

## Key components in innovative market design

Irrespective of differences in market characteristics and approaches (e.g. vertically integrated or unbundled markets), a transparent and clear regulatory framework will reduce regulatory uncertainty and facilitate the ability of market actors to adapt to a changing environment. Key components to address in regulation are:

- The demand for energy market transformation could be leveraged by a more innovative regulatory approach, for instance by promoting regulatory sandboxes and sharing experiences
- Exposing customers to price signals reflecting the actual costs of electricity distribution, including costs related to local congestion, will incentivize end-users to adjust their consumption according to local network conditions.
- DSO's and TSO's organizing local flexibility markets to address local grid congestion may complement network tariffs or other incentive programs that are not sufficiently differentiated in time and space.
- In unbundled markets the DSO should act as a neutral market facilitator, e.g. provide accurate and timely metering and communication of end-user data to relevant market actors respecting customers privacy.
- The network regulation need to ensure that the DSOs' have incentives to be cost efficient (e.g. efficient utilization of existing network, reducing network losses, efficiently balancing capital investments and operational costs, including adopting innovative technology). Performance based regulation may be a way forward.

## Leveraging a variety of stakeholders and roles

End-users may lack interest and knowledge about the electricity system. However, automatic control equipment is perfectly capable of minimizing the end-users' electricity bill based on price signals or other incentives. It is therefore paramount that transparent and efficient price signals from all levels of the electricity system are reaching the end-users. This goes both for centralized dispatch and exchange-based decentralized dispatch systems.

Customers are different in their priorities and interests and what kind of incentives they respond to (prices, environmental concern, security of supply etc.).

- Different levels of awareness and commitment among end-users does not need to be an obstacle to demand side flexibility, as long as sufficient numbers of end-users are opting-in.
- A broader spectrum of services may be considered as different customers might have different demands in terms of reliability, quality etc.
- We should see people as both customers and citizens with different motives for engagement and participation in the energy markets.

With increasing shares of variable renewables electricity production, market actors capable of delivering new types of ancillary services will be needed, e.g. inertia and reactive power.

## Energy system integration and interaction

Good system integration requires a combination of bottom-up and top-down approaches, involving all relevant stakeholders.

There is a clear relationship between decentralized solutions and market integration as they often are interdependent affecting the market potential and economy of different choices calling for more comprehensive system integration analysis.

Within each balancing area, methods for capacity calculation need to be consistent and harmonized, resulting in timely and transparent information to all stakeholders.

Market integration need to take physical network constraint (e.g. congestion, deficits and surpluses) into account and reflect these constraints in the price formation.