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Options for the Design of European Electricity Markets in 2030

Finnish Energy's response to the ENTSO-E's consultation https://consultations.entsoe.eu/markets/options-for-the-design-of-european-electricity-mar/

1. How could European Day-Ahead and Intraday markets be improved to further facilitate market access of RES and Distributed Energy Resources in 2030?

Support system and product definitions

Changes in the market design to facilitate more renewable and distributed generation should only be made after careful analysis. In Nordic countries we currently experience a large expansion of wind power under the current market regime, first driven with a subsidy system and now mostly market based. One of the priorities is not to create new subsidy schemes, adjust existing where needed and ensure an efficient European Emission Trading System.

One of the challenges is that the importance of trading closer to real time increases. That is, there is an increased need for trading up until and in real-time, remove requirements to plan in balance in day ahead timeframe and remove to requirements to provide binding production plans before GCT. Also, trading in 15-minute products, as well as product specifications that allow for smaller volumes is desirable.

The size of the bidding zones

Issues and costs referring aggregation and balancing are more easily handled in larger bidding areas. The bidding zone structure and needed network investments should increasingly be considered from top-down-perspective and applying also bidding zones not restricted by national borders, where available.

The stochastic characteristic of weather dependent electricity generation also supports larger bidding areas as liquidity in the financial market becomes increasingly important. Thus, the three above mentioned arguments must be given a prominent role when doing socioeconomic analysis of future delineations of bidding zones.

The allocation of transmission capacity is a prerequisite for the market to achieve an efficient use of resources, hence every effort must be made to maximize capacity in all time frames. In this, it is of fundamental importance that the TSO faces the correct incentives and that TSO will always consider the value to capacity limitations from the planning of maintenance to the operational period.

Continuous trading

Replacing continuous trading with auctions would amount to a large number of auctions, making market liquidity an issue for the majority of auctions (especially in areas with small bidding zones such as the Nordic). The possible decrease of cross border capacity following the implementation

of the flow-based capacity calculation method may increase these issues. There is currently very little support from the actors (neither customers nor generators) to leave the current design with continuous trading.

2. Are there any best practices which could be used as an example?

GCT t-0 in ID is applied in many countries successfully.

3. What do you consider to be the main barriers for the participation of RES in balancing markets?

We believe that rules and regulations should by technologically neutral to yield an efficient use of resources. In the Nordic balancing market, the following barriers are currently existing, to RES and non-RES equally:

- Energy-based RES-support schemes, which reduce the interest of RES to participate balancing markets, especially in down regulation.
- Different in each country and too ambitious pre-/requalification requirements: if this process is too complex, too costly, or happen too frequently it will not be worthwhile spending time on (especially for smaller players, smaller assets and/or for areas with lower price volatility). In addition, the requirements need to fit the actual needs and thus should not be overly stringent.
- Symmetrical products (must deliver both up-/down flex) unnecessarily prevent participation.
- Pay as bid instead of marginal pricing. Pay as bid means that actors must guess the market value of their participation which becomes an unnecessary transaction cost of participation. We recommend that marginal pricing is consistently used.
- Too strict ramping-requirements. (Especially delayed ramping. It is often easier to ramp RES fast)

4. Which kind of support scheme has the least distortive effect on the participation of RES in balancing markets?

Given the fast decline of costs for renewable energy sources this question must be seen as obsolete. The worst cases of distortions occur where a fixed price per MWh is applied. In addition, when support is given despite negative consequences for the market (hours with negative prices) this affects the whole set of markets (day-ahead, intraday and the real time balancing markets).

The subsidies must be minimized and adjusted where deemed necessary and applied only for in-mature technologies.

5. What do you consider as best practice to the ensure effective provision of voltage control and other non-frequency Ancillary Services (AS) by RES?

The provision of ancillary services should be technology neutral in so far that the most efficient providers should be contracted.

Non-frequency-related ancillary services are characterized by a relatively large capital cost. A market design that allows for contracts over a longer period of time will therefore be crucial in order to be able to manage the commercial risk. The compensation should be based on the system operator's alternative cost and allow a reasonable margin for uncertainties in operation and maintenance costs. The costs that this entails should be included in the network tariff.

6. How could market design mitigate the side effects of the interaction of negative prices and RES supported technologies?

First, is there a problem? A generator which has sold its generation with negative price must either provide or pay for someone else to provide. Typically, negative prices referred will occur in DA, and there the TSO has 24-36 hours to react and plan for balancing. Very likely the negative prices are not occurring in ID any more. Hence, the potential challenge will be handled when markets are let to handle it.

The question to be answered is whether there is adequate possibilities to trade oneself into balance in ID?

For enabling the market participants to provide help for the system in real-time, the pricing information about special regulations must be transparent and immediate.

7. What do you consider to be the key market design barriers limiting the uptake of DSR?

The interest from small actors (e.g. household) may be low because the expected benefits compared to the costs are low.

Generally, the current market design, with some development of systems and products, such as more automatic processes, lower minimum bid sizes etc. have the potential to allow for a much stronger demand side participation. The TSOs need to update their systems form electronic ordering.

Please also see our answer for question 3.

8. What do you consider to be the best practices for the facilitation of demand side response?

The current market design, with some IT-development such as more automatic processes (none the least automatic control of customer´s equipment) may open for lower minimum bid sizes etc., which have the potential to allow for more demand side participation.

More developed contractual relations between supplier and customer are probably necessary to increase demand side response. To achieve this, the general market development of first and foremost the balancing market to establish and convey a more correct price on the value of electricity in all time horizon contributes to this end. Also, the publication of real time prices would create correct incentives.

9. Do you see benefits in increasing the number of intraday auctions?

The mentioned arguments can be used also against increased number of IDAs.

We prefer continuous market and as few as possible ID-auctions. The main benefit with continuous trading is that the time to market is very short, which implies that the market participants have full control of the balance of their positions and can act immediately when the need arises. Replacing this with auctions would amount to a large number of auctions, making market liquidity an issue for the majority of auctions (especially in areas with small bid areas such as the Nordic). The expected decrease of cross border capacity following the implementation of the flow-based capacity calculation method will also affect these issues.

10. If so, what would be an adequate number of auctions per day?

Please see responses to previous questions. We prefer 1 Pan-European ID auction at 15:00 D+1 and the Continuous market until GCT (0 min prior to delivery).

11. Would you still see a role for cross-zonal intraday continuous trading if such adequate number of Intraday auctions would be implemented?

Yes, there is value of keeping the continuous trading. Especially in the Nordics, which relies heavily on cross-zonal intraday trading.

12. What potential benefits or drawbacks do you foresee in combining day-ahead and intraday auctions?

Would there be an additional auction / auctions to the auctions held on the previous day, the auction should apply to all remaining hours / quarters of that day. However, as stated in previous answers, we are not convinced that additional IDAs bring benefits.

13. Would you recommend any alternative solution which could achieve similar objectives?

No answer

14. How could markets for forward transmission capacity be improved to support the energy transition?

We find no need for hedging bidding zones' price differences. The implicit auction provides transmission capacities into the market as long as TSOs respect European legislation and maximize the capacity allocated in DA. There are, though, increasing worries related to liquidity of hedging products. We, however, don’t see LTTRs as a mean to tackle that issue.

The allocation of transmission capacity is a prerequisite for the market to achieve an efficient use of resources, hence every effort must be made to maximize capacity in all time frames. It is of fundamental importance that the TSO faces correct incentives to value capacity limitations from the planning of maintenance to the operational period.

15. Do you see value in developing new durations of long-term transmission capacity products mirroring products for forward electricity trading?

We find no need for hedging bidding zones' price differences.

16. Do you see other means to improve the forward markets and hedging possibilities besides long-term transmission rights?

Given that the flow-based capacity calculation method is harmful to small bidding zones, the financial markets and intraday markets needs to be given larger weight when delineation of bidding zones are considered. This would better reflect the value of larger price zones.

One could consider whether the TSOs should participate EPAD-markets with the share of energy transmitted across bidding zone borders.

17. Which potential benefits or drawbacks do you foresee with the co-optimisation of energy and balancing capacity?

We understand that practical and implementation challenges exist, and that it is not certain whether those are manageable. However, the amount of different balancing products with various separated markets with different GTOs and GCTs and transmission capacity reservations for balancing capacities create more and more challenges.

We consider that this kind of co-optimization should be investigated further.

18. Would you recommend any other solution which could achieve similar objectives?

Transmission capacity reservation for balancing capacity could done ex-post, for example with the help of new “opening-IDA” and not ex-ante.

19. Do you think that the implementation of co-optimisation or other market features could increase market complexity to a level which may be detrimental for the entrance of new players?

Complexity is always a challenge and the market participants must be able to understand how the prices have been formed.

20. How can TSO procurement of balancing services evolve to be a better fit for the new power system of 2030?

a. Publish balancing prices in real time
b. It must be clear that the transmission system operators act as monopsonies when purchasing many of these services. Market monitoring must focus more on the actions of the transmission system operators. The role of market monitoring must clearly be a task for the competition authorities and the regulators.
c. Ensure transparency in prices and rules.
d. Increase the market efficiency by for example use pay as clear.
e. Coordinate better cross zonal border and cross voltage levels (TSO/DSO).

When the transmission system operators act as a monopsony with a self-imposed role as a market monitor this creates uncertainty about the rules and long run inefficiencies in the market.
Another occasion where the transmission system operator acts as a self-imposed competition monitor is the possible abuse of pay as bid in different products.It is better that pay as clear is used, and if market abuse is suspected, it is investigated by the competent authority.

To conclude, one important issue is that (at least the Nordic) transmission system operators don't trust the market and constantly intervene pro-actively.

Closer coordination, and possibly integration, of balancing and congestion management, to improve system efficiency and increase pooling the of resources.

Close coordination between TSOs and DSOs for the use of flexibility from distributed resources and to monitor the impact of activations on respective grids.

It is a delicate balance between a robust and agile design. It is generally better if trading takes place closer to delivery, but the design should also make room for operators to manage and prepare the different products. Complex products may constitute a hurdle for the participation of new actors. Similar arguments could be made for processes outside normal business hours.

21. Do you have concrete examples of best practices in the procurement of balancing services?

It is generally better if trading takes place closer to delivery but should also make room for operators to manage and prepare the different products and avoid complexity, that will otherwise constitute a hurdle for the participation of new actors. Similar arguments could be made for processes outside normal business hours.

Make it clear that the role of the system operator is to identify and procure balancing services. It is important that consistent and transparent procurement rules is used. Pay as clear should be used whenever possible.

The TSOs should benefit xb-resources more. This the case especially when needs for congestion management and counter trading occur. Instead of limiting xb-capacities, the TSOs need to find the most economical resources, which at times may be located in another TSO's control area.

22. For system with limited congestions and reactive balancing approaches, would you foresee any benefits to implementing real-time markets managed by the relevant TSO?

Closer to real time trading is important, but no need for TSO-driven solution. Just make ID GCT to t-0 or even later. FI is a good example

23. Are there any other Balancing Markets enhancement which you would recommend?

Avoid complexity and too stringent or rigid rules. Be clear on what the needs are (see questions 20 and 21 for example of opaque procurement rules). The actions already being prepared may enhance the market significantly.
Several good measures are already on the way:
1. Integrating European market for mFRR and aFRR (including energy market for aFRR)
2. Imbalance pricing including both activated mFRR and aFRR,
3. Marginal pricing for FCR/aFRR

However, important to not have too strict requirements (see answer to q11).

24. Would you support the simplification of products traded in the DA and ID auctions to speed up the implementation of ongoing and future market evolutions?

The current products' category results from various historical categories of individual PXs and there might be some burden of history. It could be an idea looking which products are universally needed and which are rather for local peculiarities, and to consider whether something could be changed locally for making it possible to apply the universal products instead of the more local products.

25. If yes, which DA and ID market evolution would you consider to be a priority and which specific products could be discarded?

No answer.
We though remind that continuous ID is rather simple and robust trading facility compared to auctions with many different products.

26. Which potential benefits or drawbacks do you see with the alternative pricing methodologies described above?

We are open for further discussions. As long as the method transparent and market participants can put a limit how much they are ready to pay / need to receive at the minimum.

27. Would you recommend any other solution to improve the performance of DA and ID coupling algorithms?

The current pricing methodology used by the European market coupling algorithm is called "uniform" and couples the determination of the prices and the determination of the volumes to clear. This method minimizes the number of paradoxically accepted/rejected orders and ensures a single price per bidding zone; however, it impacts the computation performances compared to other solutions. Alternative pricing algorithms could decouple the resolution of prices and volumes.

TSOs using all relevant information and data available before evaluating/deciding on available capacity (independently if NTC or FB), including internal coordination among TSOs regarding parameters that may impact x-border capacity.

Potentially TSOs having the ability to use ID-markets for rebalancing/countertrade could also decrease the occurrence with TSOs making unnecessary limitations of the day ahead capacities.

28. Which potential benefits or drawbacks do you foresee by allowing more time for the algorithm optimisation?

It is important that the infrastructure is efficiently used. Thus, within reasonable limits a more correct computation may be worth investigating.

The market coupling process currently allows a fixed 12-minute resolution time for Euphemia and may be extended in accordance with the power market evolution. An extension of the computation time should carefully investigate the cost of internal procedures adaptation of the market parties.

29. Would you be in favor of keeping an hourly auction in day-ahead followed by 15 min intraday auctions?

As the ISP will be 15, the market shall be on 15 minutes too.

30. Would you recommend any other solution to adapt market coupling procedures?

No answer.

31. Do you think the zonal market model including the planned evolutions of the Clean Energy Package is suitable for the 2030 power system?

The core of the improved zonal model is the adequate delineation of bidding zones. With increasing amount of renewable electricity generation the bidding zone delineation must increasingly include the value creation of the intraday and forward markets. Thus, there may, especially when combined with the flow-based capacity allocation method, be a case for merging smaller zones into larger, also across national borders.

The zonal model facilitates more liquid markets, reduces the transaction costs for market participants to be active in greater geographical areas and increases transparency which all is for the benefit of the customers. Hence any diversion from the zonal model should be very carefully analyzed from the perspective of the customer.

32. What is the most important feature of the current zonal market design that must be adapted to make it future proof?

The liquidity of intraday and financial market must be part of the considerations when defining the bidding areas.

The core of the improved zonal model is the adequate definition of bidding zones. With increasing amount of renewable electricity generation, the bidding zone delineation must increasingly include the value creation of the intraday and forward markets. Thus, there may, especially when combined with the flow-based capacity allocation method, be a case for merging smaller zones into larger, also across national borders.

33. Which potential benefits or drawbacks do you foresee with introduction of the PST and cross-border/internal HVDC in the allocation phase of transmission capacities alongside the market coupling?

This technology is underutilized. Some of the major draw backs with non-planned flows can be alleviated with this technique thus adapting the physics to the commercial reality.

An area to investigate further is whether this can also be used to alleviate problems between different voltage levels.

34. Which potential benefits or drawbacks do you foresee with the introduction of several Flow-Based domains in the allocation phase of transmission capacities?

No answer.

35. Do you see the Dispatch hubs model as a promising option to be further analysed in the future? If so, which variant: Redispatch potential bids or market bids appears the most promising?

Dispatch hubs model should be further analyzed in the future if it would enable larger bidding zones.

36. Do you foresee any challenge in the implementation/operation of the model?

No answer

37. Do you consider more locational information in the balancing timeframe to be a solution worth requiring further analysis?

More locational information may have value in future's electricity system and provide additional possibilities for both TSOs and DSOs. It should be further analyzed. The "Dispatch hub -model" could be considered one special case of more locational information.

However, whether or not more locational information would be utilized, providing such information must remain voluntary for the market participants.

38. Would you recommend any alternative solution to solve intra-zonal congestion in the balancing timeframe?

No answer.

39. Do you think experience with nodal models can be useful in Europe, and how?

We consider zonal model better suited to promote competition. However, nodal models are important in designing bidding zone structures and in recognizing needs for new transmission capacity.

40. What other advantages or disadvantages do you foresee with nodal models in a European context than those mentioned here?

No answer.

41. How could the increasing participation of distributed energy resources to the balancing market be handled in nodal pricing models?

No answer.

42. Under which conditions do you think a nodal market could be a relevant solution for some countries?

We consider zonal model better suited to promote competition.

43. Do you foresee other challenges or solutions than those mentioned here with respect to the interaction between zonal and nodal solutions?

Current data protection policies of various TSOs may not be complementary to models where more information to the market is expected to increase the efficiency of the power market.

44. How can distortions and inc/dec gaming in market-based redispatch be addressed/mitigated?

Alert the competition authorities if market abuse is suspected.

45. What type of alternatives (e. g. capacity-based payments) exist to efficiently make use of distributed flexibility sources?

Market rules should be technology neutral. The one concession that can be useful is to simplify participation by simplifying rules and requirements.

46. What recommendations do you have for the development of local flexibility markets based on existing initiatives?

There are several ongoing pilots (INTERRFACE, OneNet, NODES, Coordinet etc.). These should be evaluated with respect to future needs.

However, the use of market flexibility is not an argument to delay building infrastructure. Market flexibility is complementary to the power system infrastructure.

47. Should EU legislation attempt to define some fundamental common principles

One size fits all standards can evolve evolutionary if the regulators are competent and flexible enough. We welcome the being done while scoping for flexibility network code.

48. Do you agree that all three models described above could be suitable for European countries in 2030?

Yes.

49. Is there any additional market model which would be suitable for European countries in 2030?

The problems that have challenged the European power systems are often connected to a lack of infrastructure and the abundant subsidies to some technologies. The solution to the first problem is that the infrastructure is developed faster and to accommodate market needs. The solution to the second is to stop creating new subsidies' systems. Low-carbon generation technologies are already highly competitive and companies will invest in new electricity generation market driven.

50. Do you see capacity mechanisms with flexibility requirements as a promising option for further analysis?

All solutions need to be technology neutral. Splitting supply and/or demand in different blocks is not good for liquidity.

51. What are in your view the main potential advantages and drawbacks of capacity mechanisms with flexibility requirements?

All solutions need to be technology neutral. Splitting supply and/or demand in different blocks is not good for liquidity.

52. Do you consider the capacity subscriptions model as a promising option for further analysis?

No answer.

53. In your view, what are the main potential advantages and drawbacks of the capacity subscriptions model?

No answer.

54. Which potential benefits or drawbacks do you foresee with the implementation of scarcity pricing in your market?

Correct and sometimes ”high” prices are important to convey information about scarcity situations to market actors and decision makers. If prices occur in the day ahead and the intraday market experience shows that relevant actions will be taken.

Most important may be to publish prices in real time.

While the technical price limits in balancing markets are expected to higher, we see little benefits for introducing additional scarcity pricing schemes.

We are, though, concerned how the proposed price limit 99 999 EUR/MWh can affect the prices of imbalances, and whether ACER has sufficiently analyzed all consequences. The very high technical price limit may cause too high risks for both demand and supply in the electricity markets.

55. Do you have any specific suggestions on how scarcity pricing could be implemented?

Correct and sometimes ”high” prices are important to convey information about scarcity situations to market actors and decision makers. If prices occur in the day ahead and the intraday market experience shows that relevant actions will be taken.

Most important may be to publish prices in real time.

56. What type of RES supports is more fit for purpose for the 2030 power system?

With the current knowledge of costs of renewable electricity generation, there is no need for new support systems as of today.

57. What other market design elements can facilitate investments in RES to achieve EU climate objectives?

Maintain a functioning EU ETS. The rules and regulations should by technologically neutral to yield an efficient use of resources. In the Nordic balancing market, the following barriers are currently existing, to RES and non-RES equally:

- Too ambitious and non-harmonized pre-/requalification requirements: if this process is too complex, too costly, or happen too frequently it will not be worthwhile spending time on (especially for smaller players, smaller assets and/or for areas with lower price volatility). In addition, the requirements need to fit the actual needs and thus should not be overly stringent.
- Symmetrical products (must deliver both up-/down flex) unnecessarily prevents participation.
- Pay as bid instead of marginal pricing is a major obstacle.
- Too strict ramping-requirements. (Especially delayed ramping. It is often easier to ramp RES fast)

58. What are the best practices for the design of RES tenders?

It is questionable, which is noted above, to continue support of technologies which are now already profitable. However, if insisted, the auctions' models for sites that would ensure proper and enough infrastructure are probably least distortive.

59. How should capacity mechanisms consider the participation of RES?

Capacity mechanisms exist to solve problems in the power system. It must thus be designed for the needs of the system rather than to suit certain technologies.

60. Do you see potential for the development of new frequency ancillary services?

Yes.

61. Which non-frequency ancillary services are more suited for market-based procurement?

Where there are small volumes and for example investment in equipment which needs to be paid for a longer period. Also, it is essential that the remuneration to all ancillary services is market based in accordance with the opportunity costs to the TSOs

62. Do you have suggestions on how to best ensure that market participants provide the necessary system inertia to the system?

It is essential that the remuneration to all ancillary services is market based in accordance with the opportunity costs to the TSOs.

Inertia needs to be considered as service essential for the power system, and to understand it having a value. The TSOs should ensure sufficient inertia through making it as a product and paying for it.

63. Would you recommend any other solution for ancillary services in 2030?

No answer.

64. Is there any other key market design area not addressed in this paper which deserves particular attention to enable the achievement of European energy and climate goals for 2030?

We appreciate ENTOS-E for inviting market participants to comment on the discussion paper. We though consider it somewhat driven from the System control perspective and not fully considering the possibilities markets would deliver. These include increased transparency on balancing prices, trading until and during operational period and motivating for self-balancing. Just to mention a few.

We also lack thinking, how the TSOs could by improving their internal processes to provide more capacity into the market.