

CEER Citizens' Q&A

CEER Short Paper on Ownership of Storage Facilities in the Electrical Distribution System 28 June 2023

1 What are storage assets and what are their use cases?

An energy storage facility in the electricity system is a facility which allows deferring the final use of electricity to a moment later than when it was generated. This can be achieved through different methods and [technologies](#), such as mechanical (pumped-hydro, flywheels), or electrochemical (different types of batteries, the most common of which are lithium-ion batteries). Storage facilities can be beneficial for the electricity system as they allow e.g. to store excess energy generated during a low consumption period/off-peak period by renewables (RES) and release it into the system during a high consumption period/peak periods. This is known as energy arbitrage, where the storage operator is also incentivised to operate in this way as it receives the price difference of peak (higher price) and off-peak (lower price) periods. This is also beneficial for the system, as it allows to better utilise RES generation, address consumption peaks, and consequentially lower the need for grid investments. Additionally, storage can provide a range of services to the electricity network, such as congestion management, voltage control, as well as other ancillary services for grid stability and reliability. From a system services aspect we can also differentiate between short-term (from seconds-to several hours) and long-term (from 10 hours to days, weeks, even seasons) energy storage.

2 Why are DSOs not allowed to own storage under “normal circumstances”?

The distribution system operator (DSO) is responsible for the secure, reliable and efficient operation and development of the distribution network. The DSO is a natural monopoly; this means that from a system perspective, it is more cost-effective to have a single common distribution network and operator for a given area. However, a monopoly must be regulated as to avoid them leveraging their monopoly power contrary to the public interest, resulting in unnecessarily high prices for consumers. The DSO is generally also excluded from participating in the electricity generation and supply (retail markets) as they would have an unfair advantage over other market participants, hindering the competitive markets' functioning. DSOs are thus generally not allowed to own assets that involve participation in the energy market, such as generation assets or storage.

In this spirit, the Electricity Directive¹ (article 36) introduced an EU-wide framework addressing the potential ownership of energy storage facilities by DSOs. As a general rule, DSOs shall not own, develop, manage or operate energy storage facilities, but by way of derogation, there are exceptions to this base case.

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019L0944>

3 Under what circumstances are DSOs allowed to own storage?

However, pursuant to the same article 36 of the Electricity Directive, there are two types of derogations that can be granted allowing the DSO to own and use storage. The first type of derogation can be granted if the storage facility is a fully integrated network component (FINC) and the approval of the national regulatory authority (NRA) has been granted. A FINC refers to small-scale applications of DSO-operated storage facilities the sole purpose of which is to ensure the secure and reliable operation of the network, and not for balancing or congestion management.

The second type of derogation can be granted if the market is not able to provide the necessary services at a reasonable cost and in a timely manner, the services are necessary for the DSO to fulfil their obligations and the storage facility is not used to participate in the electricity markets. To assess whether the market is able to provide the necessary services, an approved and fair tendering process must be performed. Lastly, the NRA must assess the necessity of the derogation and the quality of the tendering procedure, and grant an approval, only then can DSOs own and use storage. This derogation is much stricter, since these services could or should be procured on a competitive market, and it should only be allowed for the DSO to perform these services for themselves under exceptional circumstances (e.g. where there is no market).

4 Is DSO owned storage already used in practice?

In the overwhelming majority of member countries there is very little to no DSO-owned storage and no derogations have been granted. This is likely due to the derogation processes under which DSOs can be allowed to own storage being still largely unexplored, and the implementation of the derogation process as per the Electricity Directive is still in its infancy. The time limitation of the derogation may also affect DSOs' decisions in this matter. The aim of this CEER paper is to provide guidance to both NRAs and DSOs on how to implement and apply this process in practice through a stepwise guide that can be used as a basis.

5 Why is this important for energy customers and what is the impact on them?

Amidst the strong push for more (variable) renewable electricity generation and the electrification of energy demand (e.g. heat and electric mobility), there is the real risk of grid operators not being able to meet the required pace of distribution network reinforcements and ensure the reliable and secure operation of and timely connection to the distribution network. When the market is unable to efficiently provide necessary services to the DSO and when the conditions subject to the derogation process have been met, DSO-owned storage can be a cost-effective way for the DSO to guarantee the secure, reliable and efficient operation of the network. In this case, the DSO is able to lower its overall costs and/or increase the capacity of the grid, which directly results in better service for the end consumer.