

Nordic Balancing Model

Roadmap report

November 2019

Content

1	Introduction	3
2	Stakeholder involvement.....	4
3	Roadmap	4
3.1	<i>Milestones</i>	6
4	Regulatory processes	7
5	Roadmap building blocks.....	8
5.1	<i>Nordic aFRR capacity market</i>	8
5.2	<i>Nordic mFRR capacity markets</i>	9
5.3	<i>Single price model</i>	10
5.4	<i>Nordic mFRR energy activation market</i>	12
5.5	<i>15 minutes time resolution – meters and datahubs</i>	15
5.6	<i>15 minutes time resolution – Imbalance settlement period and intraday market</i>	16
5.6.1	<i>Derogation of 15 min ISP</i>	17
5.7	<i>European mFRR energy activation market</i>	18
5.8	<i>European aFRR energy activation market</i>	19
6	Abbreviations and definitions	21
7	Appendix 1.....	24
8	Appendix 2	26

1 Introduction

The Nordic Balancing Model (NBM) is the program for updating the Nordic balancing process in order to facilitate increased volumes of variable renewable energy in the system, European market integration and improved balancing market efficiency, while maintaining operational security in the most cost-effective manner. This is a complex program having several great challenges to be resolved, including changing and automating critical system operation processes.

On 28 May 2019, Statnett, Svenska kraftnät, Fingrid and Energinet presented [a revised roadmap proposal](#) for the NBM program. The roadmap was open for public consultation until 19 August 2019 and a summary of the responses was published on 11 September 2019.

This document describes an updated roadmap for the NBM. It is based on the roadmap proposal published in May 2019, but considers the stakeholder responses and recent findings during the detailed program planning. It is expected that the reader of this document is already familiar with the revised roadmap proposal, published on 28 May 2019. The document has been re-structured to emphasise project activities and milestones. Also, the naming of the building blocks has been partially changed.

Follow up of the program status will be communicated primarily in the NBM stakeholder reference group and at the [NBM webpage](#). This roadmap report is not planned to be updated in the future.

Stakeholder feedback has been summarized in a separate document, which also includes TSOs responses. There are also supporting memos published that explains more details in specific areas of interest. This is done to be able to elaborate the explanations on single topics and to have the opportunity to update these memos individually. As some topics are fairly complex, more analysis, experience and dialogue is needed.

There are two annexes to this document, Appendix 1 describing regulatory processes and their status for the time being, and Appendix 2 describing all milestones.

The NBM roadmap includes the implementation of aFRR and mFRR capacity markets, Single price model, mFRR energy activation markets and 15 min time resolution. Plans for the implementation of the European energy activation market platforms (MARI and PICASSO) are described to some extent.

2 Stakeholder involvement

For transparency reasons and to allow stakeholders to be involved in and prepare for coming changes, the Nordic TSOs will strive to include and involve stakeholders by:

- Inviting to regular discussions in the NBM Stakeholder reference group¹ and publish the material presented along with the minutes of the meetings.
- Openly report progress and milestones.
- Publishing memos on relevant subjects going more into depth on relevant subjects.
- Arranging open webinars.
- Maintaining the FAQ at the NBM website.

The [NBM webpage](#) is the main source for updates and information on progress, as well as links to all formal regulatory applications.

3 Roadmap

The roadmap for the NBM program contains several building blocks. Each building block consists of different projects including market design, regulatory processes, IT development and operational change.

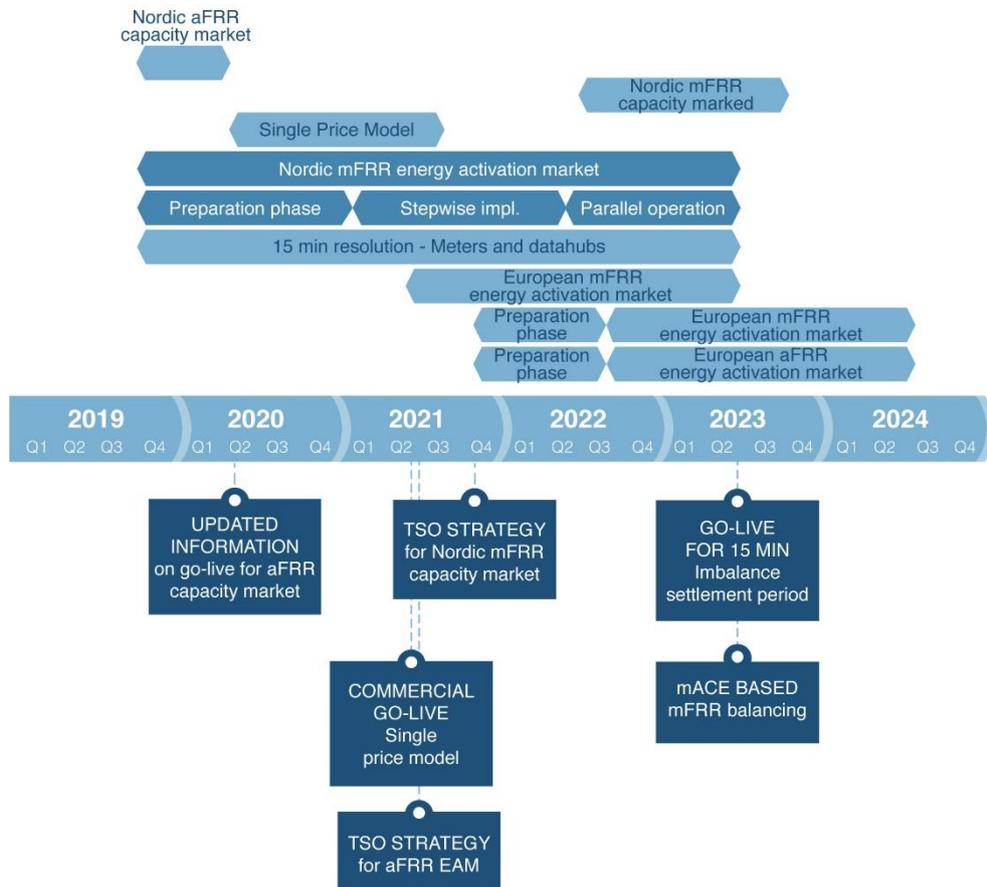
As a result of the consultation, the naming of the building blocks has been updated and are now named:

- Nordic aFRR capacity market
- Nordic mFRR capacity market
- Single price model
- Nordic mFRR energy activation market
- 15 minutes time resolution
- European mFRR energy activation market
- European aFRR energy activation market

¹ <http://nordicbalancingmodel.net/stakeholder-reference-group-for-the-nordic-balancing-model-program/>

The roadmap has been updated considering stakeholder responses and recent findings done during the detailed program planning.

Below is a high-level description of the roadmap².



The main objective for the timeline has been to prioritize the milestone for the go-live of 15 minutes time resolution. Activities before that are necessary preparations, of which the major part is the automation of the mFRR energy activation market.

There are some key matters which have major impact on the timeline:

- Commercial go-live for Nordic aFRR capacity market is uncertain due to the ongoing regulatory process.
- Implementation of mFRR capacity market is not prioritized to take place before 15 minutes time resolution is introduced. However, some TSOs have a need to implement changes in the national mFRR capacity markets before that.
- The Nordic TSOs propose to implement single pricing in the earlier proposed timeline, by Q2 2021. This is based on an assumption that the TSOs, together with stakeholders,

² This version of the roadmap is valid from Q3 2019, and all activities that has already started are illustrated with a start in Q3 2019. For activities that have not yet started, the start is when "major" work will begin. Some preparatory work, can start earlier.

including NRAs (National Regulators), can find a methodology with dual pricing in certain ISPs.

- The automation of the Nordic mFRR energy activation market needs to happen before the go-live of 15 min imbalance settlement period (ISP).
- The needed automation and new balancing process is a major change for the TSOs and sufficient time to develop and introduce the change is important. Therefore, a stepwise implementation approach is needed, as well as a parallel operation period.

3.1 Milestones

The milestones in this roadmap report are high-level milestones, considered to be of special interest for the stakeholders. In addition, the NBM program will provide more detailed milestones on the NBM website when defined.

The table below shows the major milestones. The milestone of "Go-live for 15 min imbalance settlement period" aims to be a firm date and not planned to change. The other milestones might be changes over time as the program evolves and new project planning cycles are completed.

Major milestone	Date
Updated information on go-live for aFRR capacity market	2020-03-01
Commercial go-live Single price model	2021-06-01
TSO strategy for aFRR energy activation market	Q2 2021
TSO strategy for Nordic mFRR capacity market	2021-10-01
Go-live for 15 min imbalance settlement period	Q2 2023
mACE based mFRR balancing	Q2 2023

For relevant building blocks milestones connected to regulatory process are identified. To inform market participants on changes, for example installation guides, test plan and practical information, a milestone is identified for when an IT implementation plan is published.

The milestones identified for each building block have a colour indication for the degree of uncertainty. If the colour is green, this states that the TSOs are confident to reach the milestone deadline, and there is no need to provide the assumptions for the milestone, as we have confirmed knowledge. If the colour is orange or red, we will provide the assumptions for the milestone and the colour will indicate how certain we are to reach the milestone date. We will also state the

reason for the uncertainty and at which point in time we will have increased certainty. The milestones can be found both for the respective building blocks and are also summarized in Appendix 2.

4 Regulatory processes

The regulatory processes means the process where the TSOs formally seek stakeholder input and NRA approval of terms and conditions or methodologies. This is an integral part of the NBM program and the process is in many cases regulated by the European network codes. The process may however vary from case to case depending on specific circumstances, but in general, the regulatory process for methodologies follows the below procedure:

- 1) TSOs develops a first proposal which is subject for 1 month of public consultation. The TSOs then provide answers to the consultation feedback and adjust the proposal where appropriate.
- 2) TSOs submit the proposal, taking into consideration the consultation feedback to the NRAs. The NRAs shall then decide within six months following the receipt. The decision could be an approval or request for amendment. The NRAs also have the option to receive an opinion from ACER (Agency for the Cooperation of Energy Regulators).
- 3) After the NRA submission of a request for amendment, the TSOs shall submit an amended proposal within two months. The NRAs shall then decide on the amended methodologies within two months following the TSO submission.
- 4) In case the NRAs fail to agree or the TSOs fail to submit what is required of them, additional procedures including ACER involvement are triggered, with additional time added to the overall process.
- 5) The methodology approval is in many cases followed by inclusion in the BRP and BSP terms and conditions. This process is national and the exact procedure therefore varies between the Nordic countries. The basis is however the Electricity Balancing Guideline (EBGL) article 18.

The regulatory process is indeed an integral and regulated part of the NBM and the European market integration and warrants a good design of operational and market processes. Nevertheless, seen strictly from an implementation perspective, the process adds uncertainty to the time plan. These uncertainties are accentuated either by the large IT projects dependent on firm market design details or by the very fact that methodologies have interdependencies that needs to be addressed. In the Nordics and in the NBM case, the

Nordic TSOs attempt to go beyond the minimum European target, which also triggers additional regulatory processes. One example is the FRR capacity markets. Another is the Nordic harmonization of imbalance settlement.

The status of the regulatory processes will as mentioned impact the overall NBM progress and thus the milestone dates indicated in this report. TSOs will continuously provide information on any changes in the regulatory process via the NBM webpage.

5 Roadmap building blocks

The following chapters describe the various building blocks of the roadmap and their key activities.

5.1 Nordic aFRR capacity market

The Nordic TSOs are currently preparing to establish a Nordic cross-border aFRR capacity market. The market design proposal was consulted during the autumn 2018 and submitted to the Nordic NRAs in April 2019. The final update of terms and conditions are expected to take place by 17 February 2020. The Nordic TSOs plan to start the operation of the market during 2020, however go-live date is dependent on the ongoing regulatory process. More information will be published according to the milestone “Updated information on go-live for aFRR capacity market”.

The timeline assumes that the proposed methodology for market based allocation of transmission capacity is approved and can be applied. In a case the cross-zonal allocation of transmission capacity is delayed, the commercial go-live will be postponed accordingly even though each of the Nordic TSOs possibly can launch national markets using the joint IT solution in a first phase, accommodating Nordic integration at a later stage.

DK1 can enter the Nordic aFRR capacity market when the Nordics have implemented ACE (Area Control Error) based operation, where the input to the load-frequency control (LFC) is based on the ACE of each area and not the frequency.

Available aFRR volumes contribute to operational security. Sufficient aFRR capability in the Nordic region is needed for a safe transition to the updated balancing model. Ramp up of available aFRR volumes therefore has a strong effect on the other building blocks of the roadmap. If the Nordic TSOs' ability to establish aFRR capability is delayed, there is a risk that causes a delay to the overall roadmap.

The key activities with dates are presented in the following table.

Milestone	Date	Uncertainty indication	Description
NRA Request for amendment aFRR capacity market	2019 10-17	●	Description of milestone: NRA Request for amendment (RfA) aFRR capacity market received by TSOs.
Submission of amended proposal aFRR capacity market	2019 12-17	●	Description of milestone: After NRA's RfA on 17 October 2019, Nordic TSO's will deliver a revised aFRR capacity market proposal, within two months.
Approved aFRR market methodology	2020 02-17	●	Description of milestone: NRA's shall approve the methodology proposal for aFRR capacity market, within two months after the submission of the amendment of aFRR capacity market proposal. Reason for uncertainty: Feedback from Nordic regulators indicate that cross-border capacity exchange will not be approved before Flow-Based capacity calculation is implemented. Increased certainty at this point: 2019-12-17: when TSOs have responded to NRA feedback on aFRR capacity market.
Updated information on go-live for aFRR capacity market	2020 03-01	●	Description of milestone: Nordic TSO's will publish updated information regarding commercial go-live of aFRR capacity market.
Updated terms and condition aFRR capacity market	2020 05-17	●	Description of milestone: National terms and conditions are updated according to Nordic regulatory approval of aFRR capacity market, within 3 months after approval. Reason for uncertainty: Process for updating national terms & conditions differs in the Nordic countries. Increased certainty at this point: 2019-12-17: when TSOs have responded to NRA feedback on aFRR capacity market.
Commercial go-live of Nordic aFRR capacity market	TBD, earliest Q3 2020		Description of milestone: Common Nordic aFRR capacity market is operational. Assumptions: Nordic aFRR capacity market including cross-border aFRR capacity exchange. Reason for uncertainty: Ongoing regulatory process with several open points, including cross border capacity exchange. Increased certainty at this point: 2019-12-17: when TSOs have responded to NRA feedback on aFRR capacity market.
DK1 part of Nordic aFRR capacity market	TBD		Description of milestone: DK1 joins the common Nordic aFRR capacity market.

5.2 Nordic mFRR capacity markets

In the draft roadmap the go-live of mFRR capacity market was proposed to Q3 2021. In the consultation of the draft roadmap the TSOs asked stakeholders for their view on Nordic mFRR capacity market and the importance compared to 15 minutes time resolution. The stakeholder feedback pointed in the direction to not prioritize the

Nordic mFRR capacity market before 15 minutes time resolution. In the updated roadmap the go-live of the Nordic mFRR capacity market is therefore moved to after the milestone for 15 minutes time resolution.

Some of the Nordic TSOs have needs to change the national mFRR capacity markets before 15 minutes time resolution. Changes to the national mFRR capacity markets will be communicated mainly on a national level.

DK1 can join a Nordic mFRR capacity market as soon as it starts, as DK1 is already part of the mFRR energy activation market.

The plan for the Nordic mFRR capacity market will be published according to the milestone “TSO strategy for Nordic mFRR capacity market”. The actual commercial go-live is planned to take place after 15 minutes time resolution.

Milestone	Date	Uncertainty indication	Description
TSO strategy for Nordic mFRR capacity market	2021 10-01	●	Description of milestone: NBM publishes a high-level plan for harmonisation and implementation of a common Nordic mFRR capacity market.
Commercial go-live of Nordic mFRR capacity market	TBD		Description of milestone: Common Nordic mFRR capacity market is operational.
DK1 part of Nordic mFRR capacity market	TBD		Description of milestone: DK1 joins the common Nordic mFRR capacity market.

5.3 Single price model

As a part of the NBM program, the Nordic TSOs are implementing a new settlement model for imbalance power. The new model is requested by European regulation, the EBGL and more specifically, the European proposal for imbalance settlement harmonisation. The term ‘Single price model’ is used throughout this report as a denotation of several planned changes in the imbalance settlement scheme, including single imbalance price, single BRP position, updated calculation of the imbalance price and calculation of a portfolio based on trade schedules.

The TSOs presented two options for a Single price model implementation timeline in the draft roadmap. The stakeholders expressed their clear preference for earlier implementation in the consultation. Considering the stakeholder feedback, TSOs propose to implement single pricing in the earlier proposed timeline, by Q2

2021. The TSOs prepared a separate [report](#) to analyse different alternatives for Single price model implementation. (Note: when the roadmap was consulted, the legal deadline was expected to be Q1 2021. However, the European national regulatory authorities required amendments to the European proposal of imbalance settlement harmonization. This means that the legal deadline has been shifted to June 2021).

The implementation model is based on an assumption in which dual pricing can be applied on ISPs with divergent (both up and down) balancing directions. If the TSOs together with stakeholders cannot detail an acceptable methodology for application of dual pricing in specific ISPs, the implementation of single pricing might be delayed until the introduction of 15 min ISP. The purpose of dual pricing on specific ISPs is to mitigate overreactions by self-balancing.

In addition to the conditions for dual pricing in specific ISPs, the imbalance price calculation will be updated in line with the European proposal, reference pricing rules will be adapted and calculation of a position will be done based on internal and external trade schedules corrected with the imbalance adjustments. A review of the BRP fees is also needed.

An important aspect to be considered is the quality of production plans. In order to perform efficient balancing and congestion management, the TSOs need access to high quality production plans. As the direct financial incentive for production plans is weakened when single pricing is applied, TSOs need to consider additional measures to ensure the quality of production plans. These measures will be discussed openly with stakeholders.

DK1 will implement the changes to imbalance pricing at the same time as rest of the Nordics.

The timeline for the Single price model has the following key activities and dates:

Milestone	Date	Uncertainty indication	Description
European NRAs approve the proposal on imbalance settlement harmonization	2020-01-11	●	Description of milestone: European NRAs approve the proposal on imbalance settlement harmonization. Reason for uncertainty: Possible ACER decision process. Increased certainty at this point: 2020-01-11: awaiting the European NRA approval.
TSO discussion paper on measures to ensure the quality of production plans	2020-02-15	●	Description of milestone: The discussion paper is published for the dialog with stakeholders in this matter.
Implementation plan for Single price model participants	2020-06-01	●	Description of milestone: Publication of implementation plan containing IT guides, test plans and practical information for changing to Single price model.
Updated terms and conditions for Single price model	2021-04-01	●	Description of milestone: After regulatory approval, national terms and conditions are updated.
Energinet onboarding eSett	2021-02-01	●	Description of milestone: Energinet on-boards eSett stepwise. By this milestone imbalance settlement is moved to eSett. The implementation of this milestone is not part of NBMs scope. Assumptions: Assuming non-conflicting pipeline with NBM's ordering for eSett.
Commercial go-live of Single price model	2021-06-01	●	Description of milestone: Single price model is operational in all Nordic countries. Assumptions: Assuming that TSO's find methods and price calculation support for safe operation. Reason for uncertainty: Method for dual pricing in certain ISP's not developed and not known. Increased certainty at this point: 2020-02-15: when the TSO's publish the discussion paper for production plans.

5.4 Nordic mFRR energy activation market

Changes in and automation of the Nordic mFRR energy activation market is needed before the transition to 15 minutes time resolution.

Answers to the consultation of the draft roadmap included much input and questions related to the development of the mFRR energy activation market. The topic of the mFRR energy activation market includes many subtopics that are related and there are many uncertainties in how the exact development will be. In order to give more thorough explanations of how things are working today and how we expect the development to be, we have created two memos:

- [Process for activating products](#)
- [Connection to European platforms](#)

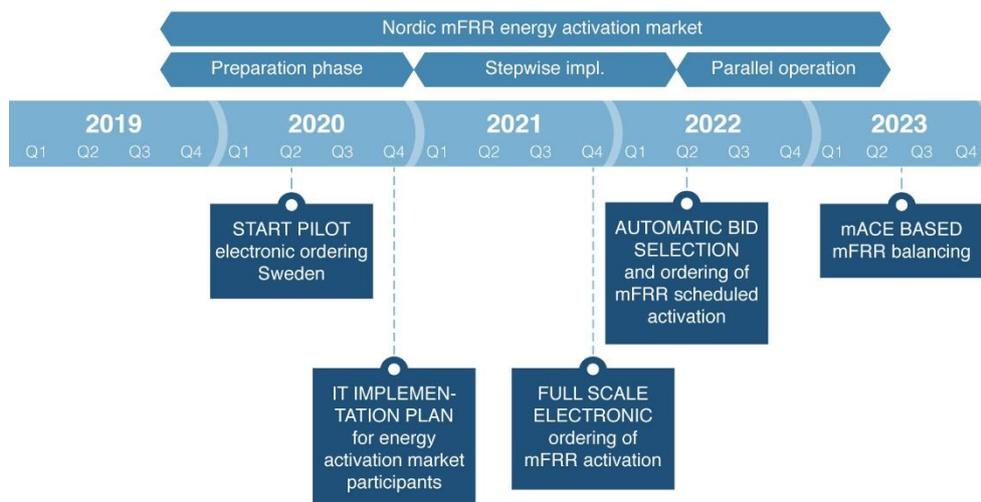
The intention is that these memos shall contribute to build an understanding of what the uncertainties are today. These memos will be a part of the stakeholder dialogue and they will be updated when more knowledge is achieved or when we recognise the need to improve the explanations. Therefore, the topic is just briefly explained in this document.

The Nordic region have had a common regulating power market (RPM) for almost 20 years. Many changes are necessary before an automated mFRR activation market that meets all EBGL requirements is in place. These are both changes in internal TSO processes, product definitions and development of terms and conditions for market participation. Changes in internal TSO processes are not only necessary for legal compliance and European market integration, but are also driven by the need for automation in order to be able to operate the future green power system in a secure and efficient way.

Changes in operational processes and evolution of products are linked. This is explained in more details in the memos. The plan is to introduce the features of the standard products gradually. In parallel, the need for special products will be considered. The most relevant special products to consider are activation before ordinary gate closure time and shorter full activation time (FAT). If any of these products are needed in any of the countries, a good dialogue with BSPs will be an important part of the development.

The implementation of an automated mFRR activation market is planned in three phases. In the preparation phase internal IT building blocks will be delivered, more analysis and more detailed planning will be performed.

One milestone is start pilot for electronic ordering in Sweden. Electronic ordering of mFRR activation will be required when the Nordic mFRR energy activation market is automated. A pilot is planned for Sweden before a full scale electronic ordering can be in place. The rest of the Nordic TSO's already have solutions for electronic ordering in place.



During the second phase, there will still be a manual balancing process. During this phase solutions continue to be developed and adjusted, and changes in processes and solutions are put into operations. A stepwise approach will both make it possible for the operators to build confidence in the new concept and solutions, and ensure quality of the IT solutions. To succeed, there is a need to reserve a sufficient time period for the stepwise implementation and the IT-solutions must be ready before the start of each step. The main milestones in this phase will be:

- Full scale electronic ordering – All participants in the Nordic mFRR energy activation market should support electronic ordering of mFRR activations.
- Activation optimization function (AOF) orders scheduled activations (SA) automatically – At this point all needed support for an automated Nordic mFRR energy activation market must be in place. This includes changes in mFRR products and processes. From this point onwards, there will be time periods where the Nordic mFRR energy activation market is operated automatically with the new solutions. During this phase there will be a need to adjust the solutions supporting Nordic mFRR energy activation market.

The last phase is called parallel operation. During this phase the operators will use the new tools and emphasis is on verification, quality assurance and final adjustments before go-live of 15 minutes time resolution. Before the start of this phase, all participants in the mFRR energy activation market (EAM) must have done the necessary changes in operational processes and IT-solutions required by the automation of the balancing process.

DK1 is already part of the Nordic EAM, and will follow the same timeline as the rest of the Nordic.

Milestone	Date	Uncertainty indication	Description
IT implementation plan for mFRR energy activation market participants	2020 11-01	●	Description of milestone: Publication of implementation plan containing IT guides, test plans and practical information for participation in Nordic mFRR energy activation market.
Start pilot electronic ordering Sweden	2020 05-01	●	Description of milestone: Automation of mFRR energy activation market requires electronic ordering of mFRR activations. It is necessary to perform a pilot in Sweden before full electronic ordering can be mandatory in Sweden (in the other Nordic countries electronic ordering mainly exist).
Full scale electronic ordering of mFRR activation	2021 10-24	●	Description of milestone: Automation of mFRR energy activation market requires electronic ordering of mFRR activations. At this milestone it shall be possible to do electronic ordering of activation of all mFRR bid activations. Assumptions: Assuming successful pilot of electronic ordering in Sweden.
Automatic bid selection and ordering of mFRR scheduled activation	2022 04-16	●	Description of milestone: The process for mFRR scheduled activation is ready to be put into operation. From this point in time, mFRR can be activated both by automatic solution and manually. Operators can verify if the new solutions are is functioning well with 60 min ISP. Assumptions: Assuming that major parts of changes in processes, organizations and IT-solution are in place. Reason for uncertainty: Uncertainty indication is orange due to a large scope where several of the parts have a significant uncertainty at this point in time.
mACE based mFRR balancing	2023 Q2	●	Description of milestone: mACE based balancing is defined as the deadline for when balancing requests shall be based on price area imbalances, not frequency as today. Assumptions: Nordic automation and implementation of Nordic AOF succeed. Reason for uncertainty: Uncertainty indication is orange due to a large scope where several of the parts have a significant uncertainty at this point in time.

The transition from today’s RPM market to an mFRR market with standard products will be gradual. This is explained in more details in “[Memo – Process for activating products](#)”.

5.5 15 minutes time resolution – meters and datahubs

Moving to 15 minutes time resolution affects the whole chain from the meter itself to the meter management systems, data communication and processing of meter data including settlement. This entails investments for the distribution and transmission grid operators and requires resources from IT vendors. Furthermore, changes to the principles of metering and requirements set to DSOs must be passed into national regulation.

The national regulation must include the scoping of 15 minutes metering and the possibility of profiling hourly values, meaning that it is not finally decided, at this point in time, which meters that needs to have 15 minutes readings.

The conversion and implementation of 15 min meters and the development of datahubs are national projects, but the dependencies to the rest of the NBM roadmap and the need to coordinate and align integrations, places this building block as part of NBM.

The Nordic TSO's have already been working on developing datahubs for a long time, and stakeholders are encouraged to find relevant information for the projects at their connected TSO. NBM will only do high-level alignment in regards to providing non-conflicting roadmaps. The progress of national transitions to 15 min meters will be monitored and reported as milestones from the NBM program, but are considered as national projects.

Milestone	Date	Uncertainty indication	Description
Regulation of 15 min metering	TBD		Description of milestone: Regulation clarify consumption meters, exchange meters and production meters, in scope for transition to 15 min time resolution. Assumptions: Assuming that TSO have to profile some hourly readings.
Commercial go-live data-hub Finland	2022-02-01	●	Description of milestone: By this point the Finnish datahub will go-live and be able to receive data in 15 min resolution. The implementation of this milestone is not part of NBM scope, but a national initiative.
Commercial go-live data-hub Sweden	2022-11-01	●	Description of milestone: By this point the Swedish datahub will be able to receive data in 15 min resolution. The implementation of this milestone is not part of NBM scope, but a national initiative. Assumptions: The assumption is that this milestone will not impact NBM roadmap. Increased certainty at this point: 01.06.20: Confirmation of plan for Swedish data hub.

5.6 15 minutes time resolution – Imbalance settlement period and intraday market

Along with the changes related to datahubs and 15 min metering, market participants need to modify their processes when 15 min ISP and market time unit are implemented, e.g. updates in trading, balance management and production planning systems.

For the TSOs, there is a limited number of changes in tools and systems required to support 15 minutes day-ahead trade, as long as the required tools to handle 15 minutes time resolution, 15 minutes intraday trade and 15 minutes balancing markets are implemented. 15 minutes time resolution may increase the maximum allowed

ramping on the HVDC interconnectors out of the synchronous area, because each quarter shift can be used for ramping.

The first key activity is the publication of the plan for transition to 15 minutes. An update of the regulatory terms and conditions is also necessary. A commercial go-live of the 15 minutes time resolution in the Intraday markets is necessary to take place at the same time with the mFRR energy activation market. The Day-ahead market go-live timetable is still open.

DK1 will change to 15 min ISP at the same time as the rest of the Nordic.

Milestone	Date	Uncertainty indication	Description
Go-live for 15 min Imbalance settlement period	2023 Q2	●	Description of milestone: Settlement system (eSett) is able to handle 15 min ISP. Operating systems are able to handle 15 min MTU. Reason for uncertainty: NRAs will decide on the go-live date. Increased certainty at this point: When request for derogation is submitted to NRAs.
Commercial go-live 15 min Intraday market	2023 Q2		Description of milestone: Coordinated with the implementation of 15 min Imbalance settlement and 15 min MTU in balancing energy markets.
Latest go-live of 15 min Day ahead market, according to CEP	2025 01-01	●	Description of milestone: Change of Market time unit in the Day ahead market, according to Electricity market regulation (CEP). Assumptions: Nordic TSOs current assumption based on a coordinated change of the DA market coupling within the boundaries (incl. Derogation) in Market regulation, article 8.

5.6.1 Derogation of 15 min ISP

Article 53.1 of the EBGL obliges all TSOs to implement 15 minutes ISP by 18 December 2020 and defines a clear link between the ISP and the MTU.

Thus, the Nordic TSOs expect that the Intraday market time unit is 15 minutes at the same time as 15 minutes ISP is introduced. ACER has explicitly stated that this is the case for cross-border intraday trade. The new Electricity market regulation within the Clean Energy Package requires that the NEMOs have an obligation to offer products with an MTU of 15 minutes from the day when 15 minutes ISP is introduced.

The Nordic TSOs plan is to start the derogation process during 2019, by providing to the Nordic NRAs necessary documentation and a proposal for the new implementation date.

Milestone	Date	Uncertainty indication	Description
TSO submission of request for derogation of 15 min ISP	2020 06-18	●	Description of milestone: TSO submission of request for derogation to NRAs.

5.7 European mFRR energy activation market

One of the drivers for the changes in the new Nordic Balancing Model is to prepare to be able to connect to the European platforms. Deadlines for taking the platform into operation and deadlines for the TSOs to connect are given by the EBGL. The consultation included several comments and questions to the plan for preparing and connecting to European platforms. In "[Memo – Connection to European platforms](#)" we have elaborated more on how the connection is planned to work and how we plan to get there. Still, it is not known for certain how everything is going to be. The plan is therefore to update this memo when there is more information and to have a dialogue with stakeholders on what they need explanation of.

The implementation of the Nordic Balancing Model is necessary to make it possible for the Nordic TSOs to use standard mFRR products and to join the European platforms. During the implementation, both processes and features of the products will be gradually changed. This is elaborated in "[Memo – Connection to European platforms](#)".

After joining MARI, The Nordic platform can be used as a regional fall-back solution if MARI is unavailable.

In Accordance with EBGL, all European TSOs proposed an implementation framework for a European platform for the exchange of mFRR 17 December 2018. As the NRAs did not agree on a decision of this implementation framework, the deadline for the ACER decision of the implementation framework is 11 February 2020. According to EBGL, the European mFRR platform shall be made operational by 30 months after the implementation framework is approved and TSOs may request a derogation of two years to their NRAs.

DK1 will connect to the European platform at the same time as the rest of the Nordic. In the Nordic market design, it's a prerequisite to have 15 min ISP resolution before the Nordic can connect to the European platforms.

Milestone	Date	Uncertainty indication	Description
ACER approval of implementation framework	2020 01-23	●	<p>Description of milestone: According to EBGL, ACER approves implementation framework.</p> <p>Assumptions: The assumption is that ACER succeed in completing the process and to agree on all open questions.</p> <p>Increased certainty at this point: At the point in time when ACER approve the implementation framework the European deadlines will be clarified.</p>
Latest go-live of European-platform	2022 07-23	●	<p>Description of milestone: According to EBGL, European platform should go live with TSOs connected, at the latest, 30 months after ACER approval of implementation framework.</p> <p>Assumptions: Assuming that the European platform projects will not be delayed due to uncertainty or changes in proposed Implementation Framework.</p>
Latest connection to European-platform according to EBGL	2024 07-23	●	<p>Description of milestone: According to EBGL, TSOs can apply for a derogation of two years of connection to the European platform.</p> <p>Assumptions: Nordic automation and implementation of Nordic AOF succeed.</p>
Go-live standard mFRR products	TBD		<p>Description of milestone: Transition from today's Regulating Power Market (RPM) product to standard mFRR product will be done by gradually.</p>
Nordic participation in MARI	TBD		<p>Description of milestone: Nordic participation in European mFRR energy activation market.</p>

5.8 European aFRR energy activation market

One of the major changes is the introduction of an aFRR energy activation market. Currently, the Nordic TSOs only operate national aFRR capacity markets and the procured capacity is then activated pro-rata. Activation signal is calculated based on deviations from the nominal synchronous frequency. The aFRR activation process will however be fundamentally changed when a separate energy activation market is introduced. Procured aFRR capacity is committed to submit a corresponding energy bid volume. In addition, it will be possible for BSPs to bid in non-contracted balancing energy bids (with gate closure close to real-time) which enables participation without the commitment of capacity that the capacity market implies. The aFRR energy bids will be activated in merit order (price order) and the TSO aFRR balancing energy demand will be determined by the area control error, corresponding to the observed bidding zone system imbalance. The activation of balancing energy will be optimised across bidding zone borders by the aFRR AOF following the same model to be used in the mFRR activation market. This new activation process is denoted mACE for aFRR.

An obvious change for the BSP is the separation of aFRR capacity and aFRR balancing energy pricing and settlement which is perceived to facilitate a more efficient pricing and thereby an improved aFRR

energy price. Currently, aFRR energy is reimbursed based on the mFRR balancing energy price.

The aFRR energy activation market preparations in the Nordic are in line with the European balancing market target model and are necessary in order to enable Nordic participation in the European market. The Nordic TSOs are currently active in the European platform project for aFRR energy activation, PICASSO. The target model is clear and the benefits are apparent. Nevertheless, the transition to develop and integrate a Nordic aFRR energy activation market with the European market is considerable and will require substantial changes in the TSO balancing processes and necessary IT solutions. These changes will take time and must be underpinned by the implementation of 15 minutes resolution and automated mFRR energy activation market as well as the development in ongoing European work.

A significant activity to be noticed is in Q2 2021 when the TSO strategy for the aFRR EAM is planned to be published. Information about the timeline for the connection to PICASSO is planned to be published during Q2 2021. Accession period to PICASSO is from Q1 2022 until the end of Q2 2024. This means that the Nordic TSOs may need to join PICASSO at a later stage than the currently planned go-live date for the PICASSO platform, which would require a derogation process in accordance with EBGL, article 62.2(a).

Standard products will be introduced for aFRR. The standard product definition is determined in the European implementation framework and includes a harmonized full activation time of 5 minutes and a 1 MW bid granularity. It is expected that the use of aFRR, as a part of the balancing process, will increase substantially, both in terms of number of hours and volumes. Planned increases are communicated separately in the TSOs aFRR ramp-up plan. aFRR capacity will be procured all hours well before the introduction of the aFRR energy activation market.

DK1 will connect to the European platform at the same time as the rest of the Nordic. In the Nordic market design, it's a prerequisite to have 15 min ISP resolution before the Nordic can connect to the European platforms.

Milestone	Date	Uncertainty indication	Description
TSO strategy for aFRR EAM	2021 Q2	●	Description of milestone: Nordic strategy for implementing a common AOF is specified and the accession plan to the European platforms are agreed between Nordic and European TSOs.
ACER approval of implementation framework	2020 01-23	●	Description of milestone: According to EBGL, ACER approves implementation framework. Assumptions: ACER succeeds in completing the process and agrees on all open questions. Increased certainty at this point: At the point in time when ACER approve the implementation framework, the European deadlines will be clarified.
Latest go-live of European platform	2022 07-23	●	Description of milestone: According to EBGL, European platform should go-live with TSOs connected, at the latest, 30 months after ACER approval of implementation framework. Assumptions: Assuming that the European platform projects will not be delayed due to uncertainty or changes in proposed Implementation Framework.
Latest connection to European platform according to EBGL	2024 07-23	●	Description of milestone: According to EBGL, TSOs can apply for 2 years derogation of connection to the European platform. Assumptions: Assuming that transition to mACE based aFRR activation works as planned, so introduction of activation market and connecting to the European platform is possible, having a well-functioning aFRR balancing capacity market.

6 Abbreviations and definitions

ACE – Area Control Error

ACER - Agency for the Cooperation of Energy Regulators

aFRR energy activation market - denotes the market where BSPs submit aFRR energy bids and the process where the TSO or TSOs activate them in merit order based on the real time need of balancing energy, taking available cross border transmission capacity into account. There is currently no Nordic aFRR energy activation market in operation.

AOF – Activation Optimization Function.

BRP - Balance Responsible Party. A market participant or its chosen representative responsible for its imbalances.

BSP - Balancing Service Provider. A market participant with reserve-providing units or reserve-providing groups able to provide balancing services to TSOs.

DSO - Distribution System Operator.

EBGL - Electricity Balancing Guideline. (Commission Regulation EU 2017/2195).

eSett – Joint Nordic company performing imbalance settlement for Finland, Sweden, Norway and in the future also for Denmark.

FAT – Full Activation Time is the time from a BSP is notified to deliver either aFRR or mFRR, to the product must be fully delivered.

ISP - Imbalance Settlement Period. Time units for which Balance Responsible Parties` imbalance is calculated.

LFC - Load-Frequency Control. Refers to an automated control process which restores the system frequency and the power flows between predetermined LFC areas to the nominal (planned) values.

mACE - modernized ACE control is a conceptual denotation of an automatic activation process of aFRR and mFRR. The need for balancing energy is determined on zonal level (LFC area), but the activations are determined in a central optimization function which combine zonal information on the balancing needs, bids and available transmission capacity and based on that optimizes the global activation including netting.

MARI - Manually Activated Reserves Initiative. The European implementation project for the creation of the European mFRR platform.

mFRR energy activation market - denotes the market where BSPs/BRPs submit mFRR energy bids and the process where the TSO or TSOs activate them in merit order based on forecasted or real time need of balancing energy, taking available cross border transmission capacity into account. The Nordic Regulation Power Market is currently the mFRR energy activation market.

MTU - Market Time Unit. The period for which the market price is established or the shortest possible common time period for the two bidding zones, if their market time units are different.

NBM - Nordic Balancing Model.

NEMO - Nominated Electricity Market Operator.

NRAs – National Regulators

RfA – Request for Amendments.

RPM – Regulation power market.

Single price model - is used throughout this report as a denotation of several planned changes in the imbalance settlement scheme

including Single imbalance price, Single BRP position, updated calculation of the imbalance price and calculation of a portfolio based on trade schedules.

PICASSO – Platform for the International Coordination of the Automatic frequency restoration process and Stable System Operation. The European implementation project for the creation of the European aFRR platform.

Single imbalance pricing - means that, for a given ISP in a given imbalance price area, the price for negative imbalance and the price for positive imbalance are equal in sign and size. Single imbalance pricing is currently applied (with some minor deviations) for the BRP consumption portfolio.

Single imbalance position - means that each BRP has one single final imbalance portfolio per imbalance area (bidding zone) equal to the sum of its external commercial trade schedules and internal commercial trade schedules corrected with the imbalance adjustment.

SOGL – System Operation Guideline (Commission Regulation EU 2017/1485).

TSO - Transmission System Operator.

7 Appendix 1

Regulatory processes

Status on NBM related methodologies for NRA approval November 2019.

All TSO NBM related methodologies for NRA approval	NC	Article	Status	Next deadline	Submitted to NRAs
"Pricing proposal" Pricing for balancing energy and cross-zonal capacity used for exchange of balancing energy or for operation the imbalance netting process	EBGL	30(1)	Not approved- submitted to ACER.	2020-01-23 Response from ACER	2018-12-18
"mFRR IF" European platform for the exchange for the balancing energy form frequency restoration reserves with manual activation	EBGL	20	Not approved- submitted to ACER.	2020-01-23 Response from ACER	2018-12-18
"aFRR IF" European platform for the exchange for the balancing energy form frequency restoration reserves with automatic activation	EBGL	21	Not approved- submitted to ACER.	2020-01-23 Response from ACER	2018-12-18
"TSO-TSO settlement" Common settlement rules for intended exchanges of energy	EBGL	50(1)	Not approved – amended proposals submitted to NRAs 2019-11-11	2020-01-11 Approval or submission to ACER is anticipated	2019-12-18
Harmonisation of imbalance settlement	EBGL	52(2)	Not approved – amended proposals submitted to NRAs 2019-11-11	2020-01-11 Approval or submission to ACER is anticipated	2018-12-18
Activation purposes methodology	EBGL	29.3	Not approved – amended proposals submitted to NRAs 2019-11-11	2020-01-11 Approval or submission to ACER is anticipated	2018-12-18
All asynchronously connected TSOs' proposal on common rules for the intended exchange of energy as a result of FCP and ramping between SAs All asynchronously connected TSOs' proposal on common rules for unintended exchange between SAs	EBGL	50(4) and 51(2)	Not approved – proposal submitted to NRAs	2019-12-18 Response from NRAs	2019-06-18
"Standard balancing capacity products" List of standard products for balancing capacity for frequency restoration reserves and replacement reserves	EBGL	25(2)	All TSOs proposal under development	2019-12-18	
All TSOs proposal for cooptimized CZC allocation	EBGL	40, 41, 42	All TSOs proposal under development	2019-12-18	

Nordic NMB related methodologies for NRA approval	NC	Article	Status	Next deadline	Submitted to NRAs
Common proposal for determination of the LFC blocks in the Nordic synchronous area	SOGL	141 (2)	Approved		
Nordic TSOs' proposals for establishment of common and harmonized rules and processes for the exchange and procurement of aFRR balancing capacity	EBGL	33(1) (incl. 58.3) and 38(1)	Not approved - Request for amendments received from NRAs 2019-10-17	2019-12-17	2019-04-15
Nordic TSOs' proposals for the methodology for a market-based allocation process of cross-zonal capacity for the exchange of aFRR balancing capacity	EBGL	41(1)	Not approved - Request for amendments received from NRAs 2019-10-17	2019-12-17	2019-04-15
Nordic TSOs' proposal for exemption for not allowing balance service providers to transfer their obligations to provide aFRR capacity	EBGL	34(1)	Not approved - Request for amendments received from NRAs 2019-10-17	2019-12-17	2019-04-15
Nordic TSO proposal on common rules for the intended exchange of energy as result of FCP and ramping and for the unintended exchange of energy within Nordic SA	EBGL	50(3) and 51(1)	Not approved – proposal submitted to NRAs	2019-12-18 NRAs to respond	2019-06-18
Frequency quality defining parameters and frequency quality target parameters (part of Synchronous Area Operational Agreement)	SOGL	127	Approved		
Coordination actions aiming to reduce FRCE and measures to reduce FRCE by requiring changes in the active power production or consumption of power generating modules and demand units (part of LFC Block agreement)	SOGL	152 (14) and (16)	Approved		
FRR exchange and sharing limits between synchronous areas (part of Synchronous Area Operational agreement)	SOGL	176(1)/178(1) and 177(1)/179(1)	Approved		
Ramping restrictions for active power output (part of LFC block agreement)	SOGL	137(3) and (4)	Approved with instructions to update	2020-07-14	
FRR dimensioning rules (part of LFC block agreement)	SOGL	157 (1)	Approved with instruction to be further detailed		

National NBM related terms and conditions for NRA approval	NC	Article	Status	Next deadline	Submitted to NRAs
Swedish terms and conditions for go-live aFRR CM Finnish terms and conditions for go-live aFRR CM Danish terms and conditions for go-live aFRR CM Norwegian terms and conditions for go-live aFRR CM	N/A EBGL	18	To be updated according to Nordic regulatory approval of aFRR capacity market		
4 X Derogation from harmonization of 15 min ISP	EBGL	62(2)(d)	Applications being prepared. Request planned to be filed in Q1 2020	2020-06-18	
4 X Derogation from deadlines for use of European balancing platforms	EBGL	62(2)(a)	Deadline for MARI and Picasso is 30 months after NRA approval of All TSO methodologies (expected summer 2022)		
4 X Requirements for specific products	EBGL	26(1)	Following the approval of implementation framework for balancing platforms		
4 X Terms and conditions for single price model	N/A EBGL	18	Planned to be updated at the latest by end of Q1 2021		
Exemption to publish information on offered prices of balancing energy or balancing capacity	EBGL	12(4)	Will be done if needed		
Period shift (change in existing national solutions) – update of terms and conditions	N/A		To be investigated		
National regulations for metering & settlement for datahubs	N/A		Different processes for each Nordic TSO		
4 X Update of terms and conditions for mFRR energy activation market	N/A EBGL	18	To be investigated – i.e start use of scheduled activation		

8 Appendix 2

Nordic aFRR capacity market

Milestone	Date	Uncertainty indication	Description
NRA Request for amendment aFRR capacity market	2019 10-17	●	Description of milestone: NRA Request for amendment aFRR capacity market received by TSOs.
Submission of amended proposal aFRR capacity market	2019 12-17	●	Description of milestone: After NRA's Request for amendment (RfA) Oct 17 2019, Nordic TSO's will deliver a revised aFRR capacity market proposal, within two months.
Approved aFRR market methodology	2020 02-17	●	Description of milestone: NRA's shall approve the methodology proposal for aFRR capacity market, within two months after the submission of the amendment of aFRR capacity market proposal. Reason for uncertainty: Feedback from Nordic regulators indicate that cross-border capacity exchange will not be approved before Flow-Based capacity calculation is implemented. Increased certainty at this point: 17.12.19: when TSOs have responded to NRA feedback on aFRR capacity market.
Updated information on go-live for aFRR CM	2020 03-01	●	Description of milestone: Nordic TSO's will publish updated information regarding commercial go-live of aFRR capacity market.
Updated terms and condition aFRR capacity market	2020 05-17	●	Description of milestone: National terms and conditions are updated according to Nordic regulatory approval of aFRR capacity market, within 3 months after approval. Reason for uncertainty: Process for updating national terms & conditions differs in the Nordic countries. Increased certainty at this point: 17.12.19: when TSOs have responded to NRA feedback on aFRR capacity market.
Commercial go-live of Nordic aFRR capacity market	TBD, earliest Q3 2020		Description of milestone: Common Nordic aFRR capacity market is operational. Assumptions: Nordic aFRR capacity market including cross-border aFRR capacity exchange. Reason for uncertainty: Ongoing regulatory process with several open points, including cross border capacity exchange. Increased certainty at this point: 17.12.19: when TSOs have responded to NRA feedback on aFRR capacity market.
DK1 part of Nordic aFRR capacity market	TBD		Description of milestone: DK1 joins the common Nordic aFRR capacity market.

Nordic mFRR capacity market

Milestone	Date	Uncertainty indication	Description
TSO strategy for Nordic mFRR capacity market	2021 10-01	●	Description of milestone: NBM publishes a high-level plan for harmonisation and implementation of common Nordic mFRR capacity market.
Commercial go-live of Nordic mFRR capacity market	TBD		Description of milestone: Common Nordic mFRR capacity market is operational.
DK1 part of Nordic mFRR capacity market	TBD		Description of milestone: DK1 joins the common Nordic mFRR capacity market.

Single price model

Milestone	Date	Uncertainty indication	Description
European NRAs approve the proposal on imbalance settlement harmonization	2020 01-11	●	Description of milestone: European NRAs approve the proposal on imbalance settlement harmonization. Reason for uncertainty: Possible ACER decision process. Increased certainty at this point: 11.01.20: awaiting the European NRA approval.
TSO discussion paper on measures to ensure the quality of production plans	2020 02-15	●	Description of milestone: The discussion paper is published for the dialog with stakeholders in this matter.
Implementation plan for single price model participants	2020 06-01	●	Description of milestone: Publication of implementation plan containing IT guides, test plans and practical information for changing to single price model.
Updated terms and conditions for Single price model	2021 04-01	●	Description of milestone: After regulatory approval, national terms and conditions are updated.
Energinet onboarding eSett	2021 02-01	●	Description of milestone: Energinet on-boards eSett step-wise. By this milestone imbalance settlement is moved to eSett. The implementation of this milestone is not part of NBM's scope. Assumptions: Assuming non-conflicting pipeline with NBM's ordering for eSett.
Commercial go-live Single price model	2021 06-01	●	Description of milestone: Single price - single balance is operational in all Nordic countries. Assumptions: Assuming that TSO's find methods and price calculation support for safe operation. Reason for uncertainty: Method for dual pricing in certain ISP's not developed and not known. Increased certainty at this point: 15.02.19: when the TSO's publish the discussion paper for production plans.

Nordic mFRR energy activation market

Milestone	Date	Uncertainty indication	Description
IT implementation plan for mFRR energy activation market participants	2020 11-01	●	Description of milestone: Publication of implementation plan containing IT guides, test plans and practical information for participation in Nordic mFRR energy activation market.
Start pilot electronic ordering Sweden	2020 05-01	●	Description of milestone: Automation of mFRR energy activation market requires electronic ordering of mFRR activations. It is necessary to perform a pilot in Sweden before full electronic ordering can be mandatory in Sweden (In the other Nordic countries electronic ordering mainly exist).
Full scale electronic ordering of mFRR activation.	2021 10-24	●	Description of milestone: Automation of mFRR energy activation market requires electronic ordering of mFRR activations. At this milestone it shall be possible to do electronic ordering of activation of all mFRR bid activations. Assumptions: Assuming successful pilot of electronic ordering in Sweden.
Automatic bid selection and ordering of mFRR scheduled activation	2022 04-16	●	Description of milestone: The process for mFRR scheduled activation is ready to be put into operation. From this point in time, mFRR can be activated both by automatic solution and manually. Operators can verify if the new solution are functioning well with 60 min ISP. Assumptions: Assuming that major parts of changes in processes, organizations and IT-solution is in place. Reason for uncertainty: Uncertainty indication is orange due to large scope where several of the parts have a significant uncertainty at this point in time.
mACE based mFRR balancing	2023 Q2	●	Description of milestone: mACE based balancing is defined as the deadline for when balancing requests shall be based on price area imbalances, not frequency as today. Assumptions: Nordic automation and implementation of Nordic AOF succeed. Reason for uncertainty: Uncertainty indication is orange due to large scope where several of the parts have a significant uncertainty at this point in time.

15 minutes time resolution – meters and datahubs

Milestone	Date	Uncertainty indication	Description
Regulation of 15 min metering	TBD		Description of milestone: Regulation clarify consumption meters, exchange meters and production meters, in scope for transition to 15 min time resolution. Assumptions: Assuming that TSO have to profile some hourly readings.
Commercial go-live data-hub Finland	2022-02-01	●	Description of milestone: By this point the Finnish datahub will go-live and be able to receive data in 15 min resolution. The implementation of this milestone is not part of NBM scope, but a national initiative.
Commercial go-live data-hub Sweden	2022-11-01	●	Description of milestone: By this point the Swedish datahub will be able to receive data in 15 min resolution. The implementation of this milestone is not part of NBM scope, but a national initiative. Assumptions: The assumption is that this milestone will not impact NBM roadmap. Increased certainty at this point: 01.06.20: Confirmation of plan for Swedish data hub.

15 minutes time resolution – Imbalance settlement period and intraday market

Milestone	Date	Uncertainty indication	Description
Go-live for 15 min Imbalance settlement period	2023 Q2	●	Description of milestone: Settlement system (eSett) is able to handle 15 min ISP. Operating systems are able to handle 15 min MTU. Reason for uncertainty: NRAs will decide on the go-live date. Increased certainty at this point: When request for derogation is submitted to NRAs.
Commercial go-live 15 min Intraday market	2023 Q2		Description of milestone: Coordinated with the implementation of 15 min Imbalance settlement and 15 min MTU in balancing energy markets.
Latest go-live of 15 min Day ahead market, according to CEP	2025-01-01	●	Description of milestone: Change of Market time unit in the Day ahead market, according to Electricity market regulation (CEP). Assumptions: Nordic TSOs current assumption based on a coordinated change of the DA market coupling within the boundaries (incl. Derogation) in Market regulation, article 8.

Derogation of 15 min ISP

Milestone	Date	Uncertainty indication	Description
TSO submission of request for derogation of 15 min ISP	2020 06-18	●	Description of milestone: TSO submission of request for derogation to NRAs.

European mFRR energy activation market

Milestone	Date	Uncertainty indication	Description
ACER approval of implementation framework	2020 01-23	●	Description of milestone: According to EBGL, ACER approves implementation framework. Assumptions: The assumption is that ACER succeed in completing the process and to agree on all open questions. Increased certainty at this point: At the point in time when ACER approve the implementation framework the European deadlines will be clarified.
Latest go-live of European-platform	2022 07-23	●	Description of milestone: According to EBGL, European platform should go live with TSOs connected, at the latest, 30 months after ACER approval of implementation framework. Assumptions: Assuming that the European platform projects will not be delayed due to uncertainty or changes in proposed Implementation Framework.
Latest connection to European-platform according to EBGL	2024 07-23	●	Description of milestone: According to EBGL, TSOs can apply for a derogation of two years of connection to the European platform. Assumptions: Nordic automation and implementation of Nordic AOF succeed.
Go-live standard mFRR products	TBD		Description of milestone: Transition from today's Regulating Power Market (RPM) product to standard mFRR product will be done by gradually.
Nordic participation in MARI	TBD		Description of milestone: Nordic participation in European mFRR energy activation market.

European mFRR energy activation market

Milestone	Date	Uncertainty indication	Description
TSO strategy for aFRR EAM	2021 Q2	●	Description of milestone: Nordic strategy for implementing a common Activation Optimization Function (AOF) is specified and the accession plan to the European platforms are agreed between Nordic and European TSOs.
ACER approval of implementation framework	2020 01-23	●	Description of milestone: According to EBGL, ACER approves implementation framework. Assumptions: ACER succeed in completing the process and to agree on all open questions. Increased certainty at this point: At the point in time when ACER approve the implementation framework the European deadlines will be clarified.
Latest go-live of EU-platform	2022 07-01	●	Description of milestone: According to EBGL, European platform should go-live with TSOs connected, at the latest, 30 months after ACER approval of implementation framework. Assumptions: Assuming that the European platform projects will not be delayed due to uncertainty or changes in proposed Implementation Framework.
Latest connection to EU-platform according to EBGL	2024 07-23	●	Description of milestone: According to EBGL, TSOs can apply for 2 years derogation of connection to the European platform. Assumptions: Assuming that transition to mACE based aFRR activation works as planned, so introduction of activation market and connecting to the European platform is possible, having well-functioning aFRR balancing capacity market.