



## The role and responsibilities of electricity distribution system operators (DSOs), particularly regarding access to storage



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Since the turn of the millennium the European energy sector has undergone deep transformation. The enactment in parallel of measures to liberalise power and gas markets, encourage development of renewable sources and more broadly reduce emissions of greenhouse gases have changed the generation landscape in particular. The development of renewable power generation has brought about new challenges, including the emergence of a more marked need for flexibility in the electricity system to compensate for the intermittency of output from renewable assets.

Part of the solution is to be found at the distribution level, which combines a large share of the intermittent power generation portfolio with potential for the development of demand-side response and distributed electricity storage. A key challenge is thus the proper integration of distributed resources in the wholesale market, in a manner that allows market participants – both on the offer (generation) and demand (consumption) side – to meet system needs at the lowest possible cost while preserving competition.

At the same time, the increasing share of distributed resources poses new challenges and opportunities to DSOs. Distributed resources can play a role in optimising the operation and expansion of the distribution systems.

#### Unbundling requirements

Strict unbundling requirements of Chapter IV and V of Directive 2009/72/EC guarantee that **Transmission System Operators (TSOs) act as neutral facilitators of the market**. In practice, this means that TSOs let market participants transact freely between themselves and adjust their positions until close to real time, while the TSOs have the responsibility of balancing the system in real time and guaranteeing transmission system security. To this end, TSOs can contract services from market participants. But, in order to limit conflicts of interest, they are excluded from the commercial operation of power

generation and from wholesale and retail supply businesses. While the Directive makes no explicit mention of storage, a contemporary interpretation of the definition of the roles and responsibilities of TSOs in the Directive dictates that storage operation, as a commercial activity, is not consistent with their unbundled status and must be excluded from the realm of normal TSO activities.

We have seen that strict rules apply concerning the separation of TSOs' activity as network operators from that of power generators, electricity suppliers and storage operators.

At the distribution level, the requirements of Chapter VI of Directive 2009/72/EC foresee **comparable unbundling requirements for Distribution System Operators (DSOs) as for TSOs**. However, these requirements have generally been loosely applied<sup>1</sup> given the lesser risk of DSOs acting as market participants until now. With the expansion of intermittent renewable power generation at distribution level, as well as the development perspectives for demand-side response and electricity storage, **the question of the strict separation of competitive commercial activities from monopolistic system operation activities at a distribution level becomes of high relevance to maintain DSOs in their role of market facilitator**.

### Competition facilitated by markets and cost efficiency

EFET insists that a strict separation of the management of, and balance sheet for, commercial business from transmission system operation at distribution level remains imperative. Beyond the risk of conflicts of interest, the main reasons for a separation, along the lines of the model applied to TSOs, are enhancement of retail and wholesale competition and of operational cost efficiency. Both these ends are served by facilitating undistorted markets at wholesale and retail levels, where participants may compete and interact on a level playing field. The example of electricity storage is particularly telling: In recent papers published in 2016<sup>2</sup>, DSO representative organisations have started arguing for DSOs to be allowed to own and operate storage assets connected to the distribution grid.

As for any other commercial activity in the electricity sector, EFET believes that **market participants (whether generators, traders, suppliers or consumers) are best placed to own and operate assets**, with the exception of network assets: what goes for

<sup>1</sup> According to the CEER Status Review on the Implementation of Distribution System Operators' Unbundling Provisions of the 3<sup>rd</sup> Energy Package, "If compared with the unbundling rules for TSOs, which were thoroughly revised under the 3rd Package, resulting in new, more far reaching unbundling requirements, the unbundling requirements for DSOs have only been slightly reinforced in the 3rd Package. Another difference between DSO unbundling and TSO unbundling lies in the new requirement for TSOs, which now have to be certified by the competent National Regulatory Authorities (NRAs) as being compliant with the unbundling requirements and to be designated by the Member States. Such a certification and designation requirement does not exist for DSOs." More information at: [http://www.ceer.eu/portal/page/portal/EER\\_HOME/EER\\_PUBLICATIONS/CEER\\_PAPERS/Cross-Sectoral/2016/C15-LTF-43-03\\_DSO-Unbundling\\_Status\\_Review-1-Apr-2016.pdf](http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Cross-Sectoral/2016/C15-LTF-43-03_DSO-Unbundling_Status_Review-1-Apr-2016.pdf).

<sup>2</sup> For more details, see the GEODE position paper on the *Functions of Electricity Storage for the Grid*, available at: <http://www.geode.eu.org/uploads/GEODE%20Germany/DOCUMENTS%202016/REPORT%20ENERGY%20STORAGE%202016.pdf>, the EDSO position paper *Integrating Electricity Storage in Distribution Grids*, available at: [http://www.edsoforsmartgrids.eu/wp-content/uploads/EDSO-views-on-electricity-storage\\_final.pdf](http://www.edsoforsmartgrids.eu/wp-content/uploads/EDSO-views-on-electricity-storage_final.pdf), and the CEDEC paper *Energy Storage: Storage as a Tool for Smart Distribution*, available at: <http://cedec.com/files/default/cedec-report-energy-storage.pdf>.

decentralised renewable power generation is also valid for decentralised batteries. Market participants would invest in decentralised storage assets if they see a business case for it. **Should DSOs have an interest in accessing storage capacity to perform their duties of system balancing and system security, they can contract this capacity directly from market participants** – much like TSOs contract upward and downward reserves for real time balancing and redispatch services for congestion management. The probability of such procurement of this type happening would improve the business case for investments in storage capacity, when considered from the point of view of market participants.

Should DSOs be allowed to own and operate storage assets directly, **detailed rules would need to be developed to ensure that DSOs use these assets for system balancing and system security only**, and do not use them effectively to supply customers in competition with market participants. Proper monitoring would then need to be implemented to understand exactly how those assets would be used. Experience shows that monitoring by national regulators of TSO activities is already an extremely complex task, even though individual regulators most often only have one TSO to oversee, and advanced transparency obligations and tools have been put in place at the transmission level. With very limited transparency on DSO activities at the moment, and more than 2,400 DSOs active in the EU, we doubt that national regulators could effectively carry out such monitoring duties.

Even if it is assumed that such assets will not be used on the market, and if thus, DSOs would be allowed to own and operate storage assets directly for their own grid balancing and security purposes, then it should be expected that the assets would be under-used, resulting in higher costs overall. On the one hand, this would diminish the value of the DSO-owned assets: if owned by market participants, the capacity and output of different storage assets could be pooled, and sold both on the market and to the DSOs, thereby decreasing the price of storage capacity use for all users, including the contracting DSOs. On the other hand, under-used DSO-owned storage assets would weaken the business case for private investments in storage assets, as it would suppress signals of the value of storage capacity on the market.

### Conclusion

- **EFET recalls that DSOs, like TSOs, are - by providing access to their networks - market facilitators. Commercial activities like power generation, demand-side response and storage lie within the contestable domain of the market. Strict separation of competitive commercial activities from monopolistic system operation activities at a distribution level is needed, based on the model applied to TSOs.**
- **Within the ongoing decentralisation trend, where an increasing number of activities will take place at the distribution level, competition must also play the predominant role. Market participants are best placed to provide cost-efficient solutions. Procurement by TSOs and DSOs of services from market participants underpins competition and remains the cheapest option for system operators to procure storage capacity and output. Competitive mechanisms also avert the risk of welfare losses related to the underuse of TSO/DSO-owned storage assets.**