



# Short-term markets

DISCUSSION PAPER  
SUMMARY OF CONSULTATION RESPONSES

Nordic TSOs | October 2019

## Executive summary

The Nordic TSOs have developed the discussion paper that explores possible market based solutions for future short-term markets and consulted stakeholders to initiate an early dialogue for future developments. Through consultation Nordic TSOs have received valuable input for development on future short-term markets.

Stakeholders recognise that the discussion paper includes the most important issues for changes towards the real-time trading. They agree that importance of short-term markets will increase, including markets for flexible resources. They have also requested that effects on all market timeframes, not only to short-term timeframe, should be addressed to have more holistic view. Short-term markets should be harmonised on Nordic and European level. Stakeholders prefer to merge market places with possibility of bidding simultaneously for different purposes.

Stakeholders would like to trade as near (or until) real-time as possible and their preference is to have third party to operate such markets.

Stakeholders do not support the nodal pricing, they prefer grid investments and only exceptionally nodal model could be introduced e.g. for balancing timeframe. Some stakeholders are still hesitant about benefits of flow-based approach in capacity calculation.

Stakeholders express that co-operation between TSOs and DSOs needs to be further explored and developed, especially for flexibility. Stakeholders request more transparency especially for balancing timeframe and for grid congestions.

Nordic TSOs will publish the summary of consultation responses as a separate document. TSOs will assess these stakeholders' responses when finalising the document for future short-term markets. This forthcoming document will include also a list of priorities engaging in topics for the future short-term markets.

## 1. Introduction

On 30 April 2019 Statnett, Svenska kraftnät, Fingrid and Energinet presented discussion paper that explores possible market based solutions for future short-term markets for public consultation until 1 July 2019.

This document summarises the responses from the public consultation. Nordic TSOs have not assessed the responses and only provided them in this document without scrutiny. The responses will be assessed when finalising future short-term market document.

The Nordic TSOs are thankful for the contributions and feedback from the consultation participants.

## 2. Consultation responses

The consultation was responded by 14 stakeholders. The respondents are from different parts of the electricity power industry, including two NEMOs, several associations, producers and consumers. Annex I presents stakeholders responses to each question. Annex II presents additional comments from stakeholders to the discussion paper.

### 2.1 MARKET STRUCTURE AND MARKET PLATFORMS

Questions:

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

Summary of the responses:

It is expected that the volumes in short-term markets (intraday and balancing) will increase. The tendency is towards close-to or in real-time trading timeframes. This will give better possibilities for market parties to balance demand and supply. Several respondents see that trading robots and artificial intelligence will be used for product and consumption optimisation via algorithms. It means also that trading processes become more automated.

Fair quantitative cost-benefit analysis is foreseen necessary to evaluate alternatives of single centralized and decentralized setup. One single centralized short-term market platform for Nordic region is currently governed by the Nordic TSOs. In a more decentralised setup, if there is a need to solve intermittent congestion at local level, a European wide solution could manage wholesale standardised trade and short-term locational flexibility markets.

A hybrid model for the ID timeframe with continuous trading complemented with ID auctions were generally seen as a workable way forwards. The amount of ID auctions and recalculation of CZC should in the respondents' view be limited to avoid detrimental effects on the liquidity and efficiency of continuous trading.

A proposal to test and evaluate a combination of the following three tools was introduced:

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

Transparency in the system operation was raised as one of the cornerstones for a credible market. TSO operated markets should be as transparent as markets run by NEMOs. There should be simple access, few products, pricing marginal, location of assets can be provided for TSOs' needs.

Communication of the use of the special regulation should in the respondents' view have higher attention. It should be harmonized among the TSOs because it has an impact on the flows, regulating power and imbalance prices. Use of special regulation affects the market participants' expectation on risk for imbalances and activity on ID market.

There are expectations that gate opening and closure times will be harmonised on European level.

Respondents see that market setup will become more complex than today. The complexity arises from various future needs and changes. For example, shorter time resolution, more products, scheduling closer to delivery, flow-based market coupling, integrated and linked market platforms at the European level. There will be several development steps at the Nordic level before European-wide integration can take place. On the other hand, there is a call for compatibility with developments in Europe in order to ensure access to large markets, increase market liquidity, and support European integration. Also increased information exchange and coordination between DSOs and TSOs and market participants are future changes. Complexity raises also questions, such as:

- Are end-users as a direct party in the marketplaces?
- Is market surveillance able to monitor the use of market power?
- Shall the electricity market remain a competitive market or is an oligopolistic short-term market emerging?

It is foreseen that increasing amounts of diverse assets will participate in the physical power market. The system will be challenged due to large changes in assets and production facilities. Also a more integrated solution for information exchange of local and system-wide level grid congestion, is needed.

The respondents expect that aggregators are established to provide market access for flexible demand and small-scale production, by applying digitalisation.

One respondent stresses the importance of the DA market as a reference price for financial trade and hedging also in the future market structure.

There is a view that a possibility to exchange the obligations (e.g. offered and "activated" aFRR capacity) amongst market participants should be present to ensure robustness and that

the economically most viable asset is used at the time of delivery. The geographical coverage of the short term markets should be as large as possible e.g. EU wide.

There is a proposal that the target design should be based on a single price, one balance settlement system, combined with markets based on 15 minutes time resolution:

- maintain a level playing field for different kind of resources (system support credited by lower fees or offered market based compensation); TSOs are not allowed to own their generation assets
- market participants to maximise their offered volume of flexibility through an obligation to transparently offer all flexibility to the market
- no obligation to be balanced at DA timeframe

Further harmonisation of the system operation (e.g. regional ISO) is supported.

## 2.2 FLEXIBILITY TO SOLVE CONGESTIONS

Questions:

1. How do you see the role of flexibility providers' in the future short-term markets?
2. Other possibilities to facilitate linking resources located in DSO grid to the short-term market.

Summary of the responses:

Generally, the respondents see that the role of the flexibility providers will increase substantially. One of their key roles will be to provide volumes to the DSOs and TSOs and act as an efficient and cost-effective route-to-flexibility for them. Providers will aggregate resources to a platform(s) that allows real time control of single assets or sub-groups of assets, based on their technical and contractual availability but also their location. There is also a proposal that for the definition of flexibility the preference is to use the term 'flexible capacity' as flexibility is a characteristic of capacity.

In respondents' view, fostering market liquidity is an important part of the design. Flexibility markets should not reduce the liquidity in existing markets. Flexibility markets should be integrated in existing markets in order to maximize market liquidity. One liquid market is preferred over a too fragmented market setup. There is even a concrete proposal to introduce a participant centric market design and incorporate location and flexibility attributes in the existing intraday market. This would make in the respondent's view the participation easy and make most use of existing well-working infrastructure and services.

Respondents see that market design should allow market actors to offer their flexibility in a voluntary and market-based manner. Free price formation without price ceilings for balancing markets should be allowed. That makes the profitability of the markets better, attracts new entrants and allows established players to make the necessary investments. Marginal pricing is supported.

Clear roles and responsibilities, level playing field and fair distribution of costs are emphasized. There is also a view that platform operations should be given to neutral intermediaries, not to TSOs nor DSOs.

Respondents see that the role of aggregators (one balance responsibility) will be highly important in delivering flexibility to the market, taking care of the single assets' connection, and offering aggregated volumes of flexibility to DSOs. The congestion management solutions at TSO and at DSO level should be harmonised with similar services in order to ensure a level-playing field on the market.

Currently “hidden” flexibility could be better unveiled based on proper market dynamics and incentives. DSOs should be transparent and send the appropriate price signals in order to ensure sufficient participation in the local markets, and to ensure liquidity. DSOs could through own actions and rules encourage flexibility entry into the market. They could use digitalization to process the increasing amount of data they are faced with and to fulfil their new role.

All types of flexibility should in respondents' view be eligible to participate depending on their technical characteristics and grid impact. No asset class should receive a special treatment. A Nordic flexibility standard should enable technical standardization of the products traded at local flexibility markets. Products for 'new' platforms should take into account inertia, reactive power, black start capability and batteries. Minimum bid size should reflect the amount of flexibility, which can be found on the local level. Low availabilities or delivery issues of resources should be penalised ex-post based on the cost they created.

In respondents' view, new digital tools facilitate distributed energy resources by creating better incentives and making it easier for prosumers to store and sell surplus electricity to the grid. New tools such as blockchain could also help to facilitate peer-to-peer electricity trade within local energy communities / prosumers. Another possible future development is having in-built functionalities in applications, “internet of things”.

Transparency in system operation is even more important than today; bid price, reason and any corrective measures when regulation power market is used for handling congestions in the grid are good examples.

In respondents' view, flexibility platforms should be incorporated in or at least linked to the existing short term open two-sided wholesale markets where possible. Also market players located in the distribution grids need to have access to the markets. Platforms enabling both flexibility and energy products as well as activation by other market participants as well as DSO-TSOs are needed. On the other hand, regional fragmentation is a risk for well-functioning short-term markets. New markets could reduce liquidity of existing markets.

There is also a view that the new markets should be limited to the balancing time frame (after intraday gate closure). This way the roles and responsibilities remain clear and DSO/TSO interference in the day-ahead/intra-day timeframes is avoided.

It is also mentioned that:

- there is a need to quantify the need for flexibility to match variations in production on mFRR/aFRR, transmission and consumptions and how products meet this
- pricing of balancing power & imbalance prices should be unaffected by actions originating from the grid constraints
- all market participants should be fully responsible for their imbalances, or contract the service to manage imbalances from a BRP
- changes to the regulatory framework are needed to allow new resources to enter the new markets
- a market based solution for storage resources is preferred over to lock in capacity of storages for DSO-use only.

### 2.3 LOCATIONAL INFORMATION FOR ALLOCATION

Questions:

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?
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?
3. What challenges would there be from the perspective of resource owner when moving from portfolio bidding to nodal or unit bidding?
4. Any other views/comments related to capacity calculation and allocation?

Summary of the responses

Respondents agree that market structure needs to be somehow adapted or complemented to tackle upcoming challenges linked to the energy transition when considering locational information for allocation and congestion management. Market participant should be given correct economic incentives to establish balanced positions before entering into real time operations.

Respondents request TSOs to invest more in the grid to avoid permanent bottlenecks. Internal congestions should be remedied with grid investments in longer term and possibly applying more frequent countertrade in the short term. However, local grid problems have to be taken into consideration. Where actual constraints exist, these must be handled transparently and in a market-based approach. The level of transparency should be improved, publishing reasons for why there are congestions and

- how they affect flows on different bidding zone borders
- how have they been managed (what tools, how's it with the investment plans)
- how they affect market participants' possibilities to participate in different markets

TSOs should offer maximum cross-border capacity to the spot markets and reservation due to TSO services should be kept to a minimum. Any reservation of capacities prior DA for the ID or balancing markets or explicit cross-border capacity markets are not supported. Some respondents view that currently planned “forecasting” of value of transmission capacity

between bidding zones by looking at yesterday's DA realisation for the capacity markets is not an adequate solution to allow use of transmission capacity where social welfare is maximized. These respondents prefer that the reserve markets and DA optimisation should be calculated together.

One respondent remarks that redefining bidding zones might be challenging with regard to fluctuating power flows and changes in location of congestions, and not the appropriate way forward to accompany the transition of the power system. Smaller bidding zones would not bring sufficient granularity to efficiently solve congestions (notably those located on the distribution grid level) and harm the well-established zonal power wholesale markets' liquidity. Besides, regular investigations regarding the possibility of reducing the number of bidding zones should be carried out.

However, some respondents agree that locational signals in a higher resolution than current bidding zones can be necessary in the future markets: one respondent propose as a first step, TSOs could 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 by providing a clear and binding timetable for grid development or other permanent solutions.

Respondents have mixed views on FB approach. Some respondents consider FB implementation in DA planned for 2021 as a good step forward as it ensures better taking network constraints into account when allocating CZCs and to ensure a harmonized method across EU TSOs. One respondent doubts about the TSOs' current proposal to start the transition before a solution for the ID market is available as the benefits and socioeconomic value of a FB methodology increase closer to the operational hour. Some respondents have concern that FB will decrease transparency of the market. If the non-intuitive ("plain") model is applied it will introduce significant amount of counter-intuitive market results with energy flows from high-price to low-price BZ. Thus, in their opinion, it still remains uncertain whether FB actually will be realised in the Nordic market and if there is framework put in place which prevents flows in incorrect direction. A respondent recommends that the effect of RCC and FB capacity calculation should be analysed carefully before making decisions about changing the market in a profound way. Some respondents find still reason to question whether or not the benefit of FB capacity allocation in the Nordic market exceeds the cost of implementation and operation of the new method and request a transparent process subject to well informed regulatory oversight.

Respondents have strong reservations regarding implementation of the nodal pricing system, as it requires profound changes in the European market design, such as unit-based bidding instead of portfolio bidding and centralised nodal dispatch instead of European decentralised setting. Respondents remark that the basis for European and Nordic electricity markets is zonal markets with portfolio bidding. Coupled zonal markets are more adapted to manage a larger interconnected European market and its complexity with possible solutions:

- Grid utilization and optimisation including measures such as FB market coupling, gate closure & capacity allocation as close to the real-time delivery of electricity as possible,



MTU reduction (e.g. 15min products), and continuous auctions complemented with ID auctions for pricing additional capacity released in ID

- Complementary local flexibility markets
- Solution to handle the timeframe between DA and real time might take into account locational information and ID auctions for all participants including the TSOs handling structural imbalances as well as bottleneck problems closer to operating hour

Furthermore, respondents foresee a need to merge market places:

- CZC capacity allocation for balancing purposes could happen simultaneously with energy market and be market based
- Possible future development paths include merger of different market places with the possibility of bidding simultaneously for different purposes
- Another possibility could be moving towards a market structure where the day-ahead market includes a possibility for market participants to purchase transmission capacity options

One respondent proposes that 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. A respondent requests further consideration of the distribution of welfare from transmission capacity allocation in the case of merchant interconnectors.

Some respondents have experienced that congestion has constrained offering their resources to the market. They assume that these constraints are going to decrease due to investments in the grid and implementation of FB approach. However, most respondents have not experienced any constraints from the grid in the DA trading.

In some cases, short term trading close to delivery is hindered as TSOs refrain from allowing participants to trade as they claim to need the last hour to solve grid congestion. In the future, one respondent expects that more challenges might be encountered as the share of renewable energy generation connected to both transmission and distribution grids increases.

Respondents do not see benefits for most resource owners in nodal or unit bidding. Changing to nodal or unit bidding would bring in respondents' view many problems to electricity producers and consumers, such as:

- Moving to nodal or unit bidding would reduce market-based operations in short-term markets and move towards a system controlled by TSOs. Asset values would change as their location would become a determining factor in pricing;
- Implications of a nodal model on the functioning of the market and already made investments can be severe and such a model can deteriorate the investment climate for new generation and consumption;
- Model would add uncertainty for electricity producers, as e.g. a relocation of a large industrial site could result in collapse of the nodal price. Nodal market would incentivise building new capacity close to consumption, which could be very difficult in large cities;

- Nodal bidding would be unfavourable also for big industrial electricity consumers. Industrial consumers would face unequal positions and playing field. Being exposed to differing electricity prices in different nodes could distort the competition and lead into differences in the competitiveness of regions. If short-term markets were changed to being local, large-scale demand response would be hampered;
- Electricity suppliers would face an uneven playing field as the market size would be decreased. Free competition would be limited;
- Unit bidding would add a lot of complexity in the bidding and create a barrier for entry for many current and potential new parties wishing and able to enter the short-term wholesale markets and some parts of the (TSO) ancillary services/balancing mechanisms. Market transparency and comprehensibility are significantly reduced;
- Reduced flexibility in a case of wrong inflow predictions in a cascaded power plant system (e.g. large hydropower systems);
- Nodal pricing is only a tool for the TSO to reduce grid investments and to further create locational signals instead of grid investments;
- For the financial market the reference price could be lost, or made irrelevant regarding the balance of production and consumption;
- Nodal pricing would result in higher hedging risks and more complex operations. This inefficiency results in rising power prices for consumers. Unit bidding is also inefficient for players with a larger portfolio which would potentially lose the portfolio effect. Especially taking into consideration that the hydro capacity in many Swedish rivers is shared between multiple owners/operators

However, on general level respondents' opinion is that bidding on different markets can have a more detailed information on location or even unit, if it helps TSOs in their duties. For a BSP such data can also be needed in the bidding, though generally portfolio bidding is more optimal for market participants as it gives greater freedom to operate optimally with own fleet. It could be considered, whether in the balancing energy market, the market participants would have an optional possibility to include locational information for resources offered and hence to ease their usage also to congestion management.

Furthermore, if DSOs define localisation requirements in case of nodal or unit bidding based on the assumption that the aggregators already have GPS coordinates of assets in their system, there would be no special challenge for flexibility providers. It would be important to keep the abstraction at the aggregation level to avoid having to connect all resources to DSOs or having to send all single unit data to DSOs.

## 2.4 MARKET TIMEFRAMES

Questions:

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?
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?

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

Summary of the responses:

Most respondents see that intraday gate opening time (GOT) should be as soon as possible after the DA market is cleared and prices announced, preferably at 14 CET D-1. GOTs should be harmonised within and between bidding zones both at the Nordic and European level. A transitional period with sequential market opening could be applied, if market participants have to wait for clearing in some markets. In addition, having a shorter GOT only inside a bidding zone is better than waiting for a decision on implementing a shorter GOT on a wider market area.

There is also an opinion that TSOs are responsible to define which is the proper timing to open intraday cross-border markets given their calculations constraints. TSOs should be allowed to perform properly their calculations for intraday cross-border capacity, even if it means that the intraday cross-border should open later than 15.00 D-1.

Intraday gate closure time (GCT) should be as close the real-time as possible. Respondents prefer closer GCT compared to the present solution; may be less than 10 minutes, preferably at t-0. Respondents propose to move to 30 minutes GCT as it has been already implemented locally in several European bidding zones and on the Finnish-Estonian border.

Harmonisation of GCT between and within bidding zones across Europe to the shortest lead time would ensure a level playing field between market participants. However, the idea is not to harmonise at any cost, but rather the goal should be that all bidding zones have in the end the same trading until delivery. Different GCT between and within bidding zones only if for some reason both can't be at time of delivery, preferably they should be equal and just at time of delivery. In areas or regions, where trading closer to real time is possible, those CGTs should be allowed.

Most respondents wish that the possible redesign of market timeframes should be done minimising unnecessary complexity. Participants should be enabled to resolve the balance of the power system and be able to trade with each other close to delivery and should not need to send in their orders to multiple platforms and settle with different parties. Intraday trading should be extended up-to-delivery and TSOs could purchase much of the balancing energy needs from the intraday market. The future power market design should allow for more efficient matching of market participants flexibility and the system needs as more trading takes place closer to the operational hour and as local aspects and location of the flexibility becomes more and more important.

Respondents generally support structures that maintain spot prices as a reference to financial market prices. However, timing and delivery periods of the spot auction(s) could be revisited to enable renewables to minimise their forecast errors in the auction-based markets.

Respondents believe that changes in the intraday gate opening and closure times should take place much earlier than implied by the 2025 perspective of the discussion paper.

## 2.5 TOWARDS REAL-TIME TRADING

Questions:

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?
2. Which design aspects should be considered to facilitate market participants' bid submission in the several platform environment?
3. Any other views/comments related to future market design of short-term market timeframe?

Summary of the responses:

Respondents agree that TSOs have described the most important issues for changes towards the real-time trading. In addition, respondents have raised the following issues:

- TSOs have not dealt the possibility to maintain current bidding zone configurations; regional fragmentation of short-term markets seems to be taken as given;
- Analysis lacks how the changes towards the real-time trading will affect the functioning of the energy market and the positions of different market participants in the market; How can the market participants themselves be actively involved in the development of the market, whether they have any more role to play among Commission, TSOs and NRAs;
- TSOs seem to be describing and tackling the problems of the future power system from each problem individually and in some cases propose solutions without properly describing the purpose or reasoning behind;
- Participants providing the assets need to be put at the centre of the future market design
- It is challenging to understand the purpose and origin of the proposed "Common transmission capacity management" which seemingly would act as a focal point for a large set of different physical power markets according to the consultation paper; if the illustration indicates some kind of new explicit capacity mechanism where different platforms request capacity according to "access rules" it would be challenging to understand how this could work efficiently in the Nordic region;
- Change to one price settlement and net balancing is not mentioned;
- Financial market and implications of a changed physical market to the financial should be addressed;
- Impacts on the retail market, competitive and comparable retail prices, and hedging possibilities for retail sales companies should be taken into account;
- TSOs are advised to focus on efficient implementation of the NBM and to provide the market players with sufficient trading opportunities for the 15 min ISP, before embarking on new complex development projects;
- By 2025, most markets and platforms will be bound by European regulation. Hence solutions proposed by Nordic TSOs should as the basic rule be harmonized;
- Market platforms should allow for linking of bids, especially for markets close to real time;
- Harmonization 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 possibly used in several, could also be important;

- Clear roadmaps need to be communicated for projects and involve stakeholders to facilitate that projects are really kicked off;
- Lacks discussion on transparency (especially with respect to imbalance price formation and congestion management) and in general on how to motivate market participants being in balance in a market based way and hence helping the system being in balance;
- There are advantages of moving from 60 to 15 minutes ISP; however, the benefit of moving to 5 minutes from this perspective could be further discussed;
- Only in the open markets, namely DA and ID markets the participants can actually trade. In the aFRR/mFRR the participants can only offer their assets at the disposal of the TSO and await activation. Balancing platforms do hence not provide a possibility for the BRP/BSP to self-balance. A respondent proposes that the term “trade” or “trading platform” would not be used in the context of TSO balancing platforms as it could confuse the reader with respect of the purpose of these platforms; and
- Possible future requirements on grid operators, meters etc. is not mentioned in the document; not the increasing security perspective either.

One respondent considers that the discussion on nodal markets and shorter imbalance settlement periods is a bit academic in the discussion paper. Nodal pricing would be a huge step away from what has been a Nordic success story. Furthermore, respondents think that now could be the time to think, how to create the market (especially ancillary and balancing markets) from scratch responding the following questions:

- What are the characteristics of the Nordic synchronous area in the future?
- What are the really needed reserves and their parameters?
- Does the system really need FFR, aFRR, mFRR scheduled, mFRR directly activated, FCR-N, FCR-D, strategic reserves, TSO reserve gas turbines?

There is also a view that the number of platforms across markets and products should be kept as minimal as possible in order to facilitate market access and bid submission for market participants. Ideally there would be only one (or few) platforms which participants (different kinds of buyers and sellers) could participate in the market instead of several overlapping tools or platforms. Respondents are uncertain whether a “several platform environment” is desirable as it ultimately scatters liquidity and makes participation in the markets expensive, potentially complex and increases barriers for entry. Platforms should be developed on commercial grounds and not be centrally governed. There might also emerge service providers that function as gates to various platforms.

One respondent considers that especially data models, processes and reporting structures of market platforms should be carefully evaluated to enable both easy and seamless integration and automation in the future digital environment. Standardization across TSOs, DSOs and bidding zones are key to allow aggregators to bring as many single sources of flexibility online and to maximize the interconnectivity between market platforms. Respondents propose more harmonisation for BRPs across all European control areas as “one front end” for BRPs for all necessary technical and economic processes, such as schedule management, settlement processes, prequalification for balancing energy, guaranties etc.

There is also a view that a TSO-operated market could be beneficial to be developed so, that it would become possible bidding resources simultaneously into different markets. All TSO products should be harmonised on regional level:

- Bid submission through aggregators or NEMOs should facilitate combining several flexibility providers so they together meet requirements for standardised products;
- Platforms like Euphemia, and MARI & PICASSO should facilitate entry of all flexibility regardless of characteristics;
- File formats/auctions/platforms/mechanisms are harmonized within one price area as well as Europe wide;
- System service products should be non-discriminatory; and
- 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.

One respondent's view is that GCT for FRR capacity bids should not take place before the DA market results have been published.

Respondents have raised the following views/comments related to the future design of short-term markets:

- There should be products with a longer maximum delivery duration (e.g. 60 minutes) available in mFRR energy market also in the future;
- Market power and its possible misuse can become a major problem as markets and volumes become fragmented;
- The short-term markets will even more than before constitute a backbone for the transition of the energy system towards a decentralized and digitalized world as breakthrough of intermittent renewable energy and new technologies supporting it (e.g. DSM, batteries, etc.) require adapted network developments but also an adapted market design creating the right incentives so as to develop cost-efficient solutions;
- Congestion management is a key element of any short term market design where detailed grid congestion forecasts for the coming years are made available by system operators. However, neutral third parties should organise the market for supply and demand to ensure fair and orderly market price signals ;
- All relevant stakeholders, including NEMOs together with TSOs and NRAs should agree on a continuation of the Nordic-invented market-based approach to in a transparent manner resolve physical power delivery and balance. Here a participant-centric market design should be strived towards by taking small steps, pilot projects e.g., in the right direction, items on the NBM roadmap should be reconsidered based on a more market-driven approach and a continuous aim to improve market functioning and better possibilities for market participants to provide their resources.
- Vision announced by Nordic ministers, "Norden senast 2030 ska ha världens mest konkurrenskraftiga, innovativa och konsumentinriktade elmarknad som bidrar till att klimatmålen nås" shall be taken into account.

Section 3.1 Market Platforms

Q1: What developments do you expect in the next 10 – 15 years for the market structure and market platforms covering the short-term market timeframe?

Q2: Any other views/comments related to the future short-term market structure and market platforms?

|           |   |
|-----------|---|
| UPM       | <p>Q1:<br/>The significance of short-term markets has grown and will grow even more in the future. Reasons behind this trend are the increase of variable RES and stronger flexibility also on the demand side.<br/>In our opinion, the short-term market should remain as a free market where electricity producers and consumers can decide themselves on the bidding and use of their assets and resources. The same principle should apply also on other time frame electricity markets.<br/>It is necessary to have different products and markets to suit different needs: e.g. the needs of a hydro power producer and an industrial consumer are not the same. However, the actual trading should be as simple as possible for the market participants: ideally there would be only one or few platforms which participants could use to participate in the market instead of several over-lapping tools or platforms.</p> <p>Q2:<br/>Day-ahead market is currently used to set a reference price to financial trading and hedging, which we see as an argument for day-ahead market to remain also in the future market structure. Using indices to set the reference price is more complicated and not as transparent as using day-ahead price.<br/>Introduction of intraday auctions raises some questions about liquidity, number of participants and REMIT rules. We see a risk that organizing several daily auctions could lead into a situation where most market participants bid their capacity in the first auction round and do not participate in the auctions that take place later or vice versa. In this case, the liquidity of auctions might spread very widely into separate auctions. This could make setting the above-mentioned reference price difficult.<br/>Several intraday auctions raise also the following question: would REMIT rules and its interpretation force market participants to bid all their capacity in all intraday auctions?</p>  |
| ELFI      | <p>Q1:</p> <ul style="list-style-type: none"> <li>• Trading volumes will increase in the intra-day and balancing markets.</li> <li>• Overall volumes in the PEXs will lower than today (Nordic area).</li> <li>• Rapid trading robots will take care of major part of product and consumption optimizing via algorithms.</li> </ul> <p>Q2:</p> <ul style="list-style-type: none"> <li>• Today's system price will not be feasible index for financial products in the future.</li> <li>• The fragmentation of the short market will create more complex electricity market structure and market participants position as a competent market party will differ much.</li> <li>• Will there be any end-users as a direct party in the marketplaces?</li> <li>• Market surveillance is not able to monitor the use of market power, a potential crisis of confidence.</li> <li>• Whether the electricity market remains a competitive market or whether an oligopolistic short-term market is emerging</li> </ul>  |
| EPEX SPOT | <p>Q1:<br/>The development of a hybrid model for short term trading with continuous intraday markets (Single Intraday Coupling – SIDC) complemented by cross-border Intraday (ID) auctions will be beneficial under the pre-condition of recalculation of cross-zonal capacities (hereinafter CZCs) by TSOs and if the number of cross-border ID auctions remains limited. Implementing cross border Intraday auctions can indeed bring a clear added-value to market participants by releasing new CZCs in the intraday timeframe. However, because they come together with halts in the continuous intraday markets, too many cross-border ID auctions could harm the well-functioning of the continuous intraday market.<br/>Taking implementation and operational constraints into account, interrupting the SIDC and performing an additional Intraday auction can only be justified if there are clear benefits for the market and if there is sufficient capacity to be priced. The main disadvantage should be the limited capacity that will be allocated in the intraday continuous market and the limited trading window for continuous trading, especially for the first product(s) after the auction(s) and for the products that will be covered in the second auction that takes place in the morning of day D.<br/>The continuous intraday market is the SIDC target model under CACM. The additional Intraday auctions are supposed to only complement current trading. EPEX SPOT believes that each trading modality has its merits and can play its role without jeopardizing each other's liquidity. In the case these ID auctions would become too numerous and/or not be based on newly calculated CZCs from TSOs, they might however have detrimental effects on the liquidity and efficiency of the continuous market.<br/>Other alternatives mentioned in the discussion paper might also be investigated and assessed for designing future short-term markets. In the longer term, the outlined more integrated solution for optimizing transmission capacity allocation could be discussed. This would in a sense amount to pursuing the implementation of a nodal system in Europe which is an option coming with some shortcomings (as explained further in our answer to the question in section 3.3.).</p> |

|                    |   |
|--------------------|---|
|                    | <p>Q2:<br/>EPEX SPOT shares the Nordic TSOs' view that market design is a very dynamic and ever evolving activity. The more centralized the market design becomes, the harder it becomes to swiftly implement changes and test new solutions. The more decentralized, the more agile and innovative. With modern technologies, market participants have the means to arbitrage various decentralized market platforms hence maximizing trading opportunities and liquidity.<br/>A fair quantitative cost-benefit analysis appears necessary to evaluate if a single centralized short-term market platform for the Nordic region governed by Nordic TSOs is superior to a more decentralized setup whereby a European wide solution manages wholesale standardized trading for large liquid bidding zones and short term locational flexibility markets are offered on demand whenever there is a need to solve intermittent congestion at local level.</p>   |
| <p>Nord Pool</p>   | <p>Q1:<br/>In general, there will be an increasing amount of diverse assets participating in the physical power markets. At the same time the system will be increasingly challenged due to the large changes in assets and production facilities. Considering this there is a clear need to ensure that markets are transparent and simple to participate guaranteeing high liquidity, efficient supply/demand balance and non-discriminatory access to markets and cross-border capacity.<br/>Therefore, Nord Pool envisages that:</p> <ol style="list-style-type: none"> <li>1. As a starting point, the market structure MUST be constructed based on the participants being able to in a competitive framework provide their assets to resolve the challenges ahead and not based on multiple individual requirements from for example "single-buyer" TSOs. Only by having "participant-centric design" will it be possible to attract market participants and assets. And again, only this will resolve the future challenges – and then both in an economically and technically efficient way.</li> <li>2. The market needs to be enabled and incentivised to resolve the balance of the power system through market-based mechanisms up-to-delivery and then the TSOs could primarily focus on via technical system measures handle only such unexpected or stochastic emergencies which markets could not handle.</li> <li>3. The market setup needs to be adapted in a direction where supply/demand assets can be more easily offered simultaneously for multiple purposes (e.g. either pure energy positions among BRPs and other market parties via bilateral and organized open markets or aFRR/MFRR energy of more locational use to TSO or other future purpose)</li> <li>4. TSOs will be enabled to do energy balancing activation also on the intraday market (which for that purpose should/will be open up-to-delivery)</li> <li>5. Market transparency will be increased as there no longer would be any withholding of market information as is the situation today with the balancing markets when considering both manual and automatic activations (e.g. "spinning reserves").</li> <li>6. Intra Bidding Zone bottlenecks will be mostly removed(physically) or made visible by net network elements in the market topology</li> </ol> <p>Q2:<br/>If specific "TSO markets" still exist then there should be a possibility to exchange the obligations (e.g. offered and "activated" aFRR capacity) amongst market participants to ensure robustness and that the economically most viable asset is used – if needed - at the time of delivery<br/>The short term market needs to cover a as large geographic area as possible (e.g. EU) to ensure</p> <ul style="list-style-type: none"> <li>• Access to flexible assets when needed</li> <li>• Make most value of the existing flexible assets in the Nordic region and preferably combined with Baltics and other relevant adjacent countries.</li> </ul> |
| <p>E-CO Energi</p> | <p>Q1:<br/>We expect to see a market heading towards several intraday auctions during the day, which includes TSOs handling structural imbalances as well as trade away from bottle necks. This will in turn lead to more frequent updates of capacities. We are also positive to a more complex market structure which is described in the paper.</p>  |
| <p>ANON</p>        | <p>Q1:<br/>As more variability is expected near real time (renewables generation and prosumers, E-mobility), we expect a clear tendency towards close-to real-time timeframes.<br/>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, impacted by this variability.<br/>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 automatisatation and robotics.</p> <p>Q2:<br/>Cooperation between DSO and TSO needs to be further explored and developed. Flexibility needs to be optimized and used where largest benefits are from a socio-economic perspective, hopefully in an automatic way.<br/>In the long run we could imagine self-orchestrating market platforms where participants would place their bids, and which would decide which bid to activate in which market, in a continuous manner.</p>  |
| <p>Fortum</p>      | <p>Q1:</p>  |



|            |   |
|------------|---|
|            | <p>We foresee much more dynamic and price-conscious demand patterns, even in household consumption. This will likely be a positive development for aggregators as this development will create more flexibility, though it can also have impacts on day-ahead markets as this type of price-aware consumption can be hard to predict. We also foresee that aggregators likely develop platform economy solutions to provide access for flexible demand, and small-scale production. Allowing smaller flexible objects participation directly or through aggregators to FRR (and FFR) markets is a key enabler. Transparency should be improved from today, as example real-time activation. All ancillary reserves should have an energy price component. This would facilitate a more correct imbalance price signal and incentivize more balancing on intraday trading. TSO's as single buyers in the operational phase should minimize the use of "free energy", as this does not give correct signals for balancing costs.</p> <p>Q2:<br/>Simplicity is key. Access should be made simple, products used should preferably be few rather than many. Pricing should be marginal, unless trading is bilateral (like Xbid). As an example, scheduled mFRR activation could be combined with intraday trading, this would also allow all market participants firstly knowledge on available volumes and prices and secondly insight to activations as they would be visible on the intraday trading platform. As TSO's might need more insight to location of assets, and potentially other parameters, these data could easily be given in the trading platform, for the TSO's to use. TSO operated markets should be as transparent as any other markets run by NEMOs.</p>  |
| Statkraft  | <p>Q1/Q2:</p> <ul style="list-style-type: none"> <li>• Given expected changes in the energy system going forward, such as more weather-dependent energy mix etc, we expect that the short-term markets will have higher importance in the future. The experience in Germany has shown that especially the intraday-market (and then in particular the last hour(s) before delivery) has become more important. At the same time, the amount of contracted balancing capacities as well as activated balancing capacities in Germany did actually decrease over the last years, despite of the growing share of wind and PV generation. Partially this can be explained by improved cooperation between TSOs however it is clearly also caused by the ability of market participants to balance demand and supply. Statkraft believes the market must be given maximum possibilities to balance demand and supply.</li> <li>• It's important to build future market structures on elements such as transparency, level playing field, standardization including standardized prequalification of resources, and optimal allocation of transmission capacity between markets</li> <li>• Given the 10-15 years perspective, integrated market platforms at European level with harmonized GOT/GCTs is the expected target model</li> <li>• Platforms should be designed in a user-friendly way, securing easy access and operability for market players. One aspect of this is that market platforms should be linked, meaning that unused bids in one platform automatically should be transferred to markets/platforms with GCT closer to real time, if prequalified.</li> <li>• An important prerequisite is correct imbalance pricing. The imbalance price should reflect the value of physical delivery of electricity in real time. Correct imbalance prices are important for giving right price incentives for balancing responsible parties. In addition, intraday and day-ahead markets are also forward markets reflecting an expectation of the imbalance price. A correct setting of the imbalance price should also cover extreme situations, like brown-outs (scarcity driven load shedding). In such case the imbalance price must be set at least at the assessment of the VoLL (or higher if a higher price was obtained on the balancing market before the load shedding). The report suggests that incentives could be impacted by implications from the inter-TSO settlement. We would not understand such implications. A correct imbalance price is crucial, and the aim is to reflect of the value of electricity delivered in the balancing time frame. This should then also be the basis for inter-TSO settlement arrangements but not the other way around.</li> </ul> |
| Uniper     | <p>Q1:</p> <ul style="list-style-type: none"> <li>• European integration is the key topic for the coming years with the alignment of balancing rules, more physical interconnections, exchange cooperation... This creates a lot of changes which need to be delivered by the different stakeholders. Thus the need for clarity</li> <li>• We see a risk with additional OTC trading platforms not operated by exchanges. This would lead to less liquidity</li> <li>• Exchanges should focus on ensuring liquidity. The continuous market is well functioning today with more and more market participants and more and more trades, esp. since XBID. Intraday auctions would create additional operational and IT complexity for a limited benefit. The current discussion status of two additional Intraday auctions is the maximum. We would favor just one auction at the beginning of the continuous trading session.</li> <li>• Uniper has the strong believe that the continuous market is the optimal choice for the Intraday timeframe. To comply with the regulatory necessity to price congestions Intraday we favor Intraday auctions instead of Nodal pricing</li> <li>• More complex market setup(Shorter ISP, Increase of products, Scheduling closer to delivery, FB MC) as well as artificial intelligence and robot trading will wipe out manual/non-API trading in Intraday market</li> <li>• Compliance is and will be a central topic. The regulation should ensure all market participants are facing the same rules.</li> <li>• The development of Wind and solar generation pushes for higher balancing resolution. It is key to maintain a balance between RES and conventional assets to ensure level playing field. 15'ISP is a good balance. 5' would be very difficult for conventional assets still needed in Europe to ensure grid stability, lower imbalance volumes but higher trading liquidity</li> </ul>   |
| Vattenfall | <p>Q1:</p>  |

|              |   |
|--------------|---|
|              | <p>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 there for socio-economically effective tariff structures. That should be complemented with a harmonized view on fees and incentives for the network's customers over all voltage levels ranging from TSO level to distribution level.</p> <p>Vattenfall foresees an increasing need to manage local and system-wide grid connection, due to new consumption (data center) and new production (Wind and PV). This will require a significant increase of information exchange and coordination between local grid operators to system operators and competitive market participants. Vattenfall also believes that harmonization of national grid tariffs within the EU is desirable. However, differences and similarities between different countries need to be analyzed and the opportunities for further harmonization hereby clarified.</p> <p>An area that will be more and more critical to develop and to assess 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 alleviate a strained system and grids. Vattenfall 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.</p> <p>The roll-out of smart meters and the digitalization trend at large will enable new and developed customer contracts that will contribute to meet the challenges with a more distributed supply system. Vattenfall 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 in order to utilize these resources in the most efficient way.</p> <p>Q2:</p> <p>The target design should be based on a single price, one balance settlement system, combined with markets based on 15 minutes periods. 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.</p> <p>Overall we encourage TSOs and NRAs to develop a framework that allow market participants to maximize their offered volume of flexibility. 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. An important development area is the growing demand for different system services. Therefore Vattenfall encourages the TSOs to actively engage in further development of the market framework to allow a better match the system operators demands with market's flexibility, already at the intraday time frame. Vattenfall is also supportive of further harmonization of the system operation, for example regional ISOs, to better reflect the borderless market.</p> <p>Transparency in system operation will be a cornerstone for a credible market. The TSOs' use of so called special regulations is not always communicated properly and not sufficiently harmonized among the Nordic TSOs. Special regulations impact the flow and thus the regulating power prices and imbalance prices that in turn impact the market participants' expectations on risk for imbalances and their activity on the intraday market.</p> <p>For the further market development we propose to complement the current design with an opening balancing auction (after gate closure of the continues intraday market) to cover system needs for the balancing time frame. Such a market place would have the potential to pool the markets flexibility resources with system operation needs to operate the market in a secure and reliable way.</p> <p>Vattenfall therefore encourages the Nordic TSOs to test and evaluate a combination of the following three tools to handle their need for flexibility:</p> <ul style="list-style-type: none"> <li>• Opening (pan-Europe) ID auction (as early as possible)</li> <li>• A regional opening balancing auction. Place after the continuous trading period for each traded product has closed and before the delivery period starts.</li> <li>• Special regulation during the operating time frame.</li> </ul> <p>By combining these three markets, the TSOs should have the opportunity to enlarge the market and handle the regulatory requirement at a low cost. The TSOs would also be able to adjust its strategy continuously to minimize market manipulation, arbitration risk, etc.</p> |
| Nordenergi   | <p>Q1/Q2</p> <ul style="list-style-type: none"> <li>• Given expected changes in the energy system going forward, we expect that the short-term markets will have higher importance in the future. The energy transition will also have a profound impact on the regional and local networks. Nordenergi foresee an increasing need to manage local and system-wide grid congestions. This will require a significant increase of information exchange and coordination between DSOs, TSOs which also has to be taken into account when designing market platforms.</li> <li>• It's important to build future market structures on elements such as transparency, level playing field, standardization including standardized prequalification of resources, and optimal allocation of transmission capacity between markets</li> <li>• Given the 10-15 years perspective, Integrated market platforms at European level with harmonized GOT/GCTs is the expected target model although, we acknowledge that different characteristics of synchronous systems may justify some flexibility in design of market platforms also in the future.</li> <li>• Platforms should be linked and designed in a user-friendly way, securing easy access and operability for market players.</li> </ul>  |
| Energi Norge | <p>Q1/Q2</p>  |

|                       |  |
|-----------------------|--|
|                       | <ul style="list-style-type: none"> <li>Given expected changes in the energy system going forward, we expect that the short term markets will have higher importance in the future. The energy transition will also have a profound impact on the regional and local grid networks. This will require a significant increase of information exchange and coordination between DSOs and TSOs also when designing market platforms.</li> <li>It's important to build future market structures on elements such as transparency, level playing field, standardization including standardized prequalification of resources, and optimal allocation of transmission capacity between markets.</li> <li>Given the 10-15 years perspective, Integrated market platforms at European level with harmonized GOT/GCTs is the expected target model although, we acknowledge that different characteristics of synchronous systems may justify some flexibility in design of market platforms also in the future.</li> <li>Platforms should be linked and designed in a user-friendly way, securing easy access and operability for market players.</li> </ul>  |
| <p>Finnish Energy</p> | <p>Q1:</p> <p>We expect that trading volumes will increase, and that especially the close to / in real-time trading will become more and more important. This is due to various factors, among which that the share and amount of variable generation is expected to increase and that more and more information and understanding will be available.</p> <p>We expect that trading processes will become more and more automated as decisions need to be timelier and the amount information available for decision making increases.</p> <p>We also expect that more needs for trading shall emerge, among which the mentioned congestion management of distribution grids, but also for other needs. This may lead to establishment of new trading venues. At the same time, it's likely that market places become more interconnected, enabling the efficient use of different resources for purposes in which they bring most value for the society and to their owners.</p> <p>We underline the importance of seeking tools for larger markets, which include the continuum of integrating the Nordic market, and integrating the Nordic markets with Baltic markets and increasingly with European market. We recognize that there will be step-wise development before integration takes place on European scale and welcome the national, Nordic and Baltic Sea area pilots for market-based solutions. As examples, we very much welcome the very recent pilots from Nordic TSOs to start publishing the value of inertia and from Fingrid to extend the intraday trading in the bidding area Finland until the start of operational hour.</p> <p>We expect that more information will become available from different sources and underline the importance of that TSOs shall increase the transparency of power system's situation for to enable market participants' with better possibilities to reply the needs power system has as well as to efficiently handle their imbalances.</p> <p>As the intermittency in the system is likely to increase, and with the increasing focus on imbalance pricing, it becomes more and more important for the market participants to have efficient tools for managing their imbalances, by means of adjusting imbalances and possibly having tools to hedge against imbalance costs.</p> <p>We consider it essential that Nordic TSOs implement one price model in the time table given in GLEB, if not earlier.</p> <p>Q2:</p> <p>While welcoming the pilots, we call for compatibility with developments in Europe in order to ensure access to large markets, increase market liquidity, and support European integration.</p> <p>We consider it essential that markets are increasingly connected, both regionally but also product-wise.</p> <p>Many of the proposals prescribed in discussion paper could be implemented earlier then later. For example, transparency should and could improve. Needs for improved transparency include transparency with respect imbalance price formation in real-time as well as exchange of information between system operators and market participants for efficient congestion management.</p> |
| <p>Swedenergy</p>     | <p>Q1:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>   |

|  |  |
|--|--|
|  | <p>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.</p> <p>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.</p> <p>Q2:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Swedenergy encourage the Nordic TSOs to test and evaluate a combination of the following three tools to handle their need for flexibility:</p> <ul style="list-style-type: none"> <li>• Opening (pan-Europe) ID auction (as early as possible)</li> <li>• A regional opening balancing auction after the continuous trading period for each traded product has closed and before the delivery period starts.</li> <li>• Special regulation during the operating time frame.</li> </ul> <p>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.</p> <p>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.</p> <p>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.</p> |
|--|--|

**Section 3.2 Using flexibility to solve congestions in the distribution grids**

Q1: How do you see the role of flexibility providers in the future short-term markets?

Q2: Other possibilities to facilitate linking resources located in DSO grid to the short-term market?

|            |   |
|------------|---|
| <p>UPM</p> | <p>Q1:</p> <p>We see the role of aggregators highly important in delivering flexibility to the market. Aggregators enable getting the "hidden" flexibility of flexibility providers (e.g. industrial electricity consumption) to the market.</p> <p>However, aggregators must have balance responsibility to give all market participants a level playing-field. If an aggregator causes imbalance, it must also bear the associated costs like all other market participants do as well.</p> |
|------------|---|

|           |  |
|-----------|--|
|           | <p>Q2:<br/>Linking resources and taking them to the market should take place purely on commercial grounds by e.g. aggregators or other market participants. Other issue is the technical capability of the DSO's grid to enable flexibility and it should not be confused with the market access.<br/>UPM supports establishing market-based tools for trading flexibility. A key feature of the tools should be to enable as flexible aggregation as possible. E.g. aggregation of loads from the same price area, different balances and from areas of different DSOs should be possible in the tools. Market participants decide by themselves in which products and markets they want to bid and participate.</p>  |
| ELFI      | <p>Q1:</p> <ul style="list-style-type: none"> <li>• Short term market will have stronger role than today.</li> <li>• Who are operating in the markets? Is market operations based on voluntary or mandatory bids? Who are running markets marketplaces TSOs, DSOs or are those under competition?</li> <li>• Regional fragmentation is risk for well-functioning short-term markets.</li> <li>• How to solve market-related competition and conflict of interest problems?</li> </ul> <p>Q2:</p> <ul style="list-style-type: none"> <li>• DSOs can through its own actions and rules encourage flexibility entry into the market</li> </ul>  |
| EPEX SPOT | <p>Q1:<br/>EPEX SPOT fully agrees with the view that “new flexibility providers” will play a key role in the future and that the potential corresponding to this currently “hidden” flexibility should be fully unveiled based on proper market dynamics and incentives. All types of flexibility including intermittent renewable energy producers, flexible thermal assets, power-to-gas, storage, but also aggregators of industrial flexible load and “prosumers” could be eligible to participate depending on their technical characteristics and grid impact.<br/>A purely cost-based redispatch does not create incentives for the development of flexibilities such as batteries, demand-side-response and power-to-x, as loads and storage cannot be integrated into the cost-based redispatch. Since it is not possible to define costs for these flexibilities, they can only unfold their potential through a market with free bids and not through a cost-based mechanism.<br/>The future market design should allow market actors to offer their flexibility in a voluntary and market-based manner, e.g. via demand-side management and aggregation services. In a market-based mechanism, the most cost-efficient flexibility bids will be used first. Competition among flexibility providers will pave the way for the most cost-efficient way to support the integration of renewables into the electricity system.<br/>EPEX SPOT supports the discussion papers’ vision of TSOs and DSOs using such market platforms for cost-efficient procurement of flexibilities and also the fact that the role of operating these flexibility market platforms should be given to neutral intermediaries. System operators managing the grid as well as market actors will in the future have interests to coordinate via flexibility markets, namely getting less costly solutions to relieve grid congestions on the one side and best valuing flexible assets as part of a business model on the other side. The Parties need to have confidence in the market and in emerging price signals stemming from flexibility markets established and operated by a neutral third party.</p> <p>Q2:<br/>From EPEX SPOT’s perspective, one of the most important impact of digitalisation is the emergence of new business models and markets on a decentralised and more “local” level, both for Power Exchanges and DSOs. New digital tools can facilitate distributed energy resources such as household solar PV panels and storage, by creating better incentives and making it easier for prosumers to store and sell surplus electricity to the grid. New tools such as blockchain could also help to facilitate peer-to-peer electricity trade within local energy communities / prosumers. In the context of a widening of the electricity trading community, EPEX SPOT sees an increasing role for Power Exchanges to provide a reliable and transparent price for all trading members, including the microgrid level.<br/>Flexibility is needed, and used, at different levels. Peer-to-peer trading responds to consumer needs on a “micro” level, and encourages consumer empowerment. New technologies such as blockchain can allow system operators to unlock flexibility at the level of the prosumer or of an energy community. The development of this flexibility on a micro-level can also reinforce the need for local flexibility markets (valuing flexibility) but also its complementarity with the wholesale market (valuing energy). The connection of the microgrid with the wholesale market provides market opportunities, an outlet in case of overproduction on the micro-level as well as access to the resources of the wholesale market in case of a production shortage on the microgrid, all with the benefit of a reliable reference price as basis for all trades.<br/>As an example, EPEX SPOT has partnered with LO3 on a project to allow microgrid participants to value their netted energy load, benefiting from a transparent and trustworthy price signal. Such a project strengthens the overall energy resiliency and security of supply. Peak consumption and production periods could then be handled more efficiently. Consequently, in the longer run, this will support the integration of decentralised renewable energy sources, and working together with industry players such as grid operators could help balancing and congestion management.<br/>Besides the focus on microgrids, the integration of smaller assets in the wholesale market is an important challenge. This can be addressed i.e. through models of aggregation/disaggregation, or through more local markets, such as flexibility markets. DSOs play a crucial role in this development: they can use digitalization to process the increasing amount of data they are faced with and to fulfil their new role in a decentralized and decarbonized energy landscape. To achieve this, TSO-DSO-coordination will be instrumental.</p> |

|                    |  |
|--------------------|--|
| <p>Nord Pool</p>   | <p>Q1:<br/>In general Nord Pool views that these should/could be incorporated in or at least linked to the existing short term open two-sided wholesale markets where possible to concentrate liquidity and enable truly efficient usage of supply/demand assets. Even though the flexibility providers offer flexibility they naturally also deliver(or are capable of) energy and their delivery of flexibility will impact delivery of energy and vice versa. As such, platforms enabling both flexibility and energy products as well as activation by both other market participants and DSO-TSOs are needed.</p> <p>Q2:<br/>By introducing a participant-centric market design it will be possible to if and where needed incorporate location and flexibility attributes in the existing intraday market. This will make participation easy and make most use of existing well-working infrastructure and services.</p>   |
| <p>E-CO Energi</p> | <p>Q1:<br/>We expect more demand side response is going to add more flexibility to the system. An important aspect related to this is that producers and demand side must compete on identical terms, to utilize maximum sosio-economic surplus.</p>   |
| <p>ANON</p>        | <p>Q1:<br/>Flexibility providers' role should be to provide volumes to the DSOs and TSOs and act as an efficient and <u>cost-effective route-to-flexibility</u> for them.<br/>Flexibility providers should aggregate resources to a platform(s) that allows real time control of single assets or sub-groups of assets, based on their technical and contractual availability but also their location.<br/>This platform should from our point of view belong to an aggregator role (one balance responsibility), taking care of the single assets' connection, and offering aggregated volumes of flexibility to DSOs thanks to a <u>single and cost-effective DSO-aggregator</u> connection.</p> <p>Q2:<br/>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. Rules such as N-1 (having always at least as much backup as the biggest asset in the pool) as should from our point of view be excluded to improve the business cases of aggregators, and low availabilities or delivery issues should be regarded and penalized ex-post based on the cost they created. Each asset type should be treated fairly as long as they have the technical capabilities to bid on such markets, and no asset class should receive a special treatment. 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.</p> |
| <p>Fortum</p>      | <p>Q1:<br/>To get more flexibility from "household" demand, small scale production etc. flexibility providers or aggregators have a key role as enablers. One enabler is also allowing free (marginal) price formation for the balancing market. There is most certainly already today hidden elasticity on the demand side that is out of the money with current price ceilings. If such elasticity could enter the market, the need for instance for strategic reserves, as a guarantee for price convergence on the day-ahead market could be questioned. Strategic reserves could anyway have a role also in the future as an emergency supply, but not as a guarantee for the functioning of the power market.</p> <p>Q2:<br/>DSO can and should purchase flexibility locally. Here the market prices for flexibility might well differ depending on local congestion situation. A Nordic flexibility standard should enable technical standardization of the products traded at local flexibility markets</p>  |
| <p>Statkraft</p>   | <p>Q1/Q2:</p> <ul style="list-style-type: none"> <li>• We consider that the term "flexibility" is a rather vague term that often is poorly defined. It may refer to the different types of balancing capacities, however then it is more precise to speak about balancing capacity. We prefer to use the term "flexible capacity" as flexibility is a characteristic of capacity. The more flexible a certain capacity is, the more value it has and thus the higher revenues it can obtain on the market.</li> <li>• Market participants with flexible capacity will have an important role to solve potential imbalances through ordinary markets (i.e. intraday) and thus reduce scope of TSO markets and interventions from TSOs. With increased digitalization, end user developments and more diversified production facilities we expect the numbers of flexibility providers to increase substantially</li> <li>• The issue of solving congestions in the distribution grid is another topic than frequency management and balancing of the Nordic synchronous system. Solving congestions in the distribution grids is a DSO responsibility, but balancing market players located in the distribution grids need to have access to the short term markets and vice versa.</li> <li>• Thus DSO/TSO coordination is needed, with DSOs in lead on distribution grid congestion management and TSO on transmission grid congestion management. However, it is crucial that congestion management solutions at TSO and at DSO level are harmonised in order to ensure a level-playing field on the market.</li> </ul>  |

|            |  |
|------------|--|
|            | <ul style="list-style-type: none"> <li>Further, we see congestion management as a service to the DSO or TSO so that the DSO/TSO can solve congestions. Congestion management is thus a service that allows the TSO/DSO to provide a secure transmission service and the transmission grid is facilitating the market. By consequence, congestion management may be (or should be) market based, however it is not a separate market segment next to the power market.</li> </ul>   |
| Uniper     | <p>Q1:<br/>UNIPER shares the view that market based congestion management solutions will be beneficial for the market participants, DSOs and TSOs. The TSO-DSO cooperation is crucial for a common markets An important condition for a well function market is the definition of standard products which reflects the technical requirements of TSO/DSO. It should be avoided to establish specific products for individual sources. That set wrong incentives and create inefficiencies. The market approach will give the incentives for new market participants or for new technologies like electric vehicles and prosumers to take part. An aggregator will collect such small sources and will bring it to the market. A separated market access for that is not necessary. Flexibility providers are the key players in the future market where intermittent sources play dominant role. However the complexity of market setup and fragmentation will require smart/automized setup for providers. It is questionable if the current setup and profitability of the markets will attract new entrants and allow established players to make the investments necessary.</p> <p>Q2:<br/>The price on the several markets will set incentives to enabling further flexibility sources. The precondition is at least a smart meter roll out and the remote controllability of facilities. From Uniper's perspective fostering market liquidity is key. We prefer one deep market over a too fragmented market setup.</p>  |
| Vattenfall | <p>Q1:<br/>Vattenfall welcomes changes to the regulatory framework to allow new resources to enter the market. To fully activate the demand resources all flexibility products should be priced pay as clear. With the equal requirement for all technologies, and regions in the same market.<br/>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 in order to make maximize the socioeconomic value for the end customers.<br/>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 and economically viable. As an example, it is not considered to be reasonable to set local frequency meters on each private electric car charger that meet the same technical requirements as the local frequency meters that are currently available at Hydroelectric power stations. In order to preserve ta level playing field equal rules we therefore recommend the development of several different products categories.<br/>What regards the pricing of flexibility Vattenfall supports a framework with the following characteristics:</p> <ul style="list-style-type: none"> <li>High level principle – same requirement for all technologies, and regions in the same market. Marginal pricing for both capacity and energy products.</li> <li>Grid regulation - Balance prices should be unaffected by actions originating from constraints in the grid, that is actions intended to solve bottlenecks should not affect the pricing of balance power nor imbalance prices. Generally, grid regulation using the balance market should only be used as a temporary solution, as it to some degree distorts the balance market prices as bidders may anticipate a grid regulation and thus bid as if it is under a “pay as bid” regime.</li> <li>Transparency in system operation - To maintain the credibility of the market functioning it is therefore central 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. Vattenfall strongly argues that the current praxis for special regulation methodology would be improved either through:             <ul style="list-style-type: none"> <li>Either organize separate market/product for grid regulation applying marginal price (ref to opening balancing auction as mentioned above), or</li> <li>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.</li> <li>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.</li> </ul> </li> <li>The role of aggregators - Vattenfall is 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 in order to make maximize the socioeconomic value for the end customer.</li> <li>Specific on mFRR and aFRR specific development - For the further development of new products the European framework and guidelines will set the boundaries and process, 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?             <ul style="list-style-type: none"> <li>Is there a need for more frequency control products? (response time &lt;1s; response time between 1s - 6s; more tertiary regulation products (Activation time &lt;5 min, &lt;15 min, &lt;30 min) etc.</li> <li>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.</li> </ul> </li> <li>Product definitions will also have to develop 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.</li> </ul> |

|                |   |
|----------------|---|
|                | <ul style="list-style-type: none"> <li>• Products for “new” system services <ul style="list-style-type: none"> <li>○ Inertia: We are positive about a market or cost plus solution - but not a pivotal development step.</li> <li>○ 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. Should be studied further from current situation.</li> <li>○ Black start capability is also an example of a system service that should be given market compensation.</li> </ul> </li> </ul> <p>A general feedback is also that the technical capabilities from non-traditional sources of ancillary services could be increased significantly if the demand from this is more clearly communicated already in the connection stage.</p> <ul style="list-style-type: none"> <li>• Balance responsibility and settlement: <ul style="list-style-type: none"> <li>○ All market participants should be fully responsible for their imbalances, or contract the service to manage imbalances from a Balance Responsible Party.</li> <li>○ Symmetry between the imbalance price and the balance price, paid to the resource that restore frequency. Areas to consider is the potential contribution from regulatory tools such as scarcity adder or similar.</li> <li>○ Single pricing and single balance position and portfolio bid should be the basis for Nordic harmonization.</li> <li>○ Any requirement to plan for balance at the day ahead stage should be removed. Rather the balance responsible parties should rather be given strong commercial incentives and requirements to transparently bid in all its flexibility balance and commercialize flexibility.</li> </ul> </li> </ul> <p>Q2:</p> <p>On the related topic “should DSOs be allowed to own storage”, as is addressed in the recent EU-package (CEP), Vattenfall proposes 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 therefore jeopardizing 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.</p> <p>An area to consider is if the current delimitation of bidding zones is optimal from this perspective. Vattenfall’s view 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.</p> |
| Nordenergi     | <p>Q1/Q2:</p> <ul style="list-style-type: none"> <li>• Solving congestions in the distribution grids is a DSO responsibility, we however acknowledge the fact that balancing market players located in the distribution grids need to have access to the short term markets.</li> <li>• DSO markets for local flexibility will increasingly gain importance and should as much as possible be interlinked with existing markets in order to maximize market liquidity Nordenergi supports marginal pricing for both capacity and energy products.</li> <li>• New flexibility markets should however reduce liquidity of existing markets and DSO/TSO interference in the DA/ID timeframes must be avoided. They should be limited to the balancing time frame (after intraday gate closure) in order to avoid information asymmetry.</li> <li>• All market participants should be fully responsible for their imbalances or contract the service to manage imbalances from a Balance Responsible Party. Single pricing and single balance position and portfolio bid should be the basis for Nordic electricity markets.</li> <li>• DSOs should provide their requirements in terms of localization in a harmonized manner across areas to facilitate aggregators’ implementation.</li> </ul>   |
| Energi Norge   | <p>Q1/Q2:</p> <ul style="list-style-type: none"> <li>• Solving congestions in the distribution grids is a DSO responsibility, we however acknowledge the fact that balancing market players located in the distribution grids also need to have access to the short term markets.</li> <li>• Non-frequency ancillary services in distribution grids should also be considered a DSO-topic, but services could be harmonised with similar TSO-services</li> <li>• DSO markets for local flexibility will increasingly gain importance and should as much as possible be harmonized with existing markets in order to maximize market liquidity Energy Norway supports marginal pricing for both capacity and energy products.</li> <li>• DSOs should strive to provide their requirements in terms of localization in a harmonized manner across areas to facilitate aggregators’ implementation.</li> <li>• We are unsure of what is meant by data hubs (p. 13), but emphasize that we do not support development of new central data hubs without proper description and justification.</li> </ul>   |
| Finnish Energy | <p>Q1:</p> <p>It is likely to increase.</p> <p>We see that it would be of benefit for the markets to have a “flexibility” standard on all ancillary services markets so that new business ideas e.g. aggregators, virtual power plants can be easily scaled to new markets. The today’s situation where each (Nordic) TSO has different requirements for flexibility / balancing resources should be improved towards common standards.</p>   |



|                   |   |
|-------------------|---|
|                   | <p>We emphasize the importance of clear roles and responsibilities, level playing field and fair distribution of costs. For example, it is of utmost importance that, as required also by European legislation, all market participants must be fully responsible for their imbalances or contract the service to manage imbalances from a Balance Responsible Party. New flexibility markets would be most suitable when limited to the balancing time frame (after intraday gate closure). This way the roles and responsibilities remain clear and DSO/TSO interference in the DA/ID timeframes is avoided.</p> <p>Q2:<br/>                 Much of resources participating also today's balancing markets are located in DSOs' grid, hence we don't see this as such a change. It would probably be useful, were the possibly foreseen needs to manage congestions in DSOs' grids be based standard product definitions. We consider that TSOs and DSOs should mainly use market-based solutions to meet all their flexibility needs.<br/>                 Possible future's development path include having more emphasis than today on aggregated resources. One possible future's development is having in-built functionalities in applications, "internet of things".</p>  |
| <p>Swedenergy</p> | <p>Q1:<br/>                 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.<br/>                 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.<br/>                 Regarding the pricing of flexibility, Swedenergy support a framework with the following characteristics:</p> <ul style="list-style-type: none"> <li>• Overarching principle - same requirement for all technologies and regions in the same market. Marginal pricing for both capacity and energy products.</li> <li>• 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.</li> <li>• 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:                         <ul style="list-style-type: none"> <li>○ 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.</li> <li>○ 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.</li> </ul> </li> <li>• 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.</li> <li>• 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.</li> <li>• 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:                         <ul style="list-style-type: none"> <li>○ Quantify the need for flexibility to match variations in production, cable transmission and consumption. How do the existing products match this?</li> <li>○ Is there a need for more frequency control products? (response time &lt;1s; response time between 1s - 6s; more tertiary regulation products (Activation time &lt;5 min, &lt;15 min, &lt;30 min) etc.</li> <li>○ 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.</li> </ul> </li> </ul> |

|  |   |
|--|---|
|  | <ul style="list-style-type: none"> <li>○ 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.</li> <li>• 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.             <ul style="list-style-type: none"> <li>○ Inertia - We are positive about a market or cost-plus solution, but not a pivotal development step.</li> <li>○ 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.</li> <li>○ Black start capability – This is also an example of a system service that should be given market compensation.</li> </ul> </li> <li>• Balance responsibility and settlement             <ul style="list-style-type: none"> <li>○ All market participants should be fully responsible for their imbalances or contract the service to manage imbalances from a Balance Responsible Party.</li> <li>○ 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.</li> <li>○ Single pricing and single balance position and portfolio bid should be the basis for Nordic harmonization.</li> <li>○ 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.</li> </ul> </li> </ul> <p>Q2:</p> <p>The overarching principle is that TSOs and DSOs should use market-based solutions to meet all flexibility needs.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> |
|--|---|

**Section 3.3 Locational information for allocation**

Q1: 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?

Q2: 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?

Q3: What challenges would there be from the perspective of resource owner when moving from portfolio bidding to nodal or unit bidding?

Q4: Any other views/comments related to capacity calculation and allocation?

|                  |  |
|------------------|--|
| <p>UPM</p>       | <p>Q1:<br/>Regional coordination centres and flow-based capacity calculation are currently being established to allocate existing transmission capacity efficiently. The effect of these changes should be analysed carefully before making decisions about changing the market in a profound way.<br/>Gate closure time and capacity allocation should be as close to the real-time delivery of electricity as possible. This would encourage market participants to bid all available capacity to the market based on the best available information. The closer the gate closure time is to the delivery, the better e.g. information about wind forecasts and water situations is. This way the bids correspond to the reality as well as possible. Also, the balance risk for potential bidders is minimized by having the gate closure time as close to real-time as possible.<br/>UPM regards the current 30 minutes gate-closure time from Finland to Baltics better than the 60 minutes gate-closure time between Nordic countries and encourages spreading at least the same GCT to other borders also. It has been decided that within Finnish price area, intraday trading will be continued until real-time meaning that the gate closure time is close to zero.</p> <p>Q2:<br/>No, we have not experienced any constraints from the grid in day-ahead trading</p> <p>Q3:<br/>Changing the whole electricity market to nodal or unit bidding would bring many problems both to electricity producers and consumers. UPM opposes a large overhaul of the electricity market from zonal market to nodal market because of the following reasons:</p> <ul style="list-style-type: none"> <li>• Moving to nodal or unit bidding would reduce market-based operations in short-term markets and move towards a system controlled by TSOs. Asset values would change as their location would become a determining factor in pricing.</li> <li>• Model would add uncertainty for electricity producers, as e.g. a relocation of a large industrial site could result in collapse of the nodal price. Nodal market would incentivize building new capacity close to consumption, which could be very difficult in large cities.</li> <li>• Nodal bidding would be unfavourable also for big industrial electricity consumers. Industrial consumers would face unequal positions and playing field. Being exposed to differing electricity prices in different nodes could distort the competition and lead into differences in the competitiveness of regions. If short-term markets were changed to being local, large-scale demand response would be hampered.</li> <li>• In addition, electricity suppliers would face an uneven playing-field as the market size would be decreased. Free competition would be limited.</li> </ul> <p>The only use case for nodal bidding could be in extreme situations, where local bottlenecks would be formed despite the strengthening of TSO and DSO networks. In these cases, ensuring a level playing-field for all market participants is of utmost importance. All market participants must have same rights and obligations in the market whether they are aggregated or not. No new rules can be set for new participants e.g. with regional products.</p> <p>Q4:<br/>No comments</p> |
| <p>ELFI</p>      | <p>Q1:</p> <ul style="list-style-type: none"> <li>• TSOs should invest more to grid to avoid permanent bottlenecks.</li> <li>• Full amount of cross border capacity should be offered to the spot markets by TSOs.</li> </ul> <p>Q2:</p> <ul style="list-style-type: none"> <li>• We have not any experience about this issue.</li> </ul> <p>Q3:</p> <ul style="list-style-type: none"> <li>• Market complexity increases and market transparency and comprehensibility are significantly reduced.</li> </ul> <p>Q4:</p> <ul style="list-style-type: none"> <li>• First priority is to work for large market areas and due to that full amount of cross border capacity should be offered to the spot markets by TSOs.</li> </ul>  |
| <p>EPEX SPOT</p> | <p>Q1:<br/>When considering the optimization of CZC allocation, the implementation of Flow-Based calculation in Day-ahead planned for 2021 is already a good step forward as already experienced for many years in the CWE region. It will ensure better taking network constraints into account when allocating CZCs and will ensure a harmonized method across EU TSOs. The transition to Flow-Based in Intraday is to be pursued as foreseen in CACM for SIDC and will represent a technical challenge for TSOs (regular recalculation of the capacity domain and issuing of PTFD matrix) as well as for NEMOs (handling of Flow-Based Parameters in SIDC).<br/>In the meantime, pan-EU cross-border Intraday auction(s) can be useful to price and allocate CZCs in intraday provided new capacities are calculated by TSOs for the benefit of the market. These cross-border ID auctions should only represent a complement to continuous ID trading for a specific purpose of pricing additional capacities released in Intraday (see our answer to question in 3.1.).</p>   |

|  |   |
|--|---|
|  | <p>Furthermore, EPEX SPOT would not support any reservation of capacities for the Intraday or Balancing markets as they should be optimised and used in earlier timeframes while the remaining part or possibly recalculated CZCs can be allocated to the market in later stages.</p> <p>When considering locational information for allocation and congestion management, EPEX SPOT shares the view that the market structure needs to be somehow adapted or complemented to tackle upcoming challenges linked to the energy transition. The economic efficiency of extending grids to accommodate all power flows resulting from the decentralisation of the energy system should always be assessed taking into account market-based solutions which might provide cost-efficient complementary solutions in the future. In this regard, the regulatory framework should be adapted to create the right incentives for system operators to consider all complementary options.</p> <p>EPEX SPOT also agrees that redefining bidding zones as it has been done in the past in the Nordics might be challenging with regard to fluctuating power flows and changes in location of congestions and is hence not the appropriate way forward to accompany the transition of the power system. Introducing smaller bidding zones would most probably not bring sufficient granularity to efficiently solve congestions (notably those located on the distribution grid level) while at the same time harming the well-established zonal power wholesale markets' liquidity.</p> <p>Introducing a new allocation method based on the grid topology and parameters to optimize power flows is one of the options currently investigated to address future power system evolution. A transition to a nodal system as currently implemented in the US represents a possible approach with theoretical benefits. It might constitute part of a solution to the problem but we need to make sure it is adapted to the European power market before we enter into a long and costly implementation phase.</p> <p>Nodal market models are based on zones defined by the nodes in a region of the electricity network, whereas coupled zonal markets work with large bidding zones and high liquidity. The general idea of nodal pricing is to model an electricity market with its various economic and technical specifications at the transmission grid level, such as generators' cost functions and technical characteristics, demand elasticity, generation limits, line power flow limits and to optimize the system for maximizing social welfare. In such a model, congestions are taken into account ex-ante, grid losses can also be considered and market actors are in principle exposed to the marginal cost of their grid usage at each node of the transmission grid. Though it can appear virtuous in theory, it appears much more complex in practice.</p> <ul style="list-style-type: none"> <li>• In Europe where zonal markets exist with portfolio-bidding and complex orders, a transition to nodal would in principle mean a transition to a unit-based system in which the bids need to be simplified and cannot anymore reflect market participants' constraints so well (e.g. smart blocks like linked blocks or curtailable blocks, notably to optimize hydro generation).</li> <li>• As the forecast of intermittent renewable generation is improving closer to delivery, the nodal day-ahead dispatch is necessarily imperfect and needs to be amended by either an intraday market or a repeated series of nodal intraday auctions.</li> <li>• In Europe new renewable assets are mostly connected to the distribution grid. Thus a nodal clearing mechanism on transmission-system level would need to rely on a pre-clearing of the market on distribution-grid level thereby reducing the theoretical efficiency of the market.</li> <li>• The computational complexity of the optimization problem that needs to be solved if we want to take into account the transmission and distributions grids across the EU is significant.</li> <li>• Prices are much more volatile in a nodal system which obliges market actors to hedge the price risk between nodes via Financial Transmission Rights. The volatility of nodal prices and the impact on prices of any grid topology change also create uncertainty over revenues for investors.</li> </ul> <p>In addition to inherent drawbacks, the transition to a nodal pricing system can hardly be justified and comes with important constraints regarding its implementation:</p> <ul style="list-style-type: none"> <li>• The problem of congestions is not proportional to a complete design change, which would result in a 'big bang' approach with far-reaching consequences.</li> <li>• Long-term markets' integrity and liquidity are jeopardized: while they today allow market participants in Europe to hedge the price risk within their portfolio without basis risk and at low transaction costs, long-term markets will use system prices or hubs as underlying thus creating basis risk for market participants. In addition, derivatives on system prices will be classified as financial instruments subjecting utilities and market participants to financial market regulation.</li> <li>• The complexity of implementation is very high and results in tremendous costs for the end consumer, because a complete redesign of the existing power system is needed:       <ul style="list-style-type: none"> <li>○ Regulatory complexity: extensive changes to CACM Regulation and the Clean Energy Package would be necessary including implementation of new network codes; need to rethink the European target model whereas we are still implementing the ones conceived more than ten years ago.</li> <li>○ Technical complexity: multi-year project including all stakeholders.</li> <li>○ Political complexity: political willingness to have geographically differentiated power prices within current bidding zones.</li> </ul> </li> <li>• Another structural constraint needs to be taken into account: would it mean the creation of a monopolistic structure with TSOs and Exchanges to merge into an ISO body?</li> </ul> <p>Hence, despite some theoretical advantages for the short-term dispatch signal, the overall benefits of a centralised nodal system in a decentralised European-wide setting, with a high level of grid flexibility and an increasing share of distributed resources and storage, are not established.</p> <p>Ever since the liberalization of the electricity market started, the zonal pricing contributed to the successful development of a truly integrated European market, through organised wholesale markets developing liquidity, with independent Power Exchanges and market coupling. The transition to a nodal system is an option in the current discussion about design of the EU power markets to addressing upcoming challenges and needs from the energy transition. However, it comes with major drawbacks and financial implications for market participants and final consumers in practice. The transition costs linked with high implementation constraints might also outweigh the expected theoretical benefits from the</p> |
|--|---|

|                  |   |
|------------------|---|
|                  | <p>optimization in a nodal system. EPEX SPOT believes implementing a nodal market with a centralized dispatch (as in the US) is certainly very lengthy and costly for end consumers without proven benefits for the EU context. Coupled zonal markets are more adapted to manage a larger interconnected European market and its complexity.</p> <p>In that sense, EPEX SPOT is actively contributing to more efficient solutions:</p> <ul style="list-style-type: none"> <li>• Grid utilisation optimization through efficient spot markets, including measures such as flow-based market coupling, lead time reduction, market time unit reduction (e.g. 15min products), and continuous auctions.</li> <li>• Local Flexibility Markets, which could also respond to challenges of the energy transition outlined in the consultation document. While avoiding a full transition to a nodal system going with all its shortcomings, complementary local flexibility markets could already solve in short-term issues linked with the decentralization as they aim to solve congestions not only on the transmission grid but also on the distribution grid level. A flexibility market is an implementation of a market-based congestion management marketplace that efficiently centralizes local flexibility offers to allow System Operators to reliably and economically relieve physical congestions from the grid and to provide a complementary market for flexibility provider to value their assets. Flexibility markets will become key for the successful integration of renewables into the electricity system. The local flexibility markets have the merits of facilitating the emergence of locational prices (and thus create right incentives for investments) while not putting into question the well-established zonal markets with bidding zones allowing for maximized liquidity. Such local flexibility markets would have several ambitions:             <ul style="list-style-type: none"> <li>○ Enable more price, volume, location, process transparency,</li> <li>○ Create a new economic space for the development of new flexibility sources (see our response to questions in section 3.2.),</li> <li>○ Enhance the coordination between System Operators to accompany the decentralization trend and increase the efficiency of the redispatch process.</li> </ul> </li> </ul> <p>EPEX SPOT has successfully launched the first flexibility marketplace in February 2019 as part of the pilot project "enera". In this demonstrator running until end of 2020, three System Operators of a North-western region of Germany can procure flexibility through a market platform on which flexibility providers can freely offer their flexibilities.</p>   |
| <p>Nord Pool</p> | <p>Q1:<br/>         Considering that Nord Pool proposes a market-based solution where market participants are incentivised and enabled to resolve the problem a simple solution is needed. Therefore, Nord Pool at least considers that markets should be designed to focus on power delivery within and Between Bidding Zones and below simultaneously to maximize available liquidity, flexibility and competition and therefore it rules out explicit cross-border capacity markets which also make little sense in the multi-BZ setup in the Nordics since it would introduce enormous complexity.</p> <p>On the other hand, with relation to FB vs. NTC Nord Pool is concerned that FB will decrease transparency of the market and if the non-intuitive ("plain") model is applied it will introduce significant amount of counter-intuitive market results with energy flows from high-price to low-price BZs and that will inevitably trigger changes in market behaviour that contravenes possible improvements made in terms of increased overall CZ IC "capacity domain". Although FB according to theoretical mathematics and some performed simulations could provide for technically better result it still remains uncertain whether this actually will realise in reality in the Nordic Market.</p> <p>On the other hand, where actual constraints exist these must be handled transparently and in a market-based approach. Nord Pool understands that in the current TSO balancing markets there is some sort of manual filtering of some orders based on location prior to energy activation. Similar also seems to be planned in the NBM project for both the Nordic energy activation markets and to be in use with Mari/Picasso. Nord Pool considers that this two-step approach with a non-transparent nodal-model filtering out of orders prior to zonal energy markets to lack both transparency and efficiency and also can have gaming/distortive effects. Hence there is a need to both remove such filtering and the congestions possibly justifying it and where not possible make sure that the market can be allowed to resolve it through more appropriate mechanisms.</p> <p>Q2:<br/>         Nord Pool considers that current grid constraints (within bidding zones) in some cases hinder short term trading close to delivery as TSOs refrain from allowing participants to trade as they claim to need the last hour to solve grid congestion. However, this problem is in general less prevalent in the Nordic region than in some continental countries where such claims also has a negative impact on when cross zonal intraday markets are opened and reduces transparency and competitiveness in how grid congestions are managed, e.g. very substantial "single-buyer" Re-Dispatch/Counter-Trading mechanisms in place without any real transparency while they are causing distortive effects on prices and volumes available in the open and competitive DA/ID short term markets.</p> <p>In general, unit-based bidding should not be compulsory but parties wanting to provide their assets to resolve potentially existing grid congestion could do so by specifying locational or other attributes to their orders.</p> <p>Q3:<br/>         We are unable to see it as a necessity, and furthermore that it is not desirable to in general shift from Portfolio to Unit Bidding since that would add a lot of complexity in the bidding and create a barrier for entry for many current and potential new parties wishing and able to enter the short-term wholesale markets and some parts of the (TSO) Ancillary Services/Balancing Mechanisms. On the other hand, it could be possible(without being compulsory) to specify for example RO(Regulation Object) on specific orders in short term markets even in this situation.</p> <p>Q4:</p> |

|             |  |
|-------------|--|
|             | <p>It is essential that as a principle all cross zonal capacity (ATC and/or FB) within strict, real, security constraint is made available for the next upcoming CZ allocation method, e.g. initially for the DA Auction Market Coupling, then remaining CZ capacity given to ID Continuous/Auction Coupling, and finally remaining CZ capacity given to Ancillary Services/Balancing real-time.</p>   |
| E-CO Energi | <p>Q1:<br/>The TSOs have no tools between Day-ahead clearing and real time today. We think a solution to this might be a node solution with Intraday auctions for all participants including the TSOs handling structural imbalances as well as bottleneck problems closer to operating hour.</p> <p>Q2:<br/>Yes, but we believe this is going to decrease due to more transmission grid, and flow-based market solutions.</p> <p>Q3:<br/>This biggest challenge is related to reduced flexibility in a case of wrong inflow predictions in a cascaded powerplant system. The waterway also links the electrical nodes and there will be a socioeconomic loss if the flexibility to optimize large hydropower systems is reduced. In case of nodal pricing, there will be crucial have some sort of a market-based instruments to move load/production between nodes. In addition, there will be some challenges related to changes in IT-systems.</p>   |
| ANON        | <p>Q1:<br/>With flow-based capacity allocation in the Day-ahead market its especially important that there is a framework put in place which prevents flows in incorrect direction. Local grid problems have to be taken into consideration.</p> <p>Q2:<br/>To reduce price differences between the areas must be highest priority for the TSO. In general maximum capacity should be offered the market and pre-booking due to TSO-services kept to a minimum. Socio-economic calculations should show whats most beneficial, pre-booking or counter trade. We belive that countertrade could be used more frequent to less cost for the society.<br/>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.</p> <p>Q3:<br/>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.<br/>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 all single units data to DSOs.</p> <p>Q4:<br/>Regular investigations regarding the possibility of reducing the number of price areas should be carried out. Cost for counter trade be valued against the increased cost for the customers.</p>   |
| Fortum      | <p>Q1:<br/>Primarily TSOs should allow the use of transmission capacity were the social welfare is maximized, i.e. Day-Ahead market. We understand the need for securing reserve capacity, anyway currently planned "forecasting" of value of transmission capacity between bidding zones by looking at yesterday's Day-Ahead realization is by no means an adequate solution. To mitigate the market disruption from capacity reservations preferably the reserves and Day-Ahead optimization should be calculated together. When taking flow-based calculation into use, there are several caveats for a market participant. One being the non-transparent way how internal bottle-necks are modelled. One practical problem that should be addressed is the capacity payment in grid connections. They should be so low that all flexibility in production and consumption can enter the market. High capacity prices will reduce peak production in most flexible (hydro) assets. This has two effects. One being the obvious reduction in flexibility when it is needed, the other that CO2 free production can be substituted with thermal power at times of peak demand.</p> <p>Q2:<br/>First and foremost, it is important that all available transmission capacity is given to the market at all times. Secondly it is crucial to allow all flexibility and also peak power to enter the markets at feasible cost. Current tariff structures with high cost on seldom used peak power in production units is counter intuitive. For demand this can make sense at peak demand situations, but also there having possibility to consume more at high production situations, should be optimal. Tariffs and grid should be developed so that all flexibility in demand and production can fully enter the market. Optimizing grid development solely from a TSO cost perspective can give unwanted side effects. If due to constraints in the grid (inside bidding-zones) some flexibility is blocked from the market, these assets should be remunerated for the lost income. Assuming that an asset has a contracted grid connection and a TSO or DSO blocks flexibility out due to grid constraints this should have a cost for the TSO or DSO to incentivize mitigating actions. Comment: we could calculate some cases around west corridor and virtual capacity between Germany and DK1.</p> <p>Q3:</p> |

|            |  |
|------------|--|
|            | <p>There is likely no added benefit for most market participants in a nodal model. The implications from a nodal model to the functioning of the market and already made investments can be severe. In addition such a model can deteriorate the investment climate for new generation and consumption.. From our standpoint nodal pricing is only a tool for the TSO to reduce grid investments and to further create locational signals (namely in Sweden and Norway). If considering the use of a nodal model, then assets that are stranded due to congestions should be compensated for loss of income. Assuming the assets (both demand and production) have a contracted grid connection, they should be allowed to use it freely. Rather than considering nodal models, countertrading to alleviate congestions should be studied as a remedy. On a general level, if needed, bidding on the different markets can have more detailed information on location or even unit, if it helps TSOs in their duties. For a BSP such data can also be needed in the bidding, though generally portfolio bidding is more optimal for a market participant as it gives greater freedom to operate optimally with own fleet. For the financial market this could have severe effects. In a nodal model, the reference price could be lost, or made irrelevant regarding the balance of production and consumption. In grid development, and bidding zone definition the aim should be to have as big and as balanced areas as possible.</p> <p>Comment: maybe look into the nodal market in US and Russia for examples of negative impacts.</p>   |
| Statkraft  | <ul style="list-style-type: none"> <li>• Q1a: We hope that implementing flow based as capacity calculation methodology will allocate transmission capacity efficiently both for day-ahead and intraday stage. This will also be a good basis for short-term markets.</li> <li>• Q1b: We desire a development where trade can be done closer to real time. This probably requires both automated processing and ordering of bids in short-term markets.</li> <li>• Q2: Yes, we have experienced that grid capacity has constrained our offerings to the markets. The level of constraints has been reduced the recent years caused by transmission grid investments. However there have been extraordinary capacity challenges at times during the construction periods.</li> <li>• Q3: No particular challenges identified so far from moving to nodal or unit bidding as such.</li> <li>• Q4: The development going forward should include correct economic incentives for market players to establish balanced positions before entering into real time operations.</li> </ul>   |
| Uniper     | <p>Q1:<br/>It is crucial that TSOs every day update on basis of forecasts instead of using historic data to reserve transmission capacities for cross-border FRR exchange for instance. Transparency is key here. The Nordic TSO's are certainly not best in class concerning ancillary service markets for instance.</p> <p>Q2:<br/>The inner Swedish bottlenecks for instance between SE2-SE3 limit our capability to offer Hydro flexibility to the market already today. With the increase of installed wind power in the Northern price areas and the too little investments to solve the congestions we expect the negative effects of grid constraints to increase by large extent.</p> <p>Q3:<br/> <ul style="list-style-type: none"> <li>• Uniper believes that in general grid expansion is the cheapest way to create flexibility in the grid. Solving congestions and define larger price areas would be beneficial for market liquidity, risk management and would on top ensure that insufficient competition as well as market power of some market participants are not an issue</li> <li>• Instead of Nodal/unit bidding which will give the wrong incentives to the market. the inner Swedish congestions should be solved.</li> <li>• Nodal pricing would result in higher hedging risks and more complex operations. This inefficiency results in rising power prices for consumers.</li> <li>• Unit bidding is also inefficient for players with a larger portfolio which would potentially lose the portfolio effect. Especially taking into consideration that the hydro capacity in many Swedish rivers is shared between multiple owners/operators.</li> </ul> </p> <p>Q4:<br/>We should aim for a level playing field in Europe. The Nordic market with its zonal pricing is ahead of the CWE markets. The drawbacks of this market setup for risk management/hedging/liquidity are obvious. Before investigating zonal pricing/ unit bidding for the fragmented Nordic market the discussion on ENTSO level and a joint approach throughout Europe would be preferable.</p> |
| Vattenfall | <p>Q1:<br/>Acknowledging the reasoning behind the methodology set to reserve cross border capacity for the exchange or reserves in the Nordics, Vattenfall would still like to highlight complicating factors that need to be closely monitored:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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 tend to constitute a boundary for further development. Recommendations: Evaluate alternative options to improve the possibilities to reallocate grid capacity through counter trade. Clarify how the cost of capacity is distributed between users.</li> <li>• A further 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.</li> </ul>   |

|                       |  |
|-----------------------|--|
|                       | <p>Q3:<br/>As is also addressed in the regulatory process to implement the BSP-BRP split, Vattenfall 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 for flexibility. The pros and cons should be assessed from a system wide perspective. What is the most socioeconomic solution to make the demanded flexibility available for the system as a whole? As stated above, Vattenfall welcomes flexibility from new sources, but as important for the end-consumers is that the flexibility is made available at the economics of scale in a market framework is possible to work.</p> <p>Q4:<br/>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.<br/>The benefits and socioeconomic value of a flowbased methodology increase closer to the operational hour. Vattenfall therefore remain doubtful about the TSOs' current proposal to start the transition before a 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.</p>   |
| <p>Nordenergi</p>     | <p>Q1-Q4:</p> <ul style="list-style-type: none"> <li>• Efficient allocation of transmission capacity for short term markets is relevant, but a sustainable and efficient model is left to be seen. Instead of allocating transmission capacity ex-ante, it could happen simultaneously.</li> <li>• We understand that more locational signals than current bidding zones can be valuable in the future markets for some purposes. We however emphasize that the basis for European and Nordic electricity markets is zonal markets with portfolio bidding.</li> <li>• Flow-based capacity calculation method, imply a major change to the market. Thus, it is crucial that the process is transparent and subject to well informed regulatory oversight.</li> <li>• Regular investigations regarding the possibility of reducing the number of bidding zones should be carried out.</li> </ul>   |
| <p>Energi Norge</p>   | <ul style="list-style-type: none"> <li>• Q1: The target efficient allocation of transmission capacity for short term markets is reached by implementing a pricing concept for transmission capacity securing that the market value of transmission capacity is maximized.</li> <li>• Q2: Yes, grid capacity has constrained offerings to the markets. The level of constraints has been reduced the recent years caused by transmission grid investments. However there have been extraordinary capacity challenges at times during the construction periods.</li> <li>• Q3: We see no particular challenges identified from moving to nodal or unit bidding as such. We see no special challenge at this stage for flexibility providers if localization requirements are clearly defined by DSOs.</li> <li>• Q4: Flow-based capacity calculation method, imply a major change to the market. Thus, it is crucial that the process is transparent and subject to well informed regulatory oversight.</li> <li>• Regular investigations regarding the possibility of changing the number of bidding zones should be carried out.</li> </ul>  |
| <p>Finnish Energy</p> | <p>Q1:<br/>We foresee a need to merge market places. Instead of allocating transmission capacities ex-ante for balancing purposes, it could rather happen simultaneously with energy market and be market based. We welcome ENTSO-E's proposal for co-optimization methodology though as stated in Eurelectric's answer, consider it needs further developing in close cooperation with stakeholders.<br/>Possible future's development paths include merger of different market places with the possibility of bidding simultaneously for different purposes. One possible development path could also be moving in a market structure where day-ahead market includes a possibility for market participants to purchase options. This, however, requires additional analysis, and we don't have a clear recommendation.<br/>There should be clear incentives and rules for TSO's when to build new transmission capacity. Internal congestions should be remedied with grid investments in the longer term and possibly counter trades in the short term.</p> <p>Q2:<br/>Our understanding is that the Finnish transmission grid is rather robust and that neither distribution grids in general constrain market participants' possibilities to participate different market.<br/>It may be that as the share of renewable energy generation connected to both transmission and distribution grids increases, more challenges are encountered.</p> <p>Q3:<br/>We consider bidding zones and portfolio bidding as fundamental elements of today's market structure and call for putting emphasis on developing the markets on this basis. Portfolio bidding allows for the market participants', who best know their resources, allocating them in optimal way and hence providing for overall efficiency.</p> |



|                   |   |
|-------------------|---|
|                   | <p>We, however, recognize that congestion management of transmission and/or distribution grids is rather locational and could benefit for more locational information. It could be considered whether in the balancing energy market the market participants would have an optional possibility to include locational information for resources offered and hence to ease their usage also to congestion management.</p> <p>Q4:<br/>We consider that the level of transparency must improve, for example:</p> <ul style="list-style-type: none"> <li>• why there are congestions</li> <li>• how they affect flows on different bidding zone borders</li> <li>• how have they been managed (what tools, how's it with the investment plans)</li> <li>• how they affect market participants' possibilities to participate different markets</li> <li>• etc.</li> </ul>  |
| <p>Swedenergy</p> | <p>Q1:<br/>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:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Q3:<br/>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.</p> |

|  |   |
|--|---|
|  | <p>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.<br/>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.</p> <p>Q4:<br/>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.<br/>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?<br/>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.<br/>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.</p> |
|--|---|

**Section 3.4 Market timeframes**

Q1: 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?

Q2: 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?

Q3: 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?

Q4: Any other views/comments related to the market timeframes?

|             |   |
|-------------|---|
| <p>UPM</p>  | <p>Q1:<br/>Intraday gate opening time should be as soon as possible after the day-ahead market has cleared. This would enable market participants to balance themselves with actualized day-ahead trade information by using the market already well in advance in case of disturbances or malfunctions of their assets.<br/>Gate opening time should be the same for cross-zonal trading and trading within a bidding zone to ensure liquidity. However, having a shorter gate opening time only inside one price area is better than waiting for a decision on implementing a shorter GOT on a wider market area.</p> <p>Q2:<br/>Gate closure time should be as close the real-time delivery of electricity as possible. This would encourage market participants to bid all available capacity to the market based on the best available information. The closer the gate closure time is to the delivery, the better e.g. information about wind forecasts and water situations is. This way the bids correspond to the reality as well as possible. The balance risk for potential bidders is also minimized by having the gate closure time as close to real-time as possible.<br/>UPM regards the current 30 minutes gate-closure time from Finland to Baltics better than the 60 minutes gate-closure time between Nordic countries and encourages spreading at least the same GCT to other borders also. It has been decided that within Finnish price area, intraday trading will be continued until real-time meaning that the gate closure time is close to zero.</p> <p>Q3:<br/>We don't see a need to change gate opening times. Gate closure time should be as close the real-time delivery of electricity as possible.<br/>Before the clearing of next marketplace, the clearing results of the previous market must be known (including flexibility markets, energy and capacity).</p> |
| <p>ELFI</p> | <p>Q1:<br/> <ul style="list-style-type: none"> <li>• The intraday gate opening could be immediately after the spot prices were announced, and there is no reason to delay it.</li> </ul> </p> <p>Q2:<br/> <ul style="list-style-type: none"> <li>• As close as possible to the moment of use of electricity.</li> </ul> </p> <p>Q3:<br/> <ul style="list-style-type: none"> <li>• There could be room and reason for two spot auctions per day.</li> <li>• There is no reason for intraday auctions in the Nordic electricity market.</li> </ul> </p>   |

|             |   |
|-------------|---|
|             | <p>Q4:</p> <ul style="list-style-type: none"> <li>It is important to support structures that maintain spot prices as a reference for financial market prices.</li> </ul>  |
| EPEX SPOT   | <p>Q1:</p> <p>EPEX SPOT has been organising cross-border intraday power markets since 2010. The intraday continuous coupling offers implicitly the interconnection capacity not already used in previous timeframes. For that reason, Intraday interconnection capacity is often scarce. TSOs have the possibility to improve their capacity calculation after Day-ahead, once Day-ahead nominations have been performed. This represents a key milestone so that the market is given a better chance to benefit from some interconnection capacity. Therefore, it is of the utmost importance to let TSOs perform properly their calculations for intraday cross-border capacity, even if it means that the intraday cross-border should open later than 15.00 D-1.</p> <p>If TSOs are not given the chance to improve their calculations, the cross-border intraday markets will open at 15.00 without much interconnection capacity, which would be useless for interconnected markets, especially considering the common grid model. It falls under the responsibility of TSOs to define which is the proper timing to open intraday cross-border markets given their calculations constraints. EPEX SPOT supports TSOs in their recalculations activities.</p> <p>Q2:</p> <p>Harmonization of gate closure time across Europe to the shortest lead time would ensure a level playing field between market participants. It would also allow participants to trade until delivery and balance forecast deviations and generation shortage until the last moment. The idea is not to harmonise at any cost, but rather the goal should be that all bidding zones have in the end the same trading until delivery. EPEX SPOT will support TSOs' initiatives in that direction.</p>  |
| Nord Pool   | <p>Q1:</p> <p>Nord Pool: In terms of the Intraday continuous implicit (SIDC) market the CZ capacity should be made available as soon as possible after the relevant spot-auction for each delivery period.</p> <p>Q2:</p> <p>Based on Nord Pools participant-centric market design the markets – within Bidding Zones and between Bidding Zones utilizing CZ IC capacity - should close only when delivery for the relevant product is physically no longer impossible. E.g. for the open two-sided wholesale energy trading between market parties bilaterally and on PX/NEMO markets closing could be a few Minutes before the delivery period starts and related to one-sided ("single buyer") balancing mechanisms even at the end of each delivery period, and also then in parallel allowing market parties to trade between them to alleviate their separate prognosticated imbalances which we understand is permitted today in for example the Netherlands. Allowing cross-zonal trading as late as possible also provides for the most efficient usage of assets and should therefore be allowed as well.</p> <p>Q3:</p> <p>Yes.</p> <p>Nord Pool considers that the participants should be enabled to resolve the balance of the power system. As such they should be able to trade with each other close to delivery and should not need to send in their orders to multiple platforms and settle with different parties. Therefore intraday-trading should be extended up-to-delivery and TSOs should where absolutely needed could purchase much of the balancing energy needs from the intraday market.</p> <p>Q4:</p> <p>Over time, as the assets participating change and the digitalization enables it, the timing and delivery periods of the spot auction(s) should be revisited to enable renewables to minimize their forecast errors in the auction-based markets.</p> |
| E-CO Energi | <p>Q1:</p> <p>Immediately after spot clearing. Why wait any further?</p> <p>Shall gate opening time be different for cross-zonal trading and trading within a bidding zone?</p> <p>The best-case solution for the future is harmonized opening. However, if we must wait for clearing in some markets, a transitional period with sequential market opening is preferred.</p> <p>Q2:</p> <p>We need closer gate closure compared to the present solution, since the TSOs encourage the market to solve imbalance problems. From our perspective we would like a closure very close to real time. Less than 10 minutes. This is however conditional on less requirements related to reporting of system data, which is a bottle neck for quick response today. We rather suggest the participants have to report on geographical positions.</p>  |
| ANON        | <p>Q1:</p> <p>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 price areas, don't get a disadvantage compared to, for example, Germany with only one price area.</p> <p>Q2:</p>   |

|            |  |
|------------|--|
|            | <p>Gate closure should move as close to the real time as possible to allow market participants to balance their portfolio and manage their imbalances' costs. That would lead to better planned balances, less costs and lower regulation needs. With nett balancing this would probably also be easier to handle.</p> <p>Q3:<br/>Flexibility from small resources, production and consumption, would probably benefit from shorter time frames.</p>   |
| Fortum     | <p>Q1:<br/>As soon as possible. There is no point in giving a time. For the market it is always beneficial with as much freedom as possible. Allow trading as soon as possible and have gate closure times as close to delivery as possible. Preferably gate closure should be at time of delivery. Shall gate opening time be different for cross-zonal trading and trading within a bidding zone? Answer: Only if for some reason one can't be as early as the other. There is anyway no added value in curtailing one trading for delays on the other. Preferred would be to open all markets as early as possible and have all markets close as late as possible, i.e. at time of delivery.</p> <p>Q2:<br/>At time of delivery. The most precise forecasts can be made just ahead of delivery, so also trading should be allowed just ahead of delivery. Shall gate closure time be different for cross-zonal trading and trading within a bidding zone? Answer: Only if for some reason both can't be at time of delivery. Preferably they should be equal and just at time of delivery.</p> <p>Q3:<br/>For the functioning of the market smaller timeframes (less than 15 minutes) are likely not needed. Even if the intermittency of production increases heavily, there is likely not a market-based need for shorter timeframes. If such needs arise from a system point of view, then this could also be addressed by tuning the reserve requirements. Too short market timeframes potentially reduces liquidity.</p> |
| Statkraft  | <ul style="list-style-type: none"> <li>• Q1: GOT's should be harmonized within and between bidding areas both at the Nordic and European level. Generally, we want the GOT as early as possible.</li> <li>• Q2: In general, the GCT should be as close to real time as possible, and clearly shorter than 60 minutes. GCT's should be harmonized within and between bidding areas both at the Nordic and European level</li> <li>• Q3: The market timeframes for short term markets (ID and balancing markets) are in the process of being changed to 15 minutes MTU. Any redesign of market timeframes should be done minimizing unnecessary complexity. It is of course also important that markets are available for market players to adjust their balances with the same MTU as the ISP.</li> <li>• Q4: The further development of short-term markets needs also to avoid creating unwanted complexity for instance by creating a large number of products or auctions. One should start with relatively simple solutions and expand products/number of auctions based on gained experiences and market requirements.</li> </ul>  |
| Uniper     | <p>Q1:<br/>Gate opening time should be at best 14 CET d-1. Aim is to have cross-zonal capacities available at 14CET too. Inner price area trading in Nordics is very illiquid. Gate opening times to be harmonized. If CWE TSOs cannot deliver the capacities early enough let the Intraday market start only with Nordic capacities at 14 CET. In general the earlier the better.</p> <p>Q2:<br/>Gate closure at delivery would be perfect if regulation object nomination gate closure is harmonized. Trade nomination gate closure until 2 days after. Gate closure for cross-zonal trading also until delivery.</p> <p>Q3:<br/>Market timeframes as well as nomination deadlines should be harmonized across TSOs to create level playing field for all producers/consumers in Europe and maximize social welfare.<br/>Guiding principle: Gate closure as close to delivery as possible and gate opening of full market as soon as possible.</p>   |
| Vattenfall | <p>Q1:<br/>Vattenfall would like to see an as early as opening time as possible, and a clear roadmap for full harmonization towards that. The trade within a bidding zone should be possible as soon as possible.</p> <p>Q2:<br/>Vattenfall'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.</p> <p>Q3:<br/>The general trend goes towards more trading taking place closer to the operational hour. An as clear trend is that the local aspects and location of the flexibility becomes more and more important. The future power market design should thus allow for more efficient matching of market participants flexibility and the system needs.</p> <p>Q4: As stated above we foresee a design should be based on a single price, one balance settlement system, combined with markets based on 15 minutes periods for trading and settlement.</p>   |
| Nordenergi | <ul style="list-style-type: none"> <li>• Q1/Q2: The GOT's for future short term markets should be early as possible. GOT's should be harmonized within and between bidding areas both at the Nordic and European level. The GCT's should be as close to real time as possible. GCT's should be harmonized within and between bidding areas both at the Nordic and European level as far as possible.</li> </ul>  |

|                |   |
|----------------|---|
|                | <ul style="list-style-type: none"> <li>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.</li> <li>Q3: The market timeframes for short term markets (ID and balancing markets) are in the process of being changed to 15 minutes MTU. Redesign of market timeframes should be done minimizing unnecessary complexity. It is important that markets are available for market players to adjust their balances with the same MTU as the ISP.</li> <li>Q4: In further development of the short term markets the issue of not creating unwanted complexity should have priority.</li> </ul>  |
| Energi Norge   | <ul style="list-style-type: none"> <li>Q1/Q2: The GOT's for future short term markets should be early as possible. GOT's should be harmonized within and between bidding areas both at the Nordic and European level. The GCT's should be as close to real time as possible. GCT's should be harmonized within and between bidding areas both at the Nordic and European level. We believe that changes in the intraday gate opening time (IDGOT) and IDGCT could take place much earlier than implied by the 2025 perspective of the discussion paper.</li> <li>Q3: The market timeframes for short term markets (ID and balancing markets) are in the process of being changed to 15 minutes MTU. Redesign of market timeframes should be done minimizing unnecessary complexity. It is important that markets are available for market players to adjust their balances with the same MTU as the ISP. The development should include market based incentives for BRPs to establish balanced positions.</li> <li>Q4: In further development of the short term markets it is important having in mind not to create unnecessary complexity.</li> </ul>   |
| Finnish Energy | <p>Q1/Q2:<br/>The more time and longer intraday is open, the better the market functions. Hence, intraday GOT should be on the latest at the moment day ahead results become available. Also, intraday trading within bidding zones should be enabled already before cross-zonal capacities are calculated. It could be considered also enabling continuous trading already before day ahead auctions.</p> <p>Preferably the GOT and GCT should be harmonized and hence have same GOT cross order as within bidding zone. However, in areas or regions, where broader trading hours are possible then in Europe as in general, those regions should have it possible to apply these broader trading hours.</p> <p>The GCT should be as late as possible, preferably at t-0, and we welcome the two pilots Fingrid is participating, having t-30 on Estonian border and the newly informed pilot for having t-0 within the Finnish bidding zone. These are important steps for increasing the market participants' possibilities to balance themselves and hence provide for a better balanced system as the operations phase begins.</p> <p>Q3:<br/>The market participants should have it possible to resolve the balance of the power system.</p> <p>Future's considerations could include whether (intraday) trading could be extended to operational phase enabling market participants to balance themselves also when imbalances occur and on the other hand whether the TSOs could use intraday markets for balancing purposes.</p> <p>Q4:<br/>We'd welcome a more holistic approach, and hence this discussion paper is very welcome! For example, the introduction of so called intraday auctions didn't seem to emerge from holistic need but from a rather narrow perspective. This doesn't mean that the additional auctions couldn't be beneficial part of the market set-up.</p> <p>We are worried that the overall complexity increases and recognize it as a challenging equation simultaneously to provide for more efficient allocation of resources (demand, generation, flexibility, transmission) while avoiding complexity.</p> |
| Swedenergy     | <p>Q1:<br/>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.</p> <p>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.</p> <p>Q2:<br/>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.</p> <p>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.</p> <p>Q3:<br/>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.</p> <p>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.</p>  |

|  |  |
|--|--|
|  | <p>Q4:<br/>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.</p> <p>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.</p> |
|--|--|

**Section 3.5 Towards real time trading**

Q1: Have the TSOs described the most important issues from your perspective for changes towards the real-time trading? What should be kept/added/deleted?

Q2: Which design aspects should be considered to facilitate market participants' bid submission in the several platform environment?

Q3: Any other views/comments related to future market design of short-term market timeframe?

|             |   |
|-------------|---|
| <p>UPM</p>  | <p>Q1:<br/>The possibilities to hold on to the current price zones are not dealt with in the discussion paper enough. Regional fragmentation of short-term markets seems to be taken as given. E.g. building new cross-border interconnectors and strengthening of DSO networks are said to be economically inefficient and seen as a reason to introduce nodal markets. Even if it were not possible to accommodate all possible power flows, increasing new transmission and distribution can alleviate the deepening of price differences between price zones in the Nordics.</p> <p>Q2:<br/>Ideally there would be only one of few platforms with which participants (different kinds of buyers and sellers) could participate in the market instead of several over-lapping tools or platforms. The actual trading should be as simple as possible for the market participants. However, these tools should be developed on commercial grounds and not be centrally governed.</p> <p>In figure 5, procurement of FHR capacities is depicted to take place two days (D-2) prior to the delivery day. UPM opposes this. Gate closure time (GCT) for FRR capacity bids should not take place before the day-ahead market results have been published. Available cross-border capacity for balancing exchange and accepted bids should be published as soon as possible without any delay.</p> <p>If the procurement takes place D-2 and not closer to the delivery time, participation of certain assets (e.g. hydro power) in the market will be reduced due to e.g. uncertainty of weather forecasts. If market participants are not sure about their available generation capacity, they will not be able participate in the market. If GCT is D-2, it will also be reflected in the pricing: market participants will ask for a higher premium for the uncertainty that D-2 GCT causes for them.</p> <p>Q3:<br/>To ensure the participation of large industrial consumers in the balancing market also in the future, there should be products with a longer maximum delivery duration (e.g. 60 minutes) available in mFRR energy market also in the future. Shorter delivery durations may prevent the participation of manufacturing industry with their flexibility to mFRR energy market due to nature of their production processes and by altering or interrupting their industrial processes. There is a risk of losing the potential of industrial flexible demand which could offer high amount of MW to balance the market in scarcity situations. Products with longer maximum durations would give these industrial loads access to the balancing market.</p> |
| <p>ELFI</p> | <p>Q1:</p> <ul style="list-style-type: none"> <li>• System-based, yes.</li> <li>• The analysis lacks how the changes towards the real-time trading will affect the functioning of the energy market and the positions of different market participants in the market.</li> <li>• Transparency is key, all market participants should be aware of the current price of electricity.</li> <li>• How can the electronic market participants themselves be actively involved in the development of the market, whether they have any more role to play among Commission, TSOs and NRAs.</li> </ul> <p>Q2:</p> <ul style="list-style-type: none"> <li>• The same flexibility capacity should be available to offer to several different markets at the same time. Automation will take care of the removal after activation.</li> </ul> <p>Q3:</p>   |

|                  |  |
|------------------|--|
|                  | <ul style="list-style-type: none"> <li>Market power and its possible misuse can become a major problem as markets and volumes become fragmented. There is a big risk that the problems will be resolved politically if market surveillance is not visible and publicly credible.</li> </ul>  |
| <p>EPEX SPOT</p> | <p>Q2:<br/>The number of platforms across markets and products should be kept as minimal as possible in order to facilitate market access and bid submission for market participants. This aim should however be pursued in a pragmatic and cost-efficient way, avoiding a big bang approach towards a single integrated “super-platform”. One example is for instance to use the same technology across market platforms to create synergies for market participants, notably with regard to trading activity automation.<br/>Moreover, EPEX SPOT supports a process for more harmonization for Balance Responsible Parties (BRPs) across all European control areas. A single BRP rule across Europe would ensure a level playing field among market participants, and ease the trading with a lowering of legal, administrative and operational costs. “One front end” for BRPs for all necessary technical and economic processes, such as schedule management, settlement processes, prequalification for balancing energy, guaranties etc. would set the rights pillars for the energy market.</p> <p>Q3:<br/>The short-term markets will even more than before constitute a backbone for the transition of the energy system towards a decentralized and digitalized world. As such, innovation in the design of markets in this timeframe will be a key success factor for the energy transition. The breakthrough of intermittent renewable energy and new technologies supporting it (e.g. DSM, batteries, etc.) require adapted network developments but also an adapted market design creating the right incentives so as to develop cost-efficient solutions.<br/>EPEX SPOT shares the view expressed in the paper that congestion management is a key element of any short term market design. System Operators have a major role in making congestion forecast data transparent so as for the market to be able to offer all available flexibilities in a cost-efficient way. It is for instance important for market participants as well as for market platform operators that detailed grid congestion forecasts for the coming years are made available by System Operators. The organization of the market confronting supply and demand so as to have fair and orderly market price signals should however be a task for neutral third Parties.</p>   |
| <p>Nord Pool</p> | <p>Q1:<br/>As a general remark, the TSOs seem to be describing and tackling the problems of the future power system from each problem individually and on the other hand in some cases propose solutions without properly describing the purpose or reasoning behind. Nord Pool considers that the participants providing the assets, consuming or producing energy or providing flexibility, need to be put at the centre of the future market design. Only by doing so can we access the needed amount of assets in one liquid market place (similar to the current Nordic DA market).<br/>Nord Pool finds it challenging to understand the purpose and origin of the proposed “Common transmission capacity management” which seemingly would act as a focal point for a large set of different physical power markets according to the consultation paper. Nord Pool understands that the TSOs are tasked with calculating the capacity which should be available to the market and to provide this to relevant market platforms such as SDAC, SIDC and European balancing platforms. If this is what is meant the Nord Pool shares the view. If however the illustration indicates some kind of new explicit capacity mechanism where different platforms request capacity according to “access rules” Nord Pool would find it challenging to understand how this could work efficiently in the Nordic Region.<br/>Under chapter 3.5 the TSOs write: “Market participants from the Nordic countries can trade in several European platforms (e.g. currently DA price coupling and ID continuous trading platforms and in the future mFRR/aFRR energy trading platforms) and Nordic platforms (e.g. aFRR/mFRR capacity trading platforms, aFRR/mFRR energy trading platforms16)”<br/>Nord Pool notes that only in the open markets, namely DA and ID markets the participants can actually trade. In the AFRR/MFRR the participants can only offer their assets at the disposal of the TSO and await activation. As such the balancing platforms do hence not provide a possibility for the BRP/BSP to self-balance. Therefore, Nord Pool would propose that the term “trade” or “trading platform” would not be used in the context of TSO balancing platforms as it could confuse the reader with respect of the purpose of these platforms.</p> <p>Q2:<br/>First of all, Nord Pool is uncertain whether a “several platform environment” is desirable as it ultimately scatters liquidity and makes participation in the markets expensive, potentially complex and increases barriers for entry.<br/>Secondly, as the physical problem as well as the participating assets remains the same from D-2 up to delivery it is unclear why different platforms operated by different entities would be needed? Different matching with one auction gathering liquidity some hours before delivery complemented by one “short-term-market” open to delivery with cross-zonal capacity would diminish the need for “several parallel platforms”. This short-term-market could handle both trading between participants seeking to minimize (or optimize) their net-position as well as grid congestion and potential remaining TSO balancing needs.<br/>Finally, to respond to the exact question, Nord Pool considers that especially data models, processes and reporting structures of market platforms should be carefully evaluated to enable both easy and seamless integration and also automation in the future digital environment.</p> <p>Q3:<br/>Nord Pool proposes that all relevant stakeholders, including PXs and NEMOs together with TSOs and NRAs agree on a continuation of the Nordic-invented market-based approach to in a transparent manner resolve physical power delivery and balance. With this agreement as a basis a participant-centric market design should be strived towards by taking small steps, pilot projects e.g., in the right direction. Nord Pool also proposes that the items on the NBM roadmap should be reconsidered based on a more market-driven approach. By continuing to pioneering the short-term-markets (as was the case about 1995-2010 where the Nordics framed the setup for and acted as a practical working example of the future pan-European DA</p> |

|             |   |
|-------------|---|
|             | and ID markets) the Nordic region can enjoy economic welfare due to efficient supply/demand balance and on the hand be used as reference setup when the EU target model 2.0 is designed at some point in time.  |
| E-CO Energi | Q1:<br>We would like to mention the possibility to use over load cable capacity for products with short time horizon. aFRR should be a suitable product for such purpose.   |
| ANON        | Q1:<br>A change to one price settlement and nett 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 allow for 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 (see 3.2, #2)<br>Q2:<br>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.<br>Q3:<br>Possible future requirements on grid operators, meters etc. is not mentioned in the document. Not the increasing security perspective either.   |
| Fortum      | Q1:<br>The financial market and implications of a changed physical market to the financial should be addressed. Similarly, the impacts on the retail market, competitive and comparable retail prices, and hedging possibilities for retail sales companies should be taken into account. There seems to be a desire to add more and more layers of complexity to the physical market. Now could be the time to think, how to create the market (especially ancillary and balancing markets) from scratch. What are the characteristics of the Nordic synchronous area in the future? What are the really needed reserves and their parameters? Does the system really need FFR, aFRR, mFRR scheduled, mFRR directly activated, FCR-N, FCR-D, strategic reserves, TSO reserve gas turbines?<br>Most worrying is the nodal pricing aspect. It is hardly something the market needs. It can be a solution for handling some congested areas in the grid, such issues should be handled by grid investments. Nodal pricing would be a huge step away from what has been a Nordic success story.<br>All real-time activation of resources should have an energy price component, that is linked to the imbalance costs.<br>Q2:<br>All TSO products should be harmonized on regional level. Bid submission through aggregators or NEMOs should facilitate combining several flexibility providers so they together meet requirements for standardized products. Platforms like Euphemia, and MARI & PICASSO should facilitate entry of all flexibility regardless of characteristics. The platforms should optimize activated resources from a system and social welfare perspective. From the perspective of a market participant a several platform solution is less than optimal. For a market participant one platform that can divide resources across different products is easier to facilitate participation in all markets. |
| Statkraft   | Q1 – Q3:<br>We believe that given the uncertainties about the nature and pace of the energy transition the TSO have described important issues toward real-time trading. However, we have in addition the following views: <ul style="list-style-type: none"> <li>Given its inherent complexity, the TSOs are advised to focus on efficient implementation of the NBM and to provide the market players with sufficient trading opportunities for the 15 min ISP, before embarking on new complex development projects.</li> <li>This discussion paper focus on large reforms post 2025. By 2025, most markets and –platforms will be bound by European regulation. Hence solutions proposed by Nordic TSOs should as the basic rule be harmonised. Any exemptions should be justified.</li> <li>Market platforms should allow for linking of bids, especially for markets close to real time.</li> </ul>   |
| Uniper      | Q1:<br>The different topics are on the table. Now clear roadmaps need to be communicated for projects to really kick off. One should not underestimate the IT workload implied by all the coming changes for the market participants<br>Q2:<br>It is crucial that file formats/auctions/platforms/mechanisms are harmonized within one price area as well as Europe wide to keep IT complexity/costs as low as possible. Market gate closures to be placed to office hours 8am to 6pm for instances.  |
| Vattenfall  | Q1:<br>Yes<br>Q2:   |



|                |   |
|----------------|---|
|                | <p>Vattenfall supports a regulatory framework that facilitates new resources to enter the market. System service products should 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.</p> <p>Q3:<br/>no</p>  |
| Nordenergi     | <p>Q1 – Q3:<br/>Given uncertainties, it is difficult at this stage to give precise answers to the questions above.<br/>Some principal views can however be given:</p> <ul style="list-style-type: none"> <li>Given its inherent complexity, the TSOs are advised to focus on efficient implementation of the NBM, and provide the market players with sufficient trading opportunities for the 15 min ISP.</li> <li>This discussion paper focus on large reforms post 2025. By 2025, most markets and –platforms will be bound by European regulation. Solutions proposed by Nordic TSOs should as the basic rule be harmonised and comply with European market platforms. Exemptions should be justified.</li> <li>A change from two price settlement and net-balancing is not mentioned. This will be a prerequisite for enabling and making real use of real-time trading.</li> <li>Harmonization 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.</li> </ul>  |
| Energi Norge   | <p>Q1 – Q3:<br/>Given uncertainties about the nature and pace of the energy transition, it is difficult at this stage to give precise answers to the questions above. Some principal views can however be given:</p> <ul style="list-style-type: none"> <li>Given its inherent complexity, the TSOs are advised to focus on efficient implementation of the NBM, and provide the market players with sufficient trading opportunities for the 15 min ISP, before embarking on new complex development projects.</li> <li>This discussion paper focus on large reforms post 2025. By 2025, most markets and –platforms will be bound by European regulation. Hence solutions proposed by Nordic TSOs should as the basic rule be harmonised. Any exemptions should be justified.</li> <li>It is important that market platforms allow for linking of bids, especially for markets close to real time</li> </ul>  |
| Finnish Energy | <p>Q1:<br/>We consider the discussion on nodal markets and shorter imbalance settlement periods a bit academic here. Trading may happen in shorter time intervals than the imbalance settlement is. This situation of today, and aFRR is providing for even shorter intervals.<br/>We consider that the paper lacks discussion on transparency (especially with respect to imbalance price formation and congestion management) and in general on how to market based motivate market participants being in balance and hence helping the system being in balance. Explicitly we'd like to have seen something on:</p> <ul style="list-style-type: none"> <li>real-time information on imbalance price formation and</li> <li>one price mode.</li> </ul> <p>Both of these are though developments that are expected sooner than within 5-10 years, but however, important building blocks of future's short term markets.<br/>It should be possible to give and take out regulation bids during settlement period, that is, all times when there are some resources available. If participants have to commit like today, well before settlement period starts, there is more uncertainty and not all resources are offered to regulation market.</p> <p>Q2:<br/>Probably there will be various new market places in addition to TSO/NEMO operated platforms, but there might emerge also service providers that function as gates to various platforms.<br/>TSO operated market could be beneficial to be developed so, that it would become possible bidding resources simultaneously into different markets. We are somewhat concerned on the introduction of new reserves, as eventually the same resources are bidding for different purposes.</p> <p>Q3:<br/>While calling for linking with European markets we consider that it's beneficial that in the Nordic market there's a continuous aim to improve markets' functioning and providing better possibilities for market participants' to provide.<br/>We are fully committed to provide for the vision announced today by Nordic ministers, "Norden senast 2030 ska ha världens mest konkurrenskraftiga, innovativa och konsumentinriktade elmarknad som bidrar till att klimatmålen nås".</p> |
| Swedenergy     | <p>Q1:</p>  |

|  |  |
|--|--|
|  | <p>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.</p> <p>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.</p> <p>Q2:</p> <p>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.</p> <p>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.</p> <p>One should always strive for simplicity, where less platforms with different GOT and GCT should be analyzed.</p> <p>Q3:</p> <p>Possible future requirements on grid operators, meters etc. is not mentioned in the document, or the increasing security perspective.</p> |
|--|--|

Additional comments

|           |   |
|-----------|---|
| UPM       | <p>We regard highly positive that Nordic TSOs have initiated the discussion about future development of short-term markets with stakeholders well in advance. As an overall comment, we wish to state that future market design should trust the free market formation and keep in mind that future products and platforms should enable both new kind of flexibility and current flexibility providers participation to the short-term markets.</p>  |
| Nord Pool | <p><b>General remarks</b></p> <p>Nord Pool makes note that although the TSOs first describe the problems of the future to continue with potential solutions, several assumptions related to usage of either existing or planned mechanisms seem be used. Nord Pool would urge the TSOs to consider all options when considering markets for 10+ years in the future.</p> <ul style="list-style-type: none"> <li>• Which are the assets which will be active in the region 10+ years from now?</li> <li>• Which is the most efficient way to balance the power system considering the situation in the future?</li> <li>• Which tools and incentives are needed to achieve that?</li> <li>• Once the direction is agreed, which steps can be taken in the right direction in the form of pilots or smaller continuous development steps?</li> </ul>  |
| Fortum    | <p>Fortum appreciates that the Nordic TSO's in addition to the current roadmap are also opening the discussion on how to improve the short term market places in the Nordic and Baltic power market.</p> <p>We strongly believe that a stronger regional power market cooperation is beneficial and necessary for all our societies alike and we support an increased ambition level by the Nordic TSO's in this area. Fortum sees that we need more harmonizing in the Nordic-Baltic regions in order to further improve the market, enable more equal level playing field for the various market participants and make the already good power market even better.</p> <p>We believe in large and liquid markets, thus it is good that also the Nordic TSO's paper address the Nordic electricity market region as a whole, preferably also the Baltics and other regions should be included. We understand that the Nordic TSO's are focusing on the synchronous area, but from a market perspective the Baltic areas cannot be excluded from the development.</p> <p><b>HOLISTIC VIEW OF THE POWER MARKETS</b></p> <p>In order to further improve the Nordic power markets there needs to be a holistic view on it, taking into account also the financial markets and hedging instruments that can support investments together with common grid planning all the way to the day-ahead, intraday and balancing markets.</p> <p>There is a need for increased cooperation between TSO's including coordinated and transparent grid investments processes and possibility to pool resources e.g. using a share of bottleneck income to joint investments in most congested areas.</p> <p>Better transparency is also needed on the use of congestion rents and specifically on grid investments prioritized to deliver most social welfare for the whole region with aim to reduce number of bidding zones. We have seen during the last years considerable improvement in the grid planning between the Nordic TSO's, but we challenge the TSO's to take this one step further.</p> <p>Fortum calls call for a serious effort to decrease the number of price areas in the Nord Pool area from the current 15 price zones, and a roadmap on how to get there. Reducing the number of countries' internal bidding zones in the Nordics should be a key priority and congestion income needs to be used for this purpose. We expect TSOs to develop price areas so they are balance in demand and supply, and ask TSO to investigate also to create cross national border price areas. With unbalanced price areas, the possibility for the underlying market places to operate becomes difficult and investment climate becomes distorted.</p> <p>We do see a risk in the discussion paper as we get the impression that the TSO's are contemplating even the possibility for nodal pricing. This is an extremely worrying signal not just for the physical market, but also for the financial market and the investment climate as a whole. A representative reference price (system price or similar) is still needed, if keeping current financial market structure in the Nordics. Internal congestions should not be solved by splitting the market into even smaller or even nodal price areas. Internal congestions should be remedied with grid investments in the longer term and possibly counter trades in the short term.</p> <p>There needs to be an analysis done on the current formation of the system price and is it sustainable in the long-term to enable a well-functioning and liquid financial market which in turn gives credible signals to investments. Fortum sees challenges with current system price calculation and has recently proposed rethinking of the Nordic reference price. Fortum believes one liquid hub (e.g. SE3) could be a better reference for all Nordic and Baltic trades on main future products and then there should be contracts for differences available to the surrounding areas from this hub. Fortum encourages the Nordic and Baltic TSOs as owners of the market coupling operation to re-evaluate the current way of calculating the system price to better match the market needs for the future.</p> <p><b>SHORT-TERM MARKETS</b></p> |

|           |   |
|-----------|---|
|           | <p>Fortum strongly believes in transparent, liquid and market-based power markets. It is our belief that there should be market-based solutions in all time frames and TSO intervention should be kept to an absolute minimum and the TSO's should inform the market in real time, or when possible even earlier, if/when there are strained situations. We have seen during this year worrying signs where the market has not been let to find solutions to tighter situations.</p> <p>We think trade prices and volumes should be made available for all at the same time, also in FRR markets, crucial is anyway to secure anonymity of market participants, so any data published should not pinpoint actors. Fortum would also welcome more simplified and more real time markets. Current TSO markets and foreseen development totals easily in more than 20 different products (up and down) and such a divided market cannot realise the full social welfare gain potential from the power market. We would strongly recommend the TSO's to think a new the whole portfolio of products and characteristics needed to fulfil system needs. Gate closure times for all markets should be as close to delivery as possible, preferably gate closure at time for delivery.</p> <p>We would also welcome new ways of entering the markets e.g. through third-party platforms and enable scale advantages for participants on several markets across national borders. In addition to this we see that it would be of great benefit for the markets to have a "flexibility" standard on all ancillary services markets so that new business ideas e.g. aggregators, virtual power plants can be easily scaled to new markets. Fortum sees a clear role for flexibility providers in the future and we welcome an equal level playing field for this across the whole Nordic market. It would also be beneficial for parties with household consumption to receive consumption data much faster than today with a lag of one day.</p>   |
| Statkraft | <p><b>General comments:</b></p> <p>Statkraft welcomes the Nordic TSOs initiative to elaborate and discuss future developments of short-term markets. Statkraft has the following high-level comments:</p> <ul style="list-style-type: none"> <li>Given the topic of the discussion paper, we miss a principal discussion on roles and capabilities between the TSOs and NEMOs related to market platforms. With respect to system operation we consider that the TSOs core capabilities today relates to procuring and dispatching balancing capacity (as single buyer) and settlement of energy imbalances. Market players through NEMOs platforms conduct ordinary market transactions both as seller and buyer inter alia to cope with role as balancing responsible parties. Some of the balancing markets can overlap with the intraday market both regarding market timeframe and product features. A key question is therefore what can be solved through ordinary markets and what needs to be handled by TSO as single buyer and can for instance intraday market and TSO balancing markets be more integrated through a common market place.</li> <li>We also miss a discussion on possible future developments regarding allocation of transmission capacity between all physical markets (DA, ID and balancing markets). The view of Statkraft is that market participants must be able to use all markets (across the different timeframes and across borders) to optimise their assets.</li> <li>A correct calculation of cross-zonal capacities is also crucial to maximally facilitate cross-zonal short-term markets. The paper mentions the recently approved CCM for the Nordic CCR. We note that there are important differences with the CCM for the Core CCR that was set by ACER decision and that the CACM Regulation requires harmonisation of these CCRs. We therefore underline that TSOs should continue to work on improving the CCM Nordic. In particular on the application of the 70% rule, the selection of CNECs and Remedial Actions.</li> <li>We would like to participate in the further discussion and possible implementation of issues raised in this discussion paper. For major development process one should consider small-scale testing (piloting) in order to gain experience and reduce risk.</li> </ul> <p>Finally, we stress the importance of the TSOs to focus on the ongoing implementation processes and particularly NBM which includes substantial changes of the balancing markets and frequency management.</p> |
| Uniper    | <p><b>General questions and remarks</b></p> <p>Overall we do see a lot of discussion in Nordic regarding Short-term market/balancing set-up but we are lacking clarity on what is the end game and the implementation details. We strongly ask the Nordic TSO to clarify the implementation roadmap prior to developing new approaches or products.</p> <ul style="list-style-type: none"> <li>2024-2026 Gate closure nearer real-time: What is the idea on the table at the moment? Which figures are discussed? 15 minutes before delivery? What is the latest document/information available on the details?</li> <li>2027-2029 Gate closure near real-time: What is the status here? 5 minutes before delivery?</li> <li>2020-2021 Intraday hybrid model: What is the latest status on this? Gate closures, frequency of auctions, platform? NP? What is the latest information available on the details?</li> <li>Would it be possible for the Nordic TSOs to maintain one detailed table with the indicative timelines and go-live dates covering all the Short Term Market changes mentioned in this paper? Potentially on the <a href="http://nordicbalancingmodel.net/">http://nordicbalancingmodel.net/</a> website</li> <li>This paper released is outdated for example (15min ISP, Nordic aFRR market go-live...)</li> </ul> <p>2.2 Imbalance pricing and settlement schemes</p> <ul style="list-style-type: none"> <li>Correct imbalance pricing: WAP vs marginal price of activated aFRR and mFRR? What is the current status of discussions on this?</li> <li>In principal the imbalance price should incentivize BRPs to be balanced at all time. Uniper supports a symmetric one balance/ one price system</li> <li>Uniper is in favor of scarcity pricing premiums at e.g. market cap prices</li> </ul> <p>2.3 Common Nordic capacity calculation methodology</p>   |

|                     |   |
|---------------------|---|
|                     | <ul style="list-style-type: none"> <li>• FB MC for Intraday foreseen for which year? What is the latest status?</li> </ul> <p>2.4 Activating the demand side</p> <ul style="list-style-type: none"> <li>• Current role of aggregators/ virtual power plants in Nordic markets unclear/ to be clarified? Market entry hurdles/ prequalification processes etc...</li> <li>• While we do see a benefit for the Nordic market to develop Demand Side Management, the approach should be since the very beginning consistent with other European countries, the Netherlands or France for instance. Especially when it comes to defining the roles and responsibilities of the different players (BRP, Flexibility provider, aggregators...</li> </ul> <p>2.5 Modernized ACE and balancing products</p> <ul style="list-style-type: none"> <li>• Improvement of FCRs – status/next steps? New prequalification rules applicable to prequalified assets or only to new entrants to the market?</li> <li>• Dynamic reservation of transmission capacities for FRR on daily basis –transparency for d+1 market is crucial</li> </ul>   |
| <p>Nordenergi</p>   | <p>Nordenergi regards this initiative as positive, since it involves the market players at an early stage regarding future market development. This method should serve as a model for future dialogue with stakeholders on major market development topics.</p> <p>Given the complex issues at hand, it is difficult to provide complete answers to all questions solely based on the content of the discussion paper. Nordenergi looks forward to a continued dialogue, as market participants will be able to provide valuable input. We ask the Nordic TSOs to describe the process going forward including involvement of stakeholders in the final version of the discussion paper.</p> <p>At this stage, Nordenergi provides the following comments organised as general comments and more specific comments to the different topics. For more elaboration, we refer to the consultation replies from the individual associations.</p> <p><b>GENERAL COMMENTS:</b></p> <p><b>Short term markets must be put in the context of the whole electricity market</b></p> <p>It is natural that the TSOs focus on issues closely related to their main tasks, i.e. keeping the physical balance. The design of the market may change, but today, short term markets is one of several building blocks 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. In the paper we therefore miss discussions on the consequences for other markets, in particular the financial markets. We also miss a discussion on allocation of transmission capacity between all physical markets (DA, ID and balancing markets) and on transparency for example with respect to imbalance price formation in real-time and capacity calculation. Finally, we miss a clear message throughout the discussion paper that changes to the Nordic market design must be compatible with a harmonized European market.</p> <p><b>TSOs have capability limits within market design</b></p> <p>Given the topic of the discussion paper, we miss a principal discussion on roles and capabilities between the TSOs and NEMOs related to market design. We consider that the TSOs core capabilities mostly related to system operation (including frequency quality and security of supply in the power system), while the NEMOs and market players have stronger capabilities related to market design</p> <p><b>Nordic TSOs should focus on ensuring successful implementing the ongoing market reforms.</b></p> <p>Over the next 3-5 years, balancing markets will be undergoing substantive changes as a result of European harmonization. These include implementation of higher time resolution, automation, and creation of new balancing markets, something which we understand is posing tremendous challenges to the Nordic TSOs. TSOs should ensure that sufficient focus and resources are allocated to these ongoing reforms while also initiating the discussion on market design after 2025.</p> <p><b>Further analyses are needed</b></p> <p>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.</p> |
| <p>Energi Norge</p> | <p>Energy Norway regards this initiative as positive, since it involves the market players at an early stage regarding future market development. This method could serve as a model for future dialogue with stakeholders on major market development topics.</p> <p>Given the complex issues at hand, it is difficult to provide complete answers to all questions within the time of this consultation and solely based on the content of the discussion paper. We ask the Nordic TSOs to describe the process going forward including involvement of stakeholders in the final version of the discussion paper.</p> <p>Energy Norway has the following comments organised as general comments and more specific comments to the different topics where some of our comments also are included in the joint consultation response from Nordenergi:</p> <p><b>GENERAL COMMENTS:</b></p> <p>Given the topic of the discussion paper, we miss a principal discussion on roles and capabilities between the TSOs and NEMOs related to market design. We consider that the TSOs core capabilities mostly are related to system operation (including frequency quality and security of supply in the power system), while the NEMOs and market players have stronger capabilities related to market design.</p> <p>We also miss a discussion on allocation of transmission capacity between all physical markets (DA, ID and balancing markets) and possible effects on hedging opportunities caused by suggested changes of market design in the discussion paper.</p>  |

|                |  |
|----------------|--|
|                | <p>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. Energy Norway also encourages the Nordic TSOs to share best practice, also with stakeholders, and use this as a basis to spread best practice between the Nordic TSOs.</p> <p>Over the next 3-5 years, balancing markets will be undergoing substantive changes as a result of European harmonization. These include implementation of higher time resolution, more automation, and creation of new balancing markets. We stress the importance of the TSOs to focus on the ongoing implementation processes and particularly NBM which includes substantial changes of the balancing markets and frequency management.</p>  |
| Finnish Energy | <p>We welcome the Nordic TSOs' discussion paper on possible developments for future short-term markets as a response to foreseen changes and challenges in the power system and consider the subject important and timely.</p> <p>As general remarks we think that in addition of considering mid-long term solutions, more emphasis is needed on ensuring successful implementing the on-going market reforms. We also consider that many reforms could and should be implemented sooner than later. These include some of the items discussed in the discussion paper as well as items been actively discussed on other platforms, but not presented in the discussion paper. As an example, the need for more transparency and information from the TSOs.</p>   |
| Swedenergy     | <p>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.</p> <p>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.</p> <p>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.</p> <p><b>General comments:</b></p> <p><b>TSOs should base all market design changes on a set of guiding objectives for all reforms</b></p> <p>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.</p> <p><b>Short term markets must be put in the context of the whole electricity market</b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p><b>The discussion paper should incorporate a discussion on governance</b></p> <p>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.</p> <p>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.</p> <p><b>Trust is a vital component for efficient markets</b></p> <p>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</p> |

|  |   |
|--|---|
|  | <p>examples on lack of faith e.g. restricting and reserving trade capacity, blocking one price settlement and keeping early gate closure.<br/><b>Some of the proposed reforms should be implemented much earlier than 2025-2030</b><br/>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.</p> |
|--|---|