ORGALIME

Position Paper

Brussels, 20 December 2013

Consultation of the Council of European Energy Regulators (CEER): Regulatory and Market Aspects of Demand Side Flexibility

Orgalime, the European Engineering Industries Association, speaks for 38 trade federations represents some 130,000 companies in the mechanical, electrical, electronic, metalworking & metal articles industries of 23 European countries. The industry employs some 10.3 million people in the EU and in 2012 accounted for some €1,840 billion of annual output. The industry not only represents some 28% of the output of manufactured products but also a third of the manufactured exports of the European Union.

This industry supplies technologies throughout the entire energy value chain, from generation, transmission, distribution to end use, while it depends on reliable and continuous access and availability of energy at cost-reflective and efficient prices for its own manufacturing processes in Europe. The industry is also the target of the Ecodesign and Energy Labelling Directives, for which implementation is ongoing for some 46 product groups of our sector.

The European engineering industries welcome the possibility to comment on the regulatory and market aspects of demand side flexibility and would like to provide the following responses and comments to the stakeholder questions. These comments are widely tying in and supporting the Commission's recent Staff Working Document on **"**Incorporating demand side flexibility, in particular demand response, in electricity markets", which accompanies the Commission Communication on "Pubic Intervention in the Electricity Market" of November 2013 (see http://ec.europa.eu/energy/gas_electricity/internal_market_en.htm).

QUESTION 1: What do you see as the main opportunities and benefits for demand side flexibility in existing/future markets and network arrangements of these? (Please identify, describe and prioritise them)

Orgalime believes that demand side flexibility can bring an overall win-win situation with opportunities and benefits arising throughout the energy system and its actors - consumers, both private and commercial, Member States and society as a whole. Among these are:

- **Enabling consumers to cope with energy costs and lower their energy bills:** adapting demand in a way that electricity is consumed in periods when it is relatively cheap or available in abundance can bring about **significant monetary savings.** Some demand response pilots have shown that, through shifting parts of consumption to low-cost periods, electricity bills of residential and industrial consumers could be reduced by more than 10%. A lot could still be gained in the area of industrial consumers, since many industrial processes have flexibility to shift large electricity consumption loads.

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At present, estimates indicate that generally only 10% of the demand response potential is used so that the overall potential is by far underutilized.
The Commission estimates the potential of the demand side response at the Union scale is enormous: "*peak demand could be reduced by 60 GW, approximately 10 % of EU's peak demand. In addition to demand-response, increased end-use energy efficiency reduces costs and reduces the need for investment in expensive generation facilities*."

- **Increased efficiency**: we see the **benefit of increasing the overall efficiency of the energy system with the optimisation of the use of generation, transmission and distribution infrastructure.** Shifting parts of consumption to low cost periods helps relieve pressure on the energy system. This will generate positive effects on system stability, the prevention of black outs, peak shaving and reduce the need for costly new investments. Society as a whole will cover its energy needs with a lesser installed supply and transmission capacity. Demand side flexibility thereby contributes to the EU´s objective of security of energy supply.
- **Facilitating the integration of significantly more variable wind and solar generation in the market** is equally a benefit that demand side flexibility can reap with the help of smart grid technologies. With variations in renewable energy generation, the energy system, and planning and managing of supply and demand become ever more complex. Enabling demand response technologies and services, including energy storage, allows these variations to be coped with while reducing generation and infrastructure costs and capacity needs.
- A **reduction in the total generation capacity needed in peak hours:** in some parts of the US electricity system, up to 8% of peak demand could be reduced in 2010 through demand response; 29 GW of load in the US is already registered for existing demand response programmes. It is estimated that the volume of controllable load in the EU is at least 60 GW; shifting this load from peak times to other periods should reduce peak-generation needs in the EU by about 10%. This is equivalent to the total installed generation capacity of two mid-size Member States or about one-third of all EU gas-fired power generation.
- Resource efficiency: demand response can contribute to realize **gains in materials consumption** (through reducing the requirements for additional generation and transmission capacities). A recent study estimated these gains in the order of €4bn per year. Therefore, demand side flexibility also **contributes to EU resource efficiency and environmental policy objectives.**

<u>QUESTION 2</u>: What do you see as the main barriers (legislative, regulatory, market barriers) to the emergence/functioning of demand side flexibility? (Please identify, prioritise and explain key barriers and highlight essential preconditions)

The primary barriers at this stage are in our view of legislative/regulatory nature at national level. Hurdles include the following:

- **Insufficient and delayed transpositions of the Third Energy Package** so that the 2014 deadline for the liberalization of the energy market threatens to be missed: To deliver its full potential, demand response needs **an internal energy market that treats demand-side participation fairly in comparison with supply** and that is equipped with a smart infrastructure system, opening up new possibilities for participation. Grid codes, including in particular the Demand Connection Code and Balancing Code, need to reflect the relevant business case without mandatory shut off of appliances and with rewarding the consumer for his flexibility.
- **Insufficient and delayed transposition of the Electricity and Energy Efficiency Directives** in EU Member States that contain core provisions for demand side flexibility: demand response needs to be placed on an equal footing with generation and in a transparent and non-discriminatory manner.

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- **Insufficient integration of data protection, privacy and security measures in national regulatory frameworks, business models and operating practices of energy companies**. Such measures, following Commission Recommendation 2012/148/EU, include in particular the Data Protection Impact Assessment template as a response to concerns about data protection and privacy, a Cyber-Security Assessment Framework as a response to concerns about system security, or the ENISA set of minimal measures needed for security and resilience with regard to cyber security.
- The introduction of **time-differentiated prices and load-based tariffs** as an option accessible to everybody gives all consumers the possibility to opt into demand response and get rewarded. However, the **removal of blanket price regulation**, where it exists, is necessary for such dynamic prices to be offered by suppliers. It is equally necessary for market transparency without which time-differentiated prices cannot be effective in reflecting true conditions in the market in real time.
- At present, two-thirds of Member States still have some form of **direct electricity price regulation** in place. Even in Member States where electricity prices are not regulated, administrative procedures (e.g. obligatory notification of price changes in advance in the retail segment of the market) can become an issue. Such administrative barriers need to be removed in unjustified cases. Removal of these and other non-technological barriers to price differentiation is also helped by innovation support actions (IEE-type of actions). Besides this, tariffs or tariff methodologies for infrastructure (transmission and distribution fees), which are set by national regulatory authorities, should adequately support policy goals, such as demand response, but also efficient network development, competition, energy efficiency and renewable electricity generation.
- **Participation is limited to some industrial sectors, neglecting others, or the threshold for participation (shedding limit) is set at too high a level, resulting in cases industrial participants are missing access to the day-ahead market**.
- Following national regulations, it is also often not **legal for consumers and aggregation of commercial and industrial loads to participate in energy markets**. This is a barrier for developing new consumer services such as those provided by energy service companies (ESCO). Market access needs to be reinforced by defining clear network and market rules for the participation of demand side resources, with demand response and generation being placed on an equal footing. This requires changes to **operational requirements that are designed for traditional incumbents** (for example 16 hour load reduction requirements or minimal single bid requirements of 25 MW or more) **and taking into account the technical capabilities of demand response providers.**
- **Lack of transparency in national market rules**: ensuring market transparency will tackle the current lack of information in some Member States preventing aggregators and consumers from calculating the value of demand response bids, notably in markets controlled by DSOs and TSOs. Developing the necessary protocols is equally relevant.
- **Bringing the technology into the market: the roll-out of smart metering with the appropriate functionalities remains an issue:** business models and smart metering that give credit to consumers for their flexibility requires an adequate framework that will facilitate the market up-take of smart appliances and management solutions at home. Solutions facilitating the portability of energy consumer profiles to other energy service providers, at customer request, need to be established to encourage competition on the energy services market.
- Inconsistencies of national regulations cause indirect barriers for demand side flexibility: for example, in Italy fire insurance policies do not cover the case of a photovoltaic panels catching fire.

The second main challenge for demand response remains raising **consumer awareness and acceptability**. A better dissemination and promotion of best practices will be important to build confidence and trust in the market.

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Also, the role of pricing spreads between peak and off-peak tariffs as an incentive for consumers to participate in demand response should be analysed more deeply. Consumers will only be ready to use demand side measures if the pricing spread is big enough.

QUESTION 3: In what way will the implementation of the EED affect your organisation/involvement with demand side flexibility? (Please make particular reference to art.15.4, 15.8, annex XI)

The transposition of the Electricity Directive is clearly lagging behind. This is even more the case for the transposition of the Energy Efficiency Directive. Only national measures will enable this EU framework to apply in Member States. It is therefore **Orgalime´s primary preoccupation that these Directives should be rapidly and properly transposed and enacted at national level so that the benefits of demand response can start to be effectively deployed.** Without such adequate national measures, investments made by our industry in energy efficiency and low carbon technologies will not pay off. This will inevitably undermine the competitiveness of companies.

The transposition of the Energy Efficiency Directive is the core for enhancing the already existing legal framework on demand response, for promoting its access to and participation in the market and the removal of remaining barriers.

This Directive mandates national regulatory authorities to encourage demand response and requires network operators –both for transmission and distribution- to treat demand response providers in a non-discriminatory way in meeting requirements for balancing and ancillary services.
Tariffs that hamper demand response participation should be removed as part of the Directive's transposition, and network tariffs and retail prices should support dynamic pricing for demand response.
As part of the required market opening, adequate technical or contractual modalities for participation of demand response in balancing, reserve or other system services markets have to be defined and disincentives in transmission and distribution tariffs that might hamper participation of demand response in balancing markets and ancillary services procurement must be removed. This requires removing, where it exists, discriminatory treatment, for example where market access for consumers or aggregators is blocked).

QUESTION 4: Have you undertaken/are you aware of studies examining the cost-benefit of demand side flexibility measures and their cost effectiveness relative to other measures? What are the results?

We are aware of the following studies/projects related to demand side flexibility:

- Energy Pool (2013) estimates total peak clipping capabilities through demand response between 6% - 11% corresponding to 35 - 60 GW. Only for Germany, VDE (Study "Demand Side Integration") described a theoretical DR-potential of 25 GW in 2010 (to be doubled by 2030), of which 8.5 GW are technical/economical potential, confirmed by the dena-Netzstudie II. Smart appliances have a large potential. The project SMART-A estimated that the demand response potential in the EU by smart appliances only was about 60 GW of controllable load, of which 40-42 GW are economically viable. From the side of manufacturers, Schneider Electric is involved in this project.

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- LINEAR (ongoing): With the help of two remuneration models and four business cases, Linear is studying ways for households and producers or power grid operators to better tailor energy consumption in relation to energy generation. Linear is studying four challenges for which demand-side management could be a sound technical and economically profitable solution. From the side of manufacturers, Orgalime´s Belgium member association AGORIA is involved in this project, in addition to several companies of our industrial sector.
- GreenLys (ERDF, Schneider Electric, France; ongoing, see http://www.greenlys.fr): GreenLys is a systemic smart grid project, which includes DER, Consumption, Networks (DSO & TSO).
- The Joint Research Centre (JRC) of the European Commission has published an inventory and report of smart grid projects in Europe "*Smart Grid projects in Europe: Lessons learned and current developments (2012 update)*", which includes recent study results as well as a collection of data (see http://ses.jrc.ec.europa.eu/jrc-scientific-and-policy-report):
  The comprehensive inventory of smart grid and smart metering projects in Europe for 2012 includes 281 smart grid projects and around 90 smart metering pilots and roll-outs from 30 European countries (EU27, Croatia, Switzerland and Norway), representing a total investment of € 1.8 billion.
  The catalogue shows that DSOs/utilities/energy companies are involved in over 80 % of the projects. Universities/research centers are involved in over 70 % of the projects, followed by manufacturers (over 45 %) and IT/telecoms (over 35 %).15 TSOs are involved in around 20 % of the projects.
  Manufacturers are leading around 12 projects with a total budget of over € 75 million. The JRC concludes that "*manufacturers may not feature most as project promoters, but nevertheless they are well represented in the projects surveyed*."
  Content wise, these projects aim at developing and testing concepts for the integration of new technological applications, such as software/hardware solutions for Optimisation and Control of Renewable Energy and Electricity Network. The JRC analysed the obstacles encountered in projects.
- Empower Demand I, Vaasa ETT 2011
- SEDC (Smart Energy Demand Coalition): "A Demand Response Action Plan for Europe" (see http://sedc-coalition.eu/wp-content/uploads/2012/02/SEDC-DR-Action-Plan.pdf).

QUESTION 5: Any other considerations to be taken into account?

Demand response is an integral part of a consumer-centric retail market vision in the energy sector, which we fully share. Its role is foreseen in the design of the EU internal energy market calling for consumer empowerment. In both wholesale and retail, demand response is centred on fair reward to consumers for demand flexibility and relies on available technical solutions.

Orgalime industries have made significant investments in energy efficiency technologies, including for smart appliances that are waiting unsold on shelves. Our sector is the (only) target of the Ecodesign and Energy Labelling Directives and its ongoing implementation on some 46 product groups.

Ecodesign, in tandem with the energy label, allows regulatory certainty for some key aspects linked to market uptake, such as access to relevant data, and helps enforce interoperability. It also allows to optimise the energy use of smart technologies for demand response.

Furthermore, the impacts on vulnerable consumer groups, affordability and comfort, questions of product performance and warranty, the interaction with central building control systems and with micro-generation units are aspects to be explored and tackled in this context.

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With this in mind, the Commission services have identified smart appliances/ meters as a priority in the *Ecodesign* work plan 2012-2014. This approach, however, only makes sense if it goes hand in hand with the deployment of smart grids, including demand side flexibility.

We believe that demand response is crucial for meeting future energy needs without recourse to greater than necessary supply and transmission capacity.
It has to be open to all kind of consumers, including households facing increasing energy bills, commercial businesses and industrial players that need to compete with companies from countries with lower energy costs.

Flexible demand response reduces the needs for costly conventional generation capacities necessary for dealing with demand peaks and the integration of variable renewable energy. It thus makes the supply chain more efficient, thereby triggering lower energy costs and eventually better prices for consumers. Just as a diversified supply-side portfolio is considered beneficial, having different demand response options available to the whole range of consumers should be seen as an advantage for the energy system.

We therefore encourage regulators, both European and national, to boost demand side flexibility as a matter of priority.

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