

26 September 2019

FORTUM'S VIEW ON THE NORDIC GRID DEVELOPMENT PLAN 2019¹

1 SUMMARY OF FORTUM'S KEY MESSAGES

- Energy transition and electrification of Nordic industries will require significant strengthening of the regional grid transmission system.
- Farsighted and transparent grid planning decreases the uncertainty of investment decisions for market participants and the overall cost of the energy transition and electrification of our industries.
- A stronger regional approach in grid planning is very welcomed and needed. The regional plan should be more than a compilation of national plans.
- Socio-economic benefits of grid investments should be assessed from the regional market perspective rather than from national perspective.
- Congestion revenues should primarily be used to develop the grid and to reduce the bottlenecks.
- A separate regional financing envelope should be established where congestion revenues would be collected. These pooled resources would be used to remove bottlenecks from the most congested areas.
- The number of price areas in the Nordic power market should be reduced, not increased. Pooled resources would help in directing resources to the most critical areas.
- Fortum agrees with the overall Nordic reference scenario on the broad development on energy transition and electrification of Nordic industrial base. The presented grid plan does not however, adequately reflect the challenges that the reference scenario presents.

¹ The Nordic grid development plan 2019 was published in August 2019 by Nordic TSOs (<https://www.statnett.no/contentassets/61e33bec85804310a0feef41387da2c0/nordic-grid-development-plan-2019-for-web.pdf>). Fortum appreciates the publication of a regional grid plan and aims with this paper share its reflections on the Nordic Grid Plan 2019 and principles for regional grid planning in general.

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2 INTRODUCTION

Fortum is a true Nordic electricity company, with production, consumption or both in all Nordic and Baltic power price areas.² Fortum supports the set-up of the regional Nordic-Baltic electricity market and the ambition to move towards a stronger regional approach in planning and operating the power infrastructure in the Nordics.³ Fortum also encourages the Nordic and Baltic TSOs to further deepen their co-operation.

Fortum has first-hand experience on a daily basis of the socio-economic benefits that the common electricity markets provide to the Nordic and Baltic citizens. In Fortum's view, the TSOs operating in the region have responsibility to enhance the market development and ensure that the underlying infrastructure is fit for current and futures market needs. Fortum believes that farsighted and transparent grid planning decreases the uncertainty of investment decisions for market participants and the overall cost of the energy transition and electrification of our industries.

Fortum welcomes the Nordic TSOs' common grid planning and the regular publication of the Nordic Grid Development Plans. The plans address the common Nordic needs for grid development and some of the Nordic benefits of grid investments. Fortum also emphasizes the importance of the Nordic TSOs taking an active role in European and regional grid planning conducted by ENTSO-E to ensure that national, Nordic and European plans are well coordinated. Fortum further encourages Nordic TSOs to invite Baltic TSOs as equal partners in the Nordic grid development.

The Nordic Grid Development Plan 2019 outlines well the main direction and drivers for grid investments. The described market development and drivers reflect the challenges that the Nordic system is facing. However, the market drivers are in our view not sufficiently accounted for in the actual Nordic Grid Development Plan 2019. The report further does not discuss any new grid investment options, but only states that the need for additional grid capacity remains a relevant topic in the next plan due in 2021 after the ongoing projects (the five predetermined corridors) .

Fortum is disappointed that the current plan is simply a collection of the national plans apart from that some cross-border lines that are commonly assessed. We find that what is lacking is an objective top-down assessment of the grid development needs from the regional power market development perspective. The Nordic and Baltic power market should be seen as one common market area, as operational and investment decisions are made by market participants based on the regional supply-demand balance. Hence the underlying infrastructure should also be developed based on a regional prioritisation.

² Fortum produces in an average year about 50 TWh electricity and delivers about 45 TWh electricity to its B2C and B2B customers in the Nordic and Baltic region

³ Fortum defines "Nordic" to include the whole Nordpool-exchange area with 15 price areas in Nordic and Baltic countries

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The Nordic power system is today divided into 15 price areas - and recently the Nordic TSOs even proposed to increase the number of price areas.⁴ In Fortum's view, the creation of price areas is always a signal of a failure in the power system planning. Hence Fortum is calling for a plan on how to reduce the number of price areas and to create cross-border price areas rather than a proposal to increase a number of price areas in our integrated regional power market.

Price areas should always aim to be in balance supply and demand-wise, so the underlying derivatives and physical market can deliver healthy operational incentives. Fortum considers that congestion incomes should always be rerouted to grid investments and to decreasing future congestion. Fortum recognises that the planning principles of investments differ in the Nordic countries, and calls for harmonization of these principles. Fortum also proposes that congestion incomes be pooled for joint usage to minimise the overall congestion costs in the Nordic-Baltic system.

3 THE NORDIC GRID DEVELOPMENT 2019 REPORT

The summary of ongoing grid projects presents well the status of both cross-border and internal projects of Nordic importance. Fortum appreciates that national projects with (Nordic) regional impact are raised.

Fortum recognises the need to invest in the Nordic grid development and that Nordic TSOs plan to spend nearly 2 billion euro annually in the next years on grid development. Fortum considers the increased investments positive, but is concerned about the sufficiency of funding for the grid expansion. One important way to increase resources for grid investments would be to allocate congestion income to grid investments through a common financing hub. For this purpose it would be important to harmonize grid financing principles at regional level.

Fortum would also like to see strong investment discipline among TSOs to ensure that planned infrastructure investments are efficiently executed. Fortum would appreciate if these reports contained more detailed explanations on all the projects, where the commissioning schedule has been delayed from the original timetable.

These reports would also include the cost estimates of different projects. In general, Fortum finds it difficult to assess the profitability of various ongoing projects by a TSO with the information currently published.

Fortum appreciates that the Nordic TSOs have developed a common Nordic reference scenario based on a joint view of the development of the Nordic region. It is also important that the Nordic TSOs actively participate in the European-wide scenario development through ENTSO-E, and that the European and Nordic scenarios are adequately aligned for the cost-benefit analysis of major projects.

⁴ Nordic study on elspot areas published in September 2019:

<https://www.statnett.no/contentassets/f4a33c4dd9504acbb44399298d8aa822/nordic-bzrr-alternative-configuration.pdf>

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Fortum agrees with the overall reference scenario on the broad development, where intermittent generation is growing in the northern price areas with good wind location and excess land available, while consumption is increasingly concentrated in the southern price areas, where conventional generation is stepwise phased out. The reference scenario describes well the challenges the Nordic grid and power market is facing in keeping supply and demand in balance. Fortum sees the strengthening of the north-south and cross-country grids crucial to keeping the energy transition progressing, and to enabling increased electrification of industries and ensuring that the energy market remains investable for commercial market actors.

As results of the presented modelling, the average price for only one bidding zone in each country is shown in the Nordic Grid Development 2019 report. As prices between different bidding zones can differ considerably, it would be beneficial to show prices for all bidding zones. Only then would it become apparent which cross-zonal grid investments that would have the biggest potential to reduce price differences. Thus the cost-benefit studies and grid licensing procedures could be prioritised to the most urgent project alternatives. Also in studying the need for new grid investments, the new principles determined by the European Commission in 2017 should be taken into account.⁵

The Nordic Grid Development Plan 2019 presents valuable results of the studies on the five Nordic corridors that were identified in the previous Nordic Grid Development Plan in 2017. Fortum is, however, disappointed that the grid plan does not meet the challenges the reference scenario presents. Fortum considers that the energy transition and electrification of Nordic industries will require significant strengthening of the regional grid transmission. The regional plan should be developed and assessed based on how it enables the energy transition and electrification of Nordic industries.

The Swedish internal North-South project is crucial for the whole Nordic power market. The planned schedule for this project is, however, very slow as the full capacity increase is expected to be reached only around 2040. A faster schedule should be analysed and implemented in order not to block future wind power investments in northern Scandinavia. Sweden should also reduce the number of price areas to two by merging SE3-SE4 to one southern price area and SE1-SE2 to a northern price area.⁶

In Norway, Fortum calls for a more ambitious plan to strengthen the grid across the various price areas and to couple the northern Norwegian price areas to the Swedish ones, to keep Norway investable for market based wind investments. Fortum calls for an analysis of all relevant cross-border bidding zone borders (e.g. NO4-SE2) with a

⁵ EU Communication on strengthening Europe's energy networks https://ec.europa.eu/energy/sites/ener/files/documents/communication_on_infrastructure_17.pdf. According to these principles, additional interconnections should be prioritized if the price differential exceeds an indicative threshold of 2 euro/MWh between Member States, regions or bidding zones to ensure all consumers benefit from the internal market in a comparable manner. The higher the price differential, the greater the need for urgent action

⁶ Fortum supports the recent proposal to merge SE4 and SE3 to one joint price area, but opposes the idea to isolate Stockholm region to an own price area. Fortum does not see any benefits of isolating notable consumption inside an own price area and considers the proposal to cause only notable and unnecessary uncertainty for market players

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possibility of high price differences to be included in the “corridor” analysis and viable investment options presented.

On the investigated northern NO4-FI connection, it would be beneficial to introduce market arrangements that enable market-based power trading already before the proposed back-to-back DC station investment.⁷

In Finland, Fortum supports the target to keep Finland as one price area.

On the Finland-Sweden DC links, Fortum agrees with the recommended lifetime extension of Fenno-Skan 1 (FI-SE3), as an early investment in the Kvarken link (FI-SE2) would be quite expensive. Fortum encourages to increase the transmission capacity between Finland and SE3 to keep the large Finnish and Swedish consumption areas coupled.

The Nordic Grid Development Plan 2019 does not include the Baltic countries, but Fortum encourages to investigate further grid expansion options for Estonia and Finland and between Estonia and Latvia.

On the analysed corridors between Denmark, Norway and Sweden, net benefits can be seen on projects with Denmark, while net benefits of additional capacity between NO1 and SE3 seem uncertain. Fortum sees a need to better couple NO1 and SE3 as the price different between these areas is notable. As there is often physical power transit between NO2 and DK2 through NO1, SE3 and SE4, it could be interesting to study also an alternative direct DC cable between NO2⁸ and eastern Denmark (DK2).

Regarding the presented five corridors, there could be better transparency on the feasibility studies of the various Nordic corridors. Currently, the available data of the assessments varies from project to project. It is important that all the cost-benefit analyses are finalized and investments are initiated on those corridors where clear net benefits have been shown.

4 FURTHER WORK

Fortum supports the Nordic TSOs’ intention to further develop the Nordic grid planning in close cooperation with stakeholders, as well as with national and European grid planning. The new Nordic Electricity Market Forum will also provide a platform to support the Nordic grid planning and development.

The next Nordic Grid Development Plan should comprehensively analyse all investment options that can provide net benefits for the Nordic market and reduce the price differences between bidding zones. This should also enable a reduction of the number of bidding zones that should be taken into account in the Nordic Bidding Zone Review in 2020. Both direct cross-zonal investments and increased transit possibilities

⁷The proposed DC station could possibly be built with a somewhat higher capacity than the current border capacity, by implementing additional measures on the existing lines.

⁸ e.g. the Rød substation studied as one option for NO-SE3

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through other bidding zones and countries (incl. the Baltic countries) should be taken into account.

In the European grid planning, the Nordic TSOs should also continue to study new grid links between the Nordic market and other European regions to avoid big price differences between regions, and to enable more market-based RES generation investments in the Nordic countries, and to maintain high security of supply with adequate import possibilities in tight market situations.

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