DEMAND SIDE RESPONSE POLICY PAPER

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INTRODUCTION

Demand Side Response (DSR) is a key component in the successful evolution of the power system from a conventional based generation system to one that has significant contributions from intermittent sources of generation and power intensive loads. **To achieve the EU's 2030 and 2050 energy policy and decarbonisation targets, DSR uptake must therefore be broad and deep.**

DSR is load demand that can be actively changed by a trigger. **Demand Side Management (DSM)** is the utilization of DSR for a purpose such as system security (i.e. balancing and congestion), or system adequacy.

DSR benefits are numerous:

- DSR creates value for consumers and society by allowing consumers to be rewarded for changing their consumption behaviour and to therefore reduce the costs of energy.
- DSR provides flexibility to system operators, helping them to maintain security of supply and system adequacy, optimise the utilisation of infrastructure and investments in the grids.
- DSR can be a competitive alternative to other power sources, thereby enhancing competition and improving the EU's Target Model for electricity markets.

However, currently less than 4 %[1)] of available demand is utilised to provide DSR. This observation underscores the existence of a number of challenges that need to be addressed to allow DSR to fully contribute to the achievement of the EU policy goals.

This paper outlines the critical issues for facilitating DSR and proposes a series of recommendations to address them.[2)]

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SUMMARY OF RECOMMENDATIONS

ENTSO-E identifies **five critical issues** that need to be addressed to enable DSR to fulfil its potential. These relate to agreeing on roles and responsibilities between transmission system operators (TSOs) and distribution system operators (DSOs), organising data handling procedures, ensuring security of supply, configuring market mechanisms, and defining a common European framework.

To address each of these issues, ENTSO-E recommends:

1. **Clear setting of the roles and responsibilities of relevant parties to facilitate and enable the delivery of DSR and customer engagement.** In particular, this requires an important collaboration between TSOs and DSOs.
2. **Development of a framework that optimises the use of DSR across multiple parties (e.g. DSR sharing), facilitated through the role of a future data handling body (or bodies).** This will ensure TSOs, DSOs, suppliers and other market participants are able to gather the data required to fulfil licence/regulatory/commercial obligations.
3. **Agreement in Europe on Security of Supply needs from the networks and the development of network Planning and Operation standards to reflect a new network paradigm with DSR.** This will entail defining and ensuring performance criteria for DSR.
4. **Market integration of DSR as another market participant on equitable and transparent terms with generation and storage.** This will require opening all markets to DSR on a non-discriminatory basis and creating generic "DSR friendly" products to allow markets to deliver appropriate price signals and incentives to develop DSR in the system.
5. **Adoption of a common European framework for DSR with regional/national settings.** These should set up clear and consistent ground-rules and roles for all relevant parties to deliver DSR, while leaving flexibility for pilot projects at regional or national levels.

1) EC C(2013) 7243: "Incorporating demand side flexibility, in particular demand response, in electricity markets", Commission staff working document, 5.11.2013. The document mentions that around 10% of industrial load, which composes 40% of total load, is currently deployed for DSR. Thus about 4% of demand is currently deployed as DSR products.

2) This paper takes into account the objectives set out in 2012/27/EU Energy Efficiency Directive in which Article 15 paragraph 8 sets out the obligations of member states and their regulatory authorities, as well as TSOs and DSOs in the scope of the promotion and development of DSR.

FIVE CRITICAL ISSUES TO BE ADDRESSED TO ENABLE DSR AT THE EU LEVEL

This section describes each of the five issues in more detail and proposes a series of recommendations to address them.

1 ROLES AND RESPONSIBILITIES – THE TSO AND DSO NEXUS

At the national and European levels, there are contrasting views, especially between TSOs and DSOs, on the use and development of DSR. As a consequence, limited progress has been achieved across Europe in deploying DSR.

As DSR is becoming more important in future system design and operations, it is essential to develop an aligned position between TSOs, DSOs and other DSR stakeholders on how to deal with this emerging system flexibility. DSR will be a key feature for markets and will be used by all market parties for their day-ahead or intra-day optimisation, but also for longer term portfolio management.

TSOs are key players in designing the market tools necessary to fully utilise the physical facilities and should therefore coordinate and work in close cooperation with DSOs when extracting flexibility or DSR from DSO-connected access points. TSOs will primarily need DSR for system balancing, while DSOs will primarily need DSR for local congestion management.

TSO-DSO interaction is particularly important in steering the debate in Europe on how to further develop DSR, both in the short- and long-term. This discussion is also embedded in the broader debate on how to organise electricity markets in Europe (cf. Network Codes) and engage customers. Therefore, ENTSO-E needs to "lead" and provide guidance with respect to this strategic topic.

RECOMMENDATIONS

- **ENTSO-E should take the initiative** in informing decision makers and stakeholders, not only on DSR **technicalities** and economics, but also in the broader debate on how to organise the roles concerning DSR within future electricity markets in Europe. This policy should keep in mind that TSOs are independent parties that have played a crucial role in executing the Third Energy Package and maintaining total system balancing.
- **TSOs should undertake endeavours to facilitate the deployment of DSR in their systems and market operations.** To do this, TSOs will need to actively take the lead on engaging the market and aligning with policymakers at both the European and national levels.
- Finally, **TSOs and DSOs should collaborate** to facilitate and enable the delivery of the DSR, with increased customer engagement, into their networks and the markets in a transparent way and in accordance with applicable legislation, thereby avoiding negative, adverse effects.

2 DEFINING EFFICIENT DATA HANDLING PROCEDURES

Efficient arrangements for data handling will play a central role in the successful development of DSR across Europe. To that extent, a framework for data handling, while ensuring the proper access for stakeholders in fulfilling their assigned role and responsibilities, is crucial.

Without efficient data handling, it will be difficult for customers to switch their DSR provider, which could lead to reduced DSR growth and limiting new business models. Also, without proper and transparent information, consumers may get confused with too many unclear offers, complex contract handling and multiple parties. Processing and presenting data in a clear way is key to simplifying DSR participation.

Other constraints that hinder efficient data handling include:

- The data handling challenge is compounded by a lack of technology penetration (e.g. smart metering, standards, communication, etc.) as well as issues of privacy and confidentiality which stem from data gathering and monitoring.
- Information and data is becoming more important due to the increasing activity at the demand level as the number of parties who want to use DSR resources has increased (e.g. DSOs, TSOs, Balancing Responsible Parties (BRPs), suppliers, and third parties such as aggregators). Unfortunately, due to current data sharing being based upon historic needs and arrangements, data is held in pockets and generally only shared because of obligations or through ad-hoc requests.
- In addition, DSR users currently do not co-ordinate (i.e. in procurement or dispatch) and there is limited transparency on DSR use. Thus there is a need to clearly define procedural and operational issues, such as who sends orders for DSR services and how to verify the realisation of DSR, to guarantee market effectiveness and transparency.

RECOMMENDATIONS

- **The right data should be available for right system and market needs.** TSOs need simple and transparent data handling structures and management. Data can be gathered by regulated or independent companies at different hub levels to optimise management and data flow.
- **Develop a framework that optimises the use of DSR across multiple parties (e.g. DSR sharing between DSOs and TSOs) facilitated through the role of a future data handling body (or bodies).** This will ensure that TSOs and DSOs, along with suppliers and other market participants, have access to the data required to fulfil licence/regulatory/commercial obligations.
- **Centralised and regulated coordination of data**, as exemplified in Denmark, to facilitate competition by making it easy for customers to switch DSR services, and for new DSR services

3 ENSURING SECURITY OF SUPPLY WITH DSR

Traditionally, the planning and operation of networks have not included the full potential of DSR. Load has been widely used as a last resort in emergency situations, and requirements to secure the system have been met so far by synchronous generation which has dominated the generation mix. However, the increasing penetration of dispersed and intermittent generation requires more control resources to maintain security standards.

DSR is a resource that can replace traditional synchronous generation at reasonably competitive costs and can therefore allow a more secure integration of high RES levels by providing extra means of flexibility. DSR can also bring potential deferment in grid development.

This large-scale uptake of DSR needs to be accompanied by a review of the Security of Supply standards and requirements in order to properly plan and operate the network for the period 2020-2050. Such a review needs to be conducted by TSOs with network users (and associated stakeholders).

RECOMMENDATIONS

- **Ensure performance criteria for DSR** through the appropriate legislative options, to be developed or improved (e.g. Eco-design directive) through contracts and possibly through regional initiatives.
- **DSR should be principally run on a voluntary basis.** However, TSOs overseeing the whole system may specify requirements for DSR needs to maintain Security of Supply, e.g. load shedding.
- **Develop planning and operational standards** which are adapted to reflect the shift towards a high level of RES/DSR participation. These should be based on the needs of users, which may be progressive and dynamic, evolving on a changing portfolio of users and/or provide different levels of Security of Supply based on user needs.
- **ENTSO-E to lead the European debate on long-term Security of Supply** working with Regulators, the European Commission and all other key stakeholders.

4 MARKET INTEGRATION

To facilitate the participation of DSR, a change in the organisation of electricity markets is needed. There is less market liquidity and less competition without DSR participation, resulting in less effective electricity markets and increased costs for society.

Markets today have barriers to entry for the majority of DSR, which means that only the big players have the power to enter. In addition, the markets were designed with generation in mind, not DSR. Barriers should be challenged and reviewed so that new and smaller players can participate in the markets.

Common principles are essential to allow DSR to participate in cross-border trading and consumers must be able to participate in markets, potentially through a third-party, typically suppliers or aggregators. However, those third-parties need to interact smoothly with other market parties performing a specific role (e. g. interactions with balance responsible parties).

RECOMMENDATIONS

- Allow markets to deliver **appropriate price signals and incentives** to develop DSR in the system
- **All existing electricity markets should be open to DSR on a non-discriminatory basis** from day-ahead to balancing, including ancillary services, in order to create a level playing field between generation and DSR. TSOs must take the responsibility to make this happen.
- The creation of **generic "DSR friendly" products for the wholesale and balancing markets** is key when designing a DSR-friendly market. These products must be reliable and capable of being exchanged between demand-side and conventional market players indifferently. Solutions that must be evaluated in product design are reduced bid size, bid time and/or gate closure time. Although EU standardisation is important towards increased cross-border exchange, there should be room for the development of **specific demand-based products**, given the underlying variety of demand resources, market and TSO or DSO needs. TSOs and market operators must take the lead on this topic.
- Use **single billing** to raise consumer acceptance. Retail supplier, network charges and new DSR payments must all be on a single bill, supervised by one independent and neutral body that maintains the confidentiality of the different suppliers. Regulators must take the lead to ensure retail markets stick to this model.

5 CONSISTENT GROUND-RULES AT THE EU LEVEL

It is currently difficult for consumers to provide DSR and to participate in the energy market, as customers are not recognised as being central.[1)] Today, DSR in the energy market is a small proportion of industrial load demand with virtually no residential or commercial load demand.

Moreover, a global common European framework for DSR does not exist – though some progress has been made through provisions in the Energy Efficiency Directive, and the introduction of a concept of flexibility in standardisation through the Smart Grid initiative developed at EU level.

One of the key challenges is that different countries have different DSR products and frameworks ranging from time-of-use to bilateral interruptible contracts, balancing services provided by large industry customers, critical peak pricing tariffs, additional time-base tariffs, and reserve capacity tenders. As we move towards completing the Internal Energy Market, this lack of harmonisation at the pan-European – or at least regional – level creates confusion and will act as a barrier to market uptake of DSR.

RECOMMENDATIONS

- **Establish clear and consistent ground-rules and roles for all relevant parties to deliver DSR**; these should be adopted at the EU level with some uniformity while leaving flexibility for pilot and realisation at regional or national levels and should be based on an evaluation of the existing obstacles for the development of DSR (regulatory, economic, etc.). ENTSO-E should take a leading role and work with European institutions, regulators, and standardisation bodies to define these DSR ground-rules with input from stakeholders.
- **Thoroughly assess differences in national/regional frameworks for DSR within Europe** and assess whether DSR potential can be fully deployed within the current market and regulatory frameworks. TSOs should engage to assess market and system perspectives, considering sufficient system adequacy.

1) "CEER calls for consumer interests to be a key consideration during formulation of future EU DSR policies"

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