	0	0	0	0	0	0	0	0
Total CM household Coffee Makers	0	0	0	0	0	0	0	0	0	0
WM household Washing Machine	0	0	0	0	0	0	0	0	0	0
DW Household Dishwashers	0	0	0	0	0	0	0	0	0	0
LD household Laundry Drier	0	0	0	0	0	0	0	0	0	0
VC Vacuum Cleaners	0	0	0	0	0	0	0	0	0	0
FAN Industrial Fans >125W (excl. box/ roof)	1	2	2	0	3	4	1	3	4	1
MT Motors AC, LV, 0.12-1000 kW	4	9	9	0	11	14	3	12	16	3
WP Water pumps	6	8	8	0	9	9	0	10	10	0
CP Standard air compressors	0	0	0	0	0	0	0	0	0	0
TRAFO Utility Transformers	0	0	0	0	0	0	0	0	0	0
TYRE Replacement and OEM Tyres	0	0	0	0	0	0	0	0	0	0
<b>TOTAL in 1000 jobs</b>	<b>333</b>	<b>700</b>	<b>702</b>	<b>2</b>	<b>815</b>	<b>970</b>	<b>155</b>	<b>912</b>	<b>1142</b>	<b>230</b>

## ANNEX G: Direct employment impacts

### Jobs Maintenance (in 1000 jobs)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	53	62	62	0	65	65	0	68	68	0
CHC Central Heating combi, water heat	13	24	24	0	28	28	0	32	32	0
CH Central Heating boiler, space heat	123	198	198	0	229	229	0	264	264	0
SFB Solid Fuel Boilers	4	2	2	0	3	3	0	3	3	0
AHC central Air Cooling	10	43	43	0	67	67	0	88	88	0
AHC central Air Heating (excl. AC rev)	1	1	1	0	1	1	0	1	1	0
LH Local Heaters	8	12	12	0	16	16	0	19	19	0
RAC Room Air Conditioner	1	9	9	0	15	15	0	22	22	0
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	10	31	31	0	42	42	0	50	50	0
LS Light Sources	17	41	42	0	52	52	0	66	67	0
DP electronic DisPlays	2	4	4	0	4	4	0	5	5	0
STB set top boxes (Complex & Simple)	0	0	0	0	0	0	0	0	0	0
VIDEO	0	0	0	0	0	0	0	0	0	0
ES+DS Enterprise Servers and Data Storage	0	0	0	0	0	0	0	0	0	0
PC Personal Computers	0	0	0	0	0	0	0	0	0	0
EP & IJ imaging equipment	0	0	0	0	0	0	0	0	0	0
SB (networked) Stand-By (rest)	0	0	0	0	0	0	0	0	0	0
EPS External Power Supplies	0	0	0	0	0	0	0	0	0	0
UPS Uninterruptable Power Supplies	3	7	7	0	8	8	0	11	11	0
RF Household Refrigerators & freezers	0	0	0	0	0	0	0	0	0	0
Total CF Commercial Refrigeration	10	12	12	0	13	13	0	14	14	0
Total PF Professional Refrigeration (excl.)	0	0	0	0	0	0	0	0	0	0
Total CA Cooking Appliances	0	0	0	0	0	0	0	0	0	0
Total CM household Coffee Makers	0	0	0	0	0	0	0	0	0	0
WM household Washing Machine	0	0	0	0	0	0	0	0	0	0
DW Household Dishwashers	0	0	0	0	0	0	0	0	0	0
LD household Laundry Drier	0	0	0	0	0	0	0	0	0	0
VC Vacuum Cleaners	0	0	0	0	0	0	0	0	0	0
FAN Industrial Fans >125W (excl. box/ roof)	3	9	9	0	11	11	0	13	13	0
MT Motors AC, LV, 0.12-1000 kW	6	9	9	0	11	11	0	12	12	0
WP Water pumps	10	14	14	0	16	16	0	19	19	0
CP Standard air compressors	4	9	9	0	10	10	0	10	10	0
TRAFO Utility Transformers	0	0	0	0	0	0	0	0	0	0
TYRE Replacement and OEM Tyres	0	0	0	0	0	0	0	0	0	0
<b>TOTAL in 1000 jobs</b>	<b>278</b>	<b>487</b>	<b>488</b>	<b>0</b>	<b>590</b>	<b>591</b>	<b>1</b>	<b>695</b>	<b>696</b>	<b>1</b>

## ANNEX G: Direct employment impacts

### TOTAL direct jobs by product group (in 1000 jobs)

product groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
WH dedicated Water Heater	115	137	137	0	145	203	59	157	225	68
CHC Central Heating combi, water heat	58	103	103	0	123	200	77	132	235	103
CH Central Heating boiler, space heat	361	543	556	13	622	1039	417	735	1425	690
SFB Solid Fuel Boilers	23	42	42	0	42	45	3	46	50	4
AHC central Air Cooling	35	159	159	0	227	227	0	291	291	0
AHC central Air Heating (excl. AC rev)	11	8	8	0	7	7	1	6	7	0
LH Local Heaters	116	186	186	0	229	250	22	248	272	24
RAC Room Air Conditioner	9	110	110	0	210	231	21	237	263	26
CIRC Circulator pumps <2.5 kW	0	0	0	0	0	0	0	0	0	0
VU Ventilation Units (res & nonres)	429	1020	1020	0	1150	1181	31	1289	1320	31
LS Light Sources	108	217	224	7	287	298	11	254	246	-9
DP electronic DisPlays	315	525	525	0	409	409	0	503	503	0
STB set top boxes (Complex & Simple)	0	81	81	0	85	85	0	83	83	0
VIDEO	1	186	186	0	80	80	0	71	71	0
ES+DS Enterprise Servers and Data Storage	30	658	658	0	650	650	0	859	859	0
PC Personal Computers	61	627	627	0	977	977	0	1329	1329	0
EP & IJ imaging equipment	95	107	107	0	157	157	0	182	182	0
SB (networked) Stand-By (rest)	16	135	135	0	201	201	0	258	258	0
EPS External Power Supplies	2	48	49	0	48	49	1	49	50	0
UPS Uninterruptable Power Supplies	12	25	25	0	31	31	0	42	42	0
RF Household Refrigerators & freezers	112	122	140	18	126	158	32	130	173	44
Total CF Commercial Refrigeration	44	50	50	0	52	56	4	55	57	2
Total PF Professional Refrigeration (excl.)	19	22	22	0	25	26	1	28	28	0
Total CA Cooking Appliances	174	232	232	0	255	275	21	261	278	17
Total CM household Coffee Makers	13	25	25	0	35	35	0	39	39	0
WM household Washing Machine	61	88	106	18	95	121	26	91	109	18
DW Household Dishwashers	26	57	76	19	76	98	23	94	116	22
LD household Laundry Drier	20	39	39	0	45	51	5	47	51	4
VC Vacuum Cleaners	71	186	186	0	310	319	9	373	373	0
FAN Industrial Fans >125W (excl. box/ roof)	19	54	54	0	67	87	21	70	86	16
MT Motors AC, LV, 0.12-1000 kW	36	73	73	0	83	100	17	90	110	20
WP Water pumps	35	48	48	0	55	55	0	64	64	0
CP Standard air compressors	14	21	21	0	23	25	1	26	27	1
TRAFO Utility Transformers	50	82	82	0	99	111	12	126	145	18
TYRE Replacement and OEM Tyres	347	432	443	10	562	681	119	720	880	160
<b>TOTAL in 1000 jobs</b>	<b>2835</b>	<b>6449</b>	<b>6534</b>	<b>86</b>	<b>7587</b>	<b>8519</b>	<b>933</b>	<b>8985</b>	<b>10245</b>	<b>1260</b>

### TOTAL direct jobs by functional group (in 1000 jobs)

Functional groups	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
<b>WATER HEATING</b>	<b>173</b>	<b>240</b>	<b>240</b>	<b>0</b>	<b>268</b>	<b>404</b>	<b>136</b>	<b>289</b>	<b>460</b>	<b>171</b>
<b>SPACE HEATING (excl. reversible AC)</b>	<b>516</b>	<b>835</b>	<b>848</b>	<b>13</b>	<b>1005</b>	<b>1457</b>	<b>453</b>	<b>1153</b>	<b>1885</b>	<b>732</b>
<b>SPACE COOLING</b>	<b>39</b>	<b>214</b>	<b>214</b>	<b>0</b>	<b>332</b>	<b>343</b>	<b>10</b>	<b>409</b>	<b>422</b>	<b>13</b>
<b>VENTILATION</b>	<b>429</b>	<b>1020</b>	<b>1020</b>	<b>0</b>	<b>1150</b>	<b>1181</b>	<b>31</b>	<b>1289</b>	<b>1320</b>	<b>31</b>
<b>LIGHTING</b>	<b>108</b>	<b>217</b>	<b>224</b>	<b>7</b>	<b>287</b>	<b>298</b>	<b>11</b>	<b>254</b>	<b>246</b>	<b>-9</b>
<b>ELECTRONICS</b>	<b>531</b>	<b>2392</b>	<b>2392</b>	<b>0</b>	<b>2638</b>	<b>2639</b>	<b>1</b>	<b>3376</b>	<b>3377</b>	<b>0</b>
<b>FOOD PRESERVATION</b>	<b>175</b>	<b>194</b>	<b>212</b>	<b>18</b>	<b>202</b>	<b>240</b>	<b>37</b>	<b>213</b>	<b>258</b>	<b>45</b>
<b>COOKING</b>	<b>187</b>	<b>257</b>	<b>257</b>	<b>0</b>	<b>290</b>	<b>310</b>	<b>21</b>	<b>300</b>	<b>317</b>	<b>17</b>
<b>CLEANING</b>	<b>177</b>	<b>371</b>	<b>408</b>	<b>37</b>	<b>526</b>	<b>589</b>	<b>63</b>	<b>605</b>	<b>649</b>	<b>44</b>
INDUSTRY COMPONENTS	104	195	195	0	228	267	39	250	286	37
<b>ENERGY SECTOR</b>	<b>50</b>	<b>82</b>	<b>82</b>	<b>0</b>	<b>99</b>	<b>111</b>	<b>12</b>	<b>126</b>	<b>145</b>	<b>18</b>
<b>TRANSPORT SECTOR</b>	<b>347</b>	<b>432</b>	<b>443</b>	<b>10</b>	<b>562</b>	<b>681</b>	<b>119</b>	<b>720</b>	<b>880</b>	<b>160</b>
<b>TOTAL in 1000 jobs</b>	<b>2835</b>	<b>6449</b>	<b>6534</b>	<b>86</b>	<b>7587</b>	<b>8519</b>	<b>933</b>	<b>8985</b>	<b>10245</b>	<b>1260</b>

### TOTAL direct jobs by sector (in 1000 jobs)

Sectors	1990	2010			2020			2030		
	BAU	BAU	ECO	inc	BAU	ECO	inc	BAU	ECO	inc
Industry (incl. OEM & business services)	1532	3793	3843	50	4429	5009	579	5265	6030	765
Wholesale	54	121	122	2	145	171	25	165	203	37
Retail	638	1348	1379	31	1607	1779	172	1947	2174	227
Installation	333	700	702	2	815	970	155	912	1142	230
Maintenance	278	487	488	0	590	591	1	695	696	1
<b>TOTAL in 1000 jobs</b>	<b>2835</b>	<b>6449</b>	<b>6534</b>	<b>86</b>	<b>7587</b>	<b>8519</b>	<b>933</b>	<b>8985</b>	<b>10245</b>	<b>1260</b>

## ANNEX H: References

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## ANNEX H: References

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## ANNEX H: References

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## ANNEX H: References

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## ANNEX H: References

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