

ACER consultation on co-optimisation implementation in SDAC algorithm

A Eurelectric response paper

June 2024

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:

- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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KEY MESSAGES

- Eurelectric welcomes ACER study for providing valuable insights but considers it too theoretical, lacking detailed feasibility and sensitivity analyses on crucial co-optimization challenges. The study's identified welfare gains are difficult to interpret without clear benchmarks, and the simplistic price forecast methodology may overestimate co-optimisation performance. Additionally, Eurelectric questions some assumptions, such as the generation mix and dispatch decision irrevocability, and emphasizes the need for further development of responsive and flexible short-term markets.
- The main advantage of this co-optimisation design, if realized, could be that it externalizes the complexities of bidding from market participants to the market coupling algorithm, potentially leading to greater system economic efficiency. However it could come along with numerous drawbacks such as:
 - o deriving from the current portfolio-based bidding model which has numerous advantages;
 - o translating day-ahead energy bids into balancing capacity bids requires accounting for various technical capabilities and limitations, which may not be fully captured by the clearing algorithm, leading to inefficiencies.
 - o the added complexity could hinder the algorithm's performance, increasing calculation time, decoupling risk, etc.
- Eurelectric notes that several questions must be clarified before considering a bid design without explicit price for balancing capacity within the co-optimisation design. In the meantime, Eurelectric urges a focus on bid designs with explicit price other than opportunity costs and on means to deliver the same economic efficiency.
- Additionally, Eurelectric emphasizes the need to carefully scope the R&D work and include market participants, particularly regarding the bid design. As previously stated, Eurelectric strongly rejects any negative impact of new evolutions on products and services within the SDAC.

Question 1.1 The consultancy study shows significant welfare gains for co-optimisation under a design where market participants are not required to forecast the day-ahead energy market outcome when bidding for balancing capacity. As shown in Appendix G1, introducing an explicit price for balancing capacity, based on opportunity costs, leads to a deterioration of benefits of about 15%. In light of these findings, do you agree to further assess the bid design without an explicit price for balancing capacity in the upcoming R&D activities to be carried out by NEMOs and TSOs for the implementation of co-optimisation in the SDAC algorithm?

No

Eurelectric notes several questions must be clarified before considering a bid design without explicit price for BC. In the meantime, Eurelectric urges a focus on bid designs with explicit price other than opportunity costs (OC) and on means to deliver the same economic efficiency. Additionally, Eurelectric emphasizes the need to carefully scope the R&D work and include market participants (MPs), particularly regarding the bid design. As previously stated, Eurelectric strongly rejects any negative impact of new evolutions on products and services within the SDAC.

Eurelectric appreciates ACER's effort to address bidding complexity in a co-optimisation environment. We understand that the objective of a fully co-optimised process is to avoid the expression of OC within MPs bidding strategy. This objective can be reached in different ways, and indeed a bid design without explicit price is one direction through which this objective could be reached.

However, Eurelectric sees several potential issues with this bidding approach and seeks assurance that any negative impacts can be avoided before agreeing to include it in upcoming R&D activities.

First, Eurelectric finds ACER's estimation of market price forecast errors questionable leading to potentially significant overestimations of degradation of market results under explicit price for BC. Eurelectric would like to underline that MPs' price forecasts are based on more refined methods than a "similar day" approach. Additionally, those price forecasts could be further improved through continued efforts in terms of market transparency, allowing to capture rapidly an important share of the benefits seen in this study.

Second, Eurelectric strongly supports the free formation of electricity prices. Explicitly pricing BC bids should not be understood exclusively as a need to integrate OC. Pricing BC bids may integrate numerous parameters including technical capabilities of assets, BE prices and probability of activation, and is part of an overall bidding strategy. It seems there is no proof today that such considerations can be efficiently integrated within the objective function of the optimisation algorithm.

Third, Eurelectric has concerns regarding the impact of implicit bidding on the possibility to maintain a portfolio-based bidding in the DA market which has repeatedly proven its efficiency and its value to the European market. Eurelectric questions whether it is possible to implicitly price BC based on the bids on the day-ahead market without doing so on a per-asset basis. Portfolio-based bidding is especially beneficial for complex portfolios with multiple technologies as it allows for blending specific abilities of assets to result in more efficient bids.

Converting DA energy bids into pricing for BC bids also requires significant insight in the technical capabilities of the underlying assets, and would thus require integration of a wide range of technical parameters into the market algorithm. It is far from certain that doing so in

a way that would approach the same insights that individual MPs have in their assets is realistic, as it often goes beyond purely quantitative or standardized elements. In this regard, the authors of the study highly underestimate the complexity and sophistication of bidding by MPs.

Finally, offloading portfolio optimization to the electricity market –as unit-based bidding requires– will greatly increase market coupling process complexity and may still not rival internal optimizations as asset owners have more insight in the ability and specificities of their own portfolio. This complexity arises in an already strained market coupling context. Coping with those challenges and allowing MPs to better reflect their technical constraints on the market seems far more achievable than the co-optimisation target and would, already today, bring significant benefits to the market.

[Question 1.2 Please list advantages and disadvantages of a co-optimisation design where bids for balancing capacity are based on the price of the linked day-ahead energy bid and the day-ahead energy price calculated by the SDAC algorithm.](#)

The main advantage of the approach, if it can be realized, would be that the bidding complexities for market-participants posed by co-optimization would to a certain extent be externalized towards the market coupling algorithm and lead to a greater system economic efficiency.

Eurelectric does not consider that the avoidance of opportunity cost as an advantage solely attributable to the solution without explicit balancing capacity bidding. A co-optimization design with explicit balancing capacity bidding should also enable the avoidance of having to bid unnecessary opportunity costs if correct linking between day-ahead energy and balancing capacity bids is enabled.

The disadvantages, however, are numerous and already touched upon in the answer to the previous question.

First, Eurelectric is concerned that, in order to derive balancing capacity bid prices from the day-ahead energy bids and day-ahead energy price, portfolio-based bidding in the day-ahead market – already the norm in most bidding zones and a target model for market participants where currently unit-based bidding in place – would have to be questioned. As explained in the response to the previous question, portfolio-based bidding has numerous advantages and Eurelectric strongly opposes any regression in this regard.

Second, translation of day-ahead energy bids into balancing capacity bids requires the integration of numerous technical abilities and limitations of units. It is not clear whether such information can be fully and correctly absorbed by the clearing algorithm, as the expression of technical abilities and limitations of units is not expressed in a standardized way across market participants. In all probability, this would lead to simplifications and approximations, losing in the process a lot of the targeted efficiencies.

Third, the transfer of the bidding complexity from market participant to clearing algorithm will challenge the ability of the algorithm to remain performant. The study provides no clarity on the actual ability of the algorithm to deal with this complexity without an increase of calculation time, increase of decoupling risk or reduction in optimality of the found solution. While this risk is indeed present in any design of co-optimization, it would be exacerbated by integrating technical parameters and a unit-based configuration.

Finally, the removal of explicit balancing capacity bids would remove the ability from market-participants to define their own bidding strategy based on a broader range of considerations than solely the day-ahead market. In order to make or keep the balancing capacity market – a crucial market for system security – attractive, free pricing should be ensured.

Question 2 Please provide any further comment

Eurelectric welcomes the study, as it provides some clear elements to consider and discuss on this important topic. In that regard, Eurelectric expected some aspects of the methodology and results to be more transparent to correctly assess the exact meaning of the obtained results and how they compare to the current situation or the relevant, future market context.

Moreover, Eurelectric regrets the short consultation period given to respond to the consultation, as it hampers the consideration it deserves among its members. The reasoning that it is not the first consultation on the subject makes little sense as it covers a wholly new study including a bidding approach that is introduced for the first time.

In addition, Eurelectric invites ACER and other relevant stakeholders to strengthen transparency, awareness and pedagogy on this topic, its challenges, the different design options in play to be considered and their consequences. While it is true that a lot of work was published so far, we lack visibility on which pieces of work remain relevant, what are the current working assumptions etc.

Overall, Eurelectric considers the study as highly theoretical. On some of the crucial challenges of co-optimization, the study simply assumes the implementation of a solution without going into any details on whether such designs are feasible or what the reduction in welfare gain would be in case a degraded solution is implemented. The clearest examples of this are the single shot optimization and linear programming approximation of the deterministic requirement. While the study is indeed a welfare study and not an implementation assessment, a more realistic approach or sensitivity analysis on such important topics should be included.

The identified welfare gains obtained by the co-optimization are difficult to interpret. It is not clear for Eurelectric to which baseline the relative welfare gains should be compared. The study should provide much more transparency on the actual impact of co-optimization on the day-ahead market. Given that the day-ahead market is the reference electricity market across Europe, any deterioration in the functioning of this market or increase of risk to successful coupling with an optimal solution may have welfare implications that would outstrip any gains of co-optimization. Eurelectric therefore asks for much more clarity and transparency on the benchmark for the relative welfare gain and examples of market coupling outcome between the different scenario's.

Eurelectric also considers the methodological approach regarding the price forecast error as too simplistic. Price forecasts are an important competitive element for market participants, especially in balancing capacity markets. Market participants therefore generally use more advanced forecasts than a simple 'last similar day' approach. Eurelectric previously made a similar remark in the context of the HCZCAM, where it considered that "any simplistic approach, e.g., considering that "the same day in the previous week/month/year" is a relevant reference, should be excluded". This simplistic approach will probably result in an overestimation of the price forecast error and thus artificially boost the performance of

the co-optimization approach. This is especially relevant, as the study itself considers “Market price forecast errors therefore become a focal point of our analysis.”

Eurelectric would also like to draw attention to assumptions it considers questionable and illustrative of the fact that the quantified outcome of the study should not be considered precise nor final and the estimated gain should not serve as a reference value for co-optimization. One example is the generation mix of countries, where Germany still has nuclear capacity and no battery-capacity is taken into account while this is expected to play an important role in the future, or where nuclear assets are not considered as flexible. We understand that data concerning the generation mix are applicable to the study period (2020-2021), but given the important evolutions in the electricity system, the outcome can hardly be considered representative. A sensitivity analysis for a more forward-looking system should have been included. Another example is the assumption of irrevocability of the dispatch decisions taken at the day-ahead stage. This is a strong assumption that does not correctly represent the reality of the system. Most assets can still adjust their output after the day-ahead based on new information.

Finally, Eurelectric considers that the finding regarding the contribution of intraday adjustments should provide insight that the current market evolution towards making the short-term markets more responsive and flexible should be further developed further, as it is a no-regret solution not only in the context of the technological evolution of the electricity system, but also for the optimal dispatch and balancing capacity reservation of assets.

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability



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