Nordic CCM SH Meeting – meeting minutes

March 17, 2022, 9.00-12.00 (Web Conference, Open Registration)

Participants	
CCM project/Stakeholder Involvement WG • Satu Viljainen (Fingrid) • Ulrik Møller (Energinet) • Emil Jansson (Svk) • Susanna Lundmark (Svk) • Ritva Hirvonen (Fingrid) • Trond Jensen (Statnett) • Zongyu Liu (E-Bridge Consulting) **Excused** • Jens Stenport Nørgaard (Nordic RSC) • Jakob Glarbo Møller (Nordic RSC)	**Attendees (in total 62 attendees)**

Text in non-italics are comments, statements, questions or claims from the stakeholder(s).
Text in italics are answers or comments provided by the Nordic CCM project.

1. Welcome and opening words (9.00-9.10)

2. Flow-based methodology pedagogical walkthrough (9.10-11.20)

Question: are borders between internal bidding zones (e.g. SE1 - SE2) treated differently to external zones (e.g. SE1 - FI)? Or are all Nordic zones completely equal??
CCM project*: Borders within a country (e.g. SE1 – SE2) are treated the same as borders between two countries (e.g. SE1 - FI) in the FB capacity calculation and allocation.*

Question: How does the Nordic FB methodology consider the Baltic states, e.g. no PTDF of Baltic countries being published?
CCM project*: For HVDC links subject to the single day-ahead coupling (SDAC), they should be modelled in accordance with CCM using the 'Advanced Hybrid Coupling' concept in the FB methodology.*

Using Estlink as an example:
Firstly, we have to remember that Estlink belongs to Baltic CCR, where CNTC based approach (not FB approach) has been implemented. In capacity calculation, the capacity on Estlink will be given as NTC value, where also internal Baltic grid restrictions (if any) are taken into account. Thus there are no PDTF matrices calculated on Baltic side of the Estlink (or a virtirual BZ). This leads to following

1. *for the FB go-live arrangement (i.e. no need to compare the FB and current NTC), the Finnish side of Estlink is modelled as a virtual bidding zone (VBZ). The concept of the VBZ is to allow the modelled HVDC (i.e. Estlink in this case) to be allocated by the SDAC.*
    a. *More specifically, this VBZ, situated in Finland, captures the impact of the import and export of this VBZ (i.e. power from and to Estonia) on the Nordic CNECs by PTDF matrices defined for VBZ. In other words, the Nordic TSOs do not need the Baltic grid models or CNECs to compute the VBZ hosted in Finland.*
    b. *Additionally, the Nordic TSOs (in this case Fingrid) apply net position constraints on this VBZ, to capture the import and export limits of this VBZ, from the Fingrid's perspective. If there are no restrictions in the Finnish AC grid then this net position on VBZ will equal the Estlink capacity*
        i. *Nordic RSC provides the FB domain, including the EstlinkVBZ to SDAC for market coupling.*
    c. *Elering, the Estonian TSO, is responsible for determining the capacity of Estlink that can be offered to the market from the Elering's perspective (taking into account the Baltic grid situation) applying CNTC methodology of Baltic CCR,.*
        i. *Elering provides the Estlink capacity from the Estonia perspective to the SDAC.*
    d. *The SDAC/Euphemia (i.e. the production environment) determines the final allocation of Estlink, considering inputs from both Nordic RSC and Elering/Baltic TSOs.*
    e. *In summary, the Baltic grid situation, translated into NTC values by Elering, is provided in step 1.c., and considered in 1.d when the EU-level SDAC market coupling is cleared.*

2. *For the external parallel run (EPR), FB and NTC market simulation outcome needs to be compared.*
    a. *For the NTC market coupling, imagine that Elering applies a capacity reduction (as stated in 1.c above). This capacity reduction needs to be considered in the FB MC simulation to ensure a fair comparison.*
    b. *To set up a proper value of 1.b.(for the EPR comparison purposes), the Nordic TSOs/RSC needs to provide their own view on the import and export limits of the VBZ (referred as the Nordic perspective 1.b. above). In addition, the Nordic TSOs/RSC also needs to collect Elering's capacity (reduction) information (referred as the Estonian perspective 1.c. above). The smaller value of the Nordic 1.b and the Estonian 1.c is used as the net position constraints of the VBZ of Estlink in Finland (i.e. as the proper 1.b in this case).*
    c. *The Nordic RSC/NEMOs run the SF to perform the market simulations, which take the proper 1.b as inputs and allocate the capacity of the VBZ in Finland.*
    d. *In summary, the Baltic grids situation, translated into NTC values by Elering, is collected in 2.b. and considered by the SF in 2.c. Thus, the resulting VBZ allocated capacity of the EstlinkVBZ implicitly considers the Baltic grids/NTC.*

Question: Data publication on JAO, using NO1-SE3 as an example, the Max Exchange values are much larger than the operational NTC. Can you elaborate the difference?
CCM project*: Max bilateral exchange in the FB context is not the same as operational NTC.*

A max bilateral exchange of a border of a FB domain is computed by maximizing the bilateral exchange of this border, subject to the FB domain and no other bilateral exchanges taking place among the Nordic BZs. Thus, the max bilateral exchange reflects a 'corner or extreme' case that the FB domain allows the market to clear at. In reality, it is unlikely that the market clears at this very specific point (i.e. no exchanges among the Nordic BZs, except the max exchange occurring at this specific border.). In short, the max bilateral exchange is highly dependent on other bilateral exchanges in the Nordic power systems (i.e. being 0 at all other borders).
On the contrary, the NTC value of a border is a feasible market point that is independent on other exchanges in the Nordic power systems. In short, the operational NTCs ensure simultaneous feasibility of all Nordic borders.
To manage the expectation, please do not expect a large capacity increase when comparing the max bilateral exchange with the current NTC values.

Question: Regarding the DK1 being part of the Nordic CCR or the Core CCR, what is the status of the discussion? How many slack nodes do you have in the Nordic FB CC, given that the DK1 is synchronized to the continental EU?
***CCM project**: DK1 discussion is on hold. Currently, DK1 has borders linking both Nordic and Hansa CCRs.*

Regarding the slack nodes in the Nordic FB CC, there is one slack node in DK2 (to capture the power imbalance in the Nordic synchronous area) and another slack node in DK1 (to capture the power imbalance in the DK1.
It is also visible in the published data on the JAO website in the 'Flowbased Domain' tab. A DK1 CNEC has 0 PTDF values on all Nordic bidding zones of Nordic synchronous area (e.g. NO1, SE2, FI, etc). This implies that for every MW increase in the Nordic synchronous BZs, there is no impact on the DK1 CNECs, because the impact is absorbed within the Nordic synchronous area. Same observation can be found on any CNEC situated in the Nordic synchronous area. Its PTDFs of DK1 BZ and VBZs are zeros.

Question: is your interpretation of the European law that the limit is only on borders between 2 countries or also between a zone and the other zones of the same country??
***CCM project**: Please refer to Electricity Regulation article 16.8 from 2019/943 and*
ACER recommendation.
https://documents.acer.europa.eu/Official_documents/Acts_of_the_Agency/Recommendations/ACER%20Recommendation%2001-2019.pdf

Question: How does FB change internal congestion, given the recent observation that the Southern part of bidding zones experience price spikes? How will the 70% rule influence this 2.14?
***CCM project**: The TSOs will get back to the stakeholders.*

Question: Why does North Sea Link (NSL) in the data publication? How do you model the HVDC within the synchronous area / bidding zone? For interaction between Nordic CCR with other CCRs, is a NTC to model the cable capacity itself still necessary?
***CCM project**: Due to Brexit, NSL is not part of the SDAC. Thus, NSL is modelled as standard hybrid coupling. For details regarding the standard hybrid coupling, please refer to Stakeholder consultation document and Impact Assessment for the Capacity Calculation Methodology Proposal for the Nordic CCR (page 31 and 32).*

Regarding the HVDC links within the synchronous area, e.g. FennoSkan (FI – SE3) and SouthwestLink (SE3 – SE4), each HVDC cable has two VBZs, reflecting the two converter stations at both ends of a cable.

In the Nordic CCR, there are no internal HVDC links within a bidding zone currently.

Regarding the interaction with other CCRs, The TSOs will get back to the stakeholders, after aligning with other CCRs. .

Question: Can you copy-paste the PTDFs of the hosting physical bidding zone to the VBZ PTDFs, assuming they are the same?
***CCM project**: The numerical values of the PTDF of a VBZ and its hosting physical BZ may be very similar, or same (given the rounding effect as well.) However, they are computed differently. The VBZ is considered a 'node' and its zone-to-slack PTDF is computed directly as if it's nodal PTDF computation. The physical BZ PTDF requires to firstly compute the nodal PTDF (of this BZ) and then to multiply by the GSK (of this BZ) using the formula: z2sPTDF = nodal_PTDF * GSK.*

3. Overview of assumptions and parameters for the beginning of the external parallel run (11.20-11.45)

Question: it is highly surprising that CNECs are selected so differently between the TSOs. Why? same for allocation constraints. It's the same physics, right?
***CCM project**: In the NTC world, the CNECs are not transparent to the market participants. Instead, the cross-border capacities are visible to the market participants as results of considering the potential limiting network elements during the capacity calculation stage. In the FB world especially at the beginning of the EPR, the CNEC selection is based on the best operational practice from each TSO obtained via years/decades of experience in the NTC world.*

Physics, indeed, remains the same and is irrelevant to the capacity calculation methods. However, the grid situations of each TSO are different, e.g. ENDK and Fingrid operate a radial system, whereas the Statnett and Svk operate a much more meshed system. Thus, the best practice to select the CNECs vary from one TSO to another. Also, the operational limits are different, e.g. some TSOs need to address more issues related to thermal limits, whereas others need to put more focus on dynamic limits. In other words, physics is a broad term that governs all power system behaviour. Under the hood, the TSOs adopt the best operational practice to ensure relevant parts of the physics are considered in the capacity calculation process. The reasons are also applicable to the combined dynamic constraints as allocation constraints.

Another aspect to address this question is to consider the application of the z2zPTDF threshold to filter those 'insignificant' CNECs that should not limit the market even they are nominated/selected by the TSOs. All TSO-nominated CNECs need to go through this filter, i.e. max_z2zPTDF of a CNEC needs to be larger or equal to 5% in order to be qualified as a market relevant CNEC. Only these CNECs may limit the market (i.e. cross-border trades) during the market coupling.

Question: How are the RAs modelled or optimized? How are they selected? *result representative now for go-live…*
***CCM project**: as a starting point, the RAs are manually optimized within each bidding zone by each Nordic TSO. The RA implementation in Nordic CCR is different from the Core CCR, which adopts a mathematical optimization approach within the FB capacity calculation process. According to the Nordic CCM article 5.5 and 5.6, no later than 18 months, the Nordic TSOs will propose amendment of the Methodology for determining CNECs regarding the application of RA to manage congestions on the internal network elements.*

Additionally, the efficiency test on the RA application becomes less relevant if the TSOs fulfil the 70% requirement.

Question: Will the FB CC and MC results change in the future, given the answer that the application of RA may change 18 months after the implementation of FB? Are the published results representative?
***CCM project**: the FB CC and MC results depend on many factors/components. After 18 months, more components may change affecting the FB CC and MC results, e.g. FRM = 5%*Fmax at the beginning of EPR will change to a statistically computed value. GSKs*

may also be studied and improved, etc. In general, the quality of the FB CC and MC results and processes are being constantly improved.

Question: all branches in SE are anonymized? Will they remain anonymized after go-live?
***CCM project**: Yes, Swedish legislation requires the Swedish CNECs to be anonymized.*

Question: will the questions and answers communicated via email be publicly available?
***CCM project**: Yes, they are publicly available on the Nordic RSC website under the Q&A section.*

Question: Will the SH event focus more on translating the FB concepts into the actual internal and external parallel run results?
***CCM project**: Yes, this stakeholder event, as a special event, is dedicated to the FB pedagogical walkthrough to prepare the stakeholders for the EPR. A regular SH event covers the elaboration of the market results from the internal and external parallel runs. The next regular stakeholder event is on 23/03, 09:00 – 12:00 CET.*

Question: if we can make the Q&A section on the RSC website a bit more user-friendly than the CWE/ CORE.... should be doable..?
***CCM project**: the CCM project is open to suggestions from the stakeholders.*

4. Closing remarks and any other business (11.45-12.00)

All participants are thanked for their constructive inputs!

The presentations have been uploaded on the Nordic RSC website: https://nordic-rsc.net/flow-based/documents-presentations/