



NordREG
Nordic Energy Regulators

Peak Load Arrangements

Assessment of Nordel Guidelines

Report 2/2009

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Preface

The Electricity Market Group (EMG) within Nordic Council of Ministers has invited NordREG in autumn 2007 to assess Nordel's proposal on "Guidelines for implementation of transitional peak load arrangements".

A consultancy study executed by EC Group has been applied to help in the assessment. NordREG together with EMG produced terms of reference (ToR) for the consultancy study and followed the study. NordREG also organised a workshop on peak load issues in May 2008. The workshop had its starting point in Nordel's proposal and the consultancy study. Due to the fact that the Swedish government had commissioned EI to investigate a long term solution to the peak load issue in Sweden - with a Nordic perspective - there was a decision by NordREG supported by EMG to postpone NordREG's final evaluation until the Swedish report was ready. The Swedish report was published in December 2008.

The work in this task has been organised through the NordREG Wholesale and Transmission Working Group, which consists of the following representatives of the Nordic regulators:

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Jon Sagen, NVE (chair)

Vivi Mathiesen, NVE (from December 2008)

Summary

Two Nordic countries, Sweden and Finland, have legislation that empowers the TSO to acquire designated peak load resources to mitigate the risk for shortage situations during the winter. In Denmark, the system operator procures resources to maintain a satisfactory level of security of supply. In Norway the TSO has set up a Regulation Power Option Market (RKOM) to secure a satisfactory level of operational reserves at all times, also in winter with high load demand. Only the arrangements in Finland and Sweden fall under the heading of Peak Load Arrangements defined in Nordel Guidelines.

NordREG has been invited by the Electricity Market Group (EMG) to evaluate Nordel's proposal for "Guidelines for transitional Peak Load Arrangements". The EMG has also financed a study made by EC Group to support NordREG in the evaluation of the proposal. The study has been taken into account in NordREG's evaluation. In parallel to the EMG task, the Swedish regulator, the Energy Markets Inspectorate, has been given the task by the Swedish government to investigate a long term solution of the peak load issue.

The Swedish and Finnish TSOs have together with Nord Pool Spot worked on finding a harmonized solution for activation of the peak load reserves in the market. An agreement accepted by the relevant authorities was reached in early January 2009, and the arrangement has been implemented since 19th January 2009. NordREG views that the proposed Nordel guidelines have served as a starting point for the presently agreed procedure. However, NordREG does not see any need to further develop the Nordel guidelines for peak load arrangements.

NordREG agrees with Nordel that the market should be designed to solve peak load problems through proper incentives to market players. NordREG presumes that the relevant authorities in each country will take decisions on the need for any peak load arrangement to ensure security of supply. NordREG proposes that such decisions should be taken after consultation with parties in other Nordic countries, and involving also regulators and TSOs.

In NordREG's view there are basically three principles that should be guiding any decision to introduce peak load arrangements in the Nordic countries:

- Firstly, the peak load arrangements should be introduced only in situations when security of supply cannot be met without these arrangements. Since the decision to introduce peak load arrangements might be of a political/legal nature, the length of such arrangement cannot be fixed. However, there should be a regular evaluation by the competent authority of any need or prolonged need for peak load arrangements and its effects of price formation in the Nordic market.
- Secondly, when peak load arrangements are introduced they should be designed to minimize the adverse effects on price formation in the Nordic market. Furthermore, if there are to be peak load arrangements, there might be a need for how to distinguish these peak load reserves from other reserves at the disposal of the TSOs. However, this issue needs further discussions and development.

- Thirdly, Nordic consultation should be carried out where the views of all relevant authorities and stakeholders in the market affected are invited. It is recommended that the governments consult with their Nordic counterparties before submitting legal proposals on peak load arrangements affecting Nordic price formation. These consultations should also be with regulators and TSOs who are involved in the design of the actual peak load arrangements.

1 Introduction

1.1 Background

One of the basic principles of the Nordic electricity market is that the market design should enable the market players to get the right incentives to offer the resources needed to meet the needs of consumption and thus secure the balance between supply and demand. Currently, two countries, Sweden and Finland, have legislation that empowers the TSO to acquire designated peak load reserves to mitigate the risk for shortage situations during the winter season that might otherwise lead to load shedding in case of insufficient supply to meet the demand during the peak load hours. Norway and Denmark use different approaches to secure adequacy of supply.

Even if we narrow the discussion to winter peak load situations, it can be maintained that different approaches can be effective in the sense that they contribute to the goal of adequacy of supply in the specific kind of situation that faces the specific country. Each approach may be logical seen against the background of the market structure and market design in the country as well as the overall view of where the division of responsibility lies between market players and TSOs, i.e. the responsibility of the TSO to ensure balance between supply and demand on the perspective of operational hour or on a longer time frame.

The need for a harmonized approach to the issue of peak load arrangements in the Nordic countries has been discussed for a long time, and Nordel was in 2006 invited by EMG to make a study of the issue. In response to that invitation Nordel in February 2007 delivered a proposal for common Nordic Guidelines for implementation of transitional peak load arrangements¹.

EMG has, following the 2007 meeting of the Nordic energy ministers, invited NordREG to assess Nordel's proposal focusing on to what extent common Nordic principles are needed, and if needed, how these principles should be designed to minimise the impact on the market. The analysis should focus on implications for prices in the short term (extreme situations) and long term, power flows and investments. Due to the fact that the Swedish government gave the Energy Markets Inspectorate (EI) the task to propose a long term solution to the Swedish peak load problem by the end of 2008, a decision was taken by the NordREG Board supported by EMG to postpone the report until early 2009 in order to be able to take into account the Swedish proposal. The proposal by the Swedish regulator, EI was published in December 2008.

The EI proposal can be summarized as follows: The temporary law of capacity reserve should be prolonged until 2020. The peak load reserve should consist of a mix of generation and demand resources, where the fraction of demand resources should increase and eventually the whole reserve should consist of demand resources. These measures should be accompanied by arrangements that aim at increasing the demand flexibility on the market.

¹ Nordel proposal, 2007. Guidelines for implementation of transitional peak load arrangements. Available at www.nordel.org.

In parallel with this study, the Swedish and Finnish TSOs with Nord Pool Spot have been working on harmonised conditions for the activation of the peak load reserves in Sweden and Finland on Nord Pool Spot in contact with the relevant regulators. After approval by NVE regarding changes in the Nord Pool Spot rules, approval by EMV to apply modified activation rules in Finland and support to the model from EI, the new activation model was introduced in Elspot market on January 19, 2009. The applied procedures are a modification of the Nordel proposal for activation, introducing more details and practical arrangements compared to the Nordel proposal.

1.2 Present arrangements in the Nordic countries

In all Nordic countries there are options to introduce arrangements to make sure that enough production resources are in place to avoid load shedding. In the following there is a short description of the arrangements.

Denmark

In Denmark, no load is in general classified as special peak load reserves and operational reserves are used to cope with disturbances.

However, one exception existed in 2008 - that is a mothballed plant was prepared for peak load during 3 month.

However part of the Danish generation – that is decentral generators and VE generators are operated under special conditions and financed by a capacity payment.

Finland

In Finland a temporary act for peak load reserves came into effect on the 15th of December 2006 and it will expire on the 28th of February 2011. The act aims at maintaining balance between demand and supply during the peak load in the wintertime. The act ensures that production capacity which is used only seldom, mainly coal condensing production units, is not decommissioned or mothballed and that the production capacity of these plants is available for the market during the peak load period in the winter.

Within the peak load power arrangements the owners of generation capacity may offer as peak load reserve the production capacity which fulfils the requirements set in legislation and they are given reasonable compensation for this. The financing of the peak load power arrangements are covered with separate charges set by the TSO to the users of the Finnish power system. The peak load power arrangement is handled by the system responsible TSO (Fingrid Oyj). The detailed rules and procedures within the peak load power arrangement (both rules for offering peak load reserves to the market and rules for financing the peak load power arrangement) shall be approved ex-ante by Energy Market Authority.

Norway

Sufficient operational reserves are necessary to achieve a secure operation of the system that can handle unbalances and faults. In Norway secure operation in any hour is fulfilled by ensuring that there are enough reserve volumes in the Regulation Power Market. To

ensure this a Regulation Power Options Market (RKOM) is established. This market shall secure that there always are enough regulation resources available in the Norwegian part for the Nordic Regulation Power Market, also in periods with increased demand for load, such as in the winter season. RKOM is operated on a weekly basis and both generation and demand can be bid into RKOM. Statnett also have a few bilateral agreements with production and demand resources which require these parties to bid into the Regulation Power Market. In the longer term it is expected that these bilateral agreements will be replaced by the market based solutions.

Sweden

Since 2003, Svenska Kraftnät has, according to provisions in a temporary law had the task to acquire up to 2000 MW to be used as peak load reserve. The costs for the reserve are to be paid by the balance responsible parties. This reserve can consist of both production bids and bids of demand response given by large consumers and can be used as a last alternative before the disturbance reserve is activated or a decision on manual load shedding is taken. According to the law, the reserves can be activated either on the spot market or in the regulation power market. When activated the prices should be high in order to signal to the market players that they should take actions to solve the capacity problem. Svenska Kraftnät is to decide when the reserves are to be activated. There are also provisions in the law for how the reserves can be activated for system reasons. Originally the tendering procedure for peak load reserves was intended to only be used during the period 2003 – 2008, but the commission to Svenska Kraftnät has been prolonged. Thus, Svenska Kraftnät will acquire peak load reserves through the winter 2010/2011.

Furthermore, the Energy Markets Inspectorate has on request by the government investigated the possibilities to abolish the peak load system in favour of a pure market solution. The conclusion in the report submitted to the government in December 2008, is a successive transition to a market solution during the 2011-2020. This means that the peak load reserve should be prolonged until the end of the winter 2019/2020. During this period the proposal is to gradually decrease the size of the reserve and to increase the proportion of demand response. The proposal also includes removal of barriers to demand flexibility.

1.3 NordREG work on Peak Load arrangements

Article 7 of The Directive 2003/54/EC states that each member state shall ensure the possibility in the interests of security of supply, of providing for new capacity or energy efficiency/demand-side management measures. These measures can be implemented by the use of tendering procedures or any other procedure equivalent in terms of transparency and non-discrimination. However, these procedures can only be launched if existing generation capacity and demand side management measures are not sufficient to ensure security of supply.

Security of supply may also be considered as public service obligation according to Article 3 of Directive 2003/54/EC which states that Member States may impose on undertakings operating in the electricity sector public service obligations which may relate to security, including security of supply. Such obligations shall be clearly defined,

transparent, non discriminatory, verifiable and shall guarantee equality of access for EU electricity companies to national consumers. In relation to security of supply and energy efficiency/demand-side management Member States may introduce long term planning, taking into account the possibility of third parties seeking access to the system.

EMG invited Nordel in 2006 to study if a joint Nordic long term solution is needed to secure sufficient peak load investments and how this can be implemented. In response, Nordel in 2007 delivered *Guidelines for implementation of transitional peak load arrangements*. The Guidelines describe Nordel's method for assessment of power balances in the Nordic System and proposes a guideline for a harmonised procedure for peak load arrangements. Nordenergi was invited to comment on Nordel's proposal and the response was *Nordenergi's remarks to the Electricity Market Group of the Nordic Council of Ministers on Peak Load Reserves*².

The Nordic Energy Ministers at their meeting in Helsinki September 2007 gave their support to EMG's recommended action regarding peak load capacity investments: *"NordREG is invited to make an assessment of Nordel's proposal, focussing on to what extent common Nordic principles are needed, and how these principles should be designed to minimise the impact on the market. The analysis should focus on implications for prices in the short term (extreme situations) and long term, power flows and investments"*.

NordREG has fulfilled the task given by evaluating the proposed Nordel guidelines with the purpose of deciding whether the guidelines should be adopted as common Nordic guidelines for peak load reserves, given the general definition that has been evolving in the countries that have seen the need to introduce dedicated reserves for peak load.

EMG also requested an evaluation of the short and long term effects of such guidelines on prices and investments.

The Nordic Council of Ministers decided to finance a consultancy study to provide comments to the Nordel draft guidelines. The study has been used in the discussion on NordREG's comments on Nordel's guidelines. Through a directed tendering process, EC Group was chosen as a consultant.

EC Group suggested in their study to discuss the guidelines against a broader vision of a harmonized market for operational reserves in the Nordic countries. For the peak load arrangements, however, it is necessary to deal with the practical implications of the existing peak load reserves.

The process leading to the decision by NVE to approve the new activation procedures for Swedish and Finnish peak load arrangements implies that it is possible to harmonise the most critical issues such as pricing on Nord Pool Spot while there are still differences between the approaches within the countries due to differences in legislation and in market design.

² Nordenergi 2007, Nordenergi's remarks to the Electricity Market Group of the Nordic Council of Ministers on peak Load Reserves.
http://www.nordenergi.org/getfile.php/PDF/Letters%20and%20presentations/NordenergiPLR_070301.pdf

2 The report from the EC Group

EC Group concentrated in their report on the wider issue of an ideal solution for how to secure balance between demand and supply in all kinds of situations and made a more theoretical analysis.

EC Group also made an assessment of the proposed Guidelines.

Elaborating on earlier work by Amundsen/Bergman, EC Group noted that adequacy of supply is to be regarded as a common good. They also noted that there are basically two “schools” as to how to secure adequate resources – one advocating that an energy only market can be designed in such a way that the market players are given adequate incentives to maintain and invest in the resources that will be in demand by the market. The other “school” on the other hand has the view that some kind of capacity market is needed in order to secure adequate reserves in at least some kinds of situations. Both schools have prominent advocates.

EC Group maintains in their report that capacity is a real concern that will always be present. The need for special incentives to secure adequate capacity varies with the kind of system and other fundamentals which change over time. Therefore EC Group states that principles governing arrangements to ensure adequate capacity should be permanent, not temporary. Furthermore, the challenge is to design the market(s) in such way that peak load is not a concern, i.e. that peak load issues are solved in the broader context of securing operational reserves.

EC Group states in their report: *“We regard all these more or less formal capacity arrangements, manually or frequency controlled, for ordinary use or extra peak load reserve, etc., as sub-markets in a not yet integrated Nordic market for operating reserve capacity. Our vision is to redesign these sub-markets in such a way that the prices are reasonably correlated across the Nordic region.”*

EC Group thus presents a vision of a complete set of markets for what EC Group calls operating reserves. A complete set of markets will provide

- Forward-, spot- and real time prices for energy (/MWh)
- Forward prices for capacity (/MW).

Such a market (set of sub-markets) would according to EC Group minimize the negative impact on the market. While many features of the Nordic market are harmonized, this is not so for the markets for operational reserves/ancillary services when it comes to capacity payments. Harmonized principles for market design should, according to EC Group, ideally be directed to this issue instead of the partial issue of peak load: *“When an integrated Nordic market for operating reserves and reserve capacity is established, one might have guidelines for the development of any additional arrangements one might like to develop locally as supplements to a joint Nordic market. Such guidelines would most likely look quite different from the current proposal, mostly because of the difference in the underlying market design philosophy in the proposal and in our vision”.*

The need for guidelines would then be a tactical/legal issue.

NordREG sees value in EC Group's approach but in the short run the issue still is whether there is need for harmonized guidelines for dedicated peak load reserves. Nordel has in the work shop arranged by NordREG responded that the division between operational reserves and peak load reserves needs to be maintained. It can also be noted that most arrangements for securing operational reserves have the effect of withdrawing capacity from the market while the present peak load reserves are designed in order to make resources available that would not be available without these arrangements.

EC Group has also undertaken to evaluate the proposed Nordel GL. *“Our main conclusion, as economists, is that even though common guidelines as such may be a positive element in the regulatory process, the current proposal does not seem to meet key requirements for such guidelines or address the relevant topic in a suitable manner. To the extent guidelines are required or desirable we recommend the development of a new proposal.... As indicated, we are sceptical to this proposal, but can also find positive elements there.”*

It can thus be seen that EC Group's criticism of the Nordel GL rests on their view that a different problem should be addressed. In the following the more specific criticism of the actual GL from EC Group is summarized:

The need for *transitional* peak load arrangements are weakly motivated – peak load will always be there while the need for incentives may differ.

EC Group asks for clearer *definitions* of peak load situations. Furthermore, the GL do not emphasize demand side resources and the need to create incentives suitable for demand side resources enough.

Regarding activation and pricing EC Group prefers a solution where the reserves are bid in at marginal prices. EC Group is critical to ideas of artificial pricing. Furthermore, EC Group maintains that the TSOs must be hands on also for activation. Thus, EC group maintains that peak reserves should primarily be bid into the regulation power market.

The need for pricing rules and profit sharing rely on competitiveness in the capacity market. If the capacity market is competitive the need for these rules diminishes.

Regarding financing EC Group agrees in principle that reserves should be financed by those who benefit, in the case of peak load that would be the balance responsible parties.

In general, EC Group sees the GL being too vague, leaving too much room to the TSOs to choose the means. That also means that the GL do not give enough guidance to make possible an evaluation of the consequences as requested by the EMG.

NordREG views the EC Group study an input to the discussion of the wider issue of efficient market design in the Nordic area.

3 Input from the workshop

NordREG arranged a workshop on 21 May 2008 at Gardermoen. The workshop had as its point of departure the task given from the EMG and the consultancy report by EC Group. Participants representing the following stakeholders attended in addition to

representatives from NordREG: EMG, Nordel, Nordenergi and the EC Group (consultant)³.

In the following are some of the issues that were addressed by the participants.

Nordel made a presentation regarding the background for their proposed guidelines and the considerations behind them including the highlights of the proposed guidelines. The following three issues were cited from Nordel long term objective regarding the peak load issue:

- The market should be designed to solve peak load problems
- Intervention in the market, such as special arrangements should be avoided to provide appropriate incentives for the decision making of the market players
- It is crucial to make a clear distinction between centrally acquired operational reserves and peak load reserves

Thus, Nordel's basic view is that peak load arrangements should be avoided. On the other hand, load shedding should also be avoided. Nordel described common methods within Nordel to assess the adequacy of the power system. There is also a suggestion to increase the scope of the adequacy forecast from three to six years. Still, the decision to introduce a peak load arrangement in one or several countries will always be a political decision, informed by Nordel's assessment. It is also Nordel's view that a peak load arrangement should be of limited duration, maximum three years.

On the other hand, if a peak load arrangement is implemented, it is Nordel's view that there should be:

- a harmonised Nordic procedure to initiate a tendering process should be developed
- a common view of how the resources should be activated and priced
- a common view of the financing of the arrangement.

Nordel also addressed the different products that are today used for different forms of needs for reserves and their use. It was noted that the Swedish peak load reserve is also used for grid problems. Thus it fulfils also other needs. Only Sweden and Finland have the (temporary) solution with peak load reserves. Norway and Denmark have solutions where the peak load problem is seen as part of the need for operational reserves.

Basically, Nordel concluded:

Peak load reserves are needed in practice in thermal dominated systems in situations with a) high or quick rise in the consumption or b) reduced production / import capacity. The peak load reserves add resources to the market. Operational reserves are needed every operating hour and takes resources from the market.

Nordenergi raised four issues: The Nordel GL, EC Group study, experiences from the working group for implementation of the GL in Sweden and Nordenergi's paper to EMG.

³ It should be noted that after the workshop there has been a process regarding the forms for activation of the peak load reserves in Sweden and Finland resulting in new procedures now being in place. The process related to this specific issue will be described separately in chapter 3. Here, comments related to activation have mostly been omitted.

Initially it was noted that according to the experiences in Sweden, the Nordel GL are not wholly adapted to reality and not sufficient in the long run – still, they are a good start for discussion.

Focussing on the EC Group report, Nordenergi noted the following issues: It is essential to use the same language. EC Group advocates a situation where the peak load issue is seen as a part of the wider issue of being able to cover all kinds of shortage situations. EC Group sees the solution in terms of operational reserves at the disposal of the TSOs. Unfortunately, there are differences in the definition of operational reserves between EC Group and the TSOs which confuse the discussion. In a way, it can be said that EC Group is avoiding the actual issue of how to deal with peak load reserves.

Nordenergi mentions the role of demand side resources and the repercussions of different pricing mechanisms on the retail market. A harmonisation is needed within relevant markets. Another issue that might affect the choice of solution is whether the issue is to keep capacity or to invest. Another issue, related to the peak load reserves is when they should be used.

Nordenergi also talked about the implementation of the GL in Sweden. This discussion can be summarised as follows. Activation in Nord Pool Spot is OK. But the risk for curtailment and the repercussions on the Regulation Power Market and the financial market as well as political implications have not been taken into account in the GL nor by the EC Group. Even a single hour with very high prices can bust a company.

Finally, Nordenergi recapitulated some points from their working paper to EMG. The basic issue is the appropriate level of security of supply and the price (to society) of load shedding. It is clear that different solutions create different conditions and have repercussions on competition. Basically, since security of supply is a political issue, national but harmonised principles with the regulators involved are necessary. Different options for financing can be discussed. Most important is not to disturb commercial bids or to prevent future investments.

Basically, Nordenergi means that there is a difference between the level of security of supply resulting from the decisions by market players and the politically acceptable level of risk for load shedding. In this area it is socioeconomically favourable to introduce some measures to secure a level of security of supply that is higher than the level resulting from market decisions.

EC Group presented the main ideas of the report.

4 Implications of peak load reserves on the market

The purpose of peak load arrangements is to lower the risk for insufficient generation capacity given a certain (high) level of electricity consumption. Thus a peak load reserve constitutes a possibility for the governments to secure a higher level of security of supply than is established by the market.

However, peak load reserves may also have negative impacts on the function of the electricity market. This is a consequence of the fact that the purchased power plants, or contracted consumption reductions, might have effect on the short run price formation in the market if not properly designed. Given the now agreed way to bid the Finnish and Swedish peak load reserves into Elspot in case a price cross cannot be reached without these resources, the consequence can be expected to be a lower price and thus a higher consumption than would be the case without the peak load reserves, giving less incentives for producers to bid in all their resources and for demand flexibility. On the other hand, in the situation when the resources are bid into Elspot, the alternative if there are no peak load reserves would be shortening of the bids on Elspot according to Elspot rulebook which can lead to a risky situation for the players due to expensive imbalances and in the end to the risk of load shedding.

The disturbance in the price formation in the short run might also have effects in the longer run. First, since use of the peak load resources is likely to lower the prices in the market, the incentive to invest in peak load power plants decreases. Secondly, the correct signals for consumers to prepare for price flexibility are not as strong as they should be. Whether this is important or not depends on the situation.

To summarise, at least in theory, the existence of peak load reserves decreases the incentives for the market participants to prepare themselves for peak load situations. However, peak load reserves may increase security of supply in the short run.

5 NordREG's view on Nordel Guidelines

Nordel's "Guidelines for implementation of transitional peak load arrangements" contains recommendations regarding different aspects on peak load arrangements; a general view, the tendering procedure, activation and pricing and finally financing.

Below Nordel's statements are summarized (citations in italics) and, after taking into account the EC Group study and the workshop, NordREG presents its comments on each statement.

5.1 General view on peak load arrangements

Nordel has stated the following general views on peak load arrangements:

- The market should be designed to solve peak load problems through proper incentives for the market players.
- The authorities have the responsibility of the overall market design and the security of supply with a duty to react in case of a market failure.
- If a permanent peak load arrangement would be introduced it would have a negative impact on the functioning of the market and it would undermine the roles and responsibilities between the TSOs, authorities and market players.

NordREG sees that in order to create a well-functioning electricity market, non-market based interventions such as peak load reserves in the market should be minimized. Thus there is also a common goal that the market should be designed in a way that minimizes

the need for peak load reserves. Furthermore, focus should be to develop the market design and to secure that the adverse effects of the peak load arrangements is minimized.

NordREG agrees with Nordel regarding the general view on peak load reserves.

5.2 Tendering procedure to acquire peak load reserves

Nordel states the following guidelines for the tendering procedure to acquire peak load resources.

- *The tendering procedure aims at maintaining a sufficient balance between supply and demand. The objective is to acquire the needed resources at lowest possible cost. To enhance competition both generation and demand resources should be invited to submit tenders. In addition, demand side resources would facilitate the development of demand flexibility and therefore contribute an added value to the long-term market development and result in lower annual fixed costs compared to generation resources*
- *To ensure transparency and non-discrimination between potential tenders, market based procurement procedures should be used and EU's rules on public procurement should be taken into account*
- *The tendering procedure should be open to existing and potential market players in the Nordic market, unless otherwise physically justified.*
- *In order to give a stable framework and proper signals to the market players the maximum volume of the acquired peak load resources must be fixed in advance, decided by the body responsible for the tendering procedure*
- *A peak load arrangement is an exceptional and temporary action to overcome a critical period only. Therefore, the time period of the arrangement should be fixed in advance and as short as possible depending on the situation in the country concerned, maximum 3 years. In addition, both the time period and the volume must be communicated to the market. The number of years – maximum 3 should be based on an evaluation of when commercially driven investments will be available to enter the market.*

NordREG has evaluated the guidelines and came to the following conclusions:

NordREG agrees with Nordel regarding the cost aspect and that both generation and demand response may be included. Furthermore, NordREG agrees that the process must be open and transparent to all market players. However, the exact conditions and the form of the procedure may be decided by the responsible party as long as it is transparent and fulfils the EU rules. NordREGs' opinion is also in line with Nordel regarding that peak load arrangements should be implemented only if security of supply can not be reached through the incentives in the market. However, such a situation could exceed three years e.g. because of time span for creating new generation or activate increased demand flexibility in the market. There should be a regular review by the competent authorities of the need for any transitional peak load arrangement.

5.3 Activation and pricing of peak load reserves

Nordel states the following guidelines for activation and pricing of the peak load resources:

- *The distortions in the market should be minimized:*
 - *Neither the commercially set market price nor the incentives for new entrants in the market should be reduced due to the acquisition of PLR⁴*
 - *The peak load resources should be activated preferably in a liquid market where many market players are bidding and there is a good transparency of the available resources.*
- *In principle, a peak load arrangement should not have an effect on the roles and responsibilities between the TSOs and market players. However in practice, the TSO may need to be involved in the practical measures like activation of the PLR having a longer activation time than the time limits in the relevant market where the PLR resource is offered.*
- *Forced load shedding can be avoided*
- *The arrangement is transitional and affects the price in the short-term only*
- *The owners of the PLR must be counter-parties in trading when the PLR are offered to the market.*

The peak load reserves may, in principle, be activated in all of the three market places: Elspot and Elbas, and the regulating power market (RPM).

In order to minimize the distortions on the market mechanisms the following guidelines should be applied:

- *In case of PLR having long start-up times, the preparedness to start-up in accordance with the rules in Elspot and Elbas should be ensured by the terms in the agreement. However, the TSOs may need to be involved and take the initiative to prepare the resources for activation based on the TSO's forecasts.*
- *To ensure harmony with the long-term market model, the PLR shall be offered first in the commercial markets (Elspot, Elbas). All remaining available resources can thereafter be offered in the Regulating power market (RPM)*
- *Due to pay-as-bid pricing Elbas is more problematic in pricing of the PLR than Elspot and RPM.*
- *The PLR units shall be offered in merit order in each price area*
- *In Elspot or RPM, the PLR shall only be activated after all commercial bids have been activated. In Elbas, there is no clear signal, when all commercial bids have been utilised*
- *In all cases the price should be equal to or higher than the last commercial bid. According to the existing rules max price (2000 Euro/MWh at least) should be applied in Elspot. In Elbas and RPM, the bid price should be equal or higher than the max price in Elspot.*

NordREG agrees with Nordel that all interference with price formation in the Nordic market should be avoided or minimized. When bidding the reserves into the spot market it is thus important that adverse effects on price formation are minimised. Coming to the

⁴ Peak load reserves

pricing issue, NordREG has some objections to Nordel's guidelines. NordREG does not agree that reserves should be bid in at a price equal to the technical max price in Elspot, but wish to refer to the pricing arrangements in the new agreement for Finnish and Swedish reserves.

During 2008 an agreement has been reached between the Swedish and Finnish TSOs, Nord Pool Spot on a modified activation model in Elspot. This model was approved by NVE on 22 December 2008 and EMV for Finnish TSO on 13 January 2009 and has been in use since 19 January 2009. The model is also supported by EI. NordREG has no objections against the modified activation model. The modified activation model is described in appendix 2. However, it has been agreed that the effects to the markets if and when the model is actually applied have to be evaluated by Nord Pool Market Surveillance and further development to overcome any problems has to be studied and applied accordingly.

5.4 Financing of peak load arrangements

Nordel states the following guidelines for financing of the peak load arrangements

- *The acquired peak load resources will be paid a compensation for ensuring their availability in critical situations.*
- *In principle, those who get the benefit of the peak load arrangements should cover the cost.*
- *A flat fee that is separated from other fees should finance the cost of the peak load arrangement.*
- *During the contract period, the PLR units can be allowed to produce for energy purposes when they are not needed as PLR. In such cases, it is necessary to assure that this generation will not create distortion on the market. A sharing of profit is needed between the designated body for the tendering procedure and the owners of the PLR. .*

NordREG has no objections in principle to Nordel's statement that the PLR should be financed by those who benefit of the arrangements. However, the actual beneficiaries may be difficult to identify, not at least in a situation when the resources have not been activated for several years. Given the different national approaches to the handling of peak load situations, NordREG questions the need for such detailed guidelines on the financing of the peak load arrangements.

6 New procedure for activating Swedish and Finnish peak load reserves

A large part of the discussion regarding the Nordel GL has been related to the proposals for activation and pricing of the peak load reserves. This issue has got a temporary solution through the suggestion by Fingrid and Svenska Kraftnät for procedures for activation of peak load reserves in Sweden and Finland through the day-ahead market

Elspot. The proposal has been accepted for implementation, and the peak load reserves have been available for Elspot from 19 January 2009.

The temporary Finnish legislation concerning the peak power reserves in Finland has been in effect since December 2006 and will expire 28 February 2011. The Swedish law concerning the peak power reserves in Sweden expired in March 2008 and has been prolonged by the Swedish Government to 15 March 2011⁵.

The new procedure is based on (but not identical with) the recommendations in the Nordel GL. The new procedure entails:

- Peak load reserves should be made available to the market through Elspot
- Peak load reserves should only be activated after all commercial bids have been activated and cross between demand and supply has not been met with commercial bids and offers in Elspot market
- Unused peak load reserves after Elspot can be traded in the regulation power market

Presently, Fingrid and Svenska Kraftnät have acquired totally 2600 MW peak load reserves, 600 MW in Finland and 2000 MW in Sweden. This is in accordance with the legislation of Finland and Sweden respectively.

The peak load reserves in Sweden and Finland will be activated as hourly bids in Elspot only if there is a situation in Sweden and/or Finland when no price cross is achieved after all ordinary steps in the price calculation in Elspot have been carried out. The peak load reserves shall be activated in the Elspot market through a second calculation process, before Nord Pool Spot asks the affected TSOs if there is more cross-border transmission capacity available for Elspot. The procedure implies some distortions in the Nord Pool Spot market, since there is an agreement that, in case both Sweden and Finland are in a situation when a price cross would not be achieved without the activation of peak load reserves, there will be a pro rata activation of Swedish and Finnish peak load reserves, respectively. There are also some differences in how the bidding is done between the two countries. Thus, there is some room for improvement in the future procedures.

The new activation routine has led to a change in the Nord Pool Spot Rulebook Appendix 1 item 3.9. The new Appendix 1 and a description of the procedure have been published on the Nord Pool Spot website.⁶

The new NPS procedure for how power reserves can be activated in Elspot was accepted by the Norwegian Water and Energy Directorate (NVE) on 22 December 2008. It has also been accepted by the Finnish and Swedish regulators. The change to the rulebook is in force from 19 January 2009.

⁵ The Energy Markets Inspectorate has made a proposal for a further period of peak load reserves through the winter 2019/2020. According to this proposal, the reserves will decrease year by year and the proportion of demand response increase.

⁶ <http://www.nordpoolspot.com/upload/rulebook/Appendix%201%20-%20Elspot%20Regulations%2019%20Jan%202009.pdf>

In accepting the new procedure, NVE has required that Nord Pool Spot report on any use of the peak load reserves, together with an evaluation by Nord Pool Market Surveillance on any possible impact on the price formation in the market.

7 Conclusions

One of the basic principles of the Nordic electricity market is that the market design should enable the market players to get the right incentives to offer resources needed to meet the needs of consumption and thus secure balance between supply and demand. The Nordic countries have to some extent chosen different approaches to mitigate such situations where balance between supply and demand is in danger. The different approaches may reflect the differences in the generation adequacy, in generation mix and demand flexibility, but may also to some extent reflect different legal approaches to generation adequacy and security of supply.

Two Nordic countries, Sweden and Finland, have legislation that empowers the TSO to acquire designated peak load resources to mitigate the risk for shortage situations during the winter. In Denmark, the system operator procures resources, financed by a capacity payment in order to maintain a satisfactory level of security of supply. In Norway, the TSO has set up a Regulation Power Option Market (RKOM) to secure satisfactory level of operational reserves at all times, also in winter with high load demand. Only the arrangements in Finland and Sweden can fall under the heading of Peak Load Arrangements defined in Nordel Guidelines for peak load arrangements.

When implementing such peak load arrangements the overall goal should be that the interventions and impact on price formation in the electricity market are minimized. As the Nordic countries are part of a common Nordic electricity market it is also important that there is a satisfactory level of harmonisation of measures taken by each country and that they are well adapted to the overall market design. Differences in legal requirements in each country will also influence to what extent a harmonised and identical system can be set up. In this context, it should be remembered that the peak load arrangements in place both in Finland and Sweden are transitional.

NordREG agrees with Nordel that the market should be designed to solve peak load problems through proper incentives to market players. NordREG presumes that relevant authorities in Nordic countries take decisions on the need for any peak load arrangement, when this is regarded necessary for security of supply reasons. NordREG proposes that such decisions should be taken after consultation with relevant parties in the other Nordic countries.

In NordREG's view there are basically three principles that should be guiding any decision to introduce peak load arrangements in the Nordic countries:

- Firstly, the peak load arrangements should be introduced only in situations when security of supply cannot be met without these arrangements. Since the decision to introduce peak load arrangements might be of a political/legal nature, the length of such arrangement cannot be fixed. However, there should be a regular evaluation by the competent authority of the need for such arrangement.
- Secondly, when peak load arrangements are introduced they should be designed to minimize distorting effects on price formation in the Nordic electricity market. Furthermore, if there are to be peak load arrangements, there might be a need for

how to distinguish these peak load reserves from other reserves at the disposal of the TSOs. However, this issue needs further discussions and development.

- Thirdly, Nordic consultation should be carried out where the views of all relevant authorities and stakeholders in the market affected are invited. It is recommended that the governments consult with their Nordic counterparties before submitting legal proposals on peak load arrangements affecting Nordic price formation. These consultations should also be with regulators and TSOs who are involved in the design of the actual peak load arrangements

NordREG welcomes Nordel's initiative to develop guidelines for the establishment of transitional peak load arrangements but NordREG does not agree with all details in the proposed guidelines. The main objections from NordREG are the restriction in time of three years for transitional arrangements and the recommendations regarding pricing when peak load reserves are activated in Elspot. NordREG does not support the proposal of a price equal to the technical max price in Elspot for the reserves when activated. Furthermore, the agreement between Svenska Kraftnät and Fingrid states that the price of the reserves (when used in Elspot) should be equal to or higher than the last commercial bid in Elspot. This price formation has been accepted by NVE in the approval to Nord Pool Spot of the arrangement (and also by EMV when approving Finnish terms and conditions for activations of reserves). This approach can be supported by NordREG.

While most regulators agree that those who benefit should also finance the arrangements, here is no general agreement within NordREG regarding the practical interpretation of such a statement.

The proposed guidelines have served as a starting point for the process that led to the common rules for activation of Swedish and Finnish peak load reserves in Elspot. NordREG views that the guidelines have served their purpose in this process. NordREG acknowledges that in the process there have been modifications in the principles compared to the Nordel guidelines. The decision regarding activation in Elspot was taken after consultation within NordREG. Thus, the basic principles in the guidelines have been upheld, but the details have been modified in order to make the arrangement acceptable. Presently, NordREG does not see any need for developing the guidelines further.

Appendix 1 – Legal conditions

The legal conditions applicable differ from country to country. The national legislation needs to be compatible with the applicable EU legislation. There are basically two directives that can be seen as a framework for the national legislation in this respect, the “Electricity market directive” Directive 2003/54/EC and the “Security of supply directive” Directive 2005/89/EC.

Presently, only Sweden and Finland have special and temporary legislation for peak load reserves.

Directive 2003/54/EC

Article 7 of Directive 2003/54/EC concerning common rules for the internal market in electricity sets requirements for tendering of new capacity for security of supply reasons.

According to Article 7(1) Member States shall ensure the possibility, in the interests of security of supply, of providing for new capacity or energy efficiency/demand-side management measures through a tendering procedure or any procedure equivalent in terms of transparency and non-discrimination, on the basis of published criteria. These procedures can, however, only be launched if on the basis of the authorisation procedure the generating capacity being built or the energy efficiency/demand-side management measures being taken are not sufficient to ensure security of supply.

According to Article 7(2) Member States may ensure the possibility, in the interests of environmental protection and the promotion of infant new technologies, of tendering for new capacity on the basis of published criteria. This tender may relate to new capacity or energy efficiency/demand-side management measures. A tendering procedure can, however, only be launched if on the basis of the authorisation procedure the generating capacity being built or the measures being taken are not sufficient to achieve these objectives.

According to Article 7(3) details of the tendering procedure for means of generating capacity and energy efficiency/demand-side management measures shall be published in the Official Journal of the European Union at least six months prior to the closing date for tenders. Furthermore, the tender specifications shall be made available to any interested undertaking established in the territory of a Member State so that it has sufficient time in which to submit a tender.

Furthermore, according to Article 7(3) with a view to ensuring transparency and non-discrimination the tender specifications shall contain a detailed description of the contract specifications and of the procedure to be followed by all tenders and an exhaustive list of criteria governing the selection of tenders and the award of the contract, including incentives, such as subsidies, which are covered by the tender.

According to Article 7(4) in invitations to tender for the requisite generating capacity, consideration must also be given to electricity supply offers with long term guarantees

from existing generating units, provided that additional requirements can be met in this way.

According to Article 7(5) Member States shall designate an authority or a public body or a private body independent from electricity generation, transmission, distribution and supply activities, which may be a regulatory authority referred, to be responsible for the organisation, monitoring and control of the tendering procedure. Where a transmission system operator is fully independent from other activities not relating to the transmission system in ownership terms, the transmission system operator may be designated as the body responsible for organising, monitoring and controlling the tendering procedure. This authority or body shall take all necessary steps to ensure confidentiality of the information contained in the tenders.

Furthermore Article 4 of Directive requires that Member States shall ensure the monitoring of security of supply issues. Where Member States consider it appropriate they may delegate this task to the regulatory authorities. This monitoring shall, in particular, cover the supply/demand balance on the national market, the level of expected future demand and envisaged additional capacity being planned or under construction, and the quality and level of maintenance of the networks, as well as measures to cover peak demand and to deal with shortfalls of one or more suppliers. The competent authorities shall publish every two years, by 31 July at the latest, a report outlining the findings resulting from the monitoring of these issues, as well as any measures taken or envisaged to address them and shall forward this report to the Commission forthwith.

Security of supply may also be considered as public service obligation according to Article 3 of Directive. According to Article 3(2) Member States, having full regard to the relevant provisions of the Treaty, in particular Article 86 thereof, may impose on undertakings operating in the electricity sector, in the general economic interest, public service obligations which may relate to security, including security of supply. Such obligations shall be clearly defined, transparent, non discriminatory, verifiable and shall guarantee equality of access for EU electricity companies to national consumers. In relation to security of supply and energy efficiency/demand-side management Member States may introduce the implementation of long term planning, taking into account the possibility of third parties seeking access to the system.

Directive 2005/89/EC

Directive 2005/89/EC concerning measures to safeguard security of electricity supply and infrastructure investment sets rules to maintain balance between supply and demand and to ensure sufficient generation reserve capacity for stable operation.

According to Article 3(1) Member States shall ensure a high level of security of electricity supply by taking the necessary measures to facilitate a stable investment climate and by defining the roles and responsibilities of competent authorities, including regulatory authorities where relevant, and all relevant market actors and publishing information thereon. The relevant market actors include, inter alia, transmission and distribution system operators, electricity generators, suppliers and final customers.

Especially according to Article 3(2f) when implementing the measures referred to in Article 3(1), Member States shall take account of the need to ensure sufficient transmission and generation reserve capacity for stable operation.

Article 5 sets requirements for maintaining balance between supply and demand. Here Article 5(1) requires that Member States shall take appropriate measures to maintain a balance between the demand for electricity and the availability of generation capacity. In particular, Member States shall according to Article 5(1b) require transmission system operators to ensure that an appropriate level of generation reserve capacity is available for balancing purposes and/or to adopt equivalent market based measures.

Member States may also according to Article 5(2), when maintaining balance between supply and demand, without prejudice to Articles 87 and 88 of the Treaty, take additional measures, e.g.

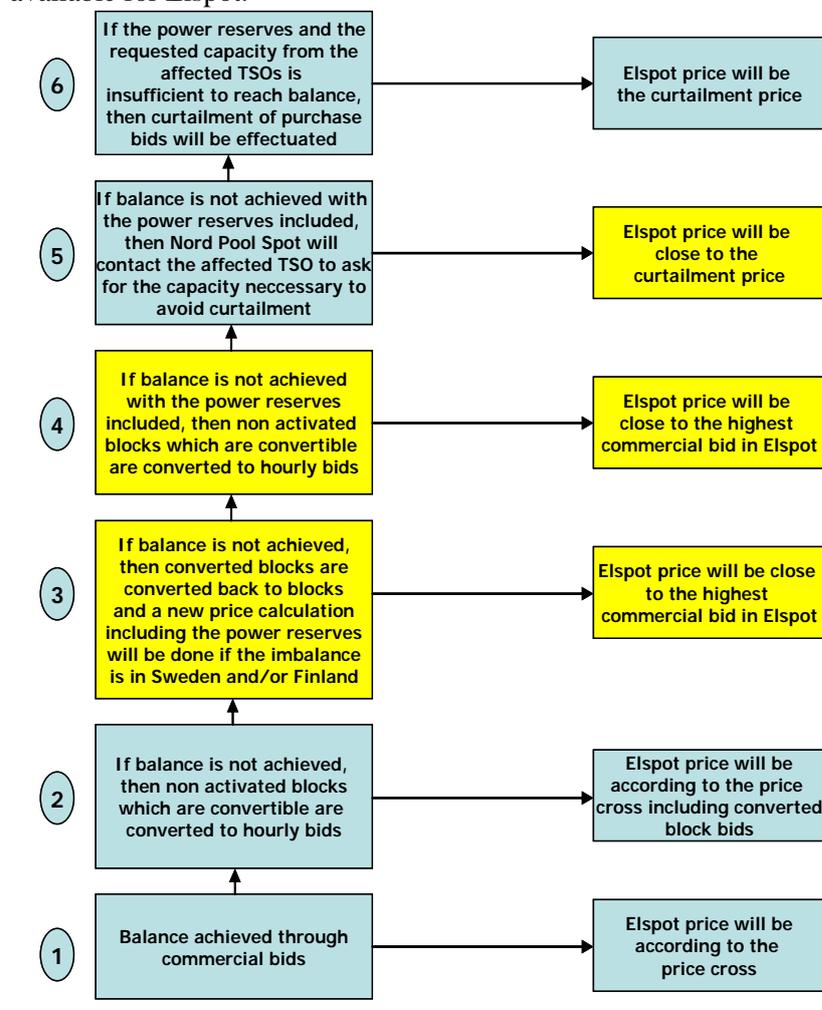
- removal of barriers that prevent the use of interruptible contracts (Article 5(2b));
- removal of barriers that prevent the conclusion of contracts of varying lengths for both producers and customers (Article 5 (2c));
- tendering procedures or any procedure equivalent in terms of transparency and non-discrimination in accordance with Article 7(1) of Directive 2003/54/EC (Article 5(2f)).

Appendix 2 – New procedures for activation of peak load reserves

The following is a description of the procedure Nord Pool Spot will use if necessary to activate the peak load reserves in Finland and Sweden⁷

The background to the activation of the reserves in Elspot can be found in Exchange Information no. 02/09 Peak power reserves in Finland and Sweden to be made available for Elspot from 19 January 2009 published 7 January 2009.

The power reserves in Sweden and Finland will be activated as hourly bids in Elspot only if there is a curtailment situation in Sweden or Finland after all ordinary steps in the price calculation has been carried out. The power reserve shall be activated in the Elspot market through a normal price calculation process, and before Nord Pool Spot as a last resource asks the affected TSOs if there is more cross-border transmission capacity available for Elspot.



⁷ http://www.nordpoolspot.com/upload/Procedure%20-%20power%20reserves%20in%20FI%20and%20SE%20med%20fotnote%20_4.pdf

The power reserves in Sweden and Finland will only be activated if balance is not achieved in Sweden and/or Finland. Item 3 and 4 are only applicable for Elspot area Sweden and Finland.

If balance is not achieved in Norway or Denmark after the conversion of block bids (item 2), then Nord Pool Spot will ask the affected TSO for the capacity necessary to avoid curtailment (item 5)

The following is a description of the procedure of how the power reserves will be priced if it has to be activated through the Elspot market.

Pricing of the power reserves in Finland and Sweden will be based on the highest commercial bid in Elspot area Finland or Sweden. These power reserves should in general not compete with commercial bids. The highest commercial bid in this respect means the highest bid with a volume change caused by either an increase in sales or decrease in purchase among Finnish and Swedish hourly bids in the Elspot market.

The power reserve bids will be submitted with the smallest possible price step in the Elspot market of 0,1 EUR/MWh to minimize their effect on the market.

Below are three examples on pricing of the power reserves in different situations. In examples 1 through 3 bids A, B and C respectively are the highest commercial bids in each price calculation. Example 3 shows a situation where the power reserves "minimi" price will influence the Elspot bidding.

Example 1

Bid A

	0	1 500	1 501	2 000
Hour X	0	0	-50	-50

Power reserve bid

	0	1 501	1 501,1	2 000
Hour X	0	0	-2 000 SE -600 FI	-2 000 SE -600 FI

In *Example 1* bid A is the highest bid with a volume change, i.e. the highest commercial bid is 1 501 EUR/MWh. The power reserve bid is submitted as a volume change between 1 501 EUR/MWh and 1 501,1 EUR/MWh.

Example 2

Bid B

	0	1 500	2 000
Hour X	0	0	-50

Power reserve bid

	0	1 999,9	2 000
Hour X	0	0	-2 000 SE -600 FI

In *Example 2* bid B has a volume change up to 2 000 EUR/MWh, i.e. equal to the technical maximum price in Elspot⁸. When commercial bids are using the whole price range up to the technical maximum price then there is no additional price step to use for the power reserve. The power reserve bids will then be submitted as a volume change between 1 999,9 and 2 000 EUR/MWh.

Example 3

Bid C

	0	500	501	2 000
Bour X	0	0	-50	-50

Power reserve bid

	0	700	700,1	2 000
Hour X	0	0	-2 000 SE -600 FI	-2 000 SE -600 FI

If the highest commercial bid price is lower than the reported minimum price for the power reserves then the power reserve bids will be submitted at the minimum price.

In *Example 3* bid C is the highest bid with a volume change, i.e. the highest commercial bid is 500 EUR/MWh. The minimum price for the power reserve is 700 EUR/MWh. The power reserve is submitted as a volume change between 700 and 700,1 EUR/MWh.

⁸ Technical maximum price in Elspot is Nord Pool Spots system technical maximum price for the Elspot price calculation. The technical maximum price is not fixed and can in certain situations be changed for the following days bidding.

The minimum price for the Swedish power reserves is the average variable cost including start up cost⁹. In Finland the minimum price is the highest variable cost for the Finnish power reserves including start up cost¹⁰. Fingrid and SvK will report this minimum price to Nord Pool Spot. Nord Pool Spot will use the higher of the two minimum prices when activating the Finnish and Swedish power reserve.

⁹ Start up cost in Sweden is distributed during an hour with peak load.

¹⁰ Start up cost in Finland is distributed during an hour with min load



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