

Co-Optimisation Workshop

Date / Place 19/12/2024, 10:00 – 12:30 CET, GoToWebinar

PARTICIPANTS

Presenters:

- Cosimo Campidoglio (MCSC Chair)
- Kata Fehér (Com TF Convenor)
- Emma Vila I Lopez de Recalde (Com TF Convenor)
- Marja Eronen (SDAC MSD Convenor)
- Timo Suhonen (SDAC MSD Convenor)
- Christoforos Zoumas (NEMO Tech TF Convenor)
- Gerard Doorman (TSO Co-opt SPoC)
- Marlon Thies (Amprion)
- Oliver Baek Hedegaard (Energinet)
- Mehdi Madani (N-side)
- Yves Langer (N-side)

Attended participants: 133

Q&A

Q: Is there a limitation in the maximum cross-zonal capacity to be allocated to balancing markets compared to Day-ahead capacity? In other words, do TSOs provide a limit in the cross-zonal capacity submitted (in ATC or in FB) that could be allocated to balancing OR is there no limitation for the capacity in both DA and Balancing timeframes? For the second case, I guess there is then an implicit limit determined by the maximum balancing energy requested by the TSOs for the procurement.

How to be sure in such case that the DA capacity is not too restricted, increasing too much the DA prices?

Q: Is there a limit in CZ capacity allocated in the balancing timeframe or this CZ capacity is taken in order to allocate the requested balancing energy means of every TSO without limit (and then impacting DA capacity)?

A: For Market-based Cross Zonal Capacity Allocation (CZCA) EB Regulation Article 41.2 specifies that cross-zonal capacity (CZC) allocated to balancing markets shall be limited to 10 % of the available capacity for the exchange of energy of the previous relevant calendar year between the respective bidding zones or, in case of new interconnectors, 10 % of the total installed technical capacity of those new interconnectors. Harmonised CZCA Methodology further specifies a process on how to apply a deviation of this default limitation.

For Co-Optimisation, there is no similar limitation for how much CZC can be allocated to balancing capacity exchange because the principle is that the allocation of capacity to the two markets shall be a result of optimization of total welfare for both markets.

The CZC in this case is considered to be optimally allocated between the energy and balancing capacity markets under the Co-Optimisation welfare maximisation rule.

Q: Since a large number of MPs and portfolios simply are either not allowed to be activated in Balancing Mechanisms or do not wish to have any activation apart from per BZ in SDAC energy market - how is that handled in the modelling? Put differently how to deal with the fact that a large chunk of SDAC buy and sell orders cannot be utilized for BAL (CZC) Capacity Reservations?

A: Both SDAC energy products and balancing capacity products will be available in co-optimised SDAC. Market Parties (MPs) with portfolios/assets not eligible for providing balancing capacity services will continue to participate as currently. MPs with portfolios/assets eligible for providing balancing capacity may opt to either submit orders for energy and/or balancing. Modelling options are still under consideration as part of this R&D phase deliverables.

Q: Is FCR still not in scope for this study?

A: Co-Optimisation is limited by regulation to the exchange of Frequency Restoration Reserves (aFRR, mFRR, RR) (EB GL Article 38 (4)), as it addresses the use of CZC for balancing capacity exchange or sharing of reserves. In the case of FCR, this is implicitly ensured by safety margins. Therefore, Co-Optimisation, as defined in EB Regulation does not include FCR.

Q: Could you please explain the difference between linked bids and combined bids?

A: Combined bids: These bids combine the offering of balancing capacity (BC) together with energy. They are typically asset-specific, meaning they are designed to match the capabilities of specific types of assets. Typical examples are combined bids for thermal assets or combined bids for batteries or other energy storage assets. They include a common set of parameters applicable to the various offered products (e.g., total capacity, which limits the energy and upward capacity that can be offered), with product linkages directly embedded within the bid.

Linked bids: Bids either energy or BC, are linked through specific constraints, similar to those currently available in SDAC. There are several types of links. For instance, "mutually exclusive" links allow a certain capacity to be used either for energy or for upward BC, but not for both at the same time. Another example is "parent-child" links, where offering downward BC requires that power must be supplied initially.

Q: Am I correct in assuming that there will NOT be Marginal pricing on Balancing capacity? Or are there other suggestions on pricing than the presented one?

A: The Harmonised CZCA Methodology specifies that the settlement of the bids of all standard products for balancing capacity shall be only in the direction from TSO to the BSPs and shall be based on cross-zonal marginal pricing (pay-as-cleared). There will be a price for each BC product and each MTU. In that sense, the clearing price is expected to be based on marginal pricing principles with required adjustments regarding non-convexities. Pricing will be investigated further in the ongoing R&D efforts for Co-Optimisation as defined by Algorithm methodology.

Q: Is there a plan to keep the mFRR capacity market open to the afternoon instead of closing it at 7:30 in the morning as of now?

A: In Co-Optimisation, balancing capacity markets' products for mFRR and aFRR would be cleared together at the same time with energy in SDAC. Co-Optimisation refers to the concept of procuring balancing capacity, i.e. scheduling possible delivery of aFRR and mFRR and energy simultaneously in one market clearing. Additional market design considerations for the further development of BC markets are not within the scope of the current R&D of Co-Optimisation. Regarding Co-Optimisation, the Harmonised CZCA Methodology specifies that the BSP-TSO gate closure time for the submission of all bids of Standard Balancing Capacity Products (SBCP) in both directions and the TSO demand shall be equal to the SDAC gate closure time pursuant to Article 47(2) of the CACM Regulation.

Q: What is the difference and benefit of this Co-Optimisation approach compared to the PICASSO and MARI processes?

A: MARI and PICASSO are about the exchange of balancing energy whereas Co-Optimisation in SDAC is one of the approaches provided by EB Regulation for co-optimising the exchange of energy and balancing capacity products (scheduled ex-ante in DA framework) and therefore covers ways on how to allocate CZC for the exchange of balancing capacity. All approaches are targeting benefits resulting from cheaper reserves that may be available in different bidding zones.

Q: As of now the capacity market for mFRR closes 7:30, in other words before the spot price market is closed, this makes it difficult to plan electricity production DA. Is there a plan to keep the mFRR capacity market open to after the spot price market, this would make it easier for energy producers to offer capacity.

A: See above. As the balancing capacity energy markets are cleared simultaneously, the market cannot be "kept open". Potential after-markets are outside the scope of the ongoing research.

Q: PICASSO and MARI already allow for XZ exchange of balancing reserves/energy. What is the difference and benefit of the approach under discussion comparing to the existing processes?

A: See the answer on the question above about the "difference and benefit of this Co-Optimisation approach comparing to the PICASSO and MARI processes".

Q: In the illustrated example provided by N-side, what would have been the EUR/MWh payment to the "selected" Balancing Capacity Orders? E.g. would it be 5 EUR?

A: In the example, the energy market clears at 100€/MWh and the Upward Balancing Capacity market clears at 45€/MWh. As these are uniform prices (i.e., paid-as-cleared), the selected Balancing Capacity order (in this case 150 MWh of Bid A2) is all cleared at 45€/MWh, resulting in a total settlement of 45€/MWh x 150 MWh = 6 750 €.

Further examples will be provided as part of the formal R&D report that will be shared for public consultation in Q2 2025.

Q: Under Co-Optimisation, could both linked bids and combined bids be available as market products, or will it be one or the other?

A: Currently, both bidding options are evaluated within a scope of investigating pros and cons for cost-reflection, modelling/scheduling flexibility and pricing. Final bidding options/suggestions and offerings are subject to consultation with MPs and further R&D.

Combined bids accurately represent typical asset constraints, while linked bids handle complex, non-standardized portfolio constraints. The goal is to add functionality without reducing current bid expressiveness.

Q: Regarding marginal pricing on Balancing capacity, it would be clearer in the example if there were more than one bid accepted for Balancing capacity. Thank you for the answer! You have answered! you show bid pricing in the example, clearing is done on marginal pricing, right?

A: The overarching principle is that bids "in the money" are accepted, while those "out of the money" are rejected (bids at the money may be partially accepted). Consequently, all bidders find the allocation of their bids satisfactory given the clearing prices. The same principle applies under Co-Optimization, where the "opportunity cost of not being accepted for another product" is factored into the price calculation to ensure that bids are allocated to the most profitable opportunities.

Note: exceptions to these principles do, however, arise due to the presence of "non-convexities" (e.g. indivisibilities).

Further examples will be provided as part of the formal R&D report that will be shared for public consultation in Q2 2025.

Q: Why is geographical vicinity important for balancing capacity? I am not aware of any such restriction in the SDAC.

A: Reserves are indispensable for a secure and reliable system operation. TSOs consider the geographically unrestricted exchange of BC to potentially jeopardize system security, e.g. in case of system splits and regarding the principle of balancing, that imbalance should be solved close to where they occur (the Allocation Optimization Functions of the Balancing platforms, therefore, minimise the number of borders between selected bid and demand). The question of how geographical restrictions can be imposed in Co-Optimisation is not yet part of the current R&D phase but will be examined as part of future R&D phases.

Q: How would you manage the reduction in solution space for the intraday market? Seems like there is a large loss of utility in such allocations.

A: With increasing shares of renewables, the relevance of Day Ahead Market Results for real dispatch decreases. In contrast to the allocated CZC for energy, the CZC required for BC exchange or sharing of reserve in Co-Optimisation is fixed after the DA market and cannot be released. Consequently, this CZC is not available to the subsequent markets (e.g., continuous intraday trading). It might become attractive to establish subsequent markets for readjusting balancing capacity, but this is outside the scope of the present research.

Q: There is a value of market transparency. Do you see a risk that Co-Optimisation will require more complex bids and hence be resulting in increased situations of non-intuitive flows, paradoxically rejected bids etc?

A: Market parties should be provided with the best tools available to reflect parameters to the market and consider the feasibility of scheduling. However, there is a risk that Co-Optimisation may require more complex bidding. Different products with specific characteristics will need to be handled by the SDAC algorithm. It cannot be answered now what the impact will be (this could be an outcome of extensive large-scale efficiency simulations).

Q: Would the Market Coupling Operator role change significantly if Co-Optimisation were introduced?

A: Governance topics on market operation for the co-optimised SDAC are subject for a later stage of R&D according to Algorithm Methodology.

Q: Why is the focus on Balancing (CZC) Capacity Reservations so much on "cost structures" given that equally short and long-term VALUE of producing or consuming or trading now or later is key? Also, since a big chunk of SDAC and SIDC markets are based on portfolio bidding there is no distinct "asset-based cost-related" reflection in bids, why does it then have to be the case for BAL Cap Reservations?

A: For considering close-to-real modelling for optimization in competitive markets, it is important that the bidding language and the algorithm can represent the short-term costs (direct or opportunity ones). If this is not the case, then the model should be considered incomplete or not fit for purpose. Hence, although it is acknowledged that in all cases (long/short) the markets are reflecting the anticipated value of the traded products, we should also consider that short-term markets should, to a certain level, reflect the relevant short-term cost fundamentals in their prices. It is acknowledged that in portfolio-based bidding benefits indicated by Co-Optimisation are already exploited to a certain extent, but not all market parties have large portfolios. Portfolio-based bidding will be part of the formal R&D report that will be shared for public consultation in Q2 2025.

Q: Could an overview of the geographic distribution of (a) informal survey responses and (b) detailed interviews be shared? For ex. A from CWE, B from other parts of CORE, C from Nordic-Baltic, D from Southern EU (outside of CORE) countries plus Ireland? Clarification: The question about distribution was simply asked to get a sense if all of Europe is represented in the survey and since setup/rules of markets and balancing mechanisms etc. are very different between Member states and regions.

A: The geographical coverage of answers will be disclosed in the upcoming R0 report to the extent that anonymity can be maintained. For now, it can be noted that several respondents are active in several countries and markets and that, generally there was broad representation, particularly from central Europe and the Nordics.

Q: Could you please indicate, how the MP feedback (e.g. from the survey) will interact with the scoping and assessment of the activities conducted by n-side? Will there be a guidance on the bid design options considered? Will there be an assessment (quantitative and qualitative) of welfare impact?

A: Based on the first feedback, the work ongoing with N-side was already enriched by the market parties' insights. Guidance on the bid design options will not be explicitly provided, but specific remarks will be outlined in the R&D report and the future deliverables (R0 Report according to [Algorithm Methodology](#)) should provide bid design considerations where pros and cons for the evaluated options would be part of the work and outcomes.

Following the SDAC Algorithm Methodology, the R0 report will be consulted with MPs. Feedback collected via the survey will be reflected to the extent possible in the subsequent reports) and R&D work.