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Swedenergy's comments regarding the discussion paper on Short-term markets

Swedenergy, representing 400 companies, is the Swedish joint association for producers, distributors and suppliers of electricity, district heating and cooling.

Swedenergy welcomes the opportunity to comment on the discussion paper and are especially grateful for this initiative to involve the market players at an early stage regarding future market development.

Given the complex issues at hand, it is difficult to provide complete answers to all questions within the relatively short time of this consultation and solely based on the content of the discussion paper. We are looking forward to a continued dialogue and are very interested in the future process where market participants can provide valuable input.

For the future process, a further discussion and process with selection and development of some of the suggestions need to be guided by a more thorough analytical background covering issues like needs assessments and cost/benefit analyses. Any major development process should include small-scale testing (piloting) in order to gain experience and reduce risk.

General comments

TSOs should base all market design changes on a set of guiding objectives for all reforms

The objectives should be to (i) create liquid, competitive and integrated markets maximizing access for producers and consumers; (ii) guarantee transparency and visibility for market participants, and; (iii) ensure full compatibility with the EU regulatory framework and avoid a region-specific market development.

Short term markets must be put in the context of the whole electricity market

It is natural that the TSOs focus on issues closely related to their main tasks, i.e. keeping the physical balance. Of course, the design of the market may change, but today, short term markets is part of a chain which is not stronger than its weakest link and it is fundamental to understand that a holistic approach is necessary for cost efficient measures. Another important aspect is that the TSOs are natural monopolies and with this comes the task of appreciating the benefits for the market as a whole, rather than focusing on cost minimization for themselves.

In the paper we therefore lack discussions on the consequences for the financial and retail markets respectively. The credibility of a reference price for hedging opportunities for once must be recognized. Furthermore, one must also consider the importance of tariffs, as they could be seen as fixed costs constituting the floor for market participants in optimizing their portfolios and a vital component that have to be taken into account in trading.

We also think it is necessary to include a discussion on the context for the short-term markets in spatial terms. As the main purpose of markets is to provide correct economic signals to the market participants, the delimitation of bidding zones is of great importance. With a common Nordic balancing market, and flowbased capacity allocation, we fail to see why national borders still trumps a delimitation in accordance to the physical characteristics.

Not the least in the “challenges report”, the TSOs stressed the importance of availability of system services and therefore it is also important to raise the issue on how these are to be priced in accordance to their value to the market.

As the markets are moving closer to real time, it should also be discussed on how to separate market from infrastructure, which is important regarding the distribution of costs. Should some system services be financed via tariffs and some via the market? The collective of grid customers is NOT identical to the collective of market participants. Not considering this will have impacts on competition in the markets.

The discussion paper should incorporate a discussion on governance

The integration of the electricity markets is continuous, although at different pace in Europe and within the Nordics respectively. As legislation is primarily based in Europe, the development of regional Nordic solutions might be restricted. Even though we can see a development where the Nordics once again can become a fore runner and a model for the development in Europe.

A fundamental challenge in the harmonization across national borders is the existence of national legislation and concerns. With the CEP, we see the first step towards a merger of the tasks of national TSOs, hence a Nordic ISO should be addressed as it seems inevitable.

Trust is a vital component for efficient markets

We appreciate that the TSOs take their responsibility seriously, but they must also have faith in the market and its participants in taking the right actions. We can see numerous examples on lack of faith e.g. restricting and reserving trade capacity, blocking one price settlement and keeping early gate closure.

Some of the proposed reforms should be implemented much earlier than 2025-2030

For instance, the Intraday Gate Closure Time (IDGCT) could be shortened immediately or as a part of the coming changes to the intraday and balancing markets.

Answer to the specific questions

(1) 1. What developments do you expect in the next 10 – 15 years for the market structure and market platforms covering the short-term market timeframe?

The energy transformation will have a profound impact on the energy system but also the regional and local networks. A prerequisite for a cost-efficient system over time is therefore socio-economically effective tariff structures, and to the extent that it is reasonable, a harmonized view of fees and incentives for the network's customers between all voltage levels. Swedenergy foresee an increasing need to manage local and system-wide grid connection, due to new consumption and new production. This will require a significant increase in the exchange of information and coordination between local grid operators to system operators and market participants. Swedenergy also believes that harmonization of the national grid tariffs within the EU should be desirable. However, differences and

similarities between different countries need to be analyzed and the conditions for harmonization in this way clarified.

An area that will be more and more critical to develop and understand is how and to what extent dynamic grid tariffs may support the functioning of the short-term energy market as a non-frequency ancillary service to manage and alleviate a strained system and grids. Swedenergy would like to emphasize that the TSOs and National Regulatory Authorities analyze the interlinkages between the development of flexible grid tariffs and the development of flexibility platforms and short-term energy markets.

The roll-out of smart meters and the digitalization trend will enable new and developed customer contracts that will contribute to meet the challenges of the more distributed supply system. Exactly how is however hard to foresee today, but Swedenergy is convinced that digitalization as such, e.g. smart aggregation of customer loads will be an important piece to address these challenges. The development of tools and regulatory framework must be responsive to this development to utilize these resources in the most efficient way.

In the future, cross zonal capacity should be priced in all market timeframes. Allocation across markets could happen through a co-optimized process for day-ahead, intraday and balancing markets instead of the inaccurate and non-robust reservation methodology proposed for mFRR and aFRR.

As more variability is expected near real time, we expect a clear tendency towards close to real-time timeframes. We believe it is necessary to give the proper short-term signals to the market participants so that they can support managing short term variability and have a way to hedge their portfolios. Market platforms should therefore from our point of view allow for short term management of variability both at TSO and DSO level. This requires moving closer to real time capabilities, being able to treat large amounts of real time data and to support automatization and robotics.

(2) 2. Any other views/comments related to the future short-term market structure and market platforms?

Flexible market places will be key for an efficient development. An important area for development is the growing demand for different system services. Therefore, Swedenergy encourage the TSOs to actively engage in further development of the market framework to better match the demands of the system operators with the flexibility of the market, already at the intraday time frame.

First and foremost, we encourage the TSOs and NRAs to develop a framework that allow market participants to offer their flexibility in the most flexible way. In our view this is best achieved without any obligation to be balanced at the day-ahead stage, but rather through an obligation to transparently offer all flexibility to the market. The design should be based on a single price, one balance settlement system, combined with markets based on 15 minutes periods. Swedenergy is positive towards further harmonization of the system operation, for example regional ISOs, to better reflect the borderless market.

Our expectation is that the supply system will be a combination of both large- and small-scale production units. To maintain the prerequisite of a level playing field, on an aggregated level it is important that all units are subject to equal requirements. Units that help the system are either credited through lower fees or offered a market-based compensation. TSOs should not be allowed to own their own generation assets.

Transparency in system operation will be a cornerstone for a credible market. The TSOs use of so-called special regulations are not always communicated properly and not sufficiently harmonized among the Nordic TSOs. Special regulation has an impact on the power flow, and thus the regulating power prices and imbalance prices. This in turn influence the market participants expectations on risk for imbalances and their activity on the intraday market.

An opening balancing auction, placed after gate closure of the continues intraday market, have the potential to pool markets flexibility with system operation needs to operate the market secure and reliable.

Swedenergy encourage the Nordic TSOs to test and evaluate a combination of the following three tools to handle their need for flexibility:

- Opening (pan-Europe) ID auction (as early as possible)
- A regional opening balancing auction after the continuous trading period for each traded product has closed and before the delivery period starts.
- Special regulation during the operating time frame.

By combining these three markets, the TSOs should have the opportunity to enlarge the market and manage the regulatory requirement at a low cost. The TSOs would also be able to adjust their strategy continuously to minimize market manipulation, arbitration risk, etc.

Cooperation between DSO and TSO needs to be further explored and developed. Flexibility needs to be optimized and used where the benefits are maximized from a socio-economic perspective, hopefully in an automatic way.

In the long run we could imagine the participants place their bids in self-orchestrating market platforms which would decide which bid to activate in which market, in a continuous manner.

(3) 1. How do you see the role of flexibility providers in the future short-term markets?

Swedenergy welcome changes to the regulatory framework to allow new resources to enter the market. To fully activate the demand resources, all flexibility products must be priced pay as cleared. The overarching principle should be that the same requirement applies for all technologies and regions in the same market.

We are convinced that aggregation of demand will constitute an important source of flexibility for the future power system. We are as convinced that the growth and development of this potential should be under full balance responsibility to maximize the socioeconomic value for the end customer and society as a whole.

A central objective for any further market development should be to bring in more flexibility from the demand side to the various markets. To make this happen, thresholds in terms of technical requirements and long pre-qualification processes needs to be lowered so that it is technically possible without becoming too expensive. As an example, it is not regarded as reasonable to set local frequency meters on each private electric car charger that meets the same technical requirements as the local frequency meters that are currently available at hydroelectric power stations. To preserve a level playing field we therefore recommend the development of several different products categories.

Regarding the pricing of flexibility, Swedenergy support a framework with the following characteristics:

- Overarching principle - same requirement for all technologies and regions in the same market. Marginal pricing for both capacity and energy products.
- Grid regulation - Balancing prices should be unaffected by actions originating from constraints in the grid, i.e. actions intended to solve bottlenecks should not affect the pricing of balancing power nor imbalance prices. Generally, grid regulation using the balancing market should only be used as a temporary solution, as it to some degree distorts the balancing prices as bidders may anticipate a grid regulation and thus bid as if it is under a "pay as bid" regime.
- Transparency in system operation - To maintain the credibility of the market functioning it is fundamental that the TSOs publish the bid price, reason and any corrective measures when they use the regulation power market for handling congestions in the grid. One other example would be the exchange of power between areas as this also has a major impact on system imbalances, market prices and actors' actions. Swedenergy strongly argues that the current praxis for special regulation methodology would be improved through:
 - Either organize separate market/product for grid regulation applying marginal price (with reference to opening balancing auction as mentioned above), or
 - allowing for two prices for the same bid, e.g. bid price + some acceptable margin (e.g. +10%) for a bid if used for grid regulation.
 - Ensure transparency and efficiency in the combined activation of different products such as aFRR and mFRR. Currently we have observed cases where the latter has not been used to restore the former, contrary to the defined role for respective category.
- The role of aggregators - Swedenergy are convinced that aggregation of demand will constitute an important source of flexibility for the future power system. We are as convinced that the growth and development of this potential should be under full balance responsibility to maximize the socioeconomic value for the end customer and society.
- Ownership of storage - As is addressed in the Clean Energy Package (CEP), Swedenergy propose the regulator to focus on application rather than technology. DSOs must be able to operate the grid efficiently and use storage for that. In a worst case, a too prescriptive framework could jeopardize the safe operation of the DSO-grids. However, if that flexibility could also generate a market value in any other traded product category (ancillary service, balancing etc.), the regulatory framework should encourage a market solution and not lock in capacity for DSO-use only. The topic is not black and white and requires further work to develop.
- Specific on mFRR and aFRR specific development - For the further development of new products, the European framework and guidelines will set the boundaries and processes. However, starting from a pragmatic view on the Nordic system, our recommendation is to work through the following steps:
 - Quantify the need for flexibility to match variations in production, cable transmission and consumption. How do the existing products match this?

- Is there a need for more frequency control products? (response time <1s; response time between 1s - 6s; more tertiary regulation products (Activation time <5 min, <15 min, <30 min) etc.
- The above-mentioned time interval could also be combined within a product category; the TSO calls for the lowest price as long as the response time is acceptable.
- Product definitions will have to be developed to include batteries. In particular, the system requirements for e.g. speed, frequency interval, etc. must be reviewed. Current framework is adapted to existing technology.
- Products for "new" system services - A general feedback is that the technical capabilities from the non-traditional sources of ancillary services could be increased significantly if the demand from this is more clearly communicated already in the connection stage.
 - Inertia - We are positive about a market or cost-plus solution, but not a pivotal development step.
 - Reactive power - Measurement and settlement of reactive power has been analyzed historically with the result that the administration was considered too costly in relation to the market value. We are not against it being studied further but its importance should not be exaggerated.
 - Black start capability – This is also an example of a system service that should be given market compensation.
- Balance responsibility and settlement
 - All market participants should be fully responsible for their imbalances or contract the service to manage imbalances from a Balance Responsible Party.
 - Symmetry between the imbalance price and the balancing price paid to the resource that restore frequency. Areas to consider is the potential contribution from regulatory tools such as scarcity adder or similar.
 - Single pricing and single balance position and portfolio bid should be the basis for Nordic harmonization.
 - Any requirement to plan for balance at the day ahead stage should be removed. The balance responsible parties should rather be given strong commercial incentives and requirements to transparently bid in all its flexibility balance and commercialize flexibility.

(4) 2. Other possibilities to facilitate linking resources located in DSO grid to the short-term market?

The overarching principle is that TSOs and DSOs should use market-based solutions to meet all flexibility needs.

On the related topic on ownership of storage, addressed in the CEP, Swedenergy propose the regulator to focus on application rather than technology. DSOs must be able to operate the grid efficiently and use storage for that. In a worst case, a too prescriptive framework could jeopardize the safe operation of the DSO-grids. However, if that flexibility could also generate a market value in any other traded product category

(ancillary service, balancing etc.) the regulatory framework should encourage a market solution and not lock in capacity for DSO-use only. The topic is not black and white and requires further work to develop.

An area to consider is if the current delimitation of bidding zones is optimal from this perspective. Swedenergy's overarching position is that congestion in the grid should be managed where it occurs, using market-based methods. An obvious trade-off here is how a combination of an energy market applying "copper plate" approach may be (socioeconomically) efficiently combined with a grid redispatch market based on a much more detailed grid representation.

DSO markets for local flexibility will increasingly gain importance. However, new flexibility markets should not reduce the liquidity in existing markets. DSO markets should as much as possible be integrated in existing markets in order to maximize market liquidity. New flexibility markets should be limited to the balancing time frame (after intraday gate closure) in order to avoid information asymmetry, spill overs and DSO/TSO interference in the DA/ID timeframes. Resources in local markets should also be possible to aggregate "upstream" to use in overlaying markets.

Flexibility should be provided through standard balancing products to the extent possible, if required complemented by additional bid characteristics such as locational information, ramp rates, firmness etc.

The DSO should be transparent and send the appropriate price signals in order to make sure sufficient participants are interested in participating into the local markets, and to ensure liquidity. The minimum bid size should reflect the amount of flexibility which can be found on the local level. The necessity of current rules, such as N-1, should be analyzed from the perspective of the impact on the business cases of aggregators, and low availabilities or delivery issues should be regarded, and penalized ex-post based on the cost they created.

DSOs should provide their requirements in terms of localization in a harmonized manner across areas to facilitate aggregators' implementation. It could be done via GPS coordinates, nodal modeling or parent-child relationship (where each flexibility would be allocated to a given grid resource it could act on). It should also be possible to transfer the flexibility automatically to the TSO to be used in overlaying markets.

(5) 1. Which actions from TSOs are needed to ensure that the existing transmission capacity will be allocated efficiently to the short-term market taking into account transition in the energy system

Swedenergy understands the reasoning behind the methodology set to reserve cross border capacity for the exchange or reserves in the Nordics, but would like to highlight complicating factors that needs to be closely monitored:

- Any method set to reserve capacity between market time frames requires full oversight of informed regulators to avoid excessive reservations that optimize the TSO-cost of balancing rather the societies cost of electricity supply. The methodology used to forecast the capacity demand for the following day should be developed with regulatory oversight.
- The reservation also implies a complicating factor that will further add to the complexity of the market framework, in a time where the complexity in itself already tends to constitute a boundary for further development. The recommendation from Swedenergy is to evaluate alternative options to improve

the possibilities to reallocate grid capacity through counter trade. Including a clarification on how the cost of capacity is distributed between users.

- An area that will require further consideration is the distribution of welfare from transmission capacity allocation in the case of merchant interconnectors, i.e. for the cases when the reserved transmission capacity is not owned by the TSOs.

Instead of allocating transmission capacities ex-ante, it should rather happen simultaneously. Either by introducing options or, better, merging different markets. And with flow-based capacity allocation in the day-ahead market, it is especially important that there is a framework put in place which prevents flows in incorrect direction. Local grid problems must be taken into consideration.

Locational signals in a higher resolution than current bidding zones can be necessary in the future markets. The growth of variable and distributed energy resources will lead to increasing bottlenecks in distribution networks and internal transmission networks. It is important to ensure transparency and visibility on the stability and continuity of these markets, so that they are not suddenly and without anticipation eroded by grid investments.

As a first step, TSOs can setup a time limited market for locational bids based on providing geographical information in the mFRR market when internal bottlenecks cannot be resolved by grid investments. TSOs/DSOs should supplement this by providing a clear and binding timetable for grid development or other permanent solutions.

However, the Nordics should take into consideration how a nodal approach will fit with the European Target Model based on bidding zones reflecting long term structural physical congestions. Much higher geographical information in terms of nodal pricing or much smaller bidding zones will reduce market liquidity. In addition, the move from portfolio bidding to unit bidding will create inefficiencies and increase transaction costs for market participants. It will also make it harder to pool smaller resources and thus reduce the ability of aggregators to increase demand side participation.

The need for locational pricing is to a large extent driven by deployment of renewables. As an alternative solution to locational pricing in the energy markets or costly grid upgrades, TSOs/DSOs could consider using tariff signals to signal the locational aspect when new renewables are deployed.

The reduction of price differences between bidding zones must be in focus for the TSO. In general, maximum capacity should be offered the market and reservation due to TSO-services kept to a minimum. Socio-economic calculations should show what is most beneficial, reservation or counter trade. We believe that countertrade could be used more frequent to less cost for the society.

It could be that inherited prequalification and IT security hurdles are not in favor of allowing more distributed resources to participate into the flexibility markets. Rules might also not always be in favor of using local sources to solve local issues.

(6) 2. Have you experienced that grid has constrained offering your resources to the short-term market (or markets in general)? If so, how much have such grid constraints increased in the recent years and are you expecting them to increase in the coming years?

N/A

(7) 3. What challenges would there be from the perspective of resource owner when moving from portfolio bidding to nodal or unit bidding?

Swedenergy advocate a solution where the BSP connected assets can still make a portfolio bid as this represent a more efficient framework for the Nordic resource base and thus enables a bigger potential of flexibility. The pros and cons how to make the demanded flexibility available for the system should be assessed from a system wide perspective to find the most socioeconomic solution. Swedenergy welcome flexibility from new sources, but not the least important for the end-consumers is that the flexibility is made available at the economics of scale in a market framework.

We see no special challenge for flexibility providers if localization requirements are clearly defined by DSOs. Assuming aggregators would already have GPS coordinates of assets in their system, they could easily adjust to nodal bidding.

It would however be important to keep the abstraction at the aggregation level to avoid having to connect all resources to DSOs or having to send data from all single units to DSOs.

(8) 4. Any other views/comments related to capacity calculation and allocation?

The new capacity calculation method, following what is stipulated under the CACM guidelines, imply a major change to the market. Thus, it is crucial that the process is transparent and subject to well informed regulatory oversight.

We see that the level of transparency must improve, e.g. why there are congestions? how they affect flows on different bidding zone borders? how they have been managed?

The benefits and socioeconomic value of a flowbased methodology increase closer to the operational hour. Swedenergy therefore remain doubtful about the TSOs' current proposal to start the transition before a functioning solution for the ID market is available. We believe there is still reason to question whether or not the benefit of flowbased capacity allocation in the Nordic market exceeds the cost of implementation and operation of the new method. The rationale of this is even more emphasized in a longer-term perspective.

Regular investigations regarding the possibility of reducing the number of bidding zones should be carried out. And cost for counter trade should be valued against the increased cost for the customers.

(9) 1. When is the optimal intraday gate opening time for future short-term markets from your perspective and why? Shall gate opening time be different for cross-zonal trading and trading within a bidding zone?

Swedenergy would like to see an opening time as early as possible, and a clear roadmap for full harmonization towards that. The trade within a bidding zone should be possible as soon as possible.

If there is a day-ahead auction as today, the gate opening time should be as soon as possible after the auction so there is time to trade before end of business day (16:30). It's important that the Nordic area, with several bidding zones, don't get a disadvantage compared to, for example, Germany with only one bidding zone.

(10) 2. When is the optimal intraday gate closure time for future short-term markets from your perspective and why? Shall gate closure time be different for cross-zonal trading and trading within a bidding zone?

Swedenergy's general view is that market participants should be able to adopt their respective positions as close to the delivery time as possible. This can be achieved with a late harmonized gate closure of the intraday market; but can also be complemented by an "opening balancing auction" as mentioned above.

Therefore, gate closure should move as close to real time as possible to allow market participants to balance their portfolio and manage their imbalancing costs. That would lead to better planned balances, less costs and lower regulation needs. With net-balancing this would probably also be easier to handle.

(11) 3. Do you see the need for redesign of market timeframes? If so, which issues are underlying, that would have to be solved by the redesign? Why?

The general trend is towards more trading taking place closer to the operational hour. And a clear trend is that the local aspects and location of the flexibility becomes more important. The future power market design should thus allow for more efficient matching of market participants flexibility and the system needs.

Flexibility from small resources, production and consumption, would probably benefit from shorter time frames. Also, a redesign could be necessary to avoid overlapping product structures.

(12) 4. Any other views/comments related to the market timeframes?

As stated above, we foresee a design that should be based on a single price, one balance settlement system, combined with markets based on 15 minutes periods for trading and settlement.

We believe that changes in the intraday gate opening time (IDGOT) and IDGCT should take place much earlier than implied by the 2025 perspective of the discussion paper. The growth of variable renewable energy and increased demand side participation requires faster and shorter markets. Ideally, TSOs should improve the speed, efficiency and automation of their scheduling processes to allow a shorter IDGCT as soon as possible. At latest with the implementation of the 15 minutes imbalance settlement period, TSOs should move to a cross zonal IDGCT of D-30 minutes as already implemented for local IDGCT in several European markets and for the IDGCT on the Fenno-Estonian border. In the interim period, local IDGCT could be shorter than the cross zonal IDGCT. The IDGCT should also in the future avoid overlaps with TSO markets for products such as mFRR and aFRR energy.

(13) 1. Have the TSOs described the most important issues from your perspective for changes towards the real-time trading? What should be kept/added/deleted?

A change from two price settlement and net-balancing is not mentioned. This will be a prerequisite for enable and make real use of real-time trading and from our point of view, the key is to allow as many participants to participate into the flexibility market to assure sufficient liquidity. To do so, constraints of using single assets in an aggregated manner need to be as low as possible, and requirements should be pushed to the aggregate level in terms of availability, prequalification and security.

One could always discuss the need for further reducing the market time unit. If motivated by accuracy in the projections for e.g. wind power, there are advantages of moving from

60 to 15 minutes imbalance settlement period. However, the benefit of moving to 5 minutes from this perspective could be discussed.

(14) 2. Which design aspects should be considered to facilitate market participants' bid submission in the several platform environment?

Swedenergy supports a regulatory framework that facilitates new resources to enter the market. System service products should be non-discriminatory. Capacity product for FRR should not require both up and down regulation to qualify. Lower minimum bid size for mFRR and aFRR, should be combined with automatic call/activation.

Standardization across TSOs, DSOs and zones are key to allow aggregators to bring as many single sources of flexibility online and to maximize the interconnectivity between market platforms. The possibility to offer the same resource in several markets, or in one but possible used in several, could also be important.

One should always strive for simplicity, where less platforms with different GOT and GCT should be analyzed.

(15) 3. Any other views/comments related to future market design of short-term market timeframe?

Possible future requirements on grid operators, meters etc. is not mentioned in the document, or the increasing security perspective.