NordREG's status report

- update

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Preface

The aim of this yearly status report is to present the work undertaken by the Nordic energy regulators (NordREG) during past 12 months in the areas of wholesale electricity markets, retail markets, network regulation and demand flexibility.

European cooperation and the drive towards a well functioning internal European energy market is, and has for many years been, of great significance for the work carried out in the NordREG.The third energy package including network codes and guidelines shall be implemented in the European and Nordic electricity market. The European energy regulators play a mayor role in this process. NordREG is an important regional plattform for the Nordic energy regulators and thereby NordREG's work related to wholesale market has focused on the specific questions of regional interest following from the implementation of network codes and guidelines.

Energy customers are indeed the central focus of a well functioning electricity market. NordREG has also continued the work relating to the establishment of a common Nordic retail market for electricity which has been a priority for NordREG for several years. Accordingly, NordREG's main objective has been to minimize the regulatory and technical obstacles for suppliers that are willing to operate in all Nordic countries.

The role of the transmission and distribution system operators and the way networks are regulated are key areas for the energy regulators. NordREG's attention to network regulation in general and tariffs in particular has continued with sharing of regulatory experiences and dialog with the stakeholders.

The development towards an electricity supply increasingly based on renewables causes market challenges as well as tecnical challenges to the electricity system. NordREG has therefore explored the concept of demand flexibility during past years. Recently, demand flexibility has also attracted growing attention at the European arena, and has singled out as one of the most promising tools to deal with these RES-challenges. Consequently NordREG has focused on exploring the potential of demand response, strengthening among regulators and stakeholdes the common understanding of the role that demand flexibility could play in the Nordic electrickty market in the future.

Simo Nurmi

Chair of NordREG

Helsinki, July 2016

Executive summary

In general NordREG's work is increasingly influenced by the development on the European arena. The European Union has placed significant weight on the establishment of a common harmonized European electricity market. The importance of the goal is underlined by the Energy Union Package from the European Commission February 2015. Furthermore, as a step towards implementing the Energy Union strategy European Commission published in July 2015 a so-called Summer Package, which included proposals for a 'new deal' for energy consumers and redesign of electricity market, followed by legislative proposals from the European Commission expected to be published in late 2016.

NordREG's work is, and has been, highly influenced by the development of the framework guidelines and network codes that are underway with specific demands etc. for the market, the market participants and regulators among others. The development emphasizes the value of a cooperative approach in dealing with the general trends and challenges.

Retail market development

The Retail Market WG provides an important platform for information exchange and sharing of best practices on a Nordic level. The working group also offers an opportunity to present Nordic cases on the EU-arena. The Nordic countries have made substantial changes to the national electricity markets in order to have a truly common Nordic electricity market such as supplier centric market processes and the development of data-hubs.

During the last year the focus of the working group has been on mapping the roles and responsibilities for the DSOs and TSOs regarding information exchange, demand response and energy services. The working group has also examined the conditions under which the suppliers and ESCOs act in the Nordic market. The findings were that the implementation of a supplier centric model and the creation of a national datahub will make it substantially easier to act as a competitive stakeholder in the Nordic electricity market.

Wholesale and transmission

Starting in 2015 the Wholesale and Transmission WG has started to evolve more into a group where ad hoc discussions can take place in order to analyze how proposals from the EU fit into the Nordic market model or to address special requirements or to make proposals to influence network codes and guidelines. The development in the Wholesale and Transmission WG thereby reflects the ever increasing importance the international – and especially the European – developments have for the Nordic region and wholesale market.

Apart from this recent role, the Wholesale and Transmission WG also acts as an umbrella for various specialized task forces, each dealing with important questions on the prioritized areas of NordREGs work in the wholesale and transmission field.

Network regulation

Focus this year has been information exchange on current and new regulatory methods in the Nordic countries and a follow-up seminar on "Load tariffs in the Nordic countries". A workshop on regulatory methods in the Nordic countries took place in Oslo the 27th of April 2016. The day was

devoted to information exchange on current and new regulatory methods between the Nordic energy regulators. The workshop was considered a success with a great turnout. The Network Regulation WG is also planning a follow-up seminar on “Load tariffs in the Nordic countries”. The seminar will cover how the NRA’s deal with tariffs as well as future national developments. The seminar will take place the 3rd of November 2016 in Copenhagen.

Flexibility

Demand side flexibility has been given increasing attention at the European arena, and it has also been a special focus area of NordREG. The working group on demand flexibility has continued to monitor ongoing discussions and initiatives regarding flexibility at the European arena and seek to coordinate common Nordic positions where beneficial.

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1 Introduction

NordREG, the regional cooperation between Nordic energy regulators, has for several years been devoted to the work of developing the different regulatory frameworks and fostering cooperation between stakeholders in the Nordic electricity market to make it one of the most well functioning electricity markets in the world. Looking at the developments that have taken place for the last ten years, NordREG's work has indeed created a momentum of change in all Nordic countries. The work is not only in line with but is also influencing and supporting the developments at the European level, in particular as a good example of a fruitful regional initiative in order to identify and remove barriers towards a harmonized electricity market.

The work towards a single Nordic electricity market is based on NordREG's vision that all Nordic electricity customers should have the possibility to choose suppliers and benefit from efficient and competitive prices and reliable supply through the Nordic and European electricity market.

All activitites undertaken by NordREG can be found in the Working Program of 2015 and 2016 respectivily. During 2015/2016 NordREG has four active working groups;

- Retail Market Working Group
- Wholesale- and transmission Working Group
- Network regulation Working Group
- Ad hoc Flexibility Working Group

The following chapters will describe the work done within the four groups between August 2015 to July 2016.

2 Retail Market

This chapter will describe the work NordREG has done within the Retail Market WG and the current state of affairs nationally looking specifically at the development of data hubs. This area has been identified by the working group as a crucial base for a well-functioning electricity retail market.

The Retail Market WG provides an important platform for information exchange and sharing of best practices between the regulators. The working group has also had several opportunities to present Nordic cases to other European regulators, European institutions and other stakeholders on the EU-arena. Presenting best practice and knowledge of the Nordic specifities have been considered a priority since new energy legislation are to be proposed by the European Commision during 2016-17.

In the light of NordREG's earlier recommenations, the Nordic countries have lately made substantial changes to the national electricity markets in order to have a truly common Nordic electricity market such as supplier centric market processes and the development of models for information exchange (data-hubs).

The main objective for the integration of retail markets in the Nordic region is to minimize the regulatory and technical obstacles for suppliers that are willing to operate in all Nordic countries. The market integration would thus provide a harmonized framework for the suppliers and energy service companies (ESCO) who wants to do business in the whole Nordic region and in such, all retail customers would be eligible to take part in the Nordic electricity market. Also the framework of customer empowerment should be adequately secured so that the customer can buy electricity from any supplier and/or ESCO with confidence.

NordREG has recommended that the Nordic retail market should be based on a supplier centric model that makes it easier to be a customer in the electricity market since the supplier is the main point of contact for the customer. The model also aims to facilitate electricity suppliers to be active in several countries and thus promote competition overall.

NordREG has identified two areas of central importance for the future work that allows for a competitive electricity markets for the benefit of the customer. The areas are information exchange and the need to highlight good Nordic examples in international foras where applicable.

NordREG finds that the key processes[1] have been harmonized at Nordic level and awaits implementation nationally. Nordic co-operation and exchange of information in this implementation process is of great importance especially regarding the information exchange systems – datahubs.

During the last year, between August 2015 to July 2016 the working group has produced three reports and one memo, which are presented in short below. The reports have been published.

[1] Switching, moving and billing

2.1 Work done

2.1.1 Status reports on roles and responsibilities for TSOs and DSOs

In 2015 the Retail Market WG worked with tasks that would help to provide data to assess whether any new Nordic recommendations are needed in order to develop a common retail market. NordREG hired two consultants, Thema and Pöyry, to analyse the need for further recommendations. The consultants carried out surveys of the rules and regulations for the exchange of information, unbundling rules, energy services, micro production and demand response.

In the Thema status report[2] regarding the transmission network operators' (TSO) and distribution system operators' (DSO) roles and responsibilities regarding information exchange, the conclusion was that the regulatory framework does not differ significantly between the Nordic countries. On the basis of the Thema report and its own analyses, NordREG concluded that no further Nordic recommendations are needed at present. However, NordREG notes that it is important to have an ongoing information exchange between the Nordic countries, especially in terms of ongoing data hub projects.

Thema also made a status report[3] regarding the rules for demand response and micro-production. The results from their study showed that there are not many rules regarding these issues other than at which level a production plant is subject to the rules for micro-production. As for demand response the roll-out of smart metering systems, functionalities, access to information, etc., affected the degree of flexible electricity contracts offered on the market. NordREG concluded that no further Nordic recommendations are needed in addition to the ones already made by NordREG on smart metering systems.

Pöyry made a status report[4] regarding the transmission network operators (TSO) and distribution system operators (DSO) roles and responsibilities concerning energy services. The report shows that the area is not covered by a specific regulatory framework except areas such as metering, billing etc. NordREG concluded that no further Nordic recommendations are needed in addition to the ones already made by NordREG on smart metering systems.

2.1.2 Memo on Vaasa ETT market barriers report

As part of the Nordic harmonisation process, it was decided that there is a need for a broad and unbiased mapping of the regulatory framework and other conditions that suppliers and energy service providers face, when entering the national Nordic electricity markets. The objective was to identify hurdles to entry and allow the NRAs to select (and prioritise) topics, which they can influence and which are out of their control. VaasaETT was commissioned by NordREG to identify these hurdles. Vaasa ETT presented its market report during 2015.[5]

[2] Mapping of TSO and DSO roles and responsibilities related to information exchange, Thema May 2015.
[3] Rules and regulation for demand response and micro-production, Thema May 2015.
[4] Mapping of TSO's and DSO's roles and responsibilities related to market design to enable energy services, Pöyry August 2015.
[5] Market entrant processes, hurdles and ideas for change in the Nordic energy market – the view of the market, published in 2015.

The report states 61 hurdles[6] in total, which have been ranked by the stakeholders themselves. The rank score goes from one (1) to three (3) with three (3) being the most important hurdle to address. The most important hurdles can be categorized into these following areas:

- Data hubs
- Smart metering systems
- Supplier centric model

The three mentioned areas are seen as the most relevant for the Nordic NRAs in order to reduce barriers for new market entries by the competing stakeholders. Apart from these areas "balancing" was also seen as an important issue to address. However, NordREG finds that this topic is already handled in the NBS-project[7].

The purpose of minimum requirements and market rules is to enable well-functioning wholesale and retail markets and security of supply. These rules shall be neutral to all stakeholders wishing to enter the market. Some of these requirements may result in hurdles for some stakeholders. The hurdles, which new entrants are facing, are mostly the same in each national market in the Nordic area. Low entry barriers enable new stakeholders to provide new innovative products and services. This can put pressure on current stakeholders to improve their offers and services for customers. Market processes have to be as similar as possible no matter which national market the company will enter. Suppliers hope to see a higher degree of harmonization. If the market models and processes were the same or at least similar enough in all Nordic countries, it would make entry into multiple markets almost as simple as operating in one national market.

NordREG's conclusions from its analyse of the report were documented in the Memo on Vaasa ETT market barriers report. To summarize NordREG finds in its memo that the majority of the hurdles mentioned by the stakeholders are currently being addressed and the conclusion is that NordREG sees no need for further measures on a Nordic level at this point.

2.1.3 Status of implementation of datahubs

Current status

Today, all Nordic countries are moving towards the implementation of data hubs for electricity meter data and market processes. Governments and regulators in the Nordic countries have given the transmission system operators (TSOs) in Denmark, Norway, Finland and Sweden the responsibility of introducing a data hub for each of the electricity retail markets. As shown in the table below, Denmark has recently implemented a second version of its data hub. Norway is underway in development of Elhub. Finland will roll out its data hub in 2019. Sweden estimates that the data hub could be operational in Q4 2020.

	Norway	Denmark	Finland	Sweden

[6] Please find all hurdles categorized according to importance one (1) to three (3) in the annex of the memo.
[7] Denmark is currently not part of the NBS-project.

Status of datahub implementation	The datahub, Elhub will go-live in 2017, after the introduction of NBS	A datahub has been operational since 2013.	Estimated to be operational on 1st August 2019.	Estimated to be operational in Q4 2020.

Governance of data hub projects

Norway

NVE is in charge of the Elhub project at the superior level while Statnett is responsible for the operational implementation. NVE makes all binding decisions regarding Elhub for Statnett, DSOs, suppliers and third party service providers. Statnett provides non-binding guidelines. By requirement from NVE, Statnett has established a stakeholder council for the project. The council consists of Representatives from DSOs and suppliers and NVE participates as an observer. The council has been used to provide the industry with updates on the progress of the project from Statnett and NVE and invite to discussions of issues raised by any of the parties. NVE has also required that Statnett apply an external quality assurance. Since the beginning of 2014 there has been made three QA revisions of the project that has delivered recommendations for improvement of the project regarding project management, risk management, cost control, security, migration, architecture, contract, change request handling, stakeholder interaction, resources/competence, progress, goals/mandate of the project and realisation of benefits.

Denmark

The Danish TSO, Energinet.dk, is in charge of the data hub. Energinet.dk has a close corporation with stakeholders and authorities, DERA amongst them. DERA approves methods within Energinet.dk's market regulations. With companies and stakeholders a key area of corporation is the assurance of the quality of data.

Finland

Fingrid Oyj (TSO) is responsible for developing the Datahub and is in charge of the project. The Ministry of Employment and the Economy prepares necessary legislation. Fingrid has established a customer council to coordinate with the Datahub project. The council consists of representatives from DSOs, suppliers, the industry organization, EV, the Ministry and some other stakeholders. The council monitors the progress of the project, contributes to the achievement of the project objectives, increases stakeholders' knowledge of the project and gives views in matters relating to industry and stakeholders. There are also sub working groups concentrating on DSO processes, supplier processes and technical issues.

Sweden

Svenska Kraftnät (SvK) is responsible for building, implementing and running the data hub. They will also probably be responsible for working out details in the user-contract, compiling a handbook and other such detailed requirements. Ei is responsible for producing the overall regulatory framework that is required for giving the data hub a place in the electricity market. The legislative changes that

Ei recommends will have to be approved by the government and the parliament before they can be introduced. Ei will be responsible for issuing any secondary regulation needed. During the current process in which Ei and SvK analyse what legislative changes are needed and specify the data hub processes etc., SvK is working closely with stakeholders in different working groups in order to ensure stakeholder involvement. Ei and SvK have also set up a joint high-level stakeholder reference group (including DSOs, suppliers, ESCOs, other agencies, Swedenergy and customer organisations) to allow the stakeholders to view and discuss Ei's and SvK's parallel projects at the same time. Ei will also set up at least two stakeholder reference groups to cover the regulatory changes needed for implementing a supplier centric market model parallelly with the data hub implementation. There is a close cooperation between SvK and Ei during this process.

Functionalities in Nordic hubs

	Norway	Denmark	Finland	Sweden
Meter point management	Yes. DSO will provide the data.	Yes	Yes. DSO will provide the data (creates, updates and removes metering points). Supplier may request changes which DSO carries out.	Yes. DSO will provide the data.
Customer data management	Yes. The supplier is responsible for updating the customer information.	Yes	Yes. Supplier provides the customer data in connection with a new contract. The supplier is also responsible for updating the customer information. DSO may request changes. Datahub forwards the request to the supplier having the latest contract with the customer.	Yes. The supplier will be responsible for updating the customer information.
Customer moving and switching	Yes	Yes	Yes. When providing the data on a new supply contract there is no need to inform whether it's due to moving or switching ->	Yes, these processes will be part of the hub.

			Datahub validates it automatically.	
Contract management	Includes contract data for start and end of supply, but no data on supply prices. Elhub does not notify suppliers of fees for cancellation of fixed price contracts.	The data hub saves the data of communication between the supplier and the DSO to a certain extend. However, the data hub has no legal authority to store data concerning the contract between the supplier and the costumer.	Supplier provides information on new supply contracts as well as updates them. Datahub automatically terminates the previous rolling contract once a new contract is registered into Datahub and communicates it to the previous contract party. Datahub includes ending dates for fixed time contracts, but not possible contractual penalties for a breach of contract. In Datahub a valid fixed time contract prevents making a new supply contract in cases where the same customers are in question. DSO confirms new network contracts and updates them.	The idea is that suppliers should register information concerning customers' supply contract (end date and if there is a fee for ending the contract early)
Forwarding service requests from supplier to DSO	No	Yes	Yes, and vice versa.	Yes
Meter value management	Yes. DSOs are responsible for data quality.	Yes	Yes. DSO will be responsible for providing meter values as well as for data quality. Meter values will be stored for 6 years.	Yes

Third party access to metering data	Yes	Yes	Yes	Yes
Provides settlement data to NBS	Yes	No	Yes. Provides balance settlement data to eSett according to NBS rules.	Yes
Market monitoring	Yes	Yes, to a limited extent.	Yes	Yes
Correction settlement	Yes	-	Yes	Yes
Compiling statistics	Yes	Yes	Yes, that has been planned (no details yet).	Compiling information for Statistics Sweden etc.
Billing	Combined billing has not yet been decided in Norway, so this functionality has not been included in the first version of Elhub. Statnett has included this functionality in the contract with the Elhub vendor and it will be possible to include the functionality at a later stage (probably closer to 2019).	In accordance with supplier centric model the supplier will send one bill from the 1st of April this year.	Mandatory combined billing has not been implemented in Finland. Datahub includes information on separate/combined billing as well as on billing channels (paper bill, E-billing, email etc.). DSOs and suppliers can submit more detailed billing data into Datahub (e.g. billing frequency, product and price data).	At present Ei is investigating possible combined billing regimes in the data hub. It has not yet been decided what type is preferable. A decision will be made later on.
Other functionalities	1. Reversal of business processes (e.g. in case of faulty switches) 2. Security management system 3. Privacy management for customers incl. giving		1. Disconnection and reconnection processes 2. Handling of customers' power of attorney 3. Cancellation of contract (due to distance selling	1. Central registration and/or handling of customers power of attorney

	data access to other persons or companies		legislation or faulty switches)	

Conclusions

Implementation of data hubs is clearly beneficial for the development of electricity retail markets. The current progress of data hub projects is therefore fully supported by NordREG. Through cooperation between TSOs, more steps may be taken towards harmonisation of business processes and use of common communication standards. NordREG will in the future focus its efforts on monitoring and encouraging this cooperation.

There are many similarities and comprehensive potential for Nordic harmonisation within common business processes, data formats and user interfaces in the data hubs. The cooperation between Nordic TSOs have already contributed to harmonisation between the countries, as TSOs have been able to learn from the experience of the data hub development in Denmark and more recently from the experiences in Norway.

The more similar the hub processes are, the easier it will be for suppliers to enter into and operate in several Nordic markets. The use of similar data formats and communication standards will enable suppliers to use similar IT-systems across the Nordic markets, and thereby reduces entry and operating costs across the markets. NordREG therefore encourages the further technical cooperation between Nordic TSOs.

There will be some differences between the data hub solutions, as is clear from the current progress in Norway and Denmark. These main differences arise from the market design and regulations for the energy sector in each country. However, as all Nordic countries have not implemented a new market design and regulations, it is too early to call the extent of these differences. The process of implementing data hubs will involve comprehensive changes to the market design through technical implementation and changes in the legal framework.

All Nordic countries do, however, have a significant support in the national processes from NordREG recommendations and take careful regard of Nordic harmonisation when implementing data hubs. The aim is to create solutions that are as similar as possible, promoting long-term harmonisation of the Nordic retail market. Regulators will continue to monitor the implementation of data hubs and encourage technical cooperation among TSOs towards this aim.

3 Wholesale and Transmission

This chapter describes the work done by NordREG within the Wholesale and Transmission WG and the current state of affairs.

Starting in 2015 the Wholesale and Transmission WG has started to evolve more into a group where ad hoc discussions can take place in order to analyze how proposals from the EU fit into the Nordic market model or to address special requirements or to make proposals to influence network codes and guidelines. The development in the Wholesale and Transmission WG thereby reflects the ever increasing importance the international – and especially the European – developments have for the Nordic region's wholesale market. The wholesale market is increasingly European, but joint efforts and common approach is advantageous for all Nordic countries – not least when it comes to proactively influencing the European development and enhancing the Nordic market perspective.

Apart from this recent role, the Wholesale and Transmission WG also acts as an umbrella for various specialized task forces, each dealing with important questions on the prioritized areas of NordREG's work in the wholesale and transmission field.

The main priorities governing the work are:

- Monitoring and capturing important EU-developments in order facilitate the necessary discussion within NordREG and propose appropriate NordREG initiatives etc.
- Facilitate Nordic cooperation in the field of the European Network Codes and guidelines and other questions with a regional or pan European dimension
- Continue/finish the ongoing work on the Nordic Balance settlement project.

3.1 Work done

3.1.1 Work related to the implementation of the CACM guideline

The Capacity Calculation and Congestion Management guideline (CACM GL) entered into force in August 2015. From the regulatory point of view, CACM GL represents a major shift on the formal and legal level. In order to coordinate and harmonize capacity allocation and implement single day-ahead and intraday coupling, the majority of decisions pursuant to CACM GL are to be based on proposals from all NEMOs or all TSOs. However, some proposals are also to be submitted by the regional NEMOs och TSOs on a regional or an individual, national level. The proposals shall be approved accordingly by all NRAs at the relevant level.

Currently different proposals are being discussed and the Wholesale and Transmission WG provides a platform for discussion between Nordic regulators and Nordic stakeholders.

The first step in the implementation of CACM GL, is the establishment of Capacity Calculation Regions (CCRs) across EU. Approval regarding coordinated methods for coordinated methodologies on capacity calculation and congestion management at a regional level will later on take place among the regulators belonging to the same CCR. All TSOs have delivered a proposal on CCRs. As all NRAs failed to reach an agreement on the CCRs proposal, the decision on the CCR configuration is to be taken by ACER in the autumn 2016.

When it comes to organization of capacity calculation and methods of congestion management the

implementation of CACM GL implies a transition from informal coordination on a bilateral basis between Nordic TSOs towards formal coordination within the CCR.

CACM GL introduces the concept of Common Grid Model on a European level as basis for the formal European wide coordination on capacity calculation in the short and long run. A regional extract of this Common Grid Model will constitute the basis for coordination of capacity calculation within the CCRs. From the Nordic point of view, this represents a major change, contrary to the Continental Europe, as a common grid model does not yet exist within the Nordic region.

During the last year, NordREG's main focus on Capacity Calculation has been to follow the TSOs process towards the forthcoming proposals in this field. NordREG has indeed focused on work to ensure that the TSOs develop appropriate basis for selection of capacity calculation methodology to be applied in the Nordic region, which is compliant with the requirements set out in CACM GL. There are two feasible approaches according to CACM GL - Flow Based and the Coordinated Net Transfer Capacities (CNTC). The Flow Based approach is to be selected unless the TSOs are able to demonstrate that the Flow Based approach will not yet be more efficient than the CNTC approach, assuming the same level of operational security. The current NTC method applied in the Nordic area does not comply with the requirements set for the Coordinated NTC method. Thus, in addition to a Flow Based method, a simplified Coordinated NTC method for the Nordic market has to be developed in order to fulfill the requirements regarding the selection of methodologies.

The entry into force of CACM GL represents a milestone as it introduces the concept of nominated electricity market operators (NEMOs) that are supposed to compete within the bidding zones. Nordic NRAs have a new task in preparing for competition and ensuring level playing field between the NEMOs.

Approval of arrangements concerning more than one NEMO in a bidding zone, is in the competence of individual NRAs. However, the Nordic NRAs have focused on informal coordination on issues regarding arrangements including more than one NEMO within each bidding zone. Currently the WG is investigating a common proposal developed by the Nordic TSOs regarding arrangements concerning more than one NEMO. Nordic stakeholders have been asked to provide input to the investigation in writing. The informal coordination will continue during the autumn 2016, as the arrangements shall be approved by the relevant regulators at the end of 2016.

Furthermore, NordREG has identified two subjects as an effect of more than one NEMO operating in a bidding zone, which are of crucial importance to find a solution to:

1) *the possibility for a continued calculation of the system price*

The system price is an important Nordic market feature as it serves as reference price for the financial market and bilateral contracts. It is not straight forward to maintain one single system price with several competing NEMOs.

NordREG is pursuing the possibilities to include a provision for system price (and other reference price) calculations as part of the coming MCO plan, which is to be decided jointly by all NRAs in the EU by mid-October 2016.

2) Uniqe market clearing price in the case of decoupling

It is very important to avoid several prices within a bidding zone in case of decoupling, also when more than one NEMO operates within the bidding zone. This must be ensured through establishment of proper fallback procedures. A single market clearing result per price area is crucial to secure operation of the Nordic market, also in fallback situations. The Nordic NRAs are coordinating among themselves and following up this matter in several processes (the MCO plan decision, the future decision on fallback procedure and national decisions on arrangements for more than one NEMO in a bidding zone).

3.1.2 Work related to the FCA guideline

A well-functioning electricity market should provide efficient means for risk hedging for market participants. In the Nordic market, basic price risks are normally hedged using financial contracts with reference to the system price. Physical deliveries are however settled against the price in a specific bidding zone. Remaining risk associated with the difference between the system price and area prices are hedged by means of Electricity Price Area Differences (EPADs). Cross-border trade can be hedged by combining EPAD contracts in the two bidding zones.

Thus, the possibility for cross-border hedging is seen as an important piece in the development of the Internal Electricity Market in the EU. To strengthen the markets, new guidelines on Forward Capacity Allocation (FCA GL) will be adopted. The FCA GL is likely to enter into force in late summer/early autumn 2016. After this date, the NRAs will have six months to develop the methodology and to perform the evaluation of the existing forward markets, according to Article 30 of FCA GL. According to the draft FCA GL, the TSOs shall issue long-term transmission rights (LTTR) on a bidding zone border, unless the competent regulatory authorities of the bidding zone border have adopted within six months from entry into force of FCA GL coordinated decisions not to issue LTTR on the bidding zone border.

It will be beneficial to cooperate as far as possible with the development of the methodology and the evaluation of the forward market in the bidding zones in the Nordic region (ref Art. 30 para 4). A coordinated method will lead to a consistent approach for the Nordic market region.

During 2015 NordREG therefore commissioned the study Measures to support the functioning of the Nordic financial electricity market.[8] According to the overall feedback from market participants in the Nordic market, they do not want to replace basic hedging in the system price with basic hedging in area prices. Financial contracts in the system price are highly liquid. However, in some bidding zones EPADs are not listed, and in other bidding zones the liquidity in EPADs may be low. Lacking or low liquidity does not have to imply a lack of hedging opportunity, however. The reason may be that hedging in the system price is sufficient due to high correlation with the area price, or that market participants are hedged via bilateral contracts. Hence, the NRAs need to assess whether lacking or low liquidity implies lacking hedging opportunities before the TSO is instructed to intervene in the market.

The NordREG FCA-group initiated a written consultation on the report “Measures to support the

[8] Thema Consulting Group and Hagman Energy: Measures to support the funcitioning of the Nordic financial electricity market, November 2015.

functioning of the Nordic financial electricity market". In May 2016 the WG organized a stakeholder workshop in Stockholm (Arlanda). The NRAs also presented initial thoughts related to the methodology of the evaluation of the existing forward market and gave some information on the way forward. The joint work will continue during the autumn 2016.

3.1.3 Work related to transmission infrastructure

Wholesale and Transmisison WG has cooperated around the EU process of nominating and appointing transmission projects of special importance to the development of the internal energy market, i.e. the so-called Projects of Common interest. The latest EU-wide list of these projects was established in autumn 2015 and the first steps in the process of establishing a new/revised list in 2017 have been taken in spring 2016. The Wholesale and Transmission WG will continue to facilitate the Nordic cooperation and discussions of both the actual PCI proposals of Nordic interest and the nomination and evaluation process in itself.

3.1.4 Work regarding analysis of the transmission capacity between the Nordic region and Germany

From 2012 onwards, there have been considerable limitations in transmission capacity between the Nordic market and Germany, especially the lines DK1-DE and SE4-DE. The interconnector between Denmark and Germany, DK1-DE, covers about 40 % of capacity between the Nordic region and the central European countries. Data shows that use in direction DK1-DE in 2015 was only 250 MW on average. In 60 % of the time there was zero capacity. This development has been ongoing for years and there is no sight of relieve within the next couple of years; the available capacity for DK1-DE was 4.0 percent of the installed capacity in February 2016 and 6.8 percent of the installed capacity in March 2016.

In October 2015 NordREG was approached by Nordenergi, the joint collaboration between the Nordic electricity industry associations, to request ACER for an opinion on the compliance of the DK1-DE interconnector curtailment with Regulation 714/2009 and the CACM GL.

On this basis, the NordREG decided at the Board meeting in December 2015 to establish an ad-hoc working group to address and assess the experienced reductions and deliver possible NordREG recommendations on next steps. The group was named NordREG Working Group for Capacity Reductions on the Nordic-German Interconnectors under Wholesale and Transmission (hereinafter referred to NordREG WT CR).

According to the Terms of Reference ("ToR") for the NordREG WT CR, which was approved by the NordREG Board 22 February 2016, the group shall collect information on the subject, including inviting Nordenergi to explain its point of view, initiate dialogue with the German NRA, Bundesnetzagentur, on the capacity reductions and possible short term measures and initiate informal discussions with ACER on this matter. Furthermore, NordREG WT CR shall compile and assess the collected information in order to describe the current practice of capacity calculation and congestion, attempt to assess the compliance of the capacity reductions with Regulation (EC) 714/2009 and the CACM GL, and finally identify possible short term measures to provide more capacity to the market. NordREG WT CR shall deliver recommendations to the NordREG Board

NordREG WT CR has by mid-May held several telcos and meetings, including physical meetings with

Nordenergi, BNetzA and ACER. In the process of collecting information, NordREG WT CR has asked BNetzA to provide answers to a number of issues pertaining to the present practice of curtailment.

In parallel to the NordREG process, DG ENER has held a meeting and initiated a process involving the German and Danish NRAs, the German and Danish TSOs, Nordenergi, BDEW (Bundesverband der Energie- und Wasserwirtschaft) and DG COMP (as observer) about the capacity reductions on the DK1-DE interconnector.

3.1.5 Work on Nordic Balance Settlement

Status in the Nordic Balance Settlement work

A common balance settlement is a prerequisite for a well-functioning common Nordic end-user market. A common Nordic Balance Settlement (NBS) will lower the entry barriers for retailers and balance responsible market participants with an ambition of operating in all countries. Further, a common balance settlement will potentially lower the administration costs of balance settlement.

Status regarding the national legal work

In Norway the new regulation to facilitate NBS is adopted and will enter into force on the 3rd of October 2016. However, the date may change due to the overall progress of the NBS project.

In Sweden the legislative work is ongoing. The changes in the Energy Act regarding NBS entered into force on the 1st of January 2016. Changes in the secondary legislation are expected to enter into force on the 3rd of October (but the date may change due to the overall progress of the NBS project).

In Finland the secondary legislation related to NBS has been adopted, and was planned to enter into force on the 3rd of October 2016. However, date has been postponed by the request from Fingrid due to postponement of go-live date of NBS. New date of entry into force of secondary legislation will be decided when exact go-live date of NBS has been announced.

Short status of the NBS implementation process

On September 29th 2015, the national TSOs agreed and published a new go-live date for NBS, which is October 3rd 2016. However, the national TSOs and eSett Oy announced June 6th 2016, that the launch of the NBS will be postponed and they aim for a new go-live date in Q1/2017. The exact date will be published in August 2016. The delay is due to the fact that the system vendor of the new imbalance settlement system has clearly stated that they will not be able to deliver a fully functioning settlement system according to the set of demands and requirements, crucial for a smooth and professional balance settlement.

Timetable

The Nordic Balance Settlement project is expected to be finished in Q1/2017, when Finland, Sweden and Norway will introduce a joint balance settlement, NBS.

In these last phases of the project, the main work and discussions in the NordREG's Nordic Balance Settlement task force are focused on the national legal changes and how the task force can monitor

the implementation process of NBS.

4 Network regulation

This chapter describes the work done last year and the work to be done in 2016 within the Network Regulation WG.

Last year's main assignment was the Network Regulation WG's report "Tariffs in Nordic countries – survey of load tariffs in DSO grids", focusing on what NRA can do to incentivize more energy efficiency in distribution and use of energy through grid tariff design. This year the focus of the Network Regulation WG has been information exchange on current and new regulatory methods in the Nordic countries and a follow-up seminar on "Load tariffs in the Nordic countries".

4.1 Work done last year

4.1.1 Report on Tariffs in Nordic countries – survey of load tariffs in DSO grids

In December 2015 NordREG published a report regarding tariffs in the Nordic countries, which included a survey of load tariffs in DSO grids.

The premises for network regulation and tariff design are undergoing a rapid transition. The implementation of the Energy Efficiency Directive in national legislation has lead to increased requirements on tariffs, such as incentivizing efficient grid usage. In addition to new legislative conditions, the introduction of new technology opens up new opportunities. Real time metering enables new types of tariffs, and monitoring and steering equipment enables load steering and direct demand response. In parallel to these changes, there is an increasing discussion about the need for harmonization of tariffs between different countries.

Based on tariff design's rapid transition the NordREG's report on tariff design intended to answer the following question: "*What can the NRA do to incentivize more energy efficiency in distribution and use of energy through grid tariff design?*"

The report provides a survey of the current DSO load tariffs in the Nordic countries, presents the ongoing discussions on tariff design, and assess the implementation of the Energy Efficiency Directive in the countries as well as surveying the policy options for NRAs to incentivize DSOs to design tariffs which are compatible with the Energy Efficiency Directive.

The report shows that the Nordic countries have different regulations on tariffs. However, the principles on how to regulate the tariffs are more or less the same. For example the pricing of electricity distribution must meet specific defined criterias, such as the tariffs must be impartial and nondiscriminatory for different customer groups and transparent.

The network companies are solely responsible for designing tariffs within their income cap according to the regulation on tariff structures. In the Nordic countries (except for Norway) there are no regulation on how the network operators should allocate fixed and variable costs in the network tariff. In all Nordic countries the DSOs have an obligation to provide information about their tariffs to the national regulatory authority. In the Nordic countries (except for Iceland) the national regulatory authority does not have a confirmation process regarding tariff structures of DSOs. In a case of disagreement on tariff structures between customer and DSO, the national regulatory authority makes a decision whether or not the tariffs are set according to regulation in every Nordic country. The regulatory approach is that price differentiation is in principle not

allowed; the Nordic countries, however, do have exemptions to this principle.

There exists tariff differentiation on different customer groups in all the Nordic countries. The specific customer groups in the different Nordic countries vary. However, the general customer grouping can be grouped into the following three customer categories; household, small industry and large industry customers.

There are ongoing developments in tariff design and network regulation. The report presents a survey of research and previous studies performed on the topic in the respective countries. Based on the studies the suggestions for the future implementation of tariffs can be arranged into two groups: Cost-reflective tariffs and demand response potential. The cost-reflective view is based on the idea that tariffs should reflects the hourly cost of grid losses while taking into account electricity prices and estimated loss ratios. Such grid pricing would enhance the precision of hourly spot price signals and yield improved data on price response for end-users. Demand response approach is based on the view that households react fairly strongly to price signals by decreasing peak demand in the peak periods and shifting electricity use from peak to off-peak periods.

4.1.2 Seminar on load tariffs in the Nordic countries

Last year the 5th of November 2015 the Network Regulation WG held a seminar on "Load tariffs in the Nordic countries" seminar. The reason for organising the seminar was to get input to the report on tariffs in the Nordic countries from the industry, academics, consultants and so forth.

The focus of the workshop was on *"What should the NRA do to incentivize more energy efficiency in distribution and use of energy through grid tariff design?"*.

4.2 Work to be done this year

4.2.1 Workshop on regulatory methods in the Nordic countries

On the 27th of April 2016, the NordREG working group on Network Regulation organised a one-day workshop on the regulatory methods for electricity distribution networks at The Norwegian Water Resources and Energy Directorate (NVE) in Oslo. The day was devoted to information exchange on current and new regulatory methods between the Nordic energy regulators.

The workshop was considered a success with a great turnout of 35 participants, mostly from the Nordic countries but also from the German and the Portuguese energy regulator.

During the workshop there was country specific presentations from the Nordic regulators on the regulatory regimes in each specific country. It became clear that even though the Nordic countries are considered fairly similar, their approaches to the regulation of the electricity distribution networks are currently very different.

Presentations were also made on some of the Nordic regulators' benchmark models and a research and development project on better benchmarking methods carried out in cooperation between NVE, academics and DSOs. Different WACC-methods, both in use and based on new recommendations from experts, were also presented. After the presentations there was a lot of discussion on the balance between stability and actuality, when deciding on the WACC-method. During the workshop an understanding of the quality regulation of the different Nordic countries

was also given as well as views on how to evaluate interruptions and to secure supply. The workshop was concluded with an insight from the Swedish Energy Markets Inspectorate (Ei) on the legal processes and especially on the challenges experienced through the legal framework. Finally there was an open discussion between the regulators on whether or not it would be more helpful for the regulator to have a more detail description of the regulation in the law.

4.2.2 Follow-up on the seminar "Load tariffs in the Nordic countries"

The Network Regulation WG will organise a follow-up seminar on "Load tariffs in the Nordic countries". The seminar will take place the 3rd of November 2016 in Copenhagen.

The seminar is a follow-up seminar on the "Load tariffs in the Nordic countries" seminar, which was held on the 5th of November 2015. The follow-up seminar will focus on the NRAs' perspective, as the former seminar's focus was on the industry's perspective. The seminar will cover how the NRAs deal with tariffs as well as future national developments. The seminar will be an open seminar.

4.2.3 General exchange of experiences regarding regulation and tariff

The Network Regulation WG monitors international studies on topics in the realm of regulation and tariffs and identifies areas/questions of particular Nordic interests. These studies and identification of areas of interest are discussed internally at the meetings within the working group. The workshops and seminars also facilitate these types of discussions.

5 Demand Flexibility

5.1 Work done

The WG on demand flexibility is an ad hoc working group established in January 2015 as a response to a request from EMG to evaluate the report "Demand response in the Nordic electricity market" by Thema Consulting, and consider potential needs for Nordic initiatives that require coordinated actions at ministry level.

5.1.1 Memo on need for coordinated actions at ministry level

In August 2015, the assignment resulted in a memo to EMG[9], where NordREG conluded that the need for coordinated actions at ministry level will most likely be related to the various ongoing EU processes. Such coordinated actions could be related to promoting that the Nordic energy markets to a high degree already are well-functioning, to avoid implementation of measures that may be in conflict with already well-functioning solutions, and to promote that the Nordic region takes the next step to ensure that flexibility is efficiently included in the markets. As these EU processes at that time were, and still are, running, it was too early to state specific coordinated actions.

Furthermore, NordREG also commented briefly some of the recommendations from the report by Thema Consulting.

The full memo is available at the NordREG's web-page.

5.1.2 Different arrangements for aggregation of demand response

During 2015, the working group also analysed demand response and potential consequences of different arrangements for aggregation, and in February 2016 it published the paper "Discussion of different arrangements for aggregation of demand response in the Nordic market". This paper was presented to EMG in April 2016, and is also available at the NordREG web-page.

The main message from NordREG in the paper was that both implicit and explicit demand response should be able to develop within well-functioning and competitive markets, such as the Nordic retail markets, if consumers are willing to change their consumption patterns and if it provides a benefit for the consumers. To efficiently enable implicit demand response, NordREG believes it is necessary that the consumers are both metered and billed at the same resolution as the price signals. Further, the price signals should in some way reflect the scarcity of either capacity in the grid or in the electricity production. As the smart metering is already installed or planned to be installed in the Nordic countries, and as the consumers are free to choose a contract with variable prices from a wide variety of suppliers, NordREG sees in general no regulatory barriers for the development of implicit demand response in the Nordic retail markets.

With regards to the development of explicit demand response through aggregation, NordREG generally considered that it would be most efficiently developed through retail market competition, where the suppliers/aggregators compete in providing the best "package" of supply and demand response services, while preserving the principle of one BRP per connection point.

Furthermore, NordREG described some of the challenges with and consequences of models for so-

[9] NordREG memo to Elmarkedsgruppen regarding demand-side flexibility.

called ”independent aggregators”, which NordREg believes that both stakeholders and Member States should be aware of. NordREG also underlined the importance of giving MS and/or NRAs the possibility to assess the consequences any of potential models, and have national freedom to decide on the most efficient instrument, given the national market situation. Thus, one common EU requirement to introduce ”independent aggregators”, was not recommended by NordREG. Instead, NordREG recommended that the focus of any EU legislation should be to allow demand response as a choice for all consumers, where ”independent aggregators” is one possible option to reach this goal.

5.2 Work planned this year

In 2016 the WG on demand flexibility will continue to monitor ongoing discussions and initiatives regarding flexibility at the European arena and, if deemed beneficial or necessary, seek to coordinate common Nordic positions.

The demand flexibility WG will also prepare a status report regarding initiatives at national, regional and European level expected to affect the potential and development of demand response. The purpose of the report is to give some guidance to both ministries and stakeholders on the current development and expectations for the future. The status report is expected to be completed during the second half of 2016.

The WG has also proposed a set of three studies related to the topic of demand flexibility, which, if financing is granted by NMR, is expected to be carried out by consultants during the second half of 2016.