



- Position paper -

## **A market-based approach to local flexibility – design principles**

### **The challenge: managing an increasing share of renewable energy and more decentralised resources**

Brussels, 12 February 2020 | Increasing the share of renewable energy generation in the energy mix is vital for decarbonisation, yet intermittent renewables such as wind and solar power can put pressure on the capacity of local and regional grids, requiring costly grid management measures from the network operators, both TSOs and DSOs.

At the same time, decentralised resources are being deployed at an increasing rate, including, among others, storage assets and electric vehicles interacting with the grid. Active customers will increasingly be able to offer demand-side flexibility, either directly or through aggregation services. Ways must be found of effectively managing and harnessing the flexibility potential offered by these resources.

While grid expansion is necessary to meet the challenges of increased electrification, it is not enough on its own to solve grid management issues, such as congestion management, and would be too costly as a unique solution. TSOs and DSOs have a range of tools to manage congestion, but harnessing local resources via mechanisms that value their location as well as the service itself will be an important part of the solution.

Overall, these challenges, the integration of renewable energy and the harnessing of decentralised resources, must be addressed in a cost-efficient manner that increases both the security of supply of the power system, and also integrates effectively with existing power markets i.e. building on the liquidity and transparency of the organised wholesale energy market.

The question is how to ensure that these flexibility resources are used when and where they are most needed, that their value to the system is reflected accurately, in a way that also meets the grid management needs of network operators.

## The solution: local flexibility markets

Digital marketplaces, or *local flexibility markets*, can help to address these challenges and ensure the efficient allocation of local flexibility resources. These marketplaces gather parties with flexible assets (flexibility service providers) and allow them to offer flexibility towards entities, typically DSO and TSOs that need to efficiently manage congestion in the grid and ensure security of supply.

A market-based approach is the most efficient way to match supply and demand for flexibility. A market provides an accessible level-playing field that allows service providers to compete fairly to deliver flexibility, triggering the development of new solutions and enabling new entrants. At the same time, this approach ensures that flexibility is delivered at the least cost and used where it provides the most value to the whole system.

Market-based flexibility solutions are especially important when it comes to the integration of demand-side flexibility, known as load flexibility. Flexibility on the load side is urgently needed to ensure the energy transition is cost-efficient and thus more acceptable to European citizens. However, regulated, cost-based approaches to congestion management struggle to integrate loads. This is because the definition of the cost of the load is based on the value of the electricity to the consumer, which varies between individual consumers as well as with time and location, making it very difficult to define meaningful costs for these load-side flexibilities. Market-based approaches with free bids, on the other hand, have the advantage of being able to integrate this flexibility and therefore unlock these resources.

The benefits of a flexibility market must also be seen in the wider context of sector coupling. An energy system with coupled sectors and with no distorting sector-specific tariffs and charges can greatly facilitate the integration of renewables and the achievement of climate targets. The technologies for this, such as power-to-x, are already available, but currently lack sufficient marketing opportunities.

Some clear principles, relevant for the design of flexibility markets have already been set out in the *Clean Energy Package*:

- End-users should have access to all organised markets and products, either directly or indirectly (*Electricity Market Directive (EU) 2019/944, Articles 5, 11, 15, 16, 17*).
- Management of grid congestion should be market-based and should be open to all generation technologies, all energy storage and all demand response (*Electricity Market Regulation (EU) 2019/943, Article 13*).
- Provision of non-frequency ancillary services to system operators must be market-based (*Electricity Market Directive (EU) 2019/944, Article 40 and Electricity Market Regulation, Article 59.1.d*).

However, these provisions must now be implemented in practice. As different flexibility market and platform designs are being developed and tested, we outline below several high-level principles that must underpin their design and implementation.

## **High-level design principles for local flexibility markets**

### **a. Transparent and accessible market platforms**

TSOs, DSOs and market parties should be able to compete freely for flexibility services, via market-based platforms with non-discriminatory access. Market-based competition for the procurement of flexibility will ensure that resources are efficiently allocated, while an accurate and visible price signal will reflect their value to market participants. Directly negotiated bilateral deals between system operators and flexibility service providers should only be concluded when it has been demonstrated that market-based procurement cannot deliver.

### **b. Operation of market platforms by independent, neutral third parties**

As has been proven in the wholesale market, operation of market infrastructure by independent third parties, who are not themselves active on the market, is the best way to avoid any risk of conflict of interest and ensure non-discriminatory access for all market parties. While TSO-DSO cooperation may well be facilitated by platforms in the regulated domain, market trading platforms facilitating trading and price formation in local flexibility markets should be operated by independent third parties. Operation by such third parties also offers advantages in view of the different levels of unbundling at DSO level.

### **c. Open to all technologies**

All types of flexibility including intermittent RES producers, flexible thermal assets, power-to-gas, storage, but also aggregators of industrial flexible load and “prosumers” could be eligible to participate in local flexibility markets depending on their characteristics and grid impact. Certification and verification of the resources would be performed by the relevant system operators (based on voltage level connection) depending on their needs.

### **d. Product design**

In a similar vein, products should to the extent possible be defined so that they allow all technologies, including (distributed) generation, storage, demand response and so on, to compete fairly and are not restricted to a certain type of technology or tailored to the needs of established or specific providers. Relevant stakeholders should therefore be fully involved in the design process. Furthermore, it is important that the development of products is done organically over time based on identified needs and opportunities. Put another way, the

establishment of a fixed set of order types or products to be applied in all given local flexibility markets should be avoided, as it is important to allow for step-wise innovation in these local flexibility market mechanisms that are just beginning to be designed and deployed.

#### **e. Responding to local needs**

The essence of flexibility markets is to respond to local needs for flexibility arising from a more and more decentralised power system. Hence, markets could be set up for each identified constrained local area, paving the way for the emergence of locational price signals for congestion management and redispatch by TSOs and DSOs. Relevant flexibility providers need to be identified and certified by system operators in the respective areas.

#### **f. Integration with the existing short-term power market**

The last decade has been characterised by the progressive integration of short-term power markets, which has led to the implementation of EU-wide single day-ahead and intraday markets as envisaged in CACM, the Guideline on Capacity Allocation and Congestion Management. In addition, rules introduced by the *Clean Energy Package* provide a framework for the trading of products which adequately reflect the penetration of intermittent and decentralised generation and demand-side response. Against this backdrop, it is essential that local markets for flexibility - answering very specific local needs – do complement, and to the extent needed are compatible with and able to be connected to existing cross zonal wholesale short-term markets. This will allow flexibility markets to build on the progress made by existing wholesale markets, benefit from possible links with them and avoid the need to redesign the existing European liberalised wholesale power market structure.

#### **g. Clear unbundling rules for the operation of flexibility assets**

The principle of unbundling implies a separation between regulated grid assets, owned by the TSOs or DSOs, and commercial ‘market’ assets. This approach, in line with the approach taken by the recast Electricity Directive, is necessary for the efficient functioning of the market by ensuring that all market participants have fair access to the assets, eliminating the risk of the TSO or DSO treating these assets differently, and helping make sure that the assets are fully utilised.

#### **h. System operator incentives for cost-effective system management**

While grid expansion is important and should not be neglected, system operators, both DSOs and TSOs should be incentivised to procure flexibility via the market as an alternative to network reinforcements. Incentive schemes and structures should therefore reflect a holistic perspective on system costs, including a shift away from a purely CAPEX based approach to network investment. Ultimately the procurement of flexibility must be a viable alternative to grid investments.

## Further recommendations

- Ensure a swift implementation of the *Clean Energy Package*, especially focussing on market-based management of grid congestion.
- Ensure continued focus on flexibility as a key enabler of the energy transition.
- Raise awareness of the benefits of local flexibility markets in Member States.
- Create regulatory incentives for system operators to procure flexibility in the most efficient way.
- Ensure that information on expected system challenges, both long-term investment needs as well as short-term congestion management actions is made available to market parties.
- Continue to promote the development of pilot projects and regulatory ‘sandboxes’ to allow innovative product development.

## About

Europex is a not-for-profit association of European energy exchanges with 29 members. It represents the interests of exchange-based wholesale electricity, gas and environmental markets, focuses on developments of the European regulatory framework for wholesale energy trading and provides a discussion platform at European level.

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