

Storage – and other assets – and the role of TSOs/DSOs

The Advisory Council has addressed the question whether TSOs should be allowed to own and operate assets (like storage). The starting assumption is that assets that are exploited on the power market should be owned and operated by market participants. During the discussion at the 2nd meeting of the Advisory Council, the ENTSO-E representatives explained that some assets that are core elements of the grid can also provide ancillary services, whereas such services could also be delivered by market participants. They underlined that regulations should not restrict TSOs in owning and operating such assets.

To structure this debate the Advisor Council proposes to distinguish between two categories of assets - market assets and grid assets - and to apply rules on ownership and operation of such assets for each of these categories.

These rules are of general nature and need elaboration for practical application.

The Advisory Council sees no fundamental difference between TSOs and DSOs in this question. Therefore the advice covers both TSOs and DSO.

Category 1: Market assets

- Definition: Market assets are assets that can be used to balance demand and supply through the power market.
- Examples: Assets for storage, generation and demand response.
- Market assets could also be used to deliver ancillary services to TSOs and DSOs. Like:, voltage control, frequency support (FCR, FRR, RR), black-start and congestion management (or even avoidance of grid expansion)
- **Rule:** DSO/TSO may not own and operate market assets.
- Why: The main reason is that procuring services is always cheaper as only then the asset owner can use the asset both on the market as well as for selling ancillary services. If the asset would be owned by the TSO/DSO then the asset could only be used for provision of ancillary services and thus value would be lost.

Category 2: Grid assets

- Definition: Grid assets are assets that are used to transport electricity and cannot be used to balance demand and supply on the market.
- Examples: overhead lines, cables, (phase shifting) transformers, inductors, capacitors, substations, HVDC-converters.
- Some of these grids assets may also be able provide ancillary services to the TSO/DSO (whereas such ancillary services could also be delivered by market assets)
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- **Rules:**
 - DSOs/TSOs own or operate grid assets and they can provide ancillary services. In other words, they reduce the need to procure ancillary services from market participants.
 - However, if a TSO/DSO has *additional* costs when investing in such grid assets, for the provision of such ancillary services, such additional investments may only be done if the alternative (which is procuring such ancillary services from market participants) is less attractive from a socio-economic point of view. This rule needs further elaboration for practical elaboration. For example, DSOs/TSOs need to take also distributed resources into account.

- Example 1: A capacitor or inductor is only used for voltage reactive power support. So all of the costs for such asset must be compared with the alternative (procuring ancillary services from the market).
 - Example 2: A HVDC convertor is mainly used for transmission. However as a side product it can deliver reactive power support. If such provision is made at no additional costs, then this should be used and reduces the need to procure services from the market.
- Why: The aim is to both allow for an optimal use of grid assets (core grid assets should be allowed to provide ancillary services) and to ensure an overall cost efficient procuring of ancillary services when such services can be provided both by grid and market assets.
 - Special cases:
 - Substations contain battery systems. These batteries are used to secure power supply for control equipment in the substation. Such batteries are assumed to be a part of a substation, which is a core grid asset. Therefore such batteries fall under category 2, Grid Assets.