Energimarknadsinspektionen
Swedish Energy Markets Inspectorate

2022-12-08

Ei R2022:10

2022-102491-0017

Follow-up of implementation plan with timetable for improving the functioning of the electricity market

The Swedish Energy Markets Inspectorate (Ei) is an authority which is commissioned to strive for well-functioning energy markets.

The overall objective of our work is for Sweden to have well-functioning distribution and trading of electricity, district heating, district cooling and natural gas. We shall also address the concerns of customers and strengthen their positions in the markets.

In concrete terms, this means that we supervise the compliance of companies with the regulatory frameworks. We are also responsible for drawing up the rules of the game and for informing customers about their implementation. We regulate the terms and conditions for the monopoly companies that operate the electricity and natural gas networks, and we supervise the companies in the competitive energy markets.

Energy markets need rules of the game – we ensure that those rules are followed.

Swedish Energy Markets Inspectorate
Box 155, 631 03 Eskilstuna.
Swedish Energy Markets Inspectorate R2022:10
Authors: Jenny Nilsson, Michelle Karlsson Savolainen, Tobias Johansson and Tobias Lusth.

The report is available from www.ei.se

Foreword

In June 2022, the Swedish Energy Markets Inspectorate (Ei) was tasked by the Swedish Government to report annually on nine measures in the implementation plan. The implementation plan was proposed by Ei in 2020 as one stage in improving the functioning of the electricity market according to the regulations set out in Article 20(3) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (the 'Electricity Regulation'). The implementation plan highlights the need for appropriate instruments, the need for continued work with demand side flexibility, and the need to ensure that the balancing market continues to develop.

In this report, we focus on reporting whether nine of the measures in the implementation plan have been implemented, how the work with implementation is progressing, and whether there are any obstacles to the implementation.

The assignment is reported for 2022 through this interim report.

Ulrika Hesslow
Director General

Jenny Nilsson
Project Manager

Contents

Summary

In a decision by the Swedish Government in June 2022, the Swedish Energy Markets Inspectorate (Ei) was tasked with reporting annually, through 2025, on a number of measures that Ei proposed in 2020 in the report *Genomförandeplan med tidsplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market*)*.[1] The implementation plan that was proposed by Ei in 2020 contains a number of measures concerning the balancing market, appropriate instruments and demand side flexibility aimed at improving the functioning of the electricity market.

In this report, Ei analyses the nine measures included in Ei's assignment. The report describes whether the measures have been implemented, and if so when, or otherwise how the work with the implementation is progressing, as well as whether there are any obstacles to its implementation.

The table below summarises the nine problem and improvement areas that Ei has been tasked to monitor and their current status:

Table 1 Problem and improvement areas, measures and status of the nine measures Ei has been tasked with monitoring

Identified problem and improvement areas in EI's proposal for the implementation plan	Measures under the assignment	Status and recommendations, if any
Lower maximum price on the regulating power market (mFRR) than on the other submarkets provides the wrong incentives.	Ei shall follow up to ensure that the regulating power market's maximum price is at least as high as the highest maximum price applied on the day-ahead and intraday markets.	The measure was implemented on 1 November 2022. The maximum price is 10,000 euro/MWh on the regulating power market.[2]

[1] Swedish Energy Markets Inspectorate (2020) Genomförandeplan med tidsplan för att förbättra elmarknadens funktion (Implementation plan to improve the functioning of the electricity market), Ei R2020:09.

[2] In conjunction with the raising of the maximum price on the regulating power market, a mechanism was also introduced to adjust this maximum price if the intraday market's maximum price is raised, in order to ensure that the regulating power market's maximum price is raised and that there is thereby the right incentive even in such a scenario.

Identified problem and improvement areas in Ei's proposal for the implementation plan	Measures under the assignment	Status and recommendations, if any
Obstacles for demand side flexibility shall be removed.	Ei shall report on identified obstacles, proposals that have been submitted, and monitoring carried out within the scope of Ei's assignment to promote demand side flexibility on the electricity market.	This measure is implemented on an ongoing basis as the work to promote demand side flexibility and identify obstacles, submit proposals and monitor developments is carried out continuously. Among other things, Ei has developed a strategy for flexibility in the electricity network, designed network tariffs that promote efficient network usage, started a project on what role conditional agreements can have in the energy transition, and submitted several concrete proposals.
Special regulations that distort the price signal in the balancing market shall be avoided.	Ei shall monitor the measure requiring the Svenska kraftnät to annually report how activations of balancing energy implemented for reasons other than balancing affect the prices of balancing energy or the settlement of actors' imbalances on the Swedish and Nordic electricity markets. Furthermore, the reasonableness of the pricing of those bids activated for other reasons than balancing should be further analysed.	This measure has not been implemented. Svenska kraftnät should be given the assignment to report on the measure. The Government should work to ensure that all Nordic transmission system operators are tasked with reporting on how measures carried out for other reasons than balancing affect the prices of balancing energy and the settlement of actors' imbalances per market time unit on the Nordic electricity market. Reasonableness in the pricing of bids activated for other reasons than balancing must be analysed within the framework of Ei's review of terms concerning balancing for suppliers of balancing services and balance responsible parties under Article 18 of Commission Regulation (EU) 2017/2195.
The fee structure for the balance responsible parties socialises costs.	Ei shall monitor to ensure that the fees that Svenska kraftnät collects from the balance responsible parties correspond in a socio-economically efficient manner to the costs that each actor gives rise to.	This measure has been partially implemented. In June 2021, Ei approved Svenska kraftnät's proposal for a new fee structure for the balance responsible parties. The fee structure was introduced on 1 November 2021. Svenska kraftnät should, in compliance with the rules set out in the Balancing Regulation, analyse the relationship between volume fee and imbalance fee as well as the costs these fees must cover. Particular attention should be given in the analysis to whether the cost items covered by the balance responsible parties should be harmonised within the Nordic countries. The Government should therefore work to ensure that all Nordic transmission system operators are given the same assignment as Svenska kraftnät and, within the scope of the common EU regulatory framework, propose a common model.

Identified problem and improvement areas in Ei's proposal for the implementation plan	Measures under the assignment	Status and recommendations, if any
The pricing of certain reserves using the *pay-as-bid* method should be reviewed.	Ei shall follow up to ensure that the pricing of frequency containment reserves (FCR-N and FCR-D) are appropriate.	This measure will be implemented no later than 1 February 2024 when Svenska kraftnät changes the pricing method of frequency containment reserves (FCR-N and FCR-D) to *pay-as-cleared*. Following this transition, the capacity products for aFRR, FCR-N and FCR-D will be priced using the same method, which Ei considers appropriate
The prequalification process risks impeding entry onto the balancing market.	Ei shall monitor the measure that Svenska kraftnät regularly review its prequalification process and evaluate the requirements specifications linked to the delivery of each ancillary service.	This measure has been implemented. The work with the evaluation of the prequalification process and the evaluation of the requirements specifications linked to the delivery of each ancillary service should continue.
The size of the minimum permitted bid prevents some actors from providing ancillary services.	Ei shall monitor that the minimum requirement on the smallest bid size for participating in the procurement of manual/automatic frequency restoration reserves (mFRR/aFRR) is lowered to 1 MW in order to reduce entry barriers.	This measure has been implemented for aFRR and will be implemented for mFRR. The minimum requirement for the smallest bid size for aFRR has been 1 MW since 10 May 2022. The minimum requirement for mFRR will be lowered to 1 MW at the latest by 24 July 2024.
The method for calculating cost-based bids for FCR-N and FCR-D involves a form of price regulation and risks discriminating against actors.	Ei shall monitor what the removal of Svenska kraftnät's requirement for cost-based bids in FCR-N and FCR-D has meant for the market actors possibilities to participate in the balancing market based on equal conditions regardless of type of resource.	This measure has been implemented. Svenska kraftnät removed the requirement on cost-based bids for FCR-N and FCR-D on 1 January 2022.
Price information should be published as close as possible to real time.	Ei shall monitor the measure that Svenska kraftnät must ensure that they are able to publish information from the balancing market as close as possible to real time.	This measure has not been implemented. Svenska kraftnät has reported on its efforts to improve transparency. Price information is expected to be published closer to real time in pace with the development of the balancing market and the Nordic balancing model. Svenska kraftnät has the goal of, within the next 1–2 years, enabling the publication of information no later than 15 minutes after the gate closure time for submitting bids.

It has not come to light that there are any direct obstacles to the implementation of the measures or changes that mean the measures will no longer lead to improving the functioning of the electricity market. However, the situation on the electricity

market has changed in several ways since Ei recommended the measures in the implementation plan. The high prices within the EU over the past year have led to extremely unusual measures, such as Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices (the 'Emergency Intervention Regulation'), which permits various types of temporary interventions in the market. The European Commission has also announced that a long-term proposal for changes in the current electricity market will be made before the end of the year.

It is Ei's opinion that the measures in the implementation plan are still essentially relevant to implement to the extent they have not yet been implemented, and that they will contribute to a more well-functioning electricity market. Ei therefore wishes to emphasise the importance of implementing the measures that have not yet been implemented as soon as possible in order to achieve a more well-functioning electricity market. The same also applies to the measures[3] that Ei proposed in the implementation plan, but which Ei has not been tasked to monitor.

In future reports, Ei will continue to monitor to ensure that measures that have not yet been implemented are implemented. In these future reports, Ei will also analyse whether the changed situation on the electricity market has given rise to any new obstacles or risks for market failures and, if needed, also propose new measures.

In the implementation of the assignment, Ei has been in close dialogue with Svenska kraftnät and with actors who have had the opportunity to submit their views via an online survey.

2022-12-08
2022-102491-0017

[3]Ei also proposed in the implementation plan that instruments on the electricity market should be appropriate and that Ei's proposals in the report *Ren energi inom EU – ett genomförande av fem rättsakter (Clean Energy in the EU – an implementation of five legal acts),* Ei R2020:02, should be implemented in Swedish legislation as soon as possible to remove regulatory distortions, and that Svenska kraftnät should stop setting requirements on symmetrical bids for FCR-N as soon as possible, as this could prevent participation from many actors.

1 Introduction

1.1 Ei's assignment

On 22 June, Ei was tasked by the Government to, by 1 December of every year from 2022 to 2025, report to the Government Offices (Ministry of Infrastructure) on the implementation of the measures listed below.

- Ei shall follow up to ensure that the regulating power market's maximum price is at least as high as the highest maximum price applied on the day-ahead and intraday markets.
- Ei shall report on identified obstacles, proposals that have been submitted, and monitoring carried out within the scope of Ei's assignment to promote demand side flexibility on the electricity market.
- Ei shall monitor the measure that Svenska kraftnät must ensure that they are able to publish information from the balancing market as close as possible to real time.
- Ei shall monitor the measure requiring Svenska kraftnät to annually report on how activations of balancing energy implemented for reasons other than balancing affect the prices of balancing energy or the settlement of actors' imbalances on the Swedish and Nordic electricity markets. Furthermore, the reasonableness of the pricing of those bids activated for purposes other than for reasons of balancing should be further analysed.
- Ei shall monitor to ensure that the fees that Svenska kraftnät collects from the balance responsible parties correspond in a socio-economically efficient manner to the costs that each actor gives rise to.
- Ei shall follow up to ensure that the pricing of frequency containment reserves (FCR-N and FCR-D) are appropriate.
- Ei shall monitor the measure that Svenska kraftnät regularly review the prequalification process and evaluate the requirements specifications linked to the delivery of each ancillary service.
- Ei shall monitor that the minimum requirement on the smallest bid size for participating in the procurement of manual/automatic frequency restoration reserves (mFRR/aFRR) is lowered to 1 MW in order to reduce entry barriers.
- Ei shall monitor what the removal of Svenska kraftnät's requirement for cost-based bids in FCR-N and FCR-D has meant for the market actors possibilities to participate in the balancing market based on equal conditions regardless of type of resource.

More information about the assignment

In the annual report, Ei shall describe whether the measures presented in the Government mandate have been implemented, and if so when, or otherwise how the work with the implementation is progressing as well as whether there are any obstacles to implementation. Ei shall also report in its annual monitoring whether any new obstacles have arisen or if there are risks of market failures. In this case, Ei shall propose further measures that should be included in the implementation plan.

The Government also deems that some of the proposals in the referral responses to Ei's report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market) can be of interest for Ei to further analyse in connection with the annual follow-up. When the resource adequacy assessment for which the European Network of Transmission System Operators for Electricity (ENTSO-E) is responsible has been approved by the EU's Agency for the Cooperation of Energy Regulators (ACER), Ei should also monitor this assessment and submit a proposal for an updated Implementation Plan if necessary.

During the implementation, Ei shall have a close dialogue with Svenska kraftnät and, when relevant, also with other stakeholders.

1.2 The implementation plan is proposed by Ei for improving the functioning of the electricity market

On behalf of the Government, Ei prepared in 2020 an implementation plan for Sweden in accordance with Article 20(3) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity ('Electricity Regulation'). An implementation plan must communicate the market's functioning and which drivers it creates for efficiency in both production and consumption as well as transmission over both the short and long terms. The implementation plan must specify such measures that the Member State will adopt to eliminate any regulatory distortions or market failures and thus achieve a more well-functioning electricity market.

In the report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market), Ei stated that the Swedish electricity market is functioning well, but that there were areas for improvement. Ei identified three areas that could be improved through additional measures: the balancing market, appropriate instruments and demand side flexibility. Ei found that there were conditions on the balancing market that constitute entry obstacles and obstacles for effective price formation. This makes it difficult for innovative products and services, such as energy storage and demand

side flexibility, to enter the market. Ei also pointed out that it is important that both existing and new national instruments are appropriately designed and do not unnecessarily affect the functioning of the electricity market. In order to improve the functioning of the electricity market, there is also a need for continued active work to remove obstacles to demand side flexibility.

Ei's proposal for an implementation plan consisting of twelve measures in the above areas is presented in Appendix 1.

1.3 The situation on the electricity market has changed since Ei proposed the implementation plan

The Swedish electricity market is part of the integrated European energy markets. It is up to the electricity markets' actors to find the optimal level of energy production and installed capacity considering the demands of energy consumers. On a well-functioning electricity market, it is the price of electricity (price signals) that inform the market actors of where the new investments in the electricity network and production are most needed. Market design in the EU and Sweden has also long been based on the expectation that well-functioning electricity markets also give the electricity markets resource adequacy. In the report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market), Ei stated that the Swedish part of the internal electricity market within the EU is functioning well but that there are areas for improvement.[4]

The situation on the electricity market has changed in several ways since Ei recommended the measures in the implementation plan. All of Europe has had high electricity prices in late 2021 and 2022 and the functioning of the electricity market has been questioned by both household and business consumers. This has led to extremely unusual measures, such as the Emergency Intervention Regulation, which allows different types of temporary interventions in the market. The European Commission has also announced that a long-term proposal for changes in the current design of the electricity market will be put forward before the end of the year.

Resource adequacy

High and volatile electricity prices do not automatically mean that Sweden does not have good resource adequacy because resource adequacy is a measure of the

[4]In addition to the measures that Ei proposed in the implementation plan, there have also been proposals for other measures that can contribute to promoting the functioning of the electricity market. For example, in the report *ACER´s Final Assessment of the EU Wholesale Electricity Market Design*, which was published in April 2022, ACER identified a number of areas for improvement to secure the current design of the electricity market for the future, which political decision-makers should focus on.

extent to which production resources and other supplies of energy are in a position to meet the expected demand.

At present, there is neither a national nor a European resource adequacy assessment implemented for Sweden according to the method decided on the European level by ACER.[5] ENTSO-E did conduct a European resource adequacy assessment in 2021, but it was not approved by ACER. ACER also did not ask ENTSO-E to supplement its analysis, but instead deemed that the resources should instead be allocated to the assessment of resource adequacy for 2022, i.e., ERAA 2022. ACER stated that the simplifications in the assessment for 2021 meant that ERAA 2021 did not reliably consider the adequacy of the resources and that using the assessment could lead to incorrect conclusions and decisions.[6] ENTSO-E will present its resource adequacy assessment for 2022 in November.[7] However, in the study *Winter Outlook Report 2022–2023*, ENTSO-E stated that there was an increased risk for power shortages in southern Sweden this winter.[8]

Even if there is not an approved resource adequacy assessment according to the method decided by ACER, Svenska kraftnät conducts regular evaluations of the power balance in Sweden, which was also described in the report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market). It is worth noting that Svenska kraftnät's assessment of the risk of power shortages during the winter of 2022 has shifted from a low risk to a substantial risk.[9] Svenska kraftnät can, just as previously, activate the power reserve in strained power shortage situations[10] as a last resort before Svenska kraftnät initiates manual load-shedding, i.e., disconnection of consumption.[11] Because Svenska kraftnät deems that the risk of power shortages has increased, they have warned the public that they may need to disconnect electricity users this winter.[12] There are a number of factors that affect the risk of power shortages this winter. For example, the Ringhals 4 nuclear reactor has

[5]The Electricity Market Regulation contains stipulations on how resource adequacy in a Member State should be decided. Every Member State's resource adequacy is evaluated according to a specific common European method (the ERAA method), which was decided by the EU's Agency for the Cooperation of Energy Regulators (ACER) during the autumn of 2020. If resource adequacy is established in a Member State, an implementation plan must be drawn up with measures and a timetable to eliminate regulatory distortions and market failures.

[6] ACER decision 02/2022 on the European Resource Adequacy Assessment for 2021.

[7] ENTSOE-E, ERAA 2022.

[8] ENTSOE-E, Early Insights of Winter Outlook Report 2022-2023.

[9] Svenska kraftnät, Risken för bortkoppling av el i vinter har ökat (Increased risk of electricity disconnection this winter).

[10] When there are not enough balancing resources, Svenska kraftnät is able to activate the power reserve. The power reserve is available between 16 November and 15 March.

[11] Svenska kraftnäts kortsiktiga marknadsanalys 2021 (Svenska kraftnät's short-term market analysis 2021) and Svenska kraftnät, Risken för bortkoppling av el i vinter har ökat (Increased risk of electricity disconnection this winter).

[12] Svenska kraftnät, Risken för bortkoppling av el i vinter har ökat (Increased risk of electricity disconnection this winter).

extended its annual maintenance audit, and is expected to be back in operation on 1 February 2023, meaning that it will be shut down for parts of the winter.[13] Sweden is only directly dependent on energy provision from Russia to a low degree, but is still affected because the security situation in Europe has deteriorated since Russia's invasion of Ukraine on 24 February 2022. This can mean that the opportunities for import of electricity to Sweden in strained situations are somewhat worse than before.[14] How the power adequacy during the upcoming winter will be affected by the war in Ukraine is, according to Svenska kraftnät, difficult to predict.[15]

In November 2022, the Government decided on a reliability standard[16] of one hour per year[17] in accordance with Ei's proposal in the report *Ei:s förslag till tillförlitlighetsnorm för Sverige* (Ei's proposal for reliability standard for Sweden).[18] The reliability standard describes how many hours a year it is justified from a socio-economic standpoint that the country's production and possible import will not meet the entire expected electricity demand.[19] The reliability standard means that the production and import of electricity should be able to meet the entire expected electricity consumption need 99.989 per cent of the time. In several of Svenska kraftnät's scenarios, it is pointed out that the reliability standard cannot be met due, among other things, to the uncertain global situation and the Ringhals 4 nuclear reactor being out of commission until 31 January 2023. Svenska kraftnät also assesses the risk of disconnection to be substantial because of this.[20]

According to Svenska kraftnät, electricity consumers can influence the extent of a power shortage risk by changing their electricity consumption patterns, i.e., lowering or shifting their consumption. Svenska kraftnät argues that this can reduce the risk of disconnection by up to five times.[21] The consumption figures for September 2022 show that household electricity consumption decreased by about 18 per cent[22] in comparison with the same month in 2021. The consumption figures

[13] Vattenfall, Tiden för reparation av Ringhals 4 förlängs (Repair time for Ringhals 4 extended).
[14] Svenska kraftnät (2022), Kraftbalansen på den svenska elmarknaden (Power balance on the Swedish electricity market) and Svenska kraftnät, Risken för bortkoppling av el i vinter har ökat (Increased risk of electricity disconnection this winter).
[15] Svenska kraftnäts systemutvecklingsplan 2022–2031 (Svenska kraftnät's system development plan 2022–2031).
[16] Under Article 25(1) of the Electricity Market Regulation, a reliability standard must specify the necessary level of security of supply for the Member State in a transparent way.
[17] Pursuant to this decision, Ei must also propose an updated reliability standard as needed.
[18] Swedish Energy Markets Inspectorate (2021), Ei:s förslag till tillförlitlighetsnorm för Sverige (Ei's proposal for reliability standard for Sweden), Ei R2021:05.
[19] Government Offices, Regeringen beslutar om en tillförlitlighetsnorm för Sverige (The Government decides on a reliability standard for Sweden).
[20] Svenska kraftnät. elförsörjningen och omvärldsläget (Electricity supply and the global situation).
[21] Svenska kraftnät, Risken för bortkoppling av el i vinter har ökat (Increased risk of electricity disconnection this winter).
[22] Svenska kraftnät, Hushållen kapar elförbrukningen kraftigt i september (Households drastically cut their electricity consumption in September). Other electricity consumers, particularly industry, have increased marginally. The figures for September are not temperature-adjusted.

for all of Sweden for September 2022 also show a decrease of 4.3 per cent in comparison with the same month in 2021. A temperature-adjusted decrease of 6.3 per cent for all electricity consumers in comparison with the same month in 2021 was also seen in October 2022.[23] The ENTSO-E report *Winter Outlook Report 2022–2023* also shows that the risks of power shortages will be reduced if the EU countries reach the goals in the Emergency Intervention Regulation to reduce total electricity consumption by 10 per cent and by 5 per cent during certain high-load hours.[24] In Sweden, the Swedish Energy Agency is implementing its information campaign 'Every kilowatt-hour counts' in autumn 2022.[25]

The measures in the implementation plan are still relevant

We can note that the situation on the electricity market, and the assumptions that to some extent form the basis for the proposed measures in the Implementation Plan, have changed in certain respects since these were proposed by Ei in 2020. This means that there may be cause in the future to update the implementation plan in accordance with Article 20(3) of the Electricity Regulation. It is Ei's opinion that the measures in the implementation plan are still essentially relevant to implement to the extent they have not yet been implemented, and that they will contribute to a more well-functioning electricity market. The measures that Ei monitors in this interim report are thus such measures that Ei considers should be implemented to promote the functioning of the Swedish electricity market.

In this first interim report of the assignment, Ei intends to focus on the parts of the assignment that are described in Chapter 2.

1.4 Structure of the report

Chapter 2 presents the purpose, method and limitations of the report. This is followed in Chapter 3 by a follow-up of whether the measures in the implementation plan have been implemented. Chapter 4 presents further measures that Ei has proposed but which have not been followed up in Chapter 3.

Appendix 1 presents Ei's 2020 proposal for an implementation plan.

[23] Svenska kraftnät,7,6 procent minskad elförbrukning i oktober (7.6 per cent reduced electricity consumption in October). When Svenska kraftnät reported electricity consumption for September, household consumption was reported separately. No separate reporting was done for electricity consumption reporting for October.
[24] ENTSOE-E, Early Insights of Winter Outlook Report 2022-2023.
[25] Swedish Energy Agency, Varje kilowattimme (kWh) räknas (Every kilowatt-hour (kWh) counts).

2 Purpose, method and scope

This chapter presents the purpose, the method that we used in producing the report, and our scope.

2.1 Purpose of the report

The purpose of this first interim report is to follow up on nine of the twelve measures Ei presented in the report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market).

2.2 Method

We have based our evaluation on previous work and reports at Ei. Ei has also collected views from Svenska kraftnät at two meetings. Furthermore, Ei has asked Svenska kraftnät for material that was necessary for us to analyse the nine measures. Stakeholders have also been given the opportunity to submit written comments to Ei via a survey that was published on Ei's website. In the survey, the stakeholders were invited to provide views on their opportunities to participate in the balancing market once Svenska kraftnät's requirements for cost-based bids for FCR-N and FCR-D have been eliminated and on the other measures Ei follows up on in this report.

2.3 Scope

Due to the brief period of time between the decision about the assignment on 22 June 2022 and the first reporting on 1 December, Ei decided to focus in this interim report on whether the nine measures have been implemented, and if so when, or otherwise how the work with the implementation is progressing as well as whether there are any obstacles to the implementation of the measures. Further analyses and proposals within the scope of this assignment will be presented in subsequent reports on the assignment.

Because there is no approved resource adequacy assessment for Sweden according to the European method at the time this report was written,[26] it is also not relevant to submit proposals for an updated implementation plan with regard to a resource adequacy assessment. It is therefore too early to know whether there are regulatory distortions or market failures that need to be removed in order to address any resource adequacy issues. The Emergency Intervention Regulation has also come into force, which will have an effect on the functioning of the electricity market in a

[26] 23 November 2022.

short-term perspective, and the European Commission has announced that a more long-term electricity market reform will be proposed before the end of the year. This means that there may be cause to update the implementation plan in the future.

In this report, Ei has not included the sort of background information that can be read in the report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market). Ei therefore refers the reader to the above report for, e.g., a description of the rules in the Electricity Regulation that are relevant to the contents of the implementation plan, how the resource adequacy assessment is related to the implementation plan, Ei's proposal for the implementation plan, and why these measures are proposed.

3 Follow-up of the measures in the implementation plan

In the report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market), Ei proposed measures to improve the functioning of the electricity market. In Sections 3.1 to 3.9, we report on the nine measures that the Government has commissioned Ei to follow up. Each section begins with a text box describing the measure that will be followed up on in the section. The follow-up for each measure aims to answer whether the measure has been implemented, and if so when, or otherwise whether any obstacles to implementation remain. Section 3.10 presents a summary of the views received from stakeholders.

3.1 Regulating power market's maximum price

The regulating power market's maximum price must be at least as high as the highest maximum price applied on the day-ahead and intraday markets.

This measure has been implemented

Ei concludes that this measure has been implemented as of 1 November 2022 and that no further adjustment to the maximum price on the regulating power market[27] is necessary at this time.

The regulating power market's maximum price has been increased

The maximum price on the day-ahead market is currently 4,000 euro/MWh[28] and the maximum price on the intraday market is 9,999 euro/MWh.[29] On the regulating power market where the frequency restoration reserves (mFRR) are traded, the maximum price was 5,000 euro/MWh until 31 October 2022. From 1 November 2022, the maximum price on the regulating power market is 10,000 euro/MWh in

[27] Regulating power market refers to the Nordic market for energy activation regarding frequency restoration reserves with manual activation (mFRR).
[28] This regulatory framework contains a mechanism for the automatic raising of the level by 1,000 euro/MWh every time the market price reaches 60 per cent of the current maximum price in any bidding area participating in the market coupling. This means that the maximum price for all of Europe is uniform and that the level is automatically adjusted five weeks after the price anywhere in Europe triggers the increase. Work is under way to review this method; Swedish Energy Markets Inspectorate's case no. 2022–102721.
[29] This level will also be adjusted upwards if the day-ahead market's maximum price exceeds the current level for the intraday market. The adjustment mechanism thus ensures that the maximum price level for the intraday market and the day-ahead market are the same. The price limits are set in ACER (2017) Harmonised maximum and minimum clearing prices for single day-ahead coupling in accordance with Article 41(1) of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (CACM Regulation).

all Nordic countries. In conjunction with the raising of the maximum price on the regulating power market, a mechanism was also introduced to adjust this maximum price if the intraday market's maximum price is raised, in order to ensure that the regulating power market's maximum price is raised and that there is thereby the right incentive even in such a scenario.

Maximum price when connecting to MARI and PICASSO

Svenska kraftnät will later forward bids from actors to special common European platforms for the exchange of balancing energy. At Svenska kraftnät's request, Ei has decided to grant Svenska kraftnät exemption from connecting to the European platforms for frequency restoration reserves with manual/automatic activation (MARI/PICASSO). This means that Svenska kraftnät must connect no later than 24 July 2024.[30] At connection, the maximum price on the markets for mFRR[31] and aFRR[32] are decided by the pan-European method in accordance with Article 30 of Commission Regulation (EU) 2017/2195 ('the Balancing Regulation'), which was decided by ACER on 25 February 2022.[33] This method specifies that the maximum price on the markets for mFRR and aFRR will temporarily be 15,000 euro/MWh for no longer than 48 months from the time the first Member State connects to MARI or PICASSO, respectively, i.e., until mid- 2026.[34] Following this, the maximum price on the markets for mFRR and aFRR will be 99,999 euro/MWh.[35]

3.2 Demand side flexibility

Ei shall report on identified obstacles, proposals that have been submitted, and monitoring carried out within the scope of Ei's assignment to promote demand side flexibility on the electricity market.

This measure is being continuously implemented

Ei is continuously implementing this measure. Ei's instructions state that Ei is tasked with continuously promoting demand side flexibility.[36] In 2020, Ei

[30] Exemption from connection to MARI, Swedish Energy Markets Inspectorate's decision of 31 August 2022, case no. 2022–100136 and exemption from connection to PICASSO, Swedish Energy Markets Inspectorate's decision of 31 August 2022, case no. 2022–100137.
[31] When Svenska kraftnät and the other Nordic transmission system operators connect to the European platform for exchange of mFRR balancing energy (MARI), the Nordic regulating power market (where mFRR is exchanged in the Nordics today) will be integrated with the European market.
[32] There is currently no market for aFRR balancing energy in the Nordic region. Svenska kraftnät and other Nordic transmission system operators plan to introduce such a market when they connect to the European platform for exchange of aFRR (PICASSO).
[33] ACER Decision 03/2022 on the amendment to the methodology for pricing balancing energy and cross-zonal capacity used for the exchange of balancing energy or operating the imbalance netting process.
[34] In practice, this means that the maximum price on the European markets for mFRR and aFRR will be 15,000 euro/MWh until mid-2026 at the latest.
[35] Methods decided by ACER can be revised on the initiative of, for example, the transmission system operators.
[36] Swedish Energy Markets Inspectorate's instructions, Regulation (2016:742) with instructions for the Swedish Energy Markets Inspectorate.

published a strategy for flexibility in the electricity system.[37] Ei has identified three strategic areas to work with: efficient price signals, efficient grid usage, and customer contribution through demand side flexibility. Ei works continuously to identify obstacles to demand side flexibility and monitors developments in the area in various ways.

Ei will follow up to ensure that the measure continues to be implemented.

Obstacles for demand side flexibility

Ei annually compiles and publishes the technical requirements and other conditions in place for the provision of services in the form of changed electricity consumption.[38] As in investigations of previous years, the investigation for 2021 indicated that electricity network operators do not impose technical requirements and other conditions that make it difficult to provide services for demand side flexibility, provided this is not justified for the safe, reliable and efficient operation of the electricity network. The 2021 investigation showed, among other things, that one of the most important aspects for the development of services for demand side flexibility is that relevant regulatory frameworks that are under development come into place. In this context, the market actors mention the regulatory frameworks for independent aggregators, the introduction of the role of supplier of balancing services, and regulation of the revenue cap for electricity network operators. An evaluation carried out within the scope of this investigation shows that the dialogue format that Ei used continues to be important to the understanding of perceived obstacles.

In 2021, Ei published the report *Oberoende aggregatorer: Förslag till nya regler för att genomföra elmarknadsdirektivet* (Independent aggregators – Proposals for new rules for the implementation of the Electricity Market Directive).[39] In this report, Ei provided recommendations to the Government on how EU regulatory frameworks on independent aggregation could be implemented in electricity legislation. The report contains proposals to make it possible for aggregators to act independently, while also requiring that they take financial responsibility for the imbalances they cause in the system. Ei also proposed that Svenska kraftnät be given an assignment concerning how the models presented in the report for independent aggregation

[37] Ei:s strategi för flexibilitet i elsystemet (Ei's strategy for flexibility in the electricity system).
[38] Swedish Energy Markets Inspectorate (2021), Tjänster för efterfrågeflexibilitet (Services for demand side flexibility), Ei R2021:13.
[39] Swedish Energy Markets Inspectorate (2021), Oberoende aggregatorer: Förslag till nya regler för att genomföra elmarknadsdirektivet (Independent aggregators – Proposals for new rules for the implementation of the Electricity Market Directive), Ei: R2021:03.

could be implemented. The report was under consultation with the Government Offices in spring 2021.[40]

In 2020, Ei submitted a proposal for an amendment to the Swedish Electricity Act (1997:857), which would make it possible to introduce incentives in the regulation to drive system operators towards solutions other than traditional network investments when justified, in order to achieve cost-effectiveness in network operations over the long term. The aim of the amendment was to provide the system operators with an incentive to take measures to streamline the cost base throughout network operations, both capital costs and running costs, and not just costs that can be influenced, which is currently the case. The proposal was under consultation with the Government Offices in 2021.

Smart grids

To make the transition of the energy system possible, the electricity networks need the functionality for electricity transmission in the new energy system. 'Smart grids' is often used as an umbrella term to describe the electricity networks of the future, and it involves new technologies, new services and new conditions for regulation and market design aimed at enabling the energy transition and increased demand side flexibility.

Under Article 59(1) of Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU ('the Electricity Market Directive'), Ei must monitor and evaluate the development of smart grids. In 2021, Ei published the report *Indikatorer för utvecklingen av smarta elnät* (Indicators for the development of smart electricity networks)[41] in which Ei presents a number of selected indicators to explain the development of smart grids in Sweden. As part of the work with smart grids and flexibility, Ei finalised regulations in July 2022[42] concerning what information electricity network operators must report so that Ei can monitor the development of smart electricity networks. These regulations come into force on 1 October 2022.

[40] Government Offices, Referral of Swedish Energy Markets Inspectorate's report Oberoende aggregatorer: Förslag till nya regler för att genomföra elmarknadsdirektivet (Independent aggregators – Proposals for new rules for the implementation of the Electricity Market Directive).
[41] Swedish Energy Markets Inspectorate (2021), Indikatorer för utvecklingen av smarta elnät (Indicators for the development of smart electricity networks), Ei R2021:07.
[42] Energimarknadsinspektionens föreskrifter och allmänna råd om skyldigheter att rapportera uppgifter om utvecklingen av smarta elnät (Swedish Energy Markets Inspectorate's regulations and general advice on obligations to report information on the development of smart electricity networks), EIFS 2022:5.

In 2021, Ei presented the report *Utvärdering av kostnader och nyttor av smarta elnät* (Evaluation of costs and benefits of smart electricity networks).[43] On assignment from the Government, Ei develops both strategic and operational approaches to the work with smart electricity networks in the report. Ei uses the report to present an evaluation of the socio-economic costs and benefits of smart electricity networks in comparison with other alternatives. The evaluation includes various scenarios of electricity production composition in the Nordic electricity power system as well as an increased electrification in society.

Network tariffs

In 2018, Ei received authorisation to prescribe how the tariffs should be designed. Since then, a project has been under way at the authority to design network tariffs that promote efficient network usage. The new regulations[44] were adopted in March 2022 and will begin to be applied no later than 1 January 2027. The new regulations state that the network tariffs must contain four appropriately priced components in order for them to be considered to be promoting efficient network usage. These components are a fixed charge, an energy charge, a customer-specific charge, and a charge for power output, which must be time-differentiated.

Local flexibility solutions

Ei regularly follows developments on the local markets for demand side flexibility through dialogues with market actors. Ei also ordered a consultancy study[45] in order to gather knowledge about the design of local markets in Sweden in terms of flexibility.

Ei has also started a project on the role conditional agreements can have in the energy transition.[46] In the project, Ei will investigate if the agreements contribute to efficient usage of the electricity network. Ei aims to have a report on conditional agreements finished in early 2023.

Ei has been working since 5 May 2022 with Svenska kraftnät, the Swedish Energy Agency and the Swedish Transport Administration on a Government assignment to implement a joint authority follow-up of society's electrification. This assignment includes reporting a summary of conclusions in terms of the

[43] Swedish Energy Markets Inspectorate (2021), Utvärdering av kostnader och nyttor av smarta elnät (Evaluation of costs and benefits of smart electricity networks), Ei R2021:06.
[44] Energimarknadsinspektionens föreskrifter och allmänna råd för utformning av nättariffer för ett effektivt utnyttjande av elnätet (Swedish Energy Markets Inspectorate's regulations and general advice on the design of network tariffs for efficient use of the electricity network), EIFS 2022:1.
[45] Sweco (2022), Kartläggning av lokala flexibilitetsmarknader (Survey of local flexibility markets).
[46] Swedish Energy Markets Inspectorate, Ei utreder vilken roll villkorade avtal kan ha i energiomställningen (Ei investigates the role conditional agreements can have in the energy transition).

development of the electricity market, including the development of local flexibility markets.

Ei has been working since 4 August 2022 with Svenska kraftnät, the Swedish Energy Agency and the Swedish Board for Accreditation and Conformity (Swedac) on a Government assignment to promote a more flexible electricity system. This assignment includes promoting flexibility and analysing if further measures are needed to realise the flexibility potential and, if so, then producing an action plan for implementing these measures. A final report on the assignment must be delivered to the Government by 15 December 2023. Within the scope of the assignment, Ei also has a sub-assignment in which Ei shall promote flexibility at the local level where it becomes socio-economically efficient in the short or longer term. The sub-assignment includes evaluating the local flexibility markets being tested in Sweden. The results are to be presented to the Government no later than 6 April 2023.

International collaboration in the area of demand side flexibility

Ei also has an active role in the international work with rule development surrounding demand side flexibility. In 2020, ACER tasked the European Commission with developing framework guidelines for demand side flexibility. In 2021 and 2022, Ei was part of ACER's task force for the development of the new rules for demand side flexibility. Within the framework of Nordic Energy Regulators (NordREG), Ei works to follow and learn from developments in demand side flexibility in other Nordic countries, and to work for a harmonised regulatory framework in the Nordic countries.

Power dialogue

Ei also works with the EFFEKT-dialogen (POWER dialogue). The aims of this dialogue are to facilitate the exchange of information, promote dialogue between different actors in the area of energy, and find solutions that contribute to increased demand side flexibility and improved capacity in the electricity network. The project started in autumn 2020 and began with Ei meeting with representatives from six different groups of stakeholders to discuss and get views on which areas should be prioritised. The project is part of Ei's assignment to promote demand side flexibility and was initially intended to run until December 2022. However, Ei has decided to extend the project beyond 2022 as the issues are highly topical and dialogues with the market actors continue to be important.

Customer dialogue and consumer perspective on demand side flexibility

In 2020, Ei identified that electricity consumers are not sufficiently represented in the dialogue on demand side flexibility and that new ways of working are needed to learn more about and integrate knowledge on the customers' needs, preferences

and opportunities in the work with demand side flexibility. In 2021, Ei commissioned a consultancy study on alternative methods for customer dialogues, which was published in autumn 2021.[47] To move from theory to practice, Ei started two pilot projects in 2022 to increase the direct dialogue with and about electricity consumers. In one of the projects, special focus is placed on the household consumers' opportunities, incentives and obstacles to contribute with demand side flexibility. The project also includes the market actors' work with incentives and obstacles to actively promote household consumers' opportunities to contribute with demand side flexibility. The second project is a new version of Elpriskollen,[48] which will be launched in 2023. The update means that all contracts with electricity suppliers that buy micro-production[49] will be provided with a symbol and the visitor can filter to choose to only see electricity suppliers that buy micro-production. The page on Elpriskollen listing electricity suppliers that offer flexibility agreements, e.g., control of electricity use and equipment, is also being reviewed with the aim of getting more suppliers to voluntarily report that they offer such products.

3.3 Activation of balancing energy for other reasons than balancing

Svenska kraftnät must annually report on how activations of balancing energy for other reasons than balancing affect the prices of balancing energy or the settlement of actors' imbalances on the Swedish and Nordic electricity markets. Furthermore, the reasonableness of the pricing of those bids activated for purposes other than balancing should be further analysed.

This measure has not been implemented

Svenska kraftnät has stated that it is not annually reporting how activations of balancing energy implemented for reasons other than balancing affect the prices of balancing energy or the settlement of actors' imbalances on the Swedish and Nordic electricity markets.[50] Svenska kraftnät has also pointed out that there are difficulties in carrying out such reporting on the Nordic electricity market. Svenska kraftnät has stated that the reason for this is that it is difficult to carry out such reporting without access to data from all of the Nordic transmission system operators. Apart from this, Svenska kraftnät has not expressed any direct obstacles to implementing the measure, but Svenska kraftnät has stated that because

[47] DNV (2021), Metoder som identifierar kunders uppfattning och drivkrafter i samband med regel- och policyutveckling (Methods that identify customers' perceptions and driving forces in connection with rule and policy development).
[48] Elpriskollen is an independent comparison website for electricity contracts that is managed by Ei.
[49] Self-generation of electricity that is delivered to the electricity network when production is greater than consumption, so-called surplus electricity.
[50] Svenska kraftnät has also stated that they have not received any such assignment from the Government and have therefore not done such reporting.

balancing in the Nordic countries is being changed from the ground up and will switch to an ACE-based (*area control error*) balancing model, that they do not consider it relevant to spend time evaluating current management practices.[51] The pricing of bids activated for reasons other than balancing are being analysed for the time being within the framework of Ei's review of terms under Article 18 of Commission Regulation (EU) 2017/2195. Ei will follow up to ensure that the measure is implemented.

Activation of balancing energy for reasons other than balancing

Svenska kraftnät does not report how activations for reasons other than balancing, so-called special regulation, affect the price for balancing energy and imbalances. Therefore, Ei has followed up on the activations to provide an indication of any impact that the special regulations have had on the price for balancing energy and imbalances.

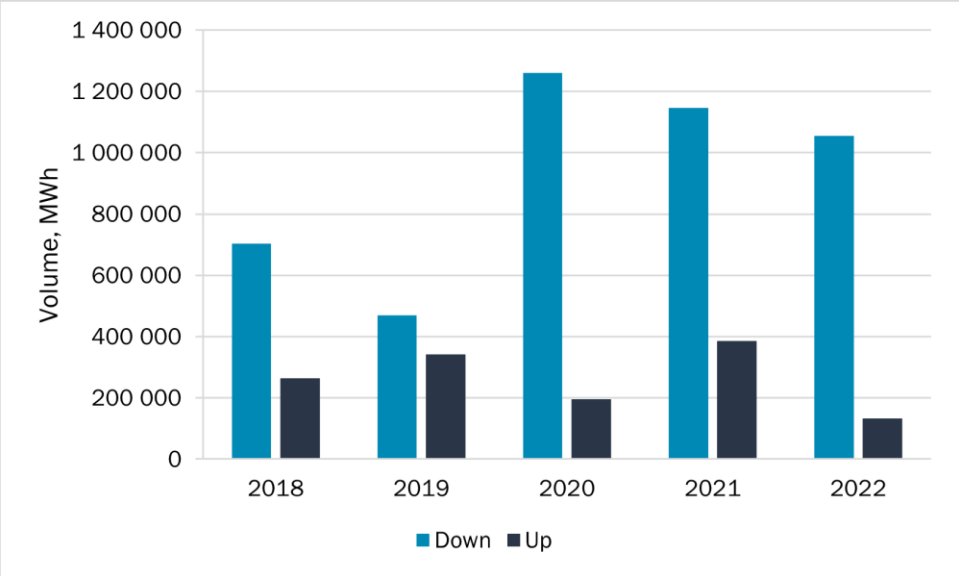
Svenska kraftnät has stated that it is always the most expensive activated bids during the hour that are categorised as activated for reasons other than balancing. These bids are priced according to the *pay-as-bid* principle and do not, according to Svenska kraftnät, affect the regulating power price.[52]

When only upward or downward regulation is ordered through special regulation, it impacts electricity market balance and thereby frequency. Any additional activations of balancing energy that Svenska kraftnät must do to restore the frequency are categorised as balance regulation, which can lead to a potential distortion of the balancing energy prices so that these no longer reflect the actors' imbalances. Even when no additional activation of balancing energy is necessary to restore frequency, this can affect the price of balancing energy and imbalances.

Ei has compiled statistics concerning special regulations in the Nordic synchronous area for the period 1 January 2018–31 August 2022; see Figure 1. If the same volume is always activated for upward and downward regulation, this indicates that the special regulation has not influenced the frequency.

[51] Meeting with Svenska kraftnät, 23 September 2022 and material from Svenska kraftnät, 13 October 2022.
[52] Material from Svenska kraftnät, 9 September 2022.

Figure 1 Volume of special regulation downward and upward in the Nordic synchronous area, MWh, 1 January 2018–31 August 2022

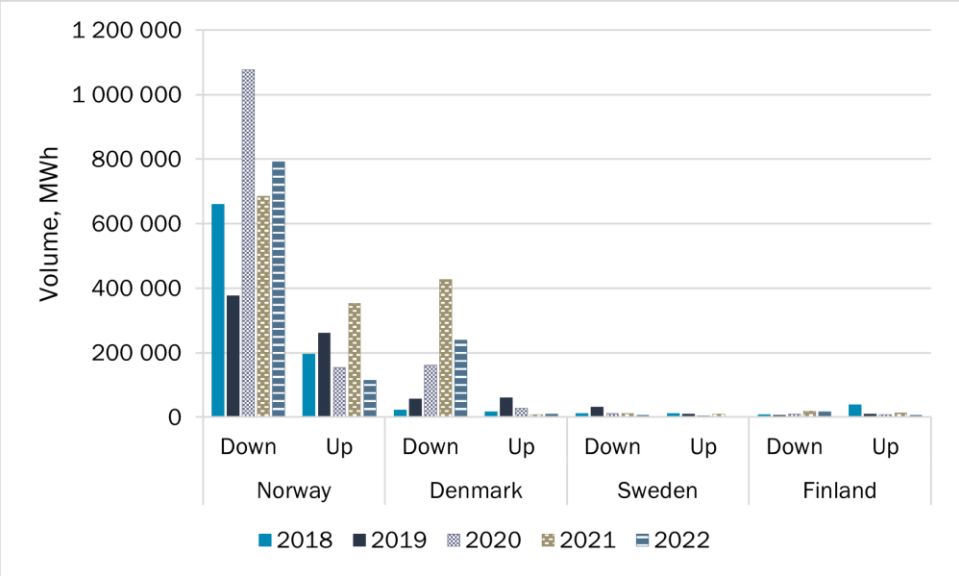


Source: Statistics from SKM Syspower

Figure 1 shows that the occurrence of downward regulations is higher for all years than for upward regulations. This shows a consistent pattern of greater volumes of downward regulation than upward regulation when special regulations are used in the Nordic countries. This indicates that there is a risk that the prices of balancing energy and the settlement of actors' imbalances have been affected by activations used for reasons other than balancing. A one-sided special regulation can mean that a regulation for balancing reasons does not occur if it means that the system is brought into balance or that the need for regulation in the other direction to achieve balance increases. In both cases, it can affect the balancing energy prices and the price for imbalances so that these do not reflect the actual imbalance in the electricity system. The greatest consequence is if the special regulation is so large that the balance changes from being over-balanced to being under-balanced, or vice versa.

In Figure 2, we break down the total figures for the Nordic region by country.

Figure 2 Volume of special regulation downward and upward in each country in the Nordic synchronous area, MWh, 1 January 2018–31 August 2022.



Source: Statistics from SKM Syspower

Figure 2 shows that the difference between upward and downward regulation is greatest in Norway and Denmark. The figure thus indicates that the potential impact of the price of balancing energy and imbalances with Svenska kraftnät's management of network issues by special regulation seems to be significantly less widespread than in Norway and Denmark.

The occurrence of special regulations and their potential impact on balancing energy and the imbalance price should be reported

Ei still consider that Svenska kraftnät should, annually beginning in 2023, report how measures taken for reasons other than balancing affect the prices of balancing energy and the settlement of actors' imbalances on the Swedish and Nordic electricity markets. Ei recommends that the Government task Svenska kraftnät with reporting this. Svenska kraftnät has also expressed that there are difficulties carrying out such reporting on the Nordic electricity market. Nordic cooperation may therefore be needed for Svenska kraftnät to be able to complete this part of the reporting. To enable such a Nordic cooperation, the Government should initiate a dialogue with the other Nordic countries and work to ensure that all Nordic transmission system operators are tasked with reporting how measures carried out for reasons other than balancing affect the prices of balancing energy and the settlement of actors' imbalances per market time unit on the Nordic electricity market. Ei deems this to be a prerequisite for the measure to be implemented.

The pricing of special regulations should follow the same principles as other regulations

In the report *Genomförandeplan för att förbättra elmarknadens funktion* (Implementation plan to improve the functioning of the electricity market), Ei has

expressed that it is not desirable to have two different pricing methods of bids in the regulating power market because this entails a risk for inefficient resource utilisation and prices. A bid that is activated in the regulating power market is settled differently depending on whether it is used for balancing needs or network-related needs. When bids are activated for balancing, in case of upward regulation settlement will be at the highest price among the bids needed, and in case of downward regulation at the lowest price among the bids needed, within the bidding zones having the same price. This means that all activated bids, e.g., for, upward regulation are settled at the same marginal price *(pay-as-cleared*) in the bidding zones sharing the same price. The bids used for special regulation are instead settled with *pay-as-bid*. Bids used for special regulation are activated from the same common regulating power market and should thereby be handled according to the same principles as far as possible.

The pricing of bids will be reviewed and decided by Ei

Upon application by Svenska kraftnät, Ei will review terms concerning balancing for suppliers of balancing services and balance responsible parties under Article 18 of Commission Regulation (EU) 2017/2195. In this review, which is currently in progress, Ei will take a position on the pricing methods.

3.4 Fees for balance responsible parties

The fees that Svenska kraftnät collects from the balance responsible parties shall correspond in a socio-economically efficient manner to the costs that each actor gives rise to.

This measure has been partially implemented

In June 2021, Ei approved Svenska kraftnät's proposal for a new fee structure for the balance responsible parties.[53] The fee structure was introduced by Svenska kraftnät and has been applied since 1 November 2021. Although Ei deems that the fee structure sufficiently meets the requirements in Commission Regulation (EU) 2017/2195, the new fee structure means that the measure is only partially implemented because Ei deems that the relationship between the volume fee and the imbalance fee should be further analysed. Ei will follow up to ensure that the measure is implemented.

[53] Swedish Energy Markets Inspectorate's decision of 24 June 2021, case no. 2021–100232. In addition to these fees, there is also a national fee linked to the financing of the power reserve that is paid by the balance responsible parties from 16 November to 15 March, which Ei has not followed up on within the scope of this report.

The fee structure is approved by Ei and consists of three parts

The fee structure that Ei approved upon application by Svenska kraftnät consists of three parts: volume fee, weekly fee and imbalance fee.[54] The volume fee is intended to cover Svenska kraftnät's costs for procurement of balancing capacity, administration and other costs for balancing that are not affected by the balance responsible party's imbalance management. The volume fee is charged based on the balance responsible party's total consumption and production. The weekly fee is intended to cover costs for administration connected to the settlement of the balance responsible party. The weekly fee is charged per week as a fixed amount. The imbalance fee is intended to cover Svenska kraftnät's cost for procurement of balancing capacity that is affected by the balance responsible party's imbalance management. Increased imbalances with the balance responsible party leads through the imbalance fee to higher costs for the balance responsible party.

The relationship between volume fee and imbalance fee should be analysed and there may be a need for harmonisation in the Nordic countries

Under its assignment, Ei shall follow up to ensure that the fees Svenska kraftnät collects correspond in a socio-economically efficient manner to the costs that each actor gives rise to. An important principle in this review is that the design of the fee structure must provide the correct incentives so that the fees collected are, to the greatest extent possible, paid by the actor that gave rise to the cost for the system as a whole.[55] Further aspects to be considered in the design are fee predictability for balance responsible parties and cost coverage for Svenska kraftnät.

When Ei decided to approve Svenska kraftnät's proposal, it was against the background that Ei considered that the fee structure sufficiently met the requirements set out in the Balancing Regulation. The new fee structure means that the measure is partially implemented, but Ei considers that there is a need for continued investigation because the greatest cost item for the balance responsible parties, the volume fee,[56] cannot be affected by the balance responsible parties. Ei recommends that the Government task Svenska kraftnät with, in compliance with the rules set out in the Balancing Regulation, analysing the relationship between volume fee and imbalance fee and the costs these fees must cover.

---

[54] According to Commission Regulation (EU) 2017/2195, the main rule is that the procurement costs for balancing capacity, administrative costs and other costs related to balancing must be charged through the introduction of a function for scarcity pricing. Alternatively, an additional settlement mechanism can be introduced. It is this additional settlement mechanism that Svenska kraftnät chose to bring to Ei for review.

[55] This principle is called the polluter pays principle.

[56] According to Svenska kraftnät, the volume fee accounts for approximately 95 per cent of the fee revenues from the balance responsibility fee. See Svenska kraftnät, ansökan om nödåtgärd: reducering av balansansvarsavgiften (Application for emergency measures: reduction of the balance responsibility fee).

The costs that each part of the fee should cover through the balance responsible parties' fees currently differ between the Nordic countries. Within the scope of Svenska kraftnät's assignment, it should therefore be analysed if the cost base to be covered by the balance responsible parties should be harmonised to create uniform incentives in the common Nordic balancing market. This requires Nordic cooperation, however, as Sweden cannot push harmonisation alone. Thus, Ei assesses that a prerequisite for this is that the Government works to ensure that all Nordic transmission system operators are tasked with analysing the cost base covered by the balance responsible parties and that they, within the scope of common EU regulatory frameworks, propose a common model. Particular attention should be paid to how costs are distributed between network operations and system operations, as this determines which costs are covered by the network customers and which are covered by the balance responsible parties.

3.5 Appropriate pricing of frequency containment reserves (FCR-N and FCR-D)

The pricing of frequency containment reserves (FCR-N and FCR-D) shall be appropriate.

This measure will be implemented

Svenska kraftnät will, no later than 1 February 2024, change the pricing method of frequency containment reserves (FCR-N and FCR-D) to *pay-as-cleared*, which Ei considers to be an appropriate pricing method. This shall take place in accordance with Ei's decision of 26 May 2022 on common and harmonised rules and processes for exchange and procurement of FCR balancing capacity between Svenska kraftnät and Energinet DK.[57]

Ei will follow up as needed on whether the pricing method for balancing capacity products ensures cost-effective and market-based procurement and well-functioning markets.

Ei considers that uniform balancing capacity pricing is appropriate

Commission Regulation (EU) 2017/2195 clearly states that *pay-as-cleared* should be the pricing method used for balancing energy products unless another alternative pricing method proves to be more efficient.[58] For balancing capacity, it is not as clear what is recommended in the regulatory framework, but Ei has thus far assessed that *pay-as-cleared* is the pricing method that should also be used for

[57] Swedish Energy Markets Inspectorate's decision of 26 May 2022, case no. 2019–103032.
[58] Article 6(4) in Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity.

balancing capacity to create conditions for effective resource allocation and incentives for new actors to become active on the FCR markets.

Ei's decision on FCR of 26 May 2022 to permit the current pricing model to continue until 31 January 2024 is because Svenska kraftnät and Energinet DK expressed in their application that there are still obstacles to implementing the transition to *pay-as-cleared.* The reason for these obstacles is that the markets need to mature further and that this should be seen as a precautionary measure. Ei and the Danish regulatory authority Försyningstilsynet have accepted this justification from Svenska kraftnät and Energinet DK. Svenska kraftnät has stated that they are working towards introducing *pay-as-cleared* according to Ei's decision, i.e., no later than 1 February 2024.[59]

Ei considers it appropriate that all balancing capacity products, including aFRR and mFRR, are priced according to the same principle. On 10 May 2022, the pricing method for aFRR balancing capacity was changed to *pay-as-cleared* for the upcoming market and for mFRR balancing capacity, Svenska kraftnät proposes that *pay-as-cleared* be applied as pricing method.[60]

3.6 Prequalification process

Svenska kraftnät shall regularly review its prequalification process and evaluate the requirements specifications linked to the delivery of each ancillary service.

This measure has been implemented

Svenska kraftnät has reviewed and introduced new routines for the prequalification process and evaluated the requirements specifications for the ancillary services FCR-N, FCR-D, aFRR and mFRR. Ei assesses that the work with evaluation of the prequalification process and evaluation of the requirements specifications linked to the delivery of each ancillary service should continue in order to make it easier for actors and enable all types of technology to participate in the balancing market under the same conditions.

Ei will follow up to ensure that the measure continues to be implemented.

To monitor Svenska kraftnät's work with the prequalification process and the requirements specifications linked to the delivery of each ancillary service, Ei has collected information from Svenska kraftnät.

[59] Material from Svenska kraftnät, 9 September 2022.
[60] Swedish Energy Markets Inspectorate, case no. 2022–102820.

Ongoing review of the prequalification process

The information collected from Svenska kraftnät indicates that Svenska kraftnät has developed processes for ongoing prequalification of new resources and re-qualification of existing resources, in accordance with Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation, in which the requirements concerning the prequalification process are stipulated.

Svenska kraftnät has also developed routines aimed at periodically updating, evaluating and developing the process. In 2022, Svenska kraftnät documented the existing prequalification process with a process description clarifying the components and working methods of the process. The prequalification process includes a process owner, a process manager and a process team, all of which work in different stages for continuous improvements.

According to Svenska kraftnät, the number of completed prequalifications is increasing in comparison with previous years. In 2020, 20 prequalifications were carried out. The corresponding figure in 2021 was 73 and from January to June of 2022, 95 prequalifications were carried out. During the second quarter of 2022, there were a total of 42 ongoing prequalifications for FCR-N, FCR-D, aFRR, mFRR, and fast frequency reserve (FFR).

Table 2 presents the increase in supply of prequalified volumes in MW.

Table 2 Increase in supply (excluding re-qualifications and volumes from pilot study for variable resources) of prequalified volumes in MW, 2018–2022

Ancillary service	2018[61]	2019	2020	2021	2022	Total theoretical supply (MW)
FCR-N	1233	33	25	53	5	1349
FCR-D upwards	2776	28	76	93	84	3057
FCR-D downwards[62]	-	-	-	308	234	542
FFR	-	-	-	-	118	118
aFRR	3784	50	0	20	55	3909
mFRR	14,369	10	0	20	63	14,462

Source: Material from Svenska kraftnät, 9 September 2022

The ongoing pilot study will create an understanding of how variable resources can contribute with ancillary services

Svenska kraftnät also has a pilot study on the delivery of reserves from resources with variable production (such as solar and wind) or consumption that is running until autumn 2023. The purpose is to, in cooperation with the industry, create an

[61] Svenska kraftnät has stated that this is a rough estimate based on the action plan for re-qualifications of existing facilities.
[62] Svenska kraftnät has stated that FCR-D downwards was introduced in 2022.

understanding of the conditions for variable resources to contribute with ancillary services. The pilot study includes investigating how the prequalification process can be designed for these resources, and those who participate in the study must have an approved simplified prequalification application before they can participate on affected reserve markets.[63]

Evaluation of requirements specifications for aFRR and mFRR is in progress

Svenska kraftnät is currently working to finalise the technical requirements for aFRR and mFRR. The aim is for the technical requirements to be harmonised in the Nordic countries and conform to the basic requirements stipulated at the European level due to future connection to the MARI and PICASSO platforms.[64]

Requirements specifications for FCR-N and FCR-D are currently being reviewed by Ei

Svenska kraftnät has reported that a Nordic cooperation is under way to develop the requirements specifications linked to the delivery of FCR-N and FCR-D.

Svenska kraftnät tested new requirements specifications in 2021. The requirements specifications were then updated based on the experiences from the test phase and a new proposal was published for public consultation in March 2022. Following further adjustments, Svenska kraftnät sent the proposal to Ei in June 2022.[65] Ei is currently analysing the proposal.

In the development of the requirements specifications, the focus has been on ensuring that the products contribute sufficiently to operational reliability in the electricity system, and that the requirements are technologically neutral and enable different types of facilities to meet the requirements specifications. Svenska kraftnät considers that the revised requirements are a prerequisite for continued high security of supply in pace with the energy transition.[66]

[63] Material from Svenska kraftnät, 9 September 2022 and Svenska kraftnät, Förlängd tidsfrist för förkvalificering till pilotstudie (Extended deadline for prequalification for pilot study).
[64] Material from Svenska kraftnät, 9 September 2022.
[65] Swedish Energy Markets Inspectorate, case no. 2022–102495.
[66] Material from Svenska kraftnät, 9 September 2022.

3.7 Smallest bid size for manual/automatic frequency restoration reserves (mFRR and aFRR)

The minimum requirement on the smallest bid size for participating in the procurement of manual/automatic frequency restoration reserves (mFRR/aFRR) will be lowered to 1 MW in order to reduce entry barriers.

This measure has been partially implemented

The smallest bid size for mFRR is 10 MW in bidding areas 1, 2 and 3, and 5 MW in bidding area 4. The measure is thus not implemented for mFRR but will be implemented by 24 July 2024 at the latest when the smallest bid size for mFRR must be 1 MW. Ei will continue to monitor the measure and any obstacles until it is implemented for mFRR.

Since 10 May 2022, the smallest bid size for aFRR is 1 MW. The minimum requirement is thereby met for aFRR.

To monitor that the minimum requirement for smallest bid size for participation in procurement of mFRR and aFRR is met, Ei has collected information from Svenska kraftnät.

Pilot study with 1 MW as smallest bid size in progress

According to Svenska kraftnät, a pilot study has been under way since January 2021 with 1 MW as the smallest bid size for actors that were not previously active on the market for mFRR balancing energy.[67] Svenska kraftnät has stated that the smallest bid size for mFRR will be lowered to 1 MW for all actors in connection with the implementation of the Nordic automatic energy activation market for mFRR during the fourth quarter of 2023. This will be done together with other Nordic transmission system operators in accordance with the timetable for the *Nordic Balancing Model* (NBM) project.[68]

Requirement for 1 MW as smallest bid size by 24 July 2024

When Svenska kraftnät connects to the MARI and PICASSO platforms, the smallest bid size must be 1 MW for mFRR and aFRR. Under the Balancing Regulation, Svenska kraftnät and the other transmission system operators must connect to MARI and PICASSO no later than 24 July 2022, but Svenska kraftnät has applied for and been granted exemption.[69] The terms of this exemption are that Svenska kraftnät must connect to the platforms by 24 July 2024 and this is thus the

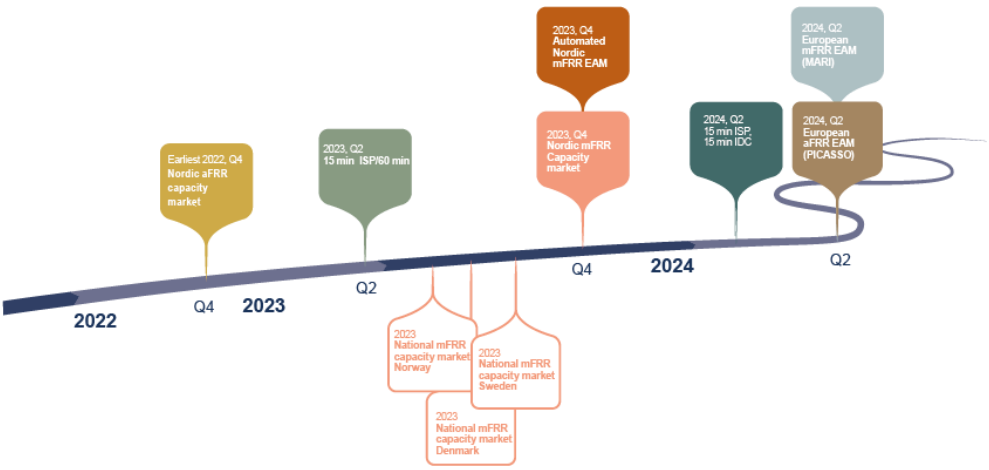
[67] Material from Svenska kraftnät, 9 September 2022.
[68] *Nordic Balancing Model* is a project conducted by the Nordic transmission system operators.
[69] Exemption from connection to MARI, Swedish Energy Markets Inspectorate's decision of 31 August 2022, case no. 2022–100136 and exemption from connection to PICASSO, Swedish Energy Markets Inspectorate's decision of 31 August 2022, case no. 2022–100137.

last date to lower the smallest bid size to 1 MW for mFRR and aFRR. As noted above, this has already been done for aFRR.

Upcoming changes on the Nordic balancing market with relevance for the measure

Figure 3 presents the current timetable that the Nordic transmission system operators are working towards with regard to the NBM project.

Figure 3 Timetable for the Nordic system operators' project *Nordic Balancing Model* (NBM)[70]



Source: *Nordic Balancing Model* (updated 29 June 2022).

In the project, the Nordic transmission system operators plan to implement a number of changes on the Nordic balancing market. Figure 3 shows milestones in the timetable relevant to the measure to monitor the minimum requirement on smallest bid size. For example, the introduction of a Nordic energy activation market for mFRR is being planned during the fourth quarter of 2023 and connection to MARI and PICASSO during the second quarter of 2024.

3.8 Removal of cost-based bid for FCR-N and FCR-D

Follow-up of what the removal of Svenska kraftnät's requirement for cost-based bids for FCR-N and FCR-D has meant for the market actors possibilities to participate in the balancing market based on equal conditions regardless of type of resource.

This measure has been implemented

On 1 January 2022, Svenska kraftnät removed the requirement for cost-based bids for FCR-N and FCR-D. To follow up on how the removal of the requirement for cost-based bids affects actors' opportunities to participate in the balancing market, Ei has collected information and data from Svenska kraftnät, and asked actors to provide their views in an online survey. Ei notes that it is not possible to draw

[70] Roadmap Nordic Balancing Model.

conclusions on what the measure to remove the requirement for cost-appropriate bids has meant for bidders' opportunities to participate in the balancing market based on equal conditions regardless of type of resource. Due to the rapid developments on the market, Ei also does not believe that further analyses will prove to be of value.

Difficult to draw conclusions on how the removal of the requirement has affected actors' opportunities to participate on the balancing market

Svenska kraftnät has provided data to Ei concerning bids for FCR-N and FCR-D during the period 1 January 2020 to 30 August 2022.

According to Svenska kraftnät, there are challenges involved with drawing conclusions on the development of bid volumes and prices before and after the removal of cost-based bids for FCR-N and FCR-D. They note that the electricity market has changed at a rapid pace and that most changes have direct or indirect impacts on the markets for ancillary services, and that the drastically rising prices on the day-ahead market since 2021 have a great impact on the price increases for FCR-N and FCR-D. The FCR supply is also dominated by hydropower and bid volumes and prices are highly influenced by hydrological factors.[71]

Ei has analysed this data and can, like Svenska kraftnät, state that there are tendencies toward increased prices for FCR-N and FCR-D over time, but that this may have other explanations than the removal of cost-based bids. There are many factors that influence price developments, and it is difficult to isolate what affect the removal of cost-based bids has had. It has also not been that long since the requirement was removed, which also contributes to the difficulty of drawing any conclusions on whether the actors' activities have changed.

Requirement for cost-based bids may have previously impaired price formation

The cost-based pricing of FCR-N and FCR-D that was previously in force was only specified for hydropower production and could not be directly translated to other types of production resources. The costs were to be based on calculations of lost income due to less-efficient use of hydro reservoirs and costs for extra wear and tear due to an increased number of changes in production modes. Calculating costs in this way is therefore not as suitable for other types of production or for demand side flexibility.

Setting requirements on how bids are to be calculated risks adversely influencing effective price formation as it can function as price regulation. There is a risk that the terms, if they are drafted improperly, discriminate against actors or mean that

[71] Material from Svenska kraftnät, 9 September 2022.

actors, due to ambiguities or poorly applied rules, may refrain from participating in the procurement, which could impair price formation.

It is Ei's assessment that the removal of Svenska kraftnät's previous requirement for cost-based bids has made it easier for actors to participate in the market based on equal conditions. The views submitted via the survey published on Ei's website indicate that the stakeholders are also positive to the removal of the requirement.[72] Four out of five stakeholders state that the removal of the requirement for cost-based bids for FCR-N and FCR-D has changed their opportunities to participate on the balancing market, while one actor states that it has not. Furthermore, four out of five stakeholders state that the removal of the requirement for cost-based bids has positively affected their opportunities to participate in the FCR markets, while one actor states that it has had no affect at all.

All participants see the removal of the requirement for cost-based bids for FCR-N and FCR-D as positive. They emphasise that the calculation was complicated, which caused a number of administrative difficulties. One participant notes that it is now easier for them to price their resources and that the resources can then be used in the market they are needed most. One participant also mentioned that the removal of the requirement for cost-based bids has meant clearer incentives for the customers to be more active and that this has led to more flexibility being made available. All participants also state that the conditions for comparing bids and competing have become clearer.

One participant states that the removal of cost-based bids has not changed their opportunities to participate in the balancing market, but rather that it is the technical qualification that determines what opportunities they have to participate in the market.

3.9 Publication of information from the balancing market

Svenska kraftnät shall ensure that they have the conditions to publish information from the balancing market as close as possible to real time.

This measure has not been implemented

To follow up on Svenska kraftnät's work to ensure that they have the conditions to publish information as close as possible to real time, Ei has collected information from Svenska kraftnät. Their report states that it is currently not possible for Svenska kraftnät to publish information close to real time. Ei considers that continued monitoring of this measure is necessary.

[72] See Chapter 3.10 for further information on the online survey.

The conditions to publish information as close as possible to real time will be improved

Svenska kraftnät states that the conditions to publish information from the balancing market as close as possible to real time will be improved as the balancing market and balancing model are developed. According to Svenska kraftnät, an automated price calculation – which is made possible with the updated IT structure developed before the start of the Nordic automated energy activation market for mFRR – is necessary to enable information to be published more quickly. Another prerequisite to be able to publish information closer to real time is, according to Svenska kraftnät, the transition from a frequency-based balancing model to balancing per bidding area, i.e., an ACE-based (*area control error*) balancing model. Svenska kraftnät expresses that there is a general goal to be able to publish information from the balancing market within 15 minutes after gate closure time for placing bids for the current market time unit.

The conditions that are needed, according to Svenska kraftnät, to enable faster publication of information are expected to be in place within the next 1–2 years, or no later than the 24 July 2024 deadline for Svenska kraftnät to connect to the MARI and PICASSO platforms.

Svenska kraftnät also emphasises that they are working for increased transparency and to make information more easily accessible to the actors. To achieve this, they have recently updated the structure and information on their actor portal.

Exemption from publishing information on individual bids

Ei decided in November 2021 to grant Svenska kraftnät exemption from publishing information on individual bids related to offered prices and volumes for balancing capacity on the aFRR, FCR-N and FCR-D markets, and for balancing energy on the mFRR market.[73] This decision was made in accordance with Article 12(4) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing and applies as long as the conditions in the decision are met. However, Svenska kraftnät must report annually to Ei on the conditions forming the basis for the exemption. As soon as the conditions for the exemption no longer exist, Svenska kraftnät must begin to publish the information.

3.10 Views from stakeholders

During this Government assignment, Ei has held a dialogue with stakeholders via a survey published on Ei's website. The purpose of the online survey was to collect views and experiences regarding the stakeholders' opportunities to participate in the balancing market when Svenska kraftnät's requirement for cost-based bids for

[73] Swedish Energy Markets Inspectorate's decision of 11 November 2021, case no. 2020–103215.

FCR-N and FCR-D were removed, and to collect other views concerning the nine measures that Ei reports on in this report. Five stakeholders completed the online survey. Below is a summary of the participants' views that have not already been reported in this chapter.

Several participants stated that they would be positive to the lowering of the smallest bid size, as this would facilitate small bids and fewer resources. Several participants also mentioned that real-time measurements and real-time reporting to Svenska kraftnät is a possible obstacle, not least for the participants with fewer resources, as such a requirement can mean that these participants do not pass the prequalification process. The prequalification process is also mentioned as a general obstacle.

One participant additionally stated that price transparency is important in the market and that all participants should have access to information about the market at the same time so that larger market participants do not possess more information than others.

It was also highlighted that marginal pricing is desired on as many products as possible and that harmonised pricing between [the Nordic] countries is important.

The stakeholders' views are valuable to Ei

It has been very beneficial to hear the stakeholders' views. In many cases, these views' substantiate Ei's conclusions concerning the nine measures on which this report primarily follows up. Ei has also considered the views received, in the online survey or in other contexts, including those that have not been mentioned in this report.

4 Additional measures in the proposed implementation plan

In the implementation plan, Ei proposed twelve measures for improving the functioning of the electricity market. Within the scope of this assignment, Ei will only follow up on nine of these measures. In this chapter, we present the remaining measures, which have not yet been implemented.

4.1 Instruments on the electricity market

- Ei proposed that instruments on the electricity market should be appropriate in order to remove regulatory distortions. This means that both existing instruments and any future energy policy instruments should have:
- a clear and detailed purpose,
- pre-set goals that enable follow-up of whether the purpose of the instrument has been achieved,
- an appropriate connection between purpose and goal, if quantitative goals are included in the instrument, and
- a clear phase-out plan initiated when the indicators show that the instrument's purpose has been achieved.

4.2 Implementation of Clean Energy Package

Ei's proposals in the report *Clean energy in the EU – an implementation of five legal acts*,[74] should be implemented in Swedish legislation as soon as possible to remove regulatory distortions. It was Ei's assessment that when the Clean Energy Package is implemented, it would contribute to a more well-functioning electricity market and Ei therefore proposed that these rules should be included in the implementation plan.

4.3 Requirement for separate procurement upwards and downwards for FCR-N

Ei proposed that Svenska kraftnät should as soon as possible cease setting requirements on symmetrical bids for FCR-N, as this requirement prevents participation from a number of market actors. Ei decided in October 2020 to

[74] Swedish Energy Markets Inspectorate (2020), Ren energi inom EU – ett genomförande av fem rättsakter (Clean energy in the EU – an implementation of five legal acts), EiR2020:02.

approve Svenska kraftnät's application for exemption from obligations in procurements of balancing capacity.[75] This decision means that Svenska kraftnät is permitted to procure balancing capacity upwards and downwards jointly until 31 December 2023.

4.4 All measures should be implemented

The situation on the electricity market has changed in several ways since Ei recommended the above measures in the implementation plan. Ei will continue to analyse how the market is coping with the various strains. Even if this means that further measures may be needed in the future, it is Ei's opinion that the measures in the implementation plan, including those not analysed in this report, are still essentially relevant to implement to the extent they have not yet been implemented, and that they contribute to a more well-functioning electricity market.

[75]Swedish Energy Markets Inspectorate's decision of 22 October 2020, case no. 2019–103272.

5 References

ACER (2022), *ACER´s Final Assessment of the EU Wholesale Electricity Market Design*. Retrieved from: https://www.acer.europa.eu/sites/default/files/documents/Publications/ACER%26%23039%3Bs Final Assessment of the EU Wholesale Electricity Market Design.pdf

DNV (2021) Metoder som identifierar kunders uppfattning och drivkrafter i samband med regel- och policyutveckling (Methods that identify customers' perceptions and driving forces in connection with rule and policy development).

Swedish Energy Markets Inspectorate, case no. 2022–102495

ACER Decision 02/2022 on the European Resource Adequacy Assessment for 2021 Retrieved from: https://www.acer.europa.eu/sites/default/files/documents/Individual Decisions/ACER Decision 02-2022 on ERAA 2021_0.pdf

ACER Decision 03/2022 on the amendment to the methodology for pricing balancing energy and cross-zonal capacity used for the exchange of balancing energy or operating the imbalance netting process
Retrieved from: https://www.acer.europa.eu/sites/default/files/documents/Individual Decisions/ACER Decision 03-2022 on the Amendment to the Methodology for Pricing Balancing Energy_0.pdf

Council of the European Union press release 30 September 2022, 'Council agrees on emergency measures to reduce energy prices'. Retrieved 20 October 2022 from: https://www.consilium.europa.eu/sv/press/press-releases/2022/09/30/council-agrees-on-emergency-measures-to-reduce-energy-prices/

ENTSO-E, ERAA 2022. Retrieved 3 November 2022 from: https://www.entsoe.eu/outlooks/eraa/2022/

ENTSOE-E, Early Insights of Winter Outlook Report 2022-2023. Retrieved 5 November 2022 from: https://www.entsoe.eu/outlooks/seasonal/

Government Offices, Mål för energipolitiken (Energy policy goals). Retrieved 2 November 2022 from: https://www.regeringen.se/regeringens-politik/energi/mal-och-visioner-for-energi/

Government Offices, Referral of Swedish Energy Markets Inspectorate's report 'Oberoende aggregatorer: Förslag till nya regler för att genomföra elmarknadsdirektivet' (Independent aggregators – Proposals for new rules for the implementation of the electricity market directive). Retrieved 24 October 2022 from: https://www.regeringen.se/remisser/2021/04/remiss-av-energimarknadsinspektionens-rapport-oberoende-aggregatorer-forslag-till-nya-regler-for-att-genomfora-elmarknadsdirektivet/

Government Offices, Regeringen beslutar om en tillförlitlighetsnorm för Sverige (The Government decides on a reliability standard for Sweden). Retrieved from: https://www.regeringen.se/pressmeddelanden/2022/11/regeringen-beslutar-om-en-tillforlitlighetsnorm-for-sverige/

Material from Svenska kraftnät, 23 September 2022.

Roadmap Nordic Balancing Model. Retrieved 20 October 2022 from: https://nordicbalancingmodel.net/roadmap-and-projects/ Material från Svenska kraftnät, 2022-09-09

Svenska kraftnät (2019b), Systemutvecklingsplan (System development plan) 2022–2031

Svenska kraftnät (2022), Kraftbalansen på den svenska elmarknaden, rapport 2022 (Power balance on the Swedish electricity market, Report 2022)

Sweco (2022), Kartläggning av lokala flexibilitetsmarknader (Survey of local flexibility markets

Svenska kraftnät, ansökan om nödåtgärd: reducering av balansansvarsavgiften (Application for emergency measures: reduction of the balance responsibility fee). Retrieved from: https://www.svk.se/siteassets/om-oss/vart-uppdrag/regeringsuppdrag/nodatgarder/nodatgard_reducering-av-balansansvarsavgiften24okt.pdf

Svenska kraftnät, Förlängd tidsfrist för förkvalificering till pilotstudie (Extended deadline for prequalification for pilot study). Retrieved 20 October 2022 from: https://www.svk.se/press-och-nyheter/nyheter/elmarknad-allmant/2022/forlangd-tidsfrist-for-forkvalificering-till-pilotstudie/

Svenska kraftnät, Hushållen kapar elförbrukningen kraftigt i september (Households drastically cut their electricity consumption in September). Retrieved 27 October 2022 from: https://www.svk.se/press-och-nyheter/press/hushallen-kapar-elforbrukningen-kraftigt-i-september---3333082/

Svenska kraftnät, Risken för bortkoppling av el i vinter har ökat (Increased risk of electricity disconnection this winter). Retrieved 20 October 2022 from: https://www.svk.se/press-och-nyheter/nyheter/allmanna-nyheter/2022/risken-for-bortkoppling-av-el-i-vinter-har-okat/

Svenska kraftnät,7,6 procent minskad elförbrukning i oktober (7.6 per cent reduced electricity consumption in October). Retrieved 16 November 2022 from: https://www.svk.se/press-och-nyheter/press/76-procent-minskad-elforbrukning-i-oktober---3334956/

Svenska kraftnät. Elförsörjningen och omvärldsläget (Electricity supply and the global situation). Retrieved 24 November 2022 from: https://www.svk.se/sakerhet-och-beredskap/elforsorjningen-och-omvarldslaget/

Svenska kraftnäts Kortsiktig marknadsanalys 2021, simulering och analys av kraftsystemet 2022–2026 (Short-term market analysis 2021, Simulation and analysis of the power system), https://www.svk.se/siteassets/om-oss/rapporter/2022/kortsiktig-marknadsanalys-2021.pdf

Swedish Energy Agency, Varje kilowattimme (kWh) räknas (Every kilowatt-hour (kWh) counts). Retrieved 26 November 2022 from: http://www.energimyndigheten.se/varje-kilowattimme-raknas/

Swedish Energy Markets Inspectorate (2020) Genomförandeplan med tidsplan för att förbättra elmarknadens funktion (Follow-up of implementation plan with timetable for improving the functioning of the electricity market), Ei R2020:09

Swedish Energy Markets Inspectorate (2020), Ren energi inom EU – ett genomförande av fem rättsakter (Clean Energy in the EU – an implementation of five legal acts), Ei R2020:02

Swedish Energy Markets Inspectorate (2021), Ei:s förslag till tillförlitlighetsnorm för Sverige (Ei's proposal for reliability standard for Sweden), Ei R2021:05

Swedish Energy Markets Inspectorate (2021), Indikatorer för utvecklingen av smarta elnät (Indicators for the development of smart electricity networks), Ei R2021:07

Swedish Energy Markets Inspectorate (2021), Oberoende aggregatorer: Förslag till nya regler för att genomföra elmarknadsdirektivet (Independent aggregators – Proposals for new rules for the implementation of the Electricity Market Directive), Ei R2021:03

Swedish Energy Markets Inspectorate (2021), Tjänster för efterfrågeflexibilitet (Services for demand side flexibility), Ei R2021:13

Swedish Energy Markets Inspectorate (2021), Utvärdering av kostnader och nyttor av smarta elnät (Evaluation of costs and benefits of smart electricity networks), Ei R2021:06

Swedish Energy Markets Inspectorate, case no. 2022–102721

Swedish Energy Markets Inspectorate, case no. 2022–102820

Swedish Energy Markets Inspectorate, Ei utreder vilken roll villkorade avtal kan ha i energiomställningen (Ei investigates the role conditional agreements can have in the energy transition). Retrieved 10 November 2022 from: https://ei.se/om-oss/nyheter/2022/2022-08-22-ei-utreder-vilken-roll-villkorade-avtal-kan-ha-i-energiomstallningen

Swedish Energy Markets Inspectorate, Ei:s strategi för flexibilitet i elsystemet (Ei's strategy for flexibility in the electricity system)
Retrieved from:
https://ei.se/download/18.6f9b6b2617714873b45f1634/1613487758406/Energimarknadsinspektionens-strategi-f%C3%B6r-flexibilitet-i-elsystemet.pdf

Swedish Energy Markets Inspectorate, Energimarknadsinspektionens föreskrifter och allmänna råd för utformning av nättariffer för ett effektivt utnyttjande av elnätet (Swedish Energy Markets Inspectorate's regulations and general advice on the design of network tariffs for efficient use of the electricity network), EIFS 2022:1

Swedish Energy Markets Inspectorate, Energimarknadsinspektionens föreskrifter och allmänna råd om skyldigheter att rapportera uppgifter om utvecklingen av smarta elnät (Swedish Energy Markets Inspectorate's regulations and general advice on obligations to report information on the development of smart electricity networks), EIFS 2022:5

Swedish Energy Markets Inspectorate's decision of 11 November 2021, case no. 2020–103215

Swedish Energy Markets Inspectorate's decision of 22 October 2020, case no. 2019–103272

Swedish Energy Markets Inspectorate's decision of 24 June 2021, case no. 2021–100232.

Swedish Energy Markets Inspectorate's decision of 26 May 2022, case no. 2019–103032

Swedish Energy Markets Inspectorate's decision of 31 August 2022, case no. 2022–100136

Swedish Energy Markets Inspectorate's decision of 31 August 2022, case no. 2022–100137

Swedish Energy Markets Inspectorate's instructions, Regulation 2016:742, https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-2016742-med-instruktion-for_sfs-2016-742

Vattenfall, Tiden för reparation av Ringhals 4 förlängs (Repair time for Ringhals 4 extended). Retrieved 20 October 2022 from: https://group.vattenfall.com/se/nyheter-och-press/nyheter/2022/iden-for-reparation-av-ringhals-4-forlangs

Appendix 1 Ei's 2020 proposal for an implementation plan

Ei's recommendations for measures for the implementation plan are summarised in the table below. The recommendations are broken down by the categories listed in Article 20(3) in the Electricity Market Regulation.

Identified problem areas and improvement areas	Recommended measures	Purpose of the measure
Clean Energy Package implemented in Swedish legislation	Ei's proposals in the report 'Clean Energy in the EU – an implementation of five legal acts', should be implemented as soon as possible	**a)** Remove regulatory distortions
Instruments on the electricity market should be appropriate	Energy policy instruments should have **a)** a clear and detailed purpose, **b)** pre-set goals that enable follow-up of whether the purpose of the instrument has been achieved, **c)** an appropriate connection between purpose and goal, if quantitative goals are included in the instrument, **d)** a clear phase-out plan initiated when the indicators show that the instrument's purpose has been achieved.	**a)** Remove regulatory distortions
Lower maximum price on the regulating power market (mFRR) than on the other submarkets provides the wrong incentives	Administratively specified maximum prices should be avoided and set at least at a level that does not risk displacing other production resources or demand side flexibility from participants. The regulating power market's maximum price should be at least as high as the highest maximum price applied on the day-ahead and intraday markets.	**b)** Remove price caps in accordance with Article 10;
Obstacles for demand side flexibility must be removed	Ei is tasked by the Government to promote demand side flexibility. As part of this assignment, Ei identifies obstacles, submits proposals and continuously monitors developments.	**e)** Enable self-generation, energy storage, demand-side measures and energy efficiency by adopting measures to eliminate any identified regulatory distortions
Price information should be published as close as possible to real time	Svenska kraftnät should ensure that they have procedures, etc. in place so that they can publish price information from the regulating power market as close as possible to real time	**f)** Ensure cost-efficient and market-based procurement of balancing and ancillary services

Identified problem areas and improvement areas	Recommended measures	Purpose of the measure
Special regulations that distort the price signal in the balancing market must be avoided	Svenska kraftnät should, starting in 2021, annually report how special regulations (measures taken for network reasons) affect the prices of balancing energy or the settlement of actors' imbalances on the Swedish and Nordic electricity markets. Furthermore, the reasonableness of the pricing of those bids activated for purposes other than for reasons of balancing and which are priced differently than bids activated by balancing reasons should be further analysed.	**f)** Ensure cost-efficient and market-based procurement of balancing and ancillary services
The fee structure for the balance responsible parties socialises costs	The fees that Svenska kraftnät collects from the balance responsible parties (BRP) should as far as possible correspond to the costs that each actor gives rise to. The current structure should be reviewed.	**f)** Ensure cost-efficient and market-based procurement of balancing and ancillary services
The pricing of certain reserves using the *pay-as-bid* method should be reviewed	It should be investigated if the application of *pay-as-bid* in pricing for FCR-N and FCR-D is the most appropriate pricing method.	**f)** Ensure cost-efficient and market-based procurement of balancing and ancillary services
The prequalification process risks impeding entry into the balancing market	Svenska kraftnät should regularly review its prequalification process and also evaluate the requirements specifications linked to the delivery of each ancillary service.	**e)** Enable self-generation, energy storage, demand-side measures and energy efficiency by adopting measures to eliminate any identified regulatory distortions and **f)** Ensure cost-effectiveness and market-based procurement of balancing and ancillary services
The size of the minimum permitted bids prevents some actors from providing ancillary services	The current relatively high minimum requirement on the smallest bid size for participating in the procurement of manual/automatic frequency restoration reserves (mFRR/aFRR) should be continuously evaluated in order to reduce entry barriers.	**e)** Enable self-generation, energy storage, demand-side measures and energy efficiency by adopting measures to eliminate any identified regulatory distortions and **f)** Ensure cost-effectiveness and market-based procurement of balancing and ancillary services
The requirement for symmetrical bids prevents actors from providing ancillary services	Svenska kraftnät should as soon as possible cease setting requirements on symmetrical bids for FCR-N. Ei will, through 31 December 2023, continuously follow up to ensure that Svenska kraftnät adopts the measures required for the removal of the requirement for symmetrical bids.	**e)** Enable self-generation, energy storage, demand-side measures and energy efficiency by adopting measures to eliminate any identified regulatory distortions and **f)** Ensure cost-effectiveness and market-based procurement of balancing and ancillary services

Identified problem areas and improvement areas	Recommended measures	Purpose of the measure
The method for calculating cost-based bids for FCR involves a form of price regulation and risks discriminating against actors.	Svenska kraftnät's requirement for cost-based bids in FCR should be removed, as this entails a form of price regulation. Each bidder should be given the opportunity to participate in the balancing market based on equal conditions regardless of which type of resource they have at their disposal.	**e)** Enable self-generation, energy storage, demand-side measures and energy efficiency by adopting measures to eliminate any identified regulatory distortions and **f)** Ensure cost-effectiveness and market-based procurement of balancing and ancillary services

2022-12-08

2022-102491-0017

Swedish Energy Markets Inspectorate Box 155, 631 03 Eskilstuna. Phone: +46 +16-16 27 00. www.ei.se