

Response to European Commission Green Paper A 2030 Framework for Climate and Energy Policies

1. Introduction

The SEDC welcomes the European Commission's willingness to be open to stakeholders' vision, taking into account long investment cycles and the need to create demand for low carbon technologies.

The Smart Energy Demand Coalition (SEDC) is a representative industry group dedicated to promoting the requirements of demand side programs in the European electricity markets.

Demand Response can be defined as follows: 'Demand Response or demand side response are programs and activities designed to encourage consumers to change their electricity usage patterns, including timing and level of electricity demand, covering all load shape and customer objectives. Demand Response includes time-of-use and dynamic rates or pricing, reliability programs such as direct load control of devices and instantaneous interruptible load, and other market options for demand changes, such as demand side bidding'.¹

Demand Response (DR) represents a great potential to address the challenges of energy transition in a cost-effective manner without requiring subsidies. In this perspective, DR could substantially contribute to the fulfilment the three main objectives of EU's climate and energy policies:

- 1) Reducing GHG emissions,
- 2) Securing energy supply,
- 3) Supporting growth and competitiveness

DR acts as a cost effective, clean, balancing resource for wind and solar generation. Adding stability to the system, it lowers the need for coal and gas fired spinning reserves - power plants that run offline, burning fuel continuously, in order to be ready to supply power on short notices. And it can decrease the need for local network investments, as it can shift consumption away from peak hours in regions with tight network capacity. In doing so it both lowers GHG emissions and supports security of supply.

Demand Response also supports economic growth and job creation by directing revenue into local economies: In 2012, in the USA, businesses and homeowners earned over **2 billion Euros**² in direct revenues from Demand Response over and above bill savings and avoided investment. **In Europe**, while residential Demand Response programs can require public investment, Commercial and Industrial programs are technically and economically viable now. In practical terms this means that

¹ International Energy Agency 'Integration of Demand Side Management, distributed generation, renewable energy sources and energy storages. State of the art report'.

² Joule Assets 2012

hundreds of millions of Euros could be directed toward local economies and support local business (hospitals, schools, hotels, office buildings, industries...) through Demand Response earnings as of **today**.

However, these services are still at an embryonic state in the EU. The Member States undergoing robust regulatory reviews include, Finland, Belgium, Austria, the UK, Ireland, Germany and France, though all are still in the formative stages of this process. The vast majority of Member State regulations block consumer participation in balancing, reserves, system services and energy markets.

In the frame of this consultation, SEDC proposes to answer two questions addressing issues where Demand Response can provide real solutions.

- How can the EU best exploit the development of indigenous conventional and unconventional energy sources within the EU to contribute to reduced energy prices and import dependency? (Q.18)
- How can the EU best improve security of energy supply internally by ensuring the full and effective functioning of the internal energy market (e.g. through the development of necessary interconnections), and externally by diversifying energy supply routes? (Q.19)

2. “How can the EU best exploit the development of indigenous conventional and unconventional energy sources within the EU to contribute to reduced energy prices and import dependency?”

(Green Paper, Competitiveness Security of supply, Q.18)

Demand Response has a key role in the management of energy intermittency and peak loads

In Europe, the rapid deployment of intermittent renewable energy has led Member States to secure their supply by investing in their own back-up generation capacity. A large part of these costs could be avoided by releasing Demand Response capacity into intra-day, spot and balance electricity markets, **providing a cost effective and fast solution to the integration of renewable energy into the grid**. For example, 400 MW Demand Response resource takes approximately 2-3 years to build, a generation unit and power line will still be in the approval phase during this time.

The type of demand side flexibility represented by Demand Response increases in both value and importance as larger shares of renewable energy sources are integrated into the generation mix.

- **System benefits:** Demand Response offers a number of benefits to the electricity system, including increased efficiency of asset utilization, supporting greater penetration of renewables on the grid, easing capacity issues on distribution networks to facilitate further uptake of distributed generation on congested local networks, reducing the required generator margin and costs of calling on traditional reserve - including the associated environmental benefits. These system benefits could be made available in Europe.
- **Increased Efficiency:** Demand Response creates a reliable, repeatable and clean source of flexibility. For example in the USA 29.5 GW of demand side resources are under control and available to market participants, lowering the number of peaking plants and increasing

efficiency. Canada, Australia, South Korea and Japan also have significant levels of participation. This resource could also become available within European markets.

- **Consumer Revenue:** In 2012 in the USA, 2 billion Euros in direct revenues were earned by business and households through Demand Response - much of this was within the balancing and capacity markets. This source of revenue could also be made available in Europe and would release money into the local economies.

Demand Response brings unique benefits to the markets. It increases systems efficiency and substantially reduces the need for investment in peaking generation by shifting consumption away from peak hours. Moreover it gives more stability to the system, providing balancing resource for intermittent renewables and lowering the need for fossil fuel spinning reserves. Finally, it encourages market competition, by allowing the participation of third party service providers (aggregators) and rewarding service oriented retailers.

Demand Response delivers these benefits through providing consumers - Residential, Commercial³ or Industrial, with control signals and/or financial incentives to lower or adjust their consumption at strategic times. **In doing so, Demand Response offers end consumers the opportunity to benefit directly from the Smart Grid.**

The majority of revenue from DR programs flows to end users and **stays** within the local communities and builds local businesses. It is unknown how many billions in revenue European businesses and households would gain directly in the form of payments, for shifting consumption and indirectly through lowered investment costs. However, the Demand Response market in the USA is now generating approximately **2 billion Euros per year** in direct revenues for local businesses, industry and households **as well as** enabling avoided investment costs. At approximately 3.500 TWh per year, the overall EU electricity market is nearly the same size as the US market, at about 3.800 TWh per year. As European electricity prices continue to rise, monetary incentives through participation in Demand Response programs will become one of the best possibilities to offset increasing energy costs.

3. How can the EU best improve security of energy supply internally by ensuring the full and effective functioning of the internal energy market (e.g. through the development of necessary interconnections), and externally by diversifying energy supply routes?

(Green Paper, Competitiveness Security of supply, Q.19)

Nowadays intermittent energy generation is increasing, new demand sources are appearing (server farms, heat pumps, cooling units and air conditioners) and grid investments are being planned and implemented. This situation represents a crucial phase in the European electricity market development and Demand side program should be implemented while these changes occur in order to be an integral part of the new system.

While residential Demand Response may require technological rollout and public investment in some member states, Commercial Industrial Demand Response does not. It is technically and economically viable **now**. Yet, there remains a **repeated pattern of regulatory barriers** stretching across almost the entire European Union, effectively halting the establishment of the programs and

³ By the term Commercial is meant all buildings and businesses which are not directly industrial or residential; in other words, municipal buildings, SMEs, businesses such as hotels, office spaces, etc.

the ability of third parties to enter these markets. Basic contractual requirements are missing; basic technical descriptions are neglected, balancing market descriptions arbitrarily favour generation, no matter the potential of national consumer flexibility or system requirements.

Demand Response should have comparable opportunities in the markets to those of generation. **Comparable opportunity** for demand side resources in the electricity markets is essential for building robust participation of demand side resources. Comparable opportunity encompasses three major components:

- Comparable access to markets
- Comparable compensation
- Fair and reasonable risk management

Step One - Involve the Consumer: As of today, small industrial, commercial and residential consumers have no realistic means of accessing the energy (wholesale⁴ and retail), balancing, reserves and other system services markets. In order to engage, consumers require a clearly defined offer, which is both simple to use and contains clear benefits. They also require a party with expertise in **providing this offer** such as an independent aggregator or a retailer. However aggregation is only beneficial to consumers if the aggregation service provider is able to stand in the place of the consumer to fulfil registration, pre-qualification, measurement and communication requirements; The aggregated pool of loads **must be treated as a single unit** and the aggregator be allowed to stand in the place of the consumer. This is not the case today in the vast majority of Member States.

Step Two – Create viable products: In order for consumers to participate in Demand Response programs, the rules for participation in these markets (wholesale, retail, balancing, reserves and other system services), must take into account the capabilities of both demand and supply. This will mean creating “products” which are appropriate for the participation of multiple resources. It is critical that product design accounts for the specifications of a range of resources, including demand side resources and not only the limitations and business case of supply side resources. Product design should allow demand and supply to compete on an equal footing. When this is not done, consumers are blocked from participation in the balancing, reserves, wholesale and other markets, such as future capacity or flexibility markets - even when they have the ability to provide valuable, clean flexibility services at a competitive price to the TSO or retailer.

Step Three - Develop measurement and verification requirements: In the United States today, 29 GW of load is registered in some form of Demand Response programs. This is possible due to the fact that the contractual and communication arrangements between parties enable smooth, cost effective market coordination and also due to well defined and appropriate measurement and verification protocols. These protocols are essential to ensure reliability. They include such elements as product delivery, performance measurement, baseline methodology, metering configuration and communication requirements.

Step Four - Ensure fair payment and investment stability: As of today, the European energy markets are designed to pay for energy (kWh) not capacity or flexibility (kW), and the full value of flexible resources is not reflected in market prices. This suppresses both flexible generation and demand and in the worst cases, the environmental benefits of wind and solar may be compromised. Wind

⁴ Electricity markets are named differently in different regions. The SEDC has chosen a division of: a) Energy Markets (wholesale + retail) b) Balancing (Reserve) Markets c) Capacity or (Flexibility) Markets

plants are taken offline and their electricity is 'dumped', wasting this clean resource or wind and solar may be backed up by coal-fired generation, which burns fossil fuels continuously, lowering or negating environmental benefits.

It is essential to create market structures which reward and maximize flexibility and capacity resources in a manner, which provides investment stability. The SEDC considers that the capacity markets that were opened up to demand-side resources from 2000 to 2008, are a central factor in the development of the roughly 2 billion Euros Demand Response industry, that flourishes in the United States. This is due to the long-term **investment stability** provided within the capacity markets, which were designed to enable the new build of flexibility resources.

The investment stability within the capacity markets financed the introduction of a wide range of customers to Demand Response, as well as the automation of customer sites. These customers are now prepared to participate in far more sophisticated electricity markets such as the reserves markets, the frequency regulation markets, and the energy markets. However without the investment stability provided through the capacity mechanism this level of growth would not have proved possible.

Though capacity markets may not be beneficial in all European Member States the principle remains the same, **investment security is vital** for the establishment of flexibility resources, which in turn are vital to the integration of renewable resources. Whichever market design is established, be it capacity/flexibility markets or availability payments, this economic fact must be taken into account or the development of flexible resources will remain depressed.

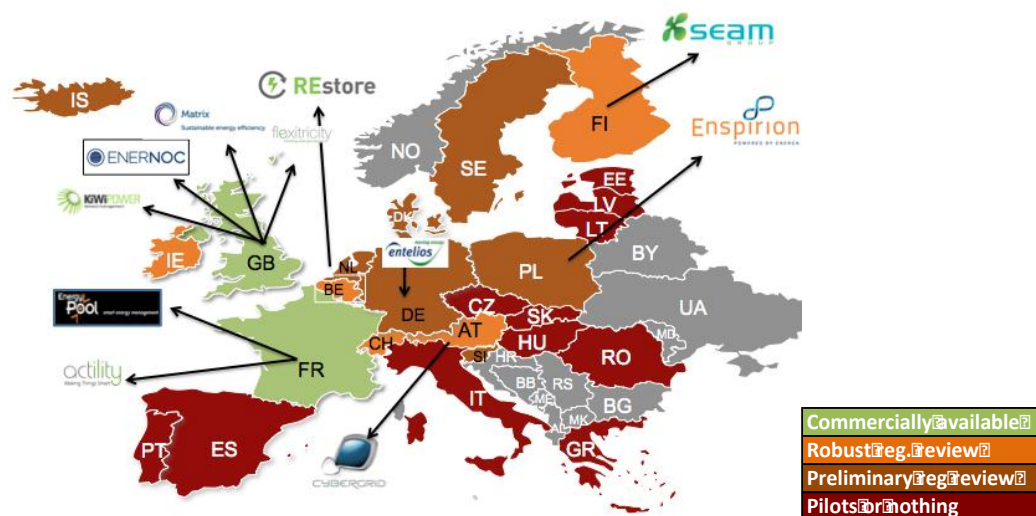
The Ten Rules for Successful Demand Response:

- 1. Aggregation should be legal, encouraged and enabled in any electricity market where generation participates.*
- 2. The aggregated pool of load must be treated as a single unit and the aggregator be allowed to stand in the place and act on behalf of the consumer.*
- 3. National regulators and TSOs should oversee the creation of streamlined, simple, contractual relationships between incumbent players and the aggregator*
- 4. Regulators and TSOs should create clear participation and payment requirements between regional players, which protect the legitimate interests of all participants – including those of new entrants.*
- 5. Create unbundled products, which allow a range of resources to participate, including demand side resources.*
- 6. Provide a complete product description that includes the technical specifications of both demand and supply.*
- 7. Establish appropriate and fair measurement and communication protocols.*
- 8. Ensure Demand Response services are compensated at the full market value of the service provided.*
- 9. Create market structures which reward and maximize flexibility and capacity in a manner that provides investment stability.*
- 10. Penalties should be fair, market appropriate and tailored to the business model of the providers.*

4. Conclusion: Further action is needed to implement Demand Response in Europe

The European Commission has stated its strong support for Demand Response and **the Energy Efficiency Directive** (Art. 15.8) requires that “Member States shall promote access to and participation of Demand Response in balancing, reserves and other system services markets, inter alia by requiring national regulatory authorities [...] in close cooperation with demand service providers and consumers, to define technical modalities for participation in these markets on the basis of the technical requirements of these markets and the capabilities of Demand Response”.

Far from achieving equal opportunity for both demand and supply side resources, Demand Response and/or aggregation remain **illegal** in the majority of European Member States and in the majority of system services and wholesale markets.



DR development in Europe. Source SEDC

The SEDC would call on the Commission to oversee the coordination of regulatory initiatives and the creation of Demand Response targets at the Member State level. The greater the coordination between Member States, the greater the economies of scale and the more robust Demand Response services become; lowering the cost of intermittent generation, improving the efficiency of the grid and lowering the cost of balancing and peaking reserves – while providing an important new source of revenue for local businesses and households.

These ten rules form the basis of consumer centric market design to enable Demand Response.

They ensure that retailers and aggregators have access to markets and can empower a range of consumers to earn from their consumption flexibility - they create a level playing field where supply and demand can compete. Enabling Demand Response in Europe requires four steps – 1) allowing for service providers to work/exist in the markets, 2) ensuring those markets include products appropriate for both supply and demand side resources, 3) establishing the appropriate measurement and communication protocols to safeguard reliability and 4) ensuring fair reliable payment for services provided. These measures are attainable and well within reach. However they will require coordination between Member States, planning, and commitment as they represent a diametric shift in thinking from generation focused markets to multi-party, multi-resource markets.

Timing is crucial. Demand Side Programs form part of a private public partnership. Wind generation is increasing and new back-up generation and grid investments are being planned and implemented. New demand sources are also appearing: server farms, heat pumps, cooling units, and air

conditioners. To fully realize the potential of demand response and other demand side programs, the Demand Response programs must be implemented **during** this phase of the European electricity market development, so that they can be built as an integral part of the new system. Not only are European consumers and businesses being shut out of Smart Grid benefits and losing money, but as unnecessary investments are made – i.e., peaking plants built – part of the potential value of demand side programs, both to European consumers and to the electricity industry, will be lost.

Taking into account the potential benefits of Demand Response and the regulatory barriers in place - clear and objective **demand side targets** will be required at a European and Member State level to ensure real progress. These should include logical step-by-step **strategies** for market development of consumer demand side services, measured and verified against well-defined key performance indicators. Only a planned and coordinated effort can hope to overcome the systematic historical barriers to Demand Response. The Commission's leadership in this process will be essential.

For the full “Demand Response Action Plan for Europe” please go to: http://sedc-coalition.eu/wp-content/uploads/2013/07/SEDC-DR_Action_Plan_for_Europe-2013-0630en.2.pdf

The Smart Energy Demand Coalition (SEDC)

The **SEDC** is an industry group, which represents the requirements of programs involving smart energy demand in order to further the development of the Smart Grid and ensure improved end-consumer benefits.

The SEDC **vision** is to promote the active participation by the demand side in European electricity markets – ensure consumer benefits, increase security of supply and reduce carbon emissions.

The SEDC **focus** is to promote Demand Side programs such as, Demand Response, energy usage feedback and information, smart home, in-home and in-building automation, electric vehicle charging management, and other programs related to making demand a **smart**, interactive part of the energy value.

For a full list of SEDC Members please go to www.sedc-coalition.eu

The views expressed in this document represent the views of the SEDC as an organization but not necessarily the point of view of any specific SEDC member