

Translation of letters

From: Ambassador Anders Ahnlid, Permanent Representation of Sweden to the EU
Date: 23 July 2014
To: Director-General Dominique Ristori, DG Energy
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Reporting under Directive 2010/31/EU on the energy performance of buildings

Enclosed please find a report on the above matter drawn up by the Swedish Ministry of Enterprise, Energy and Communications.

[complimentary close]

From: Pernilla Winnhed, Director and Head of the Energy Unit, Swedish Ministry of
Enterprise, Energy and Communications
Date: 18 June 2014
To: DG Energy
Ref.: N2014/2681/E

**Subject: Equivalence report pursuant to Articles 14 and 15 of Directive 2010/31/EU
on the energy performance of buildings**

In accordance with Articles 14 and 15 of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, enclosed please find Sweden's equivalence report for measures relating to the inspection of heating systems and of air-conditioning systems.

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Government Offices of Sweden
Ministry of Enterprise, Energy and Communications

Division for Energy
Daniel Waluszewski

Memorandum N2014/2681/E

18 June 2014

Equivalence report pursuant to Articles 14 and 15 of Directive 2010/31/EU on the energy performance of buildings

Summary

Under Articles 14 and 15 of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (EPBD), Member States which choose not to carry out inspections of heating systems and air-conditioning systems are required to submit an equivalence report on the alternative measures implemented.

Article 14 of the Directive states that the target of such inspections is locally fuelled boilers. In Sweden boilers of this kind make up only a small part of the heating systems of buildings¹. There is therefore a risk that specifically targeting heating and air-conditioning systems would be costly in relation to the result obtained. For this reason Sweden has chosen to use existing information channels such as energy and climate consultants, other professionals and the dissemination of information via the internet, brochures and leaflets.

Table 1 shows the estimated effect in terms of energy savings of the various methods. It should be noted that these are estimated energy savings relative to a baseline taking into account changes in the pattern of energy consumption owing, for example, to technical developments, changes in energy prices and the impact of other policy instruments.

¹ By way of example, district heating and electricity account for nearly 95% of the energy used for heating commercial buildings and apartment buildings, whereas locally fuelled boilers account for some 5%.

Table 1. Summary of the impact of alternative measures, 2013-16 (MWh/year)

	2013	2014	2015	2016
Heating systems				
Advice provided by energy and climate consultants	0	0	3 500	3 500
Other personal advice	0	0	7 000	7 000
Dissemination of information via the internet	0	0	700	700
Subtotal	0	0	11 200	11 200
Air-conditioning systems				
Advice provided by energy and climate consultants	0	0	1 060	1 060
Other personal advice	0	0	6 625	6 625
Dissemination of information via the internet	0	0	212	212
Subtotal	0	0	7 897	7 897
Total	0	0	19 097	19 097

Source: Swedish Energy Agency

Background

Articles 14 and 15 of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy efficiency of buildings relate to the inspection of heating systems and the inspection of air-conditioning systems, respectively. Member States choosing to make use of consultation rather than inspections are required by the Directive to submit an equivalence report every three years, in order to demonstrate that such measures can be considered equivalent to inspections.

Electric heating (including heat pumps) and district heating are the two most commonly used means of heating buildings in Sweden. Locally fuelled boilers, the target of inspections provided for by Article 14 of the Directive, account for a modest share of some 5% of final energy consumption in apartment buildings and commercial buildings. On a European scale the amount of energy involved, at just under 5 TWh, must also be considered relatively small.

To ensure the best possible effect of the information measures taken, the Swedish Energy Agency (*Energimyndigheten*) has identified locally fuelled boilers as a primary target and district heating systems as a secondary target, whereby the secondary target is expected to be larger than the primary target. Both targets involve hydronic heating systems, so that the information material is suitable for all property owners concerned.

Baseline and projection

Under the equivalence reporting framework set up by concerted action², Member States are recommended to draw up a baseline showing expected trends in relevant energy consumption.

² Reporting framework of equivalence according to Directive 2010/31/EU on the energy performance of buildings, Article 14(4) & Article 15(4).

This is not mandatory but can provide useful complementary information on the effect of the measures taken. The Energy Agency has drawn up a baseline which will be used in future reports. It is based on historical statistical data³ for relevant fuels and energy uses. As energy used for cooling is not included in national energy statistics there is no baseline for cooling. In drawing up the baseline the simplifications and approximations set out below were applied.

- Energy consumption for domestic hot water is included in the baseline and the reported effects of the alternative measures, despite domestic hot water not being covered by Article 14 of the Directive. This is because in Sweden, the same heating system is typically used for heating the building and for domestic hot water, so that assessing both factors together can be considered to be in line with the Directive's objectives. Moreover, as energy used to heat domestic water is generally not measured separately, there is no breakdown in the national energy statistics showing energy consumption for domestic hot water.
- The baseline does not take account of final energy consumption in transport and industry, although there are buildings with large heating systems particularly in the industrial sector. Typically, however, the amount of energy used for heating is small in relation to that used for core activities. Again, due to restrictions in the official energy statistics energy consumption in these sectors cannot easily be broken down into energy used for the heating of buildings and energy used for industrial activities.
- The baseline does not take account of district heating, nuclear power, hydro power, wind or solar energy.

The baseline drawn up is reflected in the table below.

Table 2. Baseline for energy consumption by locally fuelled heating systems in buildings covered by Article 14 EPBD (TWh).

	2007	2008	2009	2010	2011	2012
Energy consumption	17.2	16.3	16.7	17.2	17.8	16.3
Change, year-on-year		-5.7 %	2.5 %	3.1 %	3.6 %	-8.4 %
Average trend						-1.0 %

Source: Swedish Energy Agency

The table shows a variation in energy consumption from year to year. Such variation may, among other things, be down to factors such as the climate and economic cycles. However, average energy consumption decreased by 1% over the period examined. On the basis of the adopted baseline, a projection has been made for the coming years based on a three-year gliding mean value. The projection is shown in table 3.

³ The period of official energy statistics examined was 2007-12, given that final energy statistics for 2013 will only be available in November 2014.

Table 3. Projection for 2013-16 - baseline for energy consumption by locally fuelled heating systems in buildings covered by Article 14 EPBD (TWh).

	2013	2014	2015	2016
Energy consumption	17.1	17.1	16.8	17.0
Change, year-on-year	4.9 %	-0.2 %	-1.4 %	1.0 %

Source: Swedish Energy Agency

Alternative measures

Under the equivalence reporting framework⁴, each alternative measure is to be analysed separately and the overall impact of all measures summarised. Sweden uses three different methods:

- Provision of personal advice focusing on energy efficiency
- Provision of personal advice with another main purpose
- Dissemination of information by other means

Presumed impact on energy consumption

Energy certificates have been examined in order to assess the possible impact in terms of energy savings of measures targeting heating systems and air-conditioning systems, respectively. The measures proposed in the energy certificates are associated with estimated energy savings that can be regarded as qualitatively significant.

The average potential savings of the measures identified in the energy certificates in the sample amount to 56 MWh per measure for heating systems and 53 MWh per measure for air-conditioning systems.

In the Agency's experience it can take several years from when a visit is made by a consultant until the energy savings become fully apparent in the consumption statistics. Even after a measure has been completed it takes at least one year (or a heating or cooling season) before the systems are calibrated for optimal performance. In view of this, the information measures are expected to have negligible effect in 2014 and 2015, whereas the energy savings achieved will be distributed evenly over the years 2016-19.

Method 1 - Provision of personal advice focusing on energy efficiency

This type of advice is provided by municipal energy and climate consultants. In the Agency's experience, personal visits by municipal energy and climate consultants have a greater impact in terms of measures implemented than the dissemination of information via the internet and in brochures. The aim is for some 1 200 such visits to take place in 2014, in parallel with energy and climate consultants being trained to expand their knowledge of heating and air conditioning systems.

⁴ Reporting framework of equivalence according to Directive 2010/31/EU on the energy performance of buildings, Article 14(4) & Article 15.

Based on the Agency's experience it is estimated that 10% of those being paid a visit by an energy and climate consultant will later go on to implement a measure⁵. The estimated impact in terms of reduced energy consumption is shown in tables 4 and 5 below.

Table 4. Estimated impact of visits paid by energy and climate consultants to property owners with heating systems (MWh).

	2013	2014	2015	2016
Number of visits by consultants	1 200	2 500	2 500	2 500
Energy saving	0	0	3 500	3 500

Source: Swedish Energy Agency

Table 5. Estimated effect of visits paid by energy and climate consultants to property owners with air-conditioning systems (MWh).

	2013	2014	2015	2016
Number of visits by consultants	1 200	2 500	2 500	2 500
Energy saving	0	0	1 060	1 060

Source: Swedish Energy Agency

Method 2 - Provision of personal advice with another main purpose

Advice of this kind is provided by professionals with other main duties. For heating systems they will mainly be chimney sweepers and for air-conditioning systems inspectors carrying out mandatory ventilation checks, or cooling or heat pump technicians. The overall number of such personal visits where advice on energy efficiency is given is estimated at 10 000 per year.

No estimate is available as to the possible effect of information dissemination by professionals whose visits have a different main purpose. The impact is thought to be only half that of visits by energy and climate consultants, i.e. 5%. Tables 6 and 7 below show the impact in terms of reduced energy consumption.

Table 6. Estimated impact of advice provided by other professionals to property owners with heating systems (MWh).

	2013	2014	2015	2016
Number of visits	0	0	10 000	10 000
Energy saving	0	0	7 000	7 000

Source: Swedish Energy Agency

Table 7. Estimated impact of advice provided by other professionals to property owners with air-conditioning systems (MWh).

	2013	2014	2015	2016
Number of visits	0	0	10 000	10 000
Energy saving	0	0	6 625	6 625

Source: Swedish Energy Agency

⁵ By way of comparison, in a Danish survey the effect of energy and climate consultation was estimated at 5% of households visited. However, it can reasonably be assumed that property owners with large heating and cooling systems will be more inclined to invest in a measure.

Method 3 - Dissemination of information by other means

The Energy Agency has drawn up information material on energy efficiency as regards large heating and air-conditioning systems in the form of web texts, brochures and leaflets distributed free of charge via the internet⁶. The material was finalised and published in successive stages during the second half of 2013. Usage statistics and the number of downloads can help determine how broadly the material is disseminated.

However, the impact of this kind of information dissemination is difficult to assess. Based on experience it is estimated that no more than 1% of the number of views and downloads will result in some sort of measure being taken. Tables 8 and 9 below show the impact in terms of reduced energy consumption.

Table 8. Estimated impact of advice provided through other information channels to property owners with large heating systems (MWh).

	2013	2014	2015	2016
Number of information searches	0	5 000	5 000	5 000
Energy saving	0	0	700	700

Source: Swedish Energy Agency

Table 9. Estimated impact of advice provided through other information channels to property owners with large air-conditioning systems (MWh).

	2013	2014	2015	2016
Number of information searches	0	5 000	5 000	5 000
Energy saving	0	0	212	212

Source: Swedish Energy Agency

Overall effect

The table below comprises all data for both heating and air-conditioning systems⁷.

⁶ www.energimyndigheten.se.

⁷ It should be noted that the measures have different target recipients.

Table 10. Summary of the impact of alternative measures in 2013 and in 2014-16, respectively (MWh/year).

	2013	2014	2015	2016
Heating systems				
Provision of advice focusing on energy efficiency	0	0	3 500	3 500
Provision of advice with a different main purpose	0	0	7 000	7 000
Dissemination of information by other means	0	0	700	700
Subtotal	0	0	11 200	11 200
Air-conditioning systems				
Provision of advice focusing on energy efficiency	0	0	1 060	1 060
Provision of advice with a different main purpose	0	0	6 625	6 625
Dissemination of information by other means	0	0	212	212
Subtotal	0	0	7 897	7 897
Total				
Grand total	0	0	19 097	19 097

Source: Swedish Energy Agency

Future improvements of datasets

Information measures targeted at property owners and undertakings with large heating and cooling systems take different forms and only rough estimates of their respective impact are currently available.

However, the datasets on which the calculations are based will be gradually improved by means of the following measures:

- The National Board of Housing, Building and Planning (*Boverket*) assesses the energy certification system on a running basis; this may lead to improved data on the impact of personal and specific consultation services.
- The municipal energy and climate consultants will regularly report on the results of visits paid to the target group.
- As of 2016 a follow-up of visits paid in 2014 will be carried out, providing information on the longer-term effects.