

Energy Union proposals to unlock the benefits of demand side flexibility and energy efficiency

The energy sector has embarked on a fundamental transformation. A crucial element of this transformation is the development of the demand side of energy markets through energy efficiency, demand side response, distributed generation, storage, the use of digital technologies. It is leading to more efficient and innovative markets, services and technologies, and is helping the transition towards zero-carbon sources of energy and flexibility.

This transformation towards increasingly sustainable, decentralised and consumer-focused solutions is beneficial for Europe. First, demand side flexibility is able to increase system adequacy and to substantially reduce the need for investment in peak generation capacity by shifting consumption away from times of extremely high demand. By doing so, demand side flexibility has the ability to reduce overall system cost to the benefit of all consumers. It is also a highly cost-effective way to integrate renewable electricity onto the system. Research commissioned by the European Commission shows that demand response stands out as particularly promising among the various options to achieve integration of high shares of renewable electricity; an effective use of demand response can yield annual savings in the order of €60-100bn/yr¹. Moreover, it creates significant global market opportunities for companies exporting such solutions: the global market for low carbon and environmental goods and services is growing at over 4% a year and is expected to reach nearly €5tr in 2016².

In Europe, the main obstacles standing in the way of this transformation are regulatory and market barriers.

- **Politically**, European leaders are committed to the vision of a resilient and forward-looking Energy Union describing a fundamental transformation from a fossil-fuel heavy, highly centralised yet fragmented system, to a sustainable and inclusive one built for citizens and with strong, innovative and competitive European companies.
- The **technologies** necessary to make our appliances, homes, grids and system operation cleaner, smarter and more efficient are available, and their costs are falling fast. Costs of LED lighting have fallen by 84% over the past five years, electric vehicle batteries and solar PV costs have fallen by 55% and 50% respectively over the same period³, and wind generation has become the cheapest source of new electricity generation in many parts of Europe⁴.
- Yet, significant **regulatory and market** barriers still limit market access and hinder the growth of demand-side resources. For instance, demand side response remains illegal or ineligible in some markets, or hindered by historical supply side bias in programme participation requirements.

¹ Integration of Renewable Energy in Europe, DNV GL in cooperation with Imperial College and NERA Economic Consulting

² Low Carbon and Environmental Goods and Services Report for the UK's Department for Business, Innovation and Skills, July 2013

³ LEDs: US Department of Energy (2014) Solid-State Lighting Research and Development Multi-Year Program Plan; Batteries: Carbon Brief (2015) Electric vehicle batteries 'already cheaper than 2020 projections'; Solar PV modules NREL (2015) Photovoltaic System Pricing Trends;

⁴ Onshore wind LCOE estimated to \$83/MWh, Bloomberg New Energy Finance (2015)

The EU must take urgent action to drive the development of demand side flexibility⁵ and energy efficiency. The EU Energy Union project is Europe's chance to transform its energy system and unlock the potential of demand-side solutions, smart grids and digital innovation. If it succeeds, citizens and businesses across Europe stand to gain from more resilient, integrated, low-carbon and cost-efficient EU energy markets and new economic opportunities from digital innovation and resource efficiency. If it misses the opportunity of the current legislative agenda, it will endanger European competitiveness and European decarbonisation objectives.

Too often discussed and regulated separately, demand side flexibility and energy efficiency offer great complementarity in improving system efficiency and reducing overall system costs⁶, notably in the residential and commercial sector. The signatories of this statement propose a **joint approach in delivering demand side flexibility and energy efficiency**, starting with the first steps below:

1. **Provide market access for all demand-side resources.** EU rules must be established and enforced so that demand-side resources have unhindered access to all energy markets (wholesale, balancing, ancillary services) in all timeframes, including through product requirements fit for supply and demand-side resources alike. This also means direct market access for consumers and new market entrants, including third party aggregators and ESCOs. A clear regulatory framework should be put in place to define the roles and responsibilities of involved market actors, facilitate voluntary and remunerated demand-side response, and make the most of effective synergies that exist between demand-side and renewables assets in providing upward and downward flexibility to the system.
2. **Promote scarcity pricing and dynamic tariffs.** Market prices should reflect the availability or scarcity of supply and the status of the network. Consumers should be made aware of the potential value of their flexibility and any customer should have the right to a smart meter providing near real time insight in their energy usage, and to choose hourly, and where applicable quarter-hourly, market pricing. The retailer/BRP should be settled accordingly. At the grid level, system operators must be allowed to procure flexibility services in all timescales, taking into account local network conditions.
3. **Establish the right for consumers to self generate and consume their own energy.** Investment and operation of renewable and distributed generation assets should be encouraged via a framework that recognises their system wide benefits, notably through proportionate taxes and grid fees. Simple procedures should also be put in place to facilitate the connection of small generators.
4. **Establish system-wide adequacy assessments.** The contribution and full commercial potential of demand-side resources including energy savings, demand side response, embedded generation as well as interconnections and storage, must be taken into consideration in system adequacy assessments, to be performed at regional level.
5. **“Efficiency first” in system operation.** Transmission and Distribution System Operators should be encouraged to make use of smart demand-side flexibility solutions for cost effective system operation and infrastructure development; DSO remuneration

⁵ Keeping in mind that the provision of demand side flexibility by consumers must remain voluntary and remunerated.

⁶ Acknowledging that providing demand side flexibility can in certain cases come at the expense of the site's efficiency (this is notably the case in some industrial facilities).

structures should be revised to this end notably by decoupling DSO revenues from volumes of energy throughout. Distribution tariffs should take into consideration the system costs avoided by demand side flexibility and embedded generation.

6. **Promote the deployment of smart and integrated energy solutions.** Integration of the heat, power, and transport sectors can increase the overall flexibility and efficiency of the energy system. Bridging solutions facilitating the interplay between various sectors and the integration of renewable energy into the energy system should be valued and promoted. In particular, this means stimulating building automation and the deployment of cost-effective technologies such as heat pumps for district heating, cogeneration, large heat storages, electrolysers, smart meters, individual heat pumps, solar thermal devices, etc.
7. **Ensure better market surveillance & governance.** Adequate regulatory oversight and a robust institutional framework are indispensable to building trust and confidence in the internal energy market (IEM) and in Europe's energy transition. To this purpose, EU wide market surveillance and market performance assessment must be substantially improved, efficiency first principles and EU climate and energy objectives must be embedded in a robust institutional framework, and ACER's powers and resources should be strengthened accordingly. A set of high-level indicators should be developed to measure and track progress in the power sector's transformation, including the development of demand-side flexibility.

