

EXECUTIVE SUMMARY:

REPORT ON ARRANGEMENTS FOR
DEMAND RESPONSE AGGREGATION

July 2017

Demand Response is an effective way to provide flexibility to the energy system that is increasingly characterised by intermittent renewable energy generation. There are two main types of Demand Response: with implicit Demand Response, the consumer reacts individually to (market) price signals; with explicit Demand Response, loads are controlled by central instances, sometimes called independent aggregators.

The efficient provision of Demand Response is a particularly valuable and versatile source of flexibility that can help the system operator to balance the overall power system by reducing the imbalance between generation and demand of electricity in real-time. This will have a positive effect on the power system and the wholesale markets. Finally, Demand Response can also contribute to the mitigation of network congestion and, in the long term, reduce the need for network extension at DNO level.

Explicit DR, in particular the role of aggregators, is currently treated differently at Member State level. To incentivise the Demand Response development in Europe, the European Commission has proposed a general framework for aggregators in its new draft Directive. This includes independent aggregators that are not affiliated to a supplier or any other market participant. Aggregators combine customer loads or generated electricity for sale, for purchase or auction in any organised energy market.

DNV GL appreciates the role of the aggregator that is being introduced by the EU. Aggregators can serve as important players to enable a more flexible power system in line with needs engendered by high shares of intermittent renewable energy feed-in.

Regarding aggregators, the provisions in the draft Electricity Directive include:

- National regulatory regimes shall encourage the non-discriminative market participation of Demand Response, i.e. without the need for aggregators to have the consent from other market participants for entering the market (Art. 17.3a).
- Aggregators shall not be required to pay compensation to suppliers or generators (Art 17.3d).
- National regulation may make the aggregator liable to pay compensation to balance responsible parties only in exceptional cases where it induces imbalances to another market participant resulting in financial costs (Art. 17.4).

Review and analysis of the Impact of the Draft Directive

On behalf of EURELECTRIC, DNV GL has carried out an independent analysis of the EU Commission's draft proposal for Demand Response activated by independent aggregators. Our analysis shows that the insufficient compensation of what we call the bulk energy and imbalance issues is likely to result in compromising two important criteria of power market functioning:

- compatibility with principles in the power system and power market
- and economic efficiency

Bulk energy issue:

Our main concern regarding Article 17.3d is linked to a general principle of power markets, namely: energy procured also needs to be purchased.

Under the current provisions, we see a risk of this principle being violated because whenever Demand Response is activated by an independent aggregator for load shedding (probably the most common Demand Response application) the following situation will arise. The actual consumption of the consumer associated with the aggregator deviates from the amount of energy procured by the supplier for this consumer. And, the supplier can only bill the consumer for the actual consumption and not for the energy sold by the aggregator. This has the following consequences:

- The supplier has paid for energy but cannot invoice its value to the customer
- the independent aggregator can sell this energy on the market without having paid for it

This constitutes what we call the bulk energy issue.

Under the current provision 17.3d, the independent aggregator becomes a free rider, causing external costs to the supplier and ultimately to the whole system. The benefits of Demand Response activation accrue exclusively for the aggregator, while the costs for uncompensated energy are incurred by the supplier. This is likely to distort the market for power supply.

Moreover, under the proposed framework, Demand Response activated by an independent aggregator, is likely to lead to economic inefficiency from an overall system perspective. **When the actual costs of Demand Response, i.e. the loss in revenues to the supplier due to the bulk energy issue, are higher than the revenues generated by the aggregator, Demand Response activation is inefficient from a system perspective.** Without compensation for the energy re-routed to the market, the aggregator would activate Demand Response and sell the associated energy even when the market price (e.g. intraday or balancing) is relatively low – or even below supplier's procurement cost.

Imbalance issue:

Article 17.4 gives rise to an additional inefficiency that can be described as the 'imbalance issue'. This is the difference between the scheduled and the actual consumption in the supplier's supply portfolio due to a Demand Response activation by an independent aggregator. This imbalance is subject to central imbalance settlement (usually with the TSO).

The EU proposal allows for not compensating such imbalances induced by Demand Response activation. While the supplier has no influence on the activation of Demand Response by the aggregator, it would have to take the financial responsibility for the imbalance.

Our analysis shows that the imbalance and bulk energy issues immanent to the current EU provisions can lead to economic inefficiencies and violate basic energy market principles.

The full report can be found under: www.dnvgl.com

Recommendations

As explained above, our study reveals that the current EU proposal for the regulation of the aggregator role is problematic.

It is likely to lead to inefficiencies and market distortion. We show that sound market design including demand response aggregation requires a dedicated solution as they can be different for the bulk energy and the imbalance issue.

We recommend:

- The draft EU legislation should resolve the bulk energy issue by fully compensating the supplier, allowing Member States to set the most appropriate rules at national level.
- The responsibility of aggregators for the imbalances produced should be explicitly established. In particular, this means that the aggregator should be financially responsible for the imbalance it induces on other market participants, like the supplier or its BRP, unless there are other mechanisms able to neutralise this effect.

In other words: Other than specified in the EU proposal, the regulation should explicitly allow for compensation for the bulk energy issue and for the imbalances, or preferably even mandate it.

Non-compensation to the supplier or socialisation of the costs related to both issues should be the least preferred option and even omitted.

The implementation of the supplier compensation allows for a set of different approaches and may build upon a variety of models available in Member State regulation.

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