NBM
Nordic Balancing Model

SVENSKA KRAFTNÄT ENERGINET FINGRID Statnett

Questions and answers from the Nordic webinar on:

Future imbalance pricing in the Nordics when connected to MARI and PICASSO

The Nordic TSOs held the first common Nordic stakeholder webinar on the topic of future imbalance pricing on 8 February 2023.

All the questions have been collected from the webinar, and the TSOs have provided answers to them all which can be found in this document, organised by the following relevant topics.

Q&A topics:

NBM
Nordic Balancing Model

General

Q1: Will this webinar be recorded?

A1: The webinar will be recorded and is available at NBMs homepage here.

Q2: Are there any English webinars from the TSOs? Or are all in local languages?

A2: The national TSO stakeholder meetings will held in the local language.

Q3: How can you change the Imbalance Settlement Period to 15 minutes without giving the ability to forecast 15 minute production? (e.g. in Intraday Markets)

A3: When the change to 15 min imbalance settlement period (ISP) happens in May 2023, the balancing energy prices will still be with a 60 min market time unit (MTU), so that the imbalance settlement result is neutral (no economic exposure by not trading on 15 min time resolution). For more details see eSetts Commisioning Plan here.

Q4: How can it in one synchronous Nordic grid be said that Bidding zone A has down regulation and Bidding zone B has an up regulation need when the reality "always" is the net value, which either is up or down?

A4: Firstly, we can also have different activation directions in the synchronous area today in case of congestion between areas. Secondly, when we implement ACE-based balancing with MARI and Picasso, the direction of system imbalance (dominating direction) is set based on bidding zone demand for balancing energy, not activated balancing energy.

If there is a balancing price for the dominating direction based on demand, it will set the imbalance price, even if net activated balancing energy would indicate the opposite direction. Net activated balancing energy reflects the total demand, not the bidding zone demand.

Q5: On what Bidding zone granularity will the aFRR, mFRR etc. components be based? In other words, could such price components in for example France be a factor for the imbalance settlement price set in Finland?

A5: Balancing energy prices will be the same for all bidding zones in an uncongested area. However, the imbalance price for these bidding zones may differ. To which extent, depends on the imbalance pricing design chosen by each country.

If France is part of an uncongested area for the mFRR price together with Finland, for example mFRR scheduled activation price, the French bidding zone will be part of the market clearing together with the other bidding zones in the same uncongested area.

Q6: Has there been made any Cost Benefit Analysis on Nordic level for the foreseen changes in Balancing Products and pricing models via MARI and PICASSO? E.g. is it clear if the overall balancing costs most likely will go up or down vs. today?

A6: No such analysis has been made on Nordic level. It is expected that the European platform will increase the total European socio-economic benefit. To be able to make common European markets, it has been necessary to standardize products, activation processes and pricing rules.

Q7: When designing the Nordic imbalance price, the terms and conditions for BSP and BRP should be similar in all countries to avoid market abuse.

A7: The goal is to have similar term and conditions in all Nordic countries. Terms and conditions for BSPs and BRPs are however national processes, so this is also dependent on NRA decisions.

Q8: The value from bottleneck income is marked for specific purposes, is it the same for income from balancing markets?

A8: In MARI and Picasso, there will be a congestion income which will be settled according to the TSO-TSO settlement methodology for intended exchange, EB GL article 50 (1). This income is regulated by

EB GL article 44 (2). The Electricity Balancing Guideline (EB GL) can be found here.

Imbalance pricing

Q9: Under ACE based balancing, will the imbalance prices be decoupled between areas with different imbalances, even if there is transmission capacity?

A9: Yes, it is possible that the imbalance price will be different even if there is available transmission capacity between the areas. To which extent, depends on the chosen imbalance pricing design.

Q10: I do not understand the last slide: Currently different Bidding zones (e.g. DK1 and DK2) can get also different imbalance prices. So what is the proposed change?

A10: It is correct that bidding zones may get different imbalance prices also today, but it is only the case if there is congestion in the mFRR market. The difference in the future, is that bidding zones may get different imbalances prices even without congestion and both the aFRR and mFRR energy activation prices will be price setting for the imbalance price.

Q11: Difficult to understand that there will be different prices between uncongested areas. Wont joint bid curves be used and thereby setting the same price in the two areas?

A11: Balancing energy prices will be the same for all bidding zones in an uncongested area. However, the imbalance price for these bidding zones may differ. To which extent, depends on the chosen imbalance pricing design.

Q12: Could it be the case that in the synchronous Nordic grid the imbalance settlement price could become HIGHER in the bidding zone where upward regulation was made and LOWER in the bidding zone which "received" the power due to it having higher demand than supply?

A12: Both the bidding zones will get the same balancing energy price if they are in the same uncongested area, regardless which has the

demand and which area is activating balancing energy. However, the imbalance price for these bidding zones may differ. To which extent, depends on the chosen imbalance pricing design. Which bidding zone gets the highest imbalance price, will depend on imbalance pricing design and balancing energy prices for all the balancing energy used by the TSO to satisfy the balancing energy demand.

Q13: Will there be imbalance settlement periods with an asymmetric imbalance price like in the Netherlands?

A13: The Nordic TSOs are not discussing to implement dual pricing, neither in diverging imbalance settlement periods, like in the current Dutch design.

Q14: With volume-weighted average the mFRR bids would move towards something more similar to Pay-as-bid instead of Pay-as-cleared which is inconsistent with the direction we are moving with all the capacity products.

A14: Activated balancing energy bids from mFRR will be renumerated with the best of the mFRR price and bid price. In MARI, there will be a separate balancing energy price for scheduled activated mFRR (mFRR SA) and for directly activated mFRR (mFRR DA). The balancing energy prices for mFRR will be set based on the marginal pricing principle (pay-as-cleared).

The imbalance price can however be set as a volume-weighted average of the balancing energy prices used to satisfy the TSO demand. In case the TSO has only used one balancing energy product, for example mFRR scheduled activation, then the imbalance price would be the same as the mFRR scheduled activation price regardless of approach.

Q15: I think there are definitely some important lessons to be learned from the Germans experiment with volume weighted pricing back in 2018. If you want to take that approach, a scarcity component which is clearly communicated to the market would be needed.

A15: We will investigate further the incentive to stay in balance in a imbalance price model with the volume-weighted approach, when analysing the options.

Q16: At what point (in relation to the physical delivery hour) will the actual imbalance price (for settlement: that hour) become known to the market party: BRP? Retailers?

A16: The estimated imbalance price shall be published no later than 30 min after delivery. The final imbalance price shall be published as soon as possible. Exact timing of publication when we are connected to MARI and Picasso is not currently known but will of course be within the legal framework.

Q17: Have you considered adding a market-based benchmark to the min/max equation, similar to the German ID500 index?

A17: We understand this as a question of whether the Nordic TSOs plan to use an incentivizing component, with the purpose to ensure that the imbalance price is always higher (or lower, depending on direction) than the intraday price. This to ensure that market participants have the incentive to trade into balance in intraday markets.

This is currently not under consideration for the first phase of the new imbalance price model with MARI and Picasso.

Q18: Will this change come into place regardless of the implementation of the BSP role?

A18: Yes.

Q19: What is the reason to include aFRR for price setting the imbalance price if it increases the volatility of the prices? Isn't it possible to somehow exclude it to decrease the imbalance price volatility?

A19: It is a requirement in EB GL (article 55) that the imbalance price at least shall equal the volume-weighted average from all activated balancing energy. Even if the Nordic TSOs currently use aFRR, there is no activation market for aFRR, and therefore no balancing energy price from aFRR currently. When we enter Picasso, we have to take aFRR balancing energy prices into account when setting the imbalance price.

Q20: If you go for the combined approach and you roll out the changes with local pricing will this not maximize the volatility of the imbalance prices? I'm assuming this as when areas are coupled on price right now it tends to decrease the price difference to the spot price.

A20: The highest volatility in imbalance prices would be seen in a max/min approach. The volume-weighted average approach would give the least volatility. The combined approach would be in between. The impact of local pricing is higher variation in imbalance prices between bidding zones.

Q21: Should it not be the case that imbalance prices should only reflect the real (activated) costs for reaching sufficient balance between supply and demand in the given synchronous TSO grid, thus for all bidding zones concerned that are uncongested?

A21: We need to set the imbalance price in accordance with relevant legal framework. With several balancing energy products and prices, and different TSO balancing approaches, it is not necessarily straight forward to define what is the relevant real-time price for imbalances. The Nordic TSOs have not yet decided on the proposal for how to set the imbalance price with MARI and Picasso. In the process of developing the proposal, the Nordic TSOs will clarify its opinion on the topic.

Q22: In the combined approach would the combination of Max/min price of mFRR together with the volume weighted average (VWA) of aFRR then in turn be Volume weighted again?

A22: No, the combined approach takes the max/min of mFRR SA, mFRR DA and VWA of aFRR. This does not make it volume weighted again.

Q23: What design alternative gives the highest and lowest income to the TSOs? and compared to today's system, how much higher income will the TSOs have?

A23: The max/min approach is expected to give the highest income for the dominating direction, while volume-weighted average approach will give no income. The activation costs of the opposite direction will be the same in all approaches. We do not know the future balancing energy prices, so we cannot make estimates on the cost and income levels of the different approaches.

Q24: Which pricing model is used in the European markets which will be part of MARI and PICASSO?

A24: Currently, only Germany and Czech Republic is part of MARI and Germany, Austria and Czech Republic are part of Picasso. We do not know all their nationally chosen imbalance price models, however we might do some investigation of chose models for other countries. We know that Germany has chosen a volume weighted average (VWA) approach, with additional components of a defined scarcity component and an Intraday index.

Q25: How is the socioeconomically benefits calculated compared to use mFRR instead of netting?

A25: Social welfare is the sum of producer surplus, consumer surplus and congestion income. Whether to net demand or activate balancing energy bids, is based on this criterion. If a BSP is willing to pay 100 €/MW for 10 MW of balancing energy, it is more efficient to sell this energy to the BSP than to sell it to a TSO (net) if the netting has a value of 80 €/MWh.

Q26: It seems clear that the imbalance settlement price must be published absolutely no later than 1 hour after delivery since that is required in the EU Transparency Guideline. Can that at least be confirmed?

A26: The estimated imbalance price shall be published no later than 30 mins after delivery (Recast of Market Regulation). The final imbalance price shall be published as soon as possible (Transparency Regulation). The future publication of imbalance prices will be in accordance with legal requirements.

Q27: What remains unclear to me is the following: If bidding zone A has a huge imbalance which makes FRR prices skyrocket, and bidding zone B has a modes imbalance (with ample ATC), will bidding zone B suffer from an extreme imbalance price? Whether FRR is activated in zone A or zone B should not make a difference.

A27: The imbalance price is set based on balancing energy prices. The balancing energy prices will be the same in the uncongested areas (in the future there will be several products and possibly several sets of uncongested areas per 15 min). If a bidding zone has a very high demand for mFRR, the mFRR price can become very high in the uncongested area, even if other bidding zones have a low demand for mFRR. This is also the case today.

The final imbalance price for these two zones, will however depend on the chosen imbalance price design. If the two bidding zones only use one balancing energy product, the balancing energy price is the same (uncongested area), then the two areas may get the same imbalance price. If they are in the same direction, they will get the same imbalance price. If they are in the opposite direction, it depends on the design of the value of avoided activation (VoAA).

Q28: When will a choice between the 2-3 options for imbalance pricing design in the future be made?

A28: The timeline in the presentation shows that the final design proposal is going to be ready before or after summer vacation period 2023 (June or August). Afterward the final design proposal will come in official consultation.

Q29: Could you provide a document with a set of detailed numerical examples of how imbalance settlement pricing would end up in different cases, e.g. to also show how aFRR, mFRR prices and volumes in continental EU would impact imbalance price setting in each Nordic bidding zones regardless of if there is a need to "up or down regulate" the given bidding zone?

A29: The Nordic TSOs are currently working on a written document on the topic which will include further examples. We expect to publish the document during March/April 2023.

Dominating direction

Q30: With four activation directions, will these be able to distinctly identify?

A30: The answer to the question is yes. For each balancing energy price, there can in principle be four different "activation directions": Up, Down, Up and Down or None. The activation direction will be calculated based on activated balancing energy in the uncongested area for a given balancing energy price. It is only in MARI scheduled activation, that the activation direction can be both Up and Down due to counter activations.

When setting the imbalance price, there can either be a up or down direction for the total system imbalance (dominating direction) for the bidding zone or none. The direction is based on satisfied demand for the bidding zone. In case of a net negative demand, there will be an imbalance price for shortage. In case of net positive demand, there will be an imbalance price for surplus. In case of no demand (zero or exactly equal demand for up and down), the value of avoided activation (VoAA) needs to be calculated and will set the imbalance price.

Q31: It seems suboptimal that the dominating direction is determined per bidding zone and not per uncongested area. Is it something that you will seek to have changed when possible?

A31: How to set the dominating direction is defined in European legislation. It is to some extent possible through the imbalance price design to aim to have the same imbalance price across bidding zones. There is no ongoing activity to change the current legal framework.

MARI and PICASSO

Q32: Typically, how long ahead in time would the mFRR scheduled activation be decided and informed about to the provider(s)?

A32: The scheduled activation result will be informed about to the selected BSPs 7,5 minutes before the delivery quarter. See additional information on slide 8 here.

Q33: "*MARI only nets the demands if economically profitable*" - profitable to whom?

A33: MARI performs a social welfare optimisation. The complete rules for the optimisation can be read in detail here.

Q34: Having different pricing dependent on mFRR Scheduled Activation or mFRR Direct Activation would then directly correlate to the TSO being proactive and reactive then? Also creating change from person to person working at the TSO side I would imagine?

A34: Proactive TSO is a term used for a TSO intending to forecast the imbalance, using reserves with more response time like mFRR to handle the forecasted imbalance. This TSO will use aFRR to handle the real-time rest imbalance. A reactive TSO is a term used for a TSO not indenting to forecast the imbalance, but which is directly using aFRR to handle the measured real-time imbalance. Direct activation of mFRR will be used by both types of TSO, to handle incidents. A reactive TSO will also use mFRR to release activated aFRR, to have enough available aFRR at any time.

Examples of reactive TSOs are TenneT Netherlands and the German TSOs. Examples of proactive TSOs are the Nordics and France.

The reason that scheduled activated mFRR and direct activated mFRR is priced separately in MARI, has nothing to do with proactive/reactive TSO strategies. Please read more about the pricing reasons of mFRR SA and mFRR DA here.

Q35: Will there be transparency (published bids) of the aFRR prices? Do you plan to publish the bids?

A35: aFRR prices will be published at the Transparency platform. As a starting point, bids shall also be published, but a TSO may ask for exemption from this in accordance with EB GL Article 12(4). It will be a national TSO matter to ask for exemption if seen necessary. At the current point in time, it is uncertain how this will be handled in the Nordics.

Q36: Can we submit upregulating bids with a price below the spot price?

A36: Yes, this will be possible when we connect to MARI. The current requirement on the bid prices in the Nordics (except Finland) will be removed when we connect to the MARI platform.

Q37: How should we understand your ability to match buyers and sellers?

A37: MARI will match bids from the balance service providers (so activate bids which are not for the purpose of satisfying a TSO demand) if economical. This is connected to the social welfare optimisation rule in MARI.

Picasso will not match bids from the balance service providers.

There is no requirement on the mFRR bid price or aFRR bid price connected to the day-ahead price when we are connected to MARI and Picasso. However, this is not the only prerequisite. Whether BSP bids can be matched or not also depends on the optimisation specification. It is only MARI which is set up so that BSP bids can be matched.

Q38: I understood that MARI would not publish any SA price for the areas where there is no mFRR demand. How can this then be used as a reference price (instead of VoAA)?

A38: Bids may be activated in a bidding zone with zero demand for satisfying demand of other bidding zones, as long as there is available transmission capacity. Even if there is no demand or activation in a bidding zone, but the bidding zone is used as transit for activation in one bidding zone to cover demand in another bidding zone, the transit bidding zone will also have a price available. We therefore expect that there in almost all imbalance settlement periods will be a balancing energy price for SA, which we can use as the Value of Avoided Activation (VoAA). How we will propose to define the VoAA is not yet decided.