Nordic CCM SHF – meeting minutes

FINAL Version

February 8 2017, 09.00-16.30 (Stockholm Arlanda airport, Radisson Blu Skycity)

Participants		
CCM project • Erik Ek (Svk) – SC member • Trond Arnljot Jensen (Statnett) - PM • Nils Flaten Ræder (Statnett) • Ulrik Møller (Edk) • Heini Ruohosenmaa (Fingrid) • Mårten Bergman (Svk) • Pieter Schavemaker (E-Bridge Consulting)	See the participant list that was handed out.	

1. Coffee (9.00 – 9.30)

2. Welcome, objective and agenda (9.30 - 9.45), Trond Jensen (Statnett)

The presentations will be made available on the Stakeholder (SH) information platform. Please note that the way to get access to the SH information platform is described in the newsletter that has been distributed at the meeting (and that will be distributed by email as well).

Q: What is the reference for the work that you are doing and the comparisons that you are making?
A: The current situation (NTC world) is the reference: the operational NTCs and the corresponding market results are the reference. The current (NTC) market outcome is compared with the FB and CNTC simulated market outcomes. It is important to realize that the coordinated NTC (CNTC) values are different than the current NTC values: it is – just like the FB methodology – based on an hourly common grid model and a common capacity calculation approach.

3. NordREG presentation (9.45 - 10.15), Johan Roupe (EI)

CACM:
- it is FB, for DA and ID, unless the Nordic TSOs (formally, Norway is not in the game until they adopted the 3rd package) stand up and state collectively that CNTC is more efficient at the moment.
- deadlines on proposals and approvals are fixed whereas implementation dates are not fixed.

The first version of the new cross-border intraday solution (XBID) that is being developed cannot handle with a FB capacity domain and losses.

Q: Can FB work with a continuous ID trading mechanism?
A: Yes, FB can work with a continuous ID trading mechanism.

Q: Does the CACM refer to a capacity calculation region (CCR) or the Nordic market?
A: It refers to a CCR rather than the Nordic market. Norway is formally not part of the Nordic CCR.

Q: What can we do as stakeholders? We all interpret the CCM in a different way. What is it that you want us to do?
A: TSOs need to deliver the methodology and indicate how the objectives and requirements of CACM are met. NRAs are happy to receive well-founded comments from the stakeholders if something is considered to be flawed, or not to be in line with the CACM and its objectives.

Q: There may be 18 months of parallel runs, but not before the NRA decision in 2018.
A: The NRAs need to make a decision on the information that is available. If afterwards - when you get the 18 months of parallel run data - your analyses demonstrate flaws, or things that are not in line with CACM, the NRAs can undo their decision.

4. Nordic CCM project and timeline (10.15 - 10.30), Trond Jensen (Statnett)

Q: Implementing CACM should improve the market conditions. We should not do a step back and use older data than we use today in the capacity calculation, even when this is required in the network codes.
A: We need to use the D-2 CGM, but the CGM is a 'dynamic' model that is being updated with the latest information. We will make sure that we will use better and more up-to-date information compared to today.

Q: Do you compare FB and NTC only based on market simulations, and not on the physical grid?
A: The actual (NTC) and simulated (FB) market outcomes are used in the (physical) grid model to observe whether overloads are induced or not. There is no reason to assume that the imbalances will be different under NTC, CNTC, and FB.

Q: How to split capacity between DA and ID?
A: Capacity calculation is a continuous process: by using the latest information available, the most capacity is provided for the upcoming timeframe(s). Or in other words: for the ID timeframe dedicated grid models will be created and dedicated capacity calculation will be performed to serve the ID market as good as possible. Note, in this respect, that an integral part of the capacity calculation is the assessment of the uncertainty that the TSOs are facing in their capacity calculation. It is expected that the uncertainty for the DA stage is larger than that for the ID stage, as better forecasts are available for the ID and less assumptions need to be made. The Flow Reliability Margin (FRM) reserved at the DA stage can thus partly be released on the ID stage.

Q: Why do you only share aggregated data (average prices and so on)? Why not share the hourly data?
A: The project will check if they are allowed to share hourly results.

Q: Shouldn't there be the same capacity calculation methodology (CCM) for DA and ID?
A: The CACM requires that a CCM is proposed for both the DA and the ID; they can be different. As the first release of the XBID solution does not support a FB model, FB ID is not feasible initially.

5. Coffee (10.30 - 10.50)

6. Nordic FB and CNTC methodologies (10.50 - 11.30), Nils Flaten Ræder (Statnett) and Heini Ruohosenmaa (Fingrid)

A D-2 common grid model is used as a starting point for the capacity calculation; the information inside the model will be dynamically updated though so that the latest forecast information is taken into account in the capacity calculation.

Q: No common Nordic grid models are used at this moment in time in the operational NTC capacity calculation?
A: Today there are common Nordic grid models, but not with an hourly market time resolution for the purpose of capacity calculation. Or in other words: there are no hourly common Nordic forecast grid models used today in the Nordic capacity calculation. Within the Nordic CCM project those common grid models are being created (prototypes!) for the sole purpose of the development and testing of the capacity calculation methodology (at the same time, this is the main source of the data quality issues that the project is facing). These common grid models are only temporary models for the purpose of the project, anticipating the models that will be delivered by the European CGM project. It is those models that are to be used in the Nordic CNTC / FB capacity calculation; the Nordic CCM project is completely dependent on this input.

Q: Can you provide us with a list of internal constraints (on an aggregated level: just the numbers, how many?) that are limiting the XB capacity.
A: We will check and get back to you on this one.

Q: Will the PTDF matrix be stable for all 24 hours?
A: No, they will vary from hour to hour.

Q: The current NTCs look quite stable?
A: This is because the TSOs choose where to restrict capacity: they can vary the NTC of one border in order to keep others more stable.

Q: FB is more in line with the physics of the grid and seems to a better approach than the NTC. Your aim is to use FB in DA, while for ID CNTC is foreseen? This doesn't make sense: the closer to real-time the more detailed the capacity calculation should be.
A: Yes, indeed. It is the target to have a FB ID, but the first release of XBID does not allow to use a FB capacity domain.

Q: Did you use the CNTC computation (with the AC load flow and dynamic evaluations) and compare it to the actual NTC values?
A: Yes, the methodology has been tested on the FI-SE border based on a few common Nordic planning models (those are not hourly forecast models!). It shows not only that the computation can be automated, but also that the values on this border are comparable to the current NTC values (some are higher and some are lower demonstrating the added value of using the common grid model in capacity calculation).

Q: How sensitive are the results of CNTC and FB when a different bidding zone delineation is applied.
A: This has not been studied in the project. The relation between bidding zone delineation and FB capacity calculation and allocation will be addressed in the supporting document though.

7. Market results (11.30 - 12.00), Mårten Bergman (Svk)

Q: Are the results in line with those in CWE, when they compared FB and NTC?
A: Yes, they are. Overall FB provides more capacity, higher DA welfare, and leads to a lower price spread between the bidding zones. An income redistribution can be noted: lower congestion income, lower producer surplus, and a higher consumer surplus (compared to the current NTC world). FB may also allow for higher exports from the Nordics to the continent, compared to today's NTC world, leading to a higher Nordic producer surplus.

Q: The welfare numbers that you show, assume that nothing changes in the ID and regulation power market. ID in CWE is not functioning well though.
A: The CWE region applied DA left-over capacity as initial capacity for the ID market, when they went live with the FB DA system. This is not what is foreseen in the Nordic region. Indeed, a dedicated capacity calculation based on updated input data is foreseen. This should prevent some of the claimed issues mentioned for CWE.

Q: Did you split up the welfare between countries?
A: Yes, but this required us to make an assumption with regard to the congestion income distribution. As the latter one is an assumption only, at this moment in time, these results have not been shared.

Q: How can DK1 have a different average price in FB compared to NTC, being connected only by DC links?
A: This is due to the price linkage with Southern Sweden and Southern Norway.

Q: What will happen with the capacity between DE-DK?
A: This will not be impacted by the introduction of a Nordic FB capacity calculation, as the constraints originate from the German grid.

Q: Redispatch costs are not included in the welfare figures?
A: Indeed! There is a trade-off between welfare on the one hand and security of supply on the other. Quite often the current NTC values show an overload in the FB system, requiring a (costly) redispatch action to mitigate. The welfare figures shown are DA market welfare values.

Q: Did you encounter counter-intuitive flows?
A: Yes, we observe them quite often in the FB market results. Note that they are also present in today's NTC world!

Q: Did you test the intuitive patch (in Euphemia: introducing an additional constraint in the allocation mechanism to prevent counter-intuitive results) to check its impact?
A: Yes we did check on this. There are two versions of the intuitive patch: strict and very strict. The strict version showed a big welfare

loss (intuitive results, but at the cost of welfare), while the very strict version did not lead to a solution at all.

Q: (Based on the slide where welfare figures are shown for FB, CNTC, and NTC) Are the welfare figures shown for FB and CTNC for this one hour sufficient (CNTC showing a 3kEUR lower welfare than FB) to stand up and indicate that CNTC is the way to go?
A: CNTC, and especially the choice on how the share the available and scarce capacity among the borders, is not straightforward at all. This example merely shows that the TSOs did put effort into the CNTC approach as well, and did perform CNTC market simulations. This hour has been selected to be presented, as it was one of the few that worked out properly, and actually shows good results for CNTC.

Q: In the evaluation between FB and CNTC, do consider the counter-intuitive flows as well: take into account that you will have counter-intuitive flows in FB but not under CNTC.
A: Noted.

8. First round of questions and answers (12.00 - 12.30)

9. Lunch (12.30 - 13.30)

10. Market information platform and market information tool (13.30 - 14.00), Mårten Bergman (Svk)

Q: Will CNE3 (mentioned in the information tool) of this hour, be the same as CNE3 the next day?
A: No, not at this stage at least.

Q: Please re-address the question whether the CNEs need to be anonymized
A: There is a strict Swedish regulation on this: even the publication of the anonymized PTDF matrix in the SH information tool required a lengthy decision making process.
➔ **The stakeholders are invited to explain why the geographical details of the CNEs are needed.**

Q: How to translate what is happening in the real system to the FB world (e.g. outage of a line or generation unit)?
A: The UMM system may need to be adjusted to make it 'fit' to the FB world.

Q: Will you provide a forecast matrix for the next three years? This is needed for the water value computation.
A: It needs to be discussed between the market participants and the project how this need (and others) can be addressed.

Q: Are you planning to make use of negative RAMs?
A: Yes, but currently the PX Simulation Facility (that is used to perform the FB market simulations) does not allow the use of negative RAMs. Note that negative NTCs are used in today's NTC world.

Q: Are the GSKs constant?
A: Different GSK strategies are being studied. They can be evaluated to select the GSK strategy that gives the best forecast (or: lowest uncertainty / FRM).

Q: Are there a lot of CNEs in the bidding zones?
A: Depends on the situation. There are about 80-90 FB constraints per hour limiting the FB domain (and that will be provided to the allocation mechanism), whereas roughly 2000 CNEs are used by the TSOs in the capacity calculation process.

Q: The SH information tool shows the border flows based on the Nordic NPs. If you plug in the DA NPs that are determined by the PXs, you can assess the expected ID capacity, no?
A: No, the TSOs will perform a new capacity calculation for the ID, based on an updated CGM.

With regard to the SH information tool, that is available on the SH information platform, the following. Feel free to suggest improvements or requests on how to develop the tool further, or additional information that you would like to be added into the tool (preferably with some reasoning on the added value)!

Q: Does the FB model in the SH information tool include the voltage and dynamic limits?
A: Yes, it does.

11. CCM proposal process (14.00 - 14.30), Ulrik Møller (Edk)

Q: There are worries on the CCM decision making process, as it is difficult to make substantiated comment when you are in the dark, and do not receive results. Being in the dark, the burden of proof can not only be on the stakeholders. No hourly results can be provided. How can you expect the stakeholders to take a position on this proposal without hourly results? We have an hourly market, we need hourly results to have a view / grip on it.
A: The project will check if they are allowed to share hourly results.

12. Coffee break (14.30 - 15.00)

13. Second round of questions and answers (15.00 - 16.30)

Q: CWE is used quite often as a reference. Does this make sense? The Nordic system is quite different?
A: Fair point. CWE has a FB system in operation, and it is useful to learn from their experiences. But, indeed, the Nordic system is different in many ways: hydro-based system, many dynamic and voltage constraints, and better-balanced bidding zones, to name some of the differences.

Q: You mentioned that counter-intuitive flows have a significant impact on the welfare. What will be your recommendation on this one?
A: This is an integral part of the FB system, and we see no reason to take it out. But please note that already today, in the NTC world, there are counter-intuitive flows.

Q: There are currently no phase shifter in the Nordics. If such a device is installed, does it fit in the FB methodology?
A: Phase shifters can be implemented in the FB method in the same way as a DC link, where the allocation mechanism sets the power flow on the controllable device. In CWE, where phase shifters are in operations, they are currently implemented as remedial actions.

Q: To what extent are the exchanges with Germany and the Baltics influenced by a Nordic FB?

A: A so-called advanced hybrid coupling will be used. A DC link (being a fully controllable active power flow) is an NTC by nature. Combining these NTCs with the FB methodology applied for the AC grid is done by means of the advanced hybrid coupling: the converter stations of the DC interconnectors are modelled as 'virtual' bidding zones in the FB system (a bidding zone, without order books though), having their own PTDF factors reflecting how the exchange on the DC link is impacting the AC grid elements. Or in other words: the flows on the DCs are competing for the scarce capacity on the AC grid, like the exchanges from any of the other bidding zones (SE1, SE2, NO1, FI, and so on). The exchanges with Germany and the Baltics are thus competing for the scarce capacity in the Nordic grid like the exchanges within the Nordic synchronous area do.

Q: The FB method is theoretically better, but the overall welfare gain that you showed is not spectacular? How often do you see price differences between the two methods that are more than 1 euro?
A: In 'easy/relaxed' hours where there is a sufficient amount of capacity available, the FB methodology will lead to one single price in the Nordic system just like the NTC system today (full price convergence). Especially in the stressed hours / weeks, the price differences by providing more capacity with the FB system can be impressive: upto 50-100 EUR price reduction compared to today's NTC.

Q: How old is the data that you use when computing the FB parameters.
A: The most up-to-date data will be used, but no firm statement can be made now as the operational process and the corresponding timeline needs to be developed. Note that the D-2 CGM is a 'dynamic' model that is being updated with the latest information. We will make sure that we will use better and more up-to-date information compared to today.

Q: What is happening in the rest of the world. How can we assess / put into perspective what you are proposing?
A: We will provide an extensive supporting document, but if there is a need for additional material / papers / reports on certain topics, please post your question in the Q&A on the SH information platform.

Last but not least: Thank you for your participation in this Forum! We appreciated the discussions, the concerns expressed, and the support that we received.
Feel free to provide us with hints on how we can improve the next Forums (More discussion? Less presentations? Special topics?), and feel free to post your questions to the Q&A on the SH information platform! We will do our best to answer as soon as possible.