# Market Coordination to enhance value stacking

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## Introduction

As the energy system evolves to accommodate a higher share of decentralized energy resources, and as distribution system operators (DSOs) take a more active role in managing grids through different flexibility mechanisms, the effective coordination between different electricity markets becomes increasingly critical. Furthermore, the decentralized and local aspect of the energy transition means that the market structures of the past might not always be the most efficient ones in correctly pricing the available flexibility resources and bringing their flexibility to those that need it most. Market coordination is a broad term that can cover different approaches to ensure any asset has access to all markets in a seamless way, improving system reliability, reducing operational costs and allowing value stacking for flexibility service providers, while maximizing available liquidity in all markets.

## What is market coordination?

Market coordination refers to the alignment of different electricity markets, particularly Local Flexibility Markets (LFMs) with other electricity markets, for example balancing markets or other wholesale markets. This allows bids from one market to be available for more buyers without the need to individually place bids in each market, and without having to choose between markets that are in practice mutually exclusive (i.e. same resource can't participate for the same delivery time in several markets). This alignment requires a careful coordination of products, processes and technical requirements between markets. Coordination can take different forms, such as[1]:

- **Sequential forwarding of bids:**
  This approach involves automatically forwarding bids submitted in a Local Flexibility Market (LFM) to a different market, such as the manual Frequency Restoration Reserve (mFRR), at the time of the LFM's gate closure. This method has already been successfully implemented in certain countries[2].
- **Simultaneous accessibility of bids across markets:**
  Another option is to ensure that bids made in the LFM are also accessible in real time

[1] In this paper, we mainly comment on the coordination of DSO markets with TSO markets, as we consider this as the most relevant and achievable coordination. This does not mean that the coordination of DSO markets with other electricity markets should be excluded.
[2] In Norway the NorFlex market (2021/22) and in Sweden the sthlmflex project (2023)

to other markets. This would allow the same bids to be simultaneously visible and available for matching in both DSO and TSO markets. This requires a mechanism between the operators of the two markets to ensure the bids are instantaneously updated in each market when selected in one. This can be implemented in various way, for example in a common TSO-DSO market[3], or combined with a joint procurement optimization[4].

The exact method of implementation would depend on the specific characteristics and design of the markets involved as well as the design of the products themselves. Importantly in the case of market coordination, service providers should retain the right to opt out if they choose, and continue with their own trading strategy. Market coordination is a different and complementary concept to TSO-DSO coordination, where the latter aims at ensuring the activation of a bid by one system operator does not harm the operation of the grid of another system operator. The two concepts may, in some contexts, be implemented together. TSO-DSO coordination outside the market is not included in the scope of this paper.

## What is value stacking?

Value stacking refers to the strategy of offering the same flexibility resource or portfolio of assets, such as demand response, battery storage, or distributed generation, across multiple electricity markets or services to generate multiple revenue streams.
This can mean offering different types of services simultaneously or at different times. These services can include:

- **Local Flexibility Markets** (e.g., helping to manage grid congestion at the distribution level)
- **Balancing Services** (e.g., frequency restoration reserves like FCR, aFRR or mFRR)
- **Wholesale Market** (e.g., energy arbitrage, or hedging price and volume of electricity risk)
- **Capacity Markets** (e.g., being paid for being available during peak times)
- **Other Network Support services** (e.g., voltage regulation or reactive power)

[3] Implemented in the FinFlex TSO-DSO Congestion Management Market (from 2025, in Finland).
[4] Implemented in the Horizon2020 funded OneNet project (2021-2024) in the Baltics and Nordics, where the grid constraints of both TSO and DSO were also included in a total optimisation of most cost-effective set of bids.

By stacking these services, a flexibility service provider (FSP) can maximize the economic return from a single asset or pool of assets while contributing to grid stability and decarbonization. However, value stacking becomes complex when markets are uncoordinated, as it raises the risk of double activation (i.e., the same resource being called upon by two markets at the same time with the expectation of the same volume being delivered twice) – one of the reasons it is not accepted in some Member States or markets, or signifying also a risk of penalties. Market coordination helps to enable safe value stacking by ensuring bids are shared, but not simultaneously activated in conflicting ways.

## What are the benefits of market coordination?

Market coordination streamlines access to different markets, and addresses two limitations that FSPs and System Operators (SOs) face in uncoordinated markets:

- Necessity to choose between markets: Market participants have to actively choose in which market to place their bids, in particular where simultaneous presence in different markets is not allowed. This entails an assessment and placing expectations in which market the likelihood of activation and the profitability is higher. Market coordination allows the possibility of bidding simultaneously in all relevant markets, ensuring that their assets are monetised where they are most needed and avoid excessive prices.
- Simplicity: Market coordination allows smaller market participants, in particular flexibility service providers, and especially those whose main activity is not providing services to the grid (e.g., charging of electric vehicles, or managing industrial plants) to access more revenue streams in a simpler manner. Smaller actors might not have a complex trading strategy that allows them to optimize between markets and ensure coherence of bids placed in different markets. Market coordination simplifies their activity, allowing them to manage the assets at the service of the consumer.

Market coordination offers significant benefits for FSPs, DSOs and TSOs , and the overall efficiency of electricity markets.

**Facilitating value stacking**

One of the most impactful advantages is the ability to enable value stacking for service providers. When a single bid can be considered simultaneously in multiple markets, FSPs can optimize revenue streams without the risk of double activation of the same resource. This risk, which typically arises when participating independently in multiple markets (where allowed), can be effectively eliminated through coordinated markets, which should also help to ensure the quality of the effective service provided. Moreover, market coordination simplifies the technical and administrative burden by reducing the need for FSPs to navigate different market interfaces, platforms, and requirements—although some conditions for forwarding, such as eligibility of specific portfolios or assets, different collateral requirements of the respective markets, and different typologies of bids, may still apply.

**Increased liquidity and competition**

From a broader system perspective, market coordination helps maximize liquidity across all relevant markets. By allowing flexibility resources to flow more freely between markets, rather than forcing service providers to choose one market over another, liquidity is shared rather than split. This is especially crucial for DSOs, where liquidity could be structurally low, and markets remain underdeveloped and immature. Presented with the choice, FSPs will often move to the more mature markets, where their chance of activation is higher (even if prices are lower). This reduces liquidity in other markets, and could also mean fewer revenue streams for market participants. A shared pool can also be beneficial to value flexibility more efficiently, providing better price signals, and the increased liquidity can have beneficial impacts on system costs.

**Better system visibility and increased coordination between System Operators**

With an improved business case thanks to market coordination, new resources providing flexibility, that are currently not visible for TSOs, will surface and access these markets. This can have positive impacts, reducing system costs, and allowing access to cheaper flexibility. Market coordination may also pave the way for increased TSO-DSO coordination, allowing more efficient grid management. Sharing bids will facilitate communication on the activation of these, and, in case of temporary limits, facilitate the information that some bids or resources are not to be activated.

## What are the challenges in implementing market coordination?

The success of market coordination depends heavily on its implementation. While smartEn supports making market coordination available mandatory for SOs, this might also not be technically or economically feasible for all markets nor participation in it desirable for all market participants. For this reason, its implementation needs to be considered carefully, and the risks assessed appropriately. SOs need to perform a cost-benefit analysis to ensure that a move to coordinated markets does not create a loss in social welfare and does not affect the well-functioning of other markets. We have identified the following potential challenges to be considered:

**Voluntary participation**

Participating in coordinated markets should remain a voluntary strategy for market participants. Mandating coordination for flexibility service providers could restrict their ability to pursue tailored bidding strategies based on their own insights and more sophisticated trading strategies. Therefore, an effective coordination framework must strike a balance—ensuring system-wide efficiency and reliability while preserving market participants' autonomy and strategic preferences. Forwarding or sharing of bids should always remain as a voluntary option that FSPs can access if desired.

**Product and market suitability**

Market coordination might not be well suited to all products or markets. Order types vary between markets, and a certain degree of product harmonisation will be required, for products in local flexibility markets to have similar attributes to products in TSO markets or to bids in wholesale markets. For this reason we recommend the standardisation of some product attributes like temporal granularity. When it comes to geographical or topological granularity, it only makes sense to share bids from a high granularity market to a market with lower granularity, e.g. from a DSO local flexibility market to a balancing market. Some local flexibility products, such as dispatch limitation, may not make sense at all to share with other existing markets, whereas typical activation products can be rather similar to e.g. mFRR.

**Bid suitability**

Many markets allow for special restrictions in bids, such as block bids, minimum resting time or similar. These bids may be impossible to share with different markets where the same restrictions are not available. Hence, even where two markets are coordinated, it may not be possible to include such bids in the coordination, even with the consent of the FSP. Such cases need to be clearly informed to the market participants.

**Definition of rules governing market coordination**

Many of the challenges and open questions regarding market coordination can be addressed through an appropriate design, and should be set in the Terms & Conditions setting the framework. The proposal for a new network code for demand response includes under Article 34 a list of requirements to be included in the rules governing the market-based procurement of local services:

a) the requirements for forwarding bids to other markets;
b) how information on consent of forwarding bid is processed;
c) how the geographical or topological information about the location of the metering point or connection point in the system is included;
d) measures to maintain transparency for forwarded bids;
e) whether, under which conditions and how service providers are allowed to change pricing and volumes or to withdraw bids;
f) rights, liabilities and responsibilities for all relevant market participants when forwarded bids are not fully activated;
g) how forwarded bids are priced and how service providers are compensated;
h) measures to avoid that the same bid is selected twice in separate markets or by different system operators; and
i) how forwarded and/or combined bids are handled with respect to validation of service

There are open challenges that need to be addressed to ensure seamless market coordination. Most of these questions can be tackled through the requirements mentioned above:

- **What is the responsibility of the SO when forwarding bids? Do they choose the moments when to forward bids?**

The SO should not have to make this decision, and in no case should they perform any arbitrage on behalf of the FSP. Details on how they forward bids should be defined in the abovementioned rules in a clear way, leaving no decisions to the SO.

- **How can different types of orders/products in different markets be compatible?**

Which bids are qualified and will be forwarded must be described in market rules. Bids that are not compatible with the receiving markets cannot be forwarded. Issues with compatibility could be restrictions in the local flexibility market that cannot be applied to the receiving market (e.g. different types of block bid restrictions, resting time or similar), or incompatibilities in the granularity, response times, and other features of the bid that cannot be easily translated to a different market. This, however, does not mean that markets must have identical products: as coordination is voluntary for the FSP, this means that when accepting market coordination, it accepts the conditions of the receiving market (and that it must be qualified, and be a member if required, for this market). Bids that are not compatible with the receiving markets can, if allowed, be clustered with other bids from the same or another FSP (super-aggregation), or will not be transferred/shared. This means that even with the consent of the FSP, all bids may not be transferred, depending on the compatibility of the individual bid with the receiving market.

- **How are the locational tags required for local flexibility markets, handled in other markets?**

It should be possible to transform a locationally tagged bid into a bid without a tag – given that the price zone of the location is known, and the bid is compatible with the receiving market.

- **Who verifies the membership and required collaterals of the market participants whose bid is forwarded to another market?**

The particular market coordination rules between the two markets should clearly define the responsibilities of each market participant and/or operator or other relevant entities, and ensure that no rules of the receiving market are violated.

- **Will price and quantity of the forwarded bid remain the same?**

In principle, price and quantity should remain the same, provided that the quantity is compatible with the granularity of the receiving market and that the bid has not been activated already in the local market. Mechanisms for adapting price and quantity, if allowed, must be described thoroughly in the applicable market rules.

## Mitigating measures where market coordination is not possible

While market coordination should be the ultimate goal, it might not be technically feasible in all markets and for all products. In those cases, it is, like in any other case, important to ensure FSPs have a barrier-free access to all wholesale markets, balancing and local flexibility markets, allowing them to place their own bids. Most barriers limiting market access are linked to the lack of implementation of the Electricity Market Directive and Regulation. smartEn has proposed a Guidebook[5] that should support Member States in lifting those barriers. Lifting these barriers should increase the total liquidity across different markets but does not solve the issue of DSO market liquidity being drained to more mature markets. Hence, wherever market coordination cannot (yet) be implemented, it is important to design local flexibility products and markets in order to minimise the impact on the possibility of the FSP to participate in other markets.

## smartEn recommendations

- The national rules should facilitate sharing of liquidity between local markets and other electricity markets through market coordination if technically and economically viable, to facilitate value stacking and multiple market access for service providers.
- The TSO should be responsible for facilitating the integration or coordination of TSO redispatching and BAL markets with other local flexibility markets.
- Market coordination should include all markets that have compatible products with each other (e.g. products for local congestion and mFRR) and should be organised either:
    - Sequentially (bid forwarding/cascading), or
    - Simultaneously (bids available in several markets or to several relevant buyers)
- Where available, market coordination should:
    - remain completely voluntary to market parties, and an explicit agreement from the market participant to be required for their bids to be forwarded to other markets.
    - Provide sufficient transparency on processes, volumes, and prices.
    - Create no undue negative impact on the functioning of markets.
- In MS where market coordination is not (yet) implemented:
    - The choice of not having coordinated markets should be explained by the SOs and approved by the NRA and a Cost-Benefit Analysis performed to justify the decision.

[5] https://smarten.eu/reports/implementing-eu-laws-a-guide-to-activate-demand-side-flexibility-in-the-eu-27-member-states-2/

- The decision of not implementing market coordination should be revised regularly, and an implementation plan for coordinating markets should be set up.
- In the meantime, market access should not be conditioned on activity in other markets (FSP may participate in parallel markets, adjusting their offers in case of activation).

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smartEn is the European association of the Flexible Demand Management Industry. We aim to create opportunities for every company, building, and car to support an increasingly renewable energy system.

The positions expressed in this document represent the views of smartEn as an association, but not necessarily the opinion of each specific smartEn member.

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