



SOLUTIONS REPORT 2020

Reply to questions not
addressed on the webinar

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Current trends in power system development

Hanne Storm Edlefsen, Energinet presented the current focus for the TSOs related to power system development for the green transition. After the presentation, Hanne responded to several questions related to the coordination of TSOs and DSOs to integrate solutions at a local scale, collaboration on system integration in the North Sea region and the effect on grid prices. She also confirmed that the four Nordic TSOs are estimating that investments of approximately 15 billion Euro will occur during the period 2016 - 2028 based on expected need for asset replacements, network reinforcements due to load growth and the connection of renewable resources.

Additional Questions

Question: Is there any true analysis done on the economic potential for flexibility and not only technical?

Answer: In general, both the technical and economic potential for flexibility is uncertain and there is many different types of flexibility suitable for different timeframes (from peak load issues to real time balancing and frequency stability). Most studies seem to indicate that there is a substantial potential for demand side flexibility. Cost structures would differ significantly across providers. In addition, the development of new solutions is uncertain.

Question: The Solutions Reports welcomes DSO involvement. Are there specific Nordic initiatives about TSO/DSO coordination, e.g. with regard to congestion management and balancing?

Answer: All the Nordic TSOs are involved in pilot or demonstration projects around local flexibility markets. From the TSOs side we are using this as an opportunity to learn from the different projects. We have also put together a short report describing the various flexibility market projects ongoing in the Nordics.

Question: Should there be Nordic harmonization on DSO flexibility standards, so we don't have various standards in various countries and scatter the market and market access? This would be the way to get local flexibility market opened

Answer: It is probably a good idea to develop harmonized standards. At the same time the need for flexibility may differ significantly both between and within countries and it may be that solutions to some extent have to be tailored to the specific needs. One key learning from the ongoing pilot/demonstration projects is likely to be how the solutions can be harmonized.

Key focus in offshore development

Ricarda Peters, CIP, presented an interesting talk on VindØ, an offshore development. She also responded to questions related to the requirements for windfarms to be part of an energy island, financing, the 2030 deadline and the difficulty of connecting to multiple countries. Hanne Storm Edlefsen, Energinet answered questions related to the Danish government's commitment related to future energy islands in Denmark, grid ownership and the possibility of bidding zones.

Additional Questions

Question: Any rough number on increase in transmission tariffs needed to finance TSOs costs for the concept?

Answer: As the project is in the conceptual phase, there are no estimates of the impact on transmission tariffs.

Question: You talked about exporting the concept to other countries: wouldn't the North Sea conditions with shallow sea depths far offshore to be too unique to be applied somewhere else?

Answer: The concept of VindØ incorporates many aspects that could be applied somewhere else even if the conditions are not the same as in the North Sea. Depending on e.g. sea depths different solutions with either platforms, caissons or sand-filled islands come into play. The concept demonstrates new partnerships and involves different ownership structures, connection possibilities, and closer exploration of bundling energy for efficient transportation.

Question: Is not the experience from Kriegers Flak that connection offshore with DC is much more expensive?

Answer: The type of connection depends on many factors and have not been determined at this time.

Bidding zone review process

Mårten Bergman, Svenska kraftnät, presented on the upcoming bidding zone review process. The project is in the data collection phase and is awaiting ACER decision in October. Mårten responded to questions related to the stakeholder process, cross-border bidding zones and how flow-based is incorporated into the modeling.

Additional Questions

Question: How is the liquidity in the financial markets accounted for in the bidding zone review?

Answer: This is included in the evaluation criteria when we analyze the different configurations.

Question: What is the motivation for SE5 as Svk apparently think this is a local problem according to the solutions with Ellevio and Stockholm Exergi?

Answer: We have identified structural congestion around the Stockholm area that will not be relieved until after 2030. Hence, we will assess a new bidding zone in Stockholm. In our evaluation we will take into account the ongoing initiatives between Svk, Vattenfall and Ellevio to solve the situation.

Question: Will the merger of SE3 and SE4 have an effect on the congestion in the West coast corridor?

Answer: Since we have a slightly delayed time plan it is likely that the congestion in the west coast cut will be removed (new line 2025 and nuclear decommissioning) before a potential merge of SE3 and SE4.

Question: Would it be possible to cooperate on a Nordic level (among the TSO's) to truly secure optimal power flows between Bidding Zones and not stare at the national borders?

Answer: We are establishing a common Nordic capacity calculation for the whole Nordics. That is a step in that direction. However, I think that the Nordic TSO continuously working on increasing market integration.

Question: Will potential offshore bidding zones be taken into account in the review?

Answer: We do not have it in scope in the current study, but it is likely that we will include it in coming studies.

Bidding zone review process (continued)

Question: How is the 70% calculated? As ATC?

Answer: The regulation 943 /2019 describes two different ways of dealing with the 70 % requirement, one for CNTC and one for FB (art 16.8)

Question: Will Stockholm as a price area trigger political resistance?

Answer: Do not know. It is likely that there will be discussions. So far it is only a proposal that should be further investigated and not anything that should be implemented.

Question: In your BZ review you only analyze TSO proposed changes, but you do not make any analysis or develop and study any model-based scenarios? Can you be sure you are not missing any other optimal Nordic solution(s)?

Answer: We will make model runs and if we find structural congestion, that is not included so far, we will have a discussion how to include it.

Question: You ought to make SE1 and Finland North to one area?

Answer: We have seen a lot of congestion between SE1 and FI so we haven't found any reason to propose a merge.

Question: How far are we from optimal grid capacity? Capacity to day-ahead market has in fact gone down since 2011 from present SE2 to SE3 in Sweden as an example. Meanwhile lots of new wind is built up north.

Answer: Svk are working on reinforcing the grid and by 2040 the target is to have 10 GW between SE2 and SE3, but we also have more short-term measures to increase the capacity. <https://www.svk.se/natutveckling/transmissionsnatsprojekt/nordsyd/>

Question: Different price areas means no common market!

Answer: I do not agree. Different price areas mean that the available grid capacity is taken into account and allocated in the most efficient way.

Key focus in digitalization in the power system

Next, Jon Andreas Pretorius, Elvia, presented his view on the new digital requirements due to climate commitments and future developments. On the webinar, several questions from participants were addressed, such as the biggest data obstacles and how to drive changes, why it is difficult for energy companies to become data driven entities, and the stakeholder involvement process by the TSOs.

Additional Questions

Question: What is the main obstacle: the data availability and the vendor-lock of legacy systems or the necessary know-how to be able to extract the value from this data?

Answer: Main obstacle: Both data availability (technical vendor lock in), and know -how are obstacles, but I believe a third obstacle is the biggest one. The third obstacle is the capability in the organization to change. When you take control of the two first obstacles, I think most organizations in our domain will face a new problem; data quality. Data quality is an effect of business processes, technical tools, degree automation /manual handling, organizational silos /structures, controlling structures, compliance etc. To eliminate the third obstacle, the organization need to change, and it has to be done through heavy change management. This is great obstacle.

Key focus in market development

Petteri Havari from Finnish Energy discussed the increased complexity in the market and how to further develop existing tools to increase participation. Questions addressed on the webinar included transparency in flow-based modeling, and the weather there is a need for more products and tools in the market.

Additional Questions

Question: I am not sure that the TSO wish to increase visibility in the flow-based project. Why, if that is true, do they suggest decreasing the time of simulations and parallel runs? Why do they propose to take out (rather than add KPIs that the stakeholders want) things out of the legally binding document?

Answer: In order not delay Go Live of the Nordic capacity calculation methodology the Nordic TSOs have together with the Nordic NRAs after discussion agreed that 18 months of internal and external parallel runs that are planned is sufficient for the market participants to be able to adapt to the FB approach. Before Go Live all the KPIs that are defined for a successful capacity calculation methodology have been met. The KPIs are defined in cooperation between Nordic TSOs, NRAs and market participants in order to align on objectives that should be reached.

Question: To the TSOs - Will RSC be the sole calculator of capacities in Flow based? or will the individual TSOs provide RSC with limited information?

Answer: The TSOs will provide Individual grid models, Critical network elements, operational security limits and allocation constraints and the NRSC will make the coordinated capacity calculation

Opportunities in industry carbon reduction

The final speaker, Eva Vitel from Hybrit Development AB presented the Hybrit- initiative, a fossil free steel making technology. In response to questions from the participants, Eva compared transportation of electricity and hydrogen, storage and demand response and steel recycling. She also discussed the limiting factors related to developing this project.

Additional Questions

Question: Where will the needed hydrogen be made (on site, transported from somewhere (such as from the electricity islands) and how flexible will the process in total be?

Answer: The hydrogen will be made on site, possible on a nearby industry site, transported via pipeline to the facility. The process flexibility will depend on the separate investment in a hydrogen storage facility, and the business case for the hydrogen storage depends on forecasted fluctuations in electricity prices, as well as potential income from grid system services. With a hydrogen storage, our load can be completely flexible, i.e. the majority of our load can go off grid. The length of time we can go off grid depends on the size of the storage, we see a potential for storing hydrogen for several days of production, making a good fit with a wind power intense system.

Question: What is your view on the double state-aid issue, given the Hybrit needs state-aid, given steel mills are included in the ETS and maybe also to RE assets?

Answer: Not entirely sure what you mean here.