NordREG
Nordic Energy Regulators

DEVELOPMENT OF A COMMON NORDIC BALANCE SETTLEMENT

Report 3/2006

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1 Development of a common Nordic balance settlement - summary and conclusions

NordREG finds it essential for the customers that a common integrated end-user electricity market is developed and that all end-users are able to take part in the Nordic market. A common Nordic balance settlement is one important part of such a change. However, attention has to be paid to the comments in the workshop on 9 January 2006 that a badly designed common system is worse than well-designed national systems. It is thus important that the change to a common balance settlement is so thoroughly investigated that the common system gives a basis for a well-functioning market. An important basis for such a change is an agreed vision for the process.

Vision:
NordREG proposes the following framework for the development of a common Nordic balance settlement:

> The present different systems for balance settlement shall by the year 2010 be replaced by a common Nordic balance settlement.

This means that:

- It will be possible for a supplier to sell to the whole Nordic market from one legal entity and using only one system for customer management and reporting.

- The common Nordic balance settlement will be designed in such a way that it contributes to a well functioning market. This means for example that it will be attractive even for small suppliers and some end-users to be balance responsible parties.

Road map to a common Nordic balance settlement:

When the vision is agreed, the first phase of the work can be executed. It is feasible that the first phase is focused on those present differences that are most decisive for fulfilment of the vision. NordREG recommends that the following issues shall be discussed and agreed in co-operation between NordREG, Nordel and relevant stakeholders in the first phase:

- A common definition of balance settlement and the purpose of a common balance settlement.

    - The definition shall include how the common Nordic balance settlement shall interact with the balance control and the balance regulation of the interconnected power system and the balance settlement between countries performed by the TSOs.

- To define the cost-base for balance settlement
    - The definition should include the cost-base for common Nordic balance settlement in relation to other system responsibility costs.
    - The core activities of system responsibility have also been analyzed by NordREG.
- To define the concept of imbalance and to decide how to allocate the costs of balancing.
- To choose the model for pricing the imbalances
    - It is important to find a balance between inter alia the need for simplicity and the need for incentives to reduce imbalances.
- To decide on the number of balances that shall be planned and settled.
    - NordREG comprehends that there are advantages for vertically integrated companies if they can net their imbalances. These advantages might be reduced and competition enhanced if the balance settlement includes separate consumption imbalances and separate production imbalances per Elspot area.
- It is difficult and costly to harmonize the area of metering value processing requirements and data systems, but it is crucial that it is done in order to have a common Nordic retail market. Therefore it is important that a road map for the necessary harmonisation and standardisation of these differences is agreed in the first phase.
    - The difference in load profile systems is a obstacle for a harmonised balance settlement regarding customers without hourly measurements.

After these issues have been discussed and agreed, it is possible to decide a plan for the further work aiming at implementation of a common Nordic balance settlement, which will also include necessary changes in the legal and regulatory framework.

NordREG believes that the fulfilment of the vision is facilitated if there is appropriate time for thorough discussions in the first phase. Year 2007 can be a feasible control station for decisions regarding the further work aiming at implementation of a common Nordic balance settlement.

2 Background

2.1 General background

The Nordic Energy Regulators (NordREG) set in its Work Programme for the year 2005 four strategic objectives for its work regarding the Nordic electricity market. The strategic objectives are the following: 1) A truly common Nordic retail market with free choice of supplier, 2) A well-functioning wholesale market with competitive prices, 3) Reliable supply and 4) Efficient regulation of TSOs.

Under the strategic objective of "A truly common Nordic retail market with free choice of supplier" four tasks were stated. These are 1) To develop a common balancing management and settlement system, 2) To develop easy and harmonised procedures for all customers switching supplier, 3) To ensure adequate level of transparency in the market and 4) To create harmonised criteria for unbundling to ensure neutrality.

In the Work Programme 2005, two working groups were established to review the issues "To develop easy and harmonised procedures for all customers switching supplier" and "To develop a common balancing market".

The Nordic energy ministers in their meeting in Greenland in August 2005 set the objectives for the further development of the Nordic electricity market. These objectives and the related tasks were commissioned to the Nordic transmission system operators, ministries, regulators and other relevant authorities. A task commissioned to NordREG was the prerequisites for the development of an integrated Nordic retail market.

The customer switching group finished its work in September 2005 with the report "Supplier switching in the Nordic countries – current practices and recommendations for the future development". A new group was created, the retail market working group. The retail market group identifies the various obstacles which prevent the formation of a truly integrated Nordic electricity retail market and proposes recommendations for future work. The balancing working group deals with one already identified main obstacle, namely differences in balance settlement. Both the working groups aim at giving momentum to the development of a truly common Nordic retail market with free choice of supplier. According to the timetable set by the ministers, the prerequisites for the development of an integrated Nordic retail market shall be reported by NordREG at latest 1 March 2006.

2.2 Objective of the balancing working group

The TSOs in the Nordic countries have the overall responsibility for the momentary balance between the total supply and the total consumption of electricity. The day before the operational day, balance plans are reported by the balance responsible parties. Imbalances and frequency deviations occur if the generation does not match the consumption at a given time. The TSOs meet small deviations by automatic reserves. More substantial deviations are manually handled

in the regulation market. Imbalances between planned and real consumption and production are calculated and financially settled for each balance responsible party in the balance settlement.

There is now a common Nordic regulation market and the Nordel system operation agreement results in a balance control and balance regulation of the interconnected power system that is much harmonised. Since September 2002, bids from Nordic market participants with available regulating capacity are entered into a common price list in the common Nordic Operational Information System (NOIS).

One main obstacle to the development of a truly common Nordic retail market is however that there are differences between the countries in the systems for balance settlement.

Nordel stated in its report last winter to the Nordic Council of Ministers that differences in the balance settlement create a threshold for the market players to expand their activities to other countries. Because of the differences, the market players have to establish different administrative procedures in different countries leading to extra costs. The extra costs may be a barrier for the newcomers and an obstacle for the development of a Nordic retail market. This is contributing to one fundamental deficiency of the market; e.g. lack of a true Nordic market at retail level. There is according to Nordel a well established wholesale market in the Nordic countries, but the opportunities for medium and small-scale end-users are largely limited to local markets.

The Nordic Council of Ministers has commissioned a study on the possible creation of a common Nordic TSO. If the countries decide to create a common Nordic TSO a common Nordic balance settlement has to be developed. Does this imply that the development of a common balance settlement has to await the creation of a common TSO or is it possible to develop a common balance settlement irrespective of the attitudes to a common Nordic TSO? The balancing working group has chosen to assess if there is such a possibility.

The chosen objective of the balancing working group is to formulate a vision for a common Nordic balance settlement and to describe important bricks in such a vision. A roadmap shall be provided for the further development. The aim is to give momentum to the development of a truly common Nordic retail market with free choice of supplier. If a principal decision thereafter is taken, detailed work regarding the development of common balance settlement can be pursued by the TSOs, authorities and other relevant actors. In this process the following issues are to be addressed:

- identify the purpose of, and possible gains of a common balance settlement system,
- identify associated arrangements which may be affected by alternative solutions for common balancing, such as the working of the TSOs and Nord Pool,
- examine the effects for the suppliers as well as the large customers (that may be or become active on Nord Pool),

According to Elmarknadsgruppen's report to the Nordic Ministers at the meeting in Greenland, Nordel is given the task of investigating the development of a common balance service and how the cost base for balance services should be harmonised. According to Elmarknadsgruppen,

Nordel should consult NordREG in this matter. The NordREG balancing working group has also the task to give input to that consultation process.

2.3 Work of the balancing working group

The participants in the balancing working group have been Margareta Bergström, project leader (Energimarknadsinspektionen, EMI), Bente Danielsen (Energitilsynet), Ritva Hirvonen (Energiamarkkinavirasto, EMV) and Toril Naustvoll Gange and Olav Kolbeinstveit (Norges vassdrags- og energidirektorat, NVE). The group has been supported by a consultant, Björn Hagman, Hagman Energy AB.

Present problems with balance settlement and earlier work relating to the harmonisation of balance settlement have been identified and analysed. The European regulators are within ERGEG studying the balancing markets and the providing of ancillary services. Members of the group are participating in that work but issues regarding balance settlement are yet not studied. Interviews have been performed with market players in order to hear their views regarding Nordic balance settlement and the development of a truly common Nordic retail market. Important bricks in a common balance settlement have been discussed by the group.

A workshop for invited stakeholders was held in Stockholm on the 9th of January 2006 together with the retail market working group in order to discuss the interim results of the work done so far and to enable the exchange of views and information before the finalisation of the reporting.

The report presented by the balancing working group was approved by the NordREG Board at their meeting on the 15th of February.

The first section in this report gave a short summary containing the main conclusions and proposals for further work.

This section is about the task and work of the balancing working group.

Section 3 describes the differences in balance settlement between the Nordic countries.

Section 4 summarizes interviews with market players in the Nordic countries regarding common Nordic retail market and balance settlement. It includes also comments from market players at the workshop held in Stockholm on the 9th of January 2006 together with the retail market working group.

Section 5 formulates a vision for a common Nordic balance settlement, describes the important bricks in such a vision and the existing barriers to the realisation of the vision.

3 Differences in Nordic balance settlement

The issue of balance settlement has been divided in eleven areas in order to give a basis for the description of the present differences and the analysis of feasible development of a common Nordic balance settlement. The following areas have been chosen:

- Purpose of balance settlement
- Cost-base for balance settlement and fee structure
- Model for pricing of imbalances
- Imbalance pricing in shortage situations
- Balance plans and calculation of imbalances
- Metering requirements, load profile systems and demands on profile systems
- Management of measurement corrections from network operators
- Invoicing and terms of payment
- Collaterals and guarantees
- Organisational demands on balance responsible parties
- Legal framework and supervision

The following table summarizes some of the differences between the countries.

	Finland	**Sweden**	**Denmark**	**Norway**
Major cost-base differences	Includes parts of the costs for disturbance reserves	Includes parts of the costs for disturbance reserves	No such costs	No such costs
Pricing models	Two – price	Two – price	Two – price	One – price
Special pricing in shortage situations	Yes	Yes	No	No
Number of imbalances	Single balance	Three balances: - Production - Consumption - Total	Three balances: - Production - Consumption - Trade	Single balance
Profiles	One profile per customer group for non local suppliers	One profile per grid, shares calculated per bal. resp. party	One profile per grid, shares calculated per bal. resp. party	One profil per grid, calculated per customer
Number of balance responsible parties	23	39	39	137

3.1 Purpose of balance settlement

The purpose of balance settlement is in all Nordic countries to settle the imbalances that are the result of electricity deliveries between the parties in the electricity market. The system operators perform two types of balance settlement.

The first is the balance settlement between the countries. Balance power between two countries is priced and settled according to the Nordel System Operation Agreement. Since September 2002, bids from market participants with available regulating capacity are entered into a common price list in the common Nordic Operational Information System (NOIS). There is now a common regulation market and the system operation agreement results in a balance control and balance regulation of the interconnected power system that is much harmonised. Remaining differences between the Nordic countries in balance control and balance regulation are not further analysed in this report

The balance settlement inside the countries is a settlement between the system operators and the balance responsible parties. This settlement is governed by national balance agreements. The balance agreements also describe how the balance responsible parties can participate in the regulation power market. There are different descriptions of the purpose of balance settlement e.g. regarding the importance of reducing imbalances in order to enhance operational security v.s. simplicity in the national balance agreements.

3.2 Cost-base for balance settlement

The pricing of imbalances will be described in the next section. The fee structure includes also other fees. Differences in fee structures between the Nordic countries reflect differences in the cost-base for balance settlement.

Denmark: After conclusion of a balance agreement, the balance responsible party shall pay an initial fee of 25 000 DKK. An annual fee of 100 000 DKK shall also be paid.

In Denmark there is a special system tariff paid by network users for financing costs for system responsibility. Balance responsible parties pay only for balance settlement. The surplus from the two-price system for balance pricing is used to reduce the system tariff.

Finland: A balance responsible party pays a fixed monthly fee of EUR 1 000 per month and a volume fee of EUR 0.7 per MWh balance power purchased or sold from Fingrid.

The fees and the surplus from the two-price system for balance pricing finance balance management, balance settlement and about 10 % of the costs for disturbance reserves. Remaining costs for disturbance reserves are financed via the grid tariff.

Norway: There is a volume fee of NOK 0.60 per MWh purchase or sale of regulating power. The total turnover of regulating power is about 8 TWh per year. Balance responsible parties pay

also special fees of NOK 365 for each consumption- and production-component and for each counterpart in bilateral contracts.

The purpose of the fees is to finance the costs for balance settlement. There is a special annual account for the balance settlement business. All other costs for system responsibility are financed from the grid tariff.

Sweden: A balance responsible party pays a basic fee of SEK 0.5 per MWh total consumption and total production respectively. The volume fee on imbalances is SEK 1.0 per MWh. There is also a fee of SEK 500 twice per month for each reported counterpart in bilateral trade.

The income statement in the annual report of Svenska Kraftnät is divided up into the segments System Responsibility and Network. System Responsibility encompasses operations and expenses relating to primary and secondary regulation, parts of the disturbance reserve, balance control, balance settlement, Ediel and the temporary peak load reserve until February 2008. System Responsibility is financed by the surplus from the two-price system for balance pricing, the fees from the balance responsible parties and a special fee charged to those who use Ediel. The costs for the temporary peak load reserve are paid by the balance responsible parties via a supplementary fee of SEK 10 per MWh total consumption (excluding network losses) on weekdays between 06 hrs and 22 hrs during the period December – February.

Network is financed by the grid tariff and constraints and transit revenues. Network encompasses operations and expenses relating to the grid, interconnectors, network operation and control, parts of the disturbance reserve, counter trade and network losses.

3.3 Model for pricing of imbalances

The model for pricing of imbalances is a one-price model in Norway and a two-price model in Denmark, Finland and Sweden.

In a one-price model the price for imbalances equals the regulation power market price. In Norway the regulation power market price is defined as the most expensive regulation in an up-regulation hour and the cheapest down-regulation in a down-regulation hour. When no regulation longer than 10 minutes has been done, the elspot price is used as the regulation power market price.

In a strict two-price model, as in most European countries, players with negative balance during the operational hour or half-hour pay the up-regulation price (the price for the most expensive up-regulation ordered) and players with positive balance pay the down-regulation price (the price for the cheapest down-regulation ordered).

The two-price model in Denmark, Finland and Sweden is modified in such a way that hours with both up- and down-regulation are classified as either up-regulation hours or down-regulation hours depending on what type of regulation was predominant during the hour. If a balance responsible party has a positive balance during an up-regulation hour or a negative balance during a down-regulation hour, the elspot price is used instead of the regulation price.

Both models in the Nordic countries give the same prices for imbalances that are unfavourable for the system but different prices for imbalances that support the system. In the two-price model, imbalances that support the system are priced with the elspot price instead of the regulation power market price as in the one-price model.

A two-price model gives the balance responsible parties stronger economical incentives to plan themselves into balance by imposing more costs in average on balance responsible parties with imbalances. A one-price model facilitates for new and small players by pricing imbalances with the regulation market price (lower risk and simplified settlement). The advantage for big companies from pooling many customers is also smaller.

The two-price model gives the system operator an income from settling imbalances that normally is higher than the variable costs for regulation power (without taking into account the fixed costs for reserves) due to the asymmetric prices for positive and negative imbalances. The one-price model does not normally give the system operator a surplus from the regulation power market. Therefore the fixed costs of the system operator have to be financed in another way.

3.4 Imbalance pricing in shortage situations

The only Nordic countries with special rules for pricing of imbalances in shortage situations are Finland and Sweden.

Finland: A power shortage is deemed to have occurred when Fingrid have activated its fast disturbance reserves because all available generation capacity in Finland is in use, all up-regulation bids have been activated and it is not possible to obtain additional electricity from neighbouring countries. During power shortage, the price for negative imbalances is the highest of the price of the most recent up-regulation, the variable cost of gas turbine capacity used and the cost of other fast disturbance reserve used. A serious power shortage is deemed to have occurred when Fingrid needs to restrict consumption or disconnect loads without commercial agreements. The pricing of imbalances during serious power shortage is the same as the pricing during power shortage.

Sweden: If Svenska Kraftnät for balancing reasons has been forced to activate a part of the fast active disturbance reserve as a last resort, the up-regulation price shall be at least 10 000 SEK/MWh (or the spot price if it is higher). When a plant that is part of the temporary peak load reserve is bid in as regulation power, the bid price shall be variable costs plus 8 000 SEK/MWh. The mark-up on variable costs shall be increased in the winter 2006/2007 to 11 000 SEK/MWh and in the winter 2007/2008 to 15 000 SEK/MWh. If Svenska Kraftnät has ordered forced load shedding, the up-regulation price shall be at least 20 000 SEK/MWh. If there are accepted up-regulation bids on higher levels, the up-regulation price shall be equal to the most expensive up-regulation ordered.

There is in the balancing agreement an exception for production imbalances in shortage situations. The cost for production imbalances in shortage situations caused by unplanned

stoppage or failure to start as a result of technical failure is 600 SEK/MWh or the own cost for Svenska Kraftnät (e.g. for gas turbine operation) if it is higher.

3.5 Balance plans and calculation of imbalances

Denmark: No later than 15:00 the day before the operational day, the balance responsible part shall submit a balance plan prepared as a balanced hourly power schedule. The balance responsible party can adjust its balance plan provided acceptance by Energinet.dk. In Eastern Denmark, the balance plan can be adjusted in Elbas up to one hour before the operational hour.

There are separate balance plans in Denmark for consumption and production. Trade with other balance responsible parties shall be entered into the balance plans. The sum of each balance plan shall be zero for each hour.

The hourly differences between planned consumption and real consumption are balance power consumption. The hourly differences between planned production and real production are balance power production.

Finland: The balance responsible party shall provide Fingrid with a production plan for each hour no later than 17:00 (Finnish time) on the day precedent the delivery day. The balance responsible party shall supply Fingrid with updated information as the plans change. Changes to the production plans and bilateral trade affecting the balance responsible's balance shall be reported at the latest 20 minutes before the hour in question. Changing the production within the operational hour is allowed provided acceptance from Fingrid. Consumption plans are not presented from the balance responsible parties to Fingrid.

The distribution network operators shall organize balance settlement and information exchange concerning open supplies in their networks. The network operators shall report aggregate data to the balance responsible parties of the suppliers. The balance responsible parties shall organize balance settlement and information exchange relating to it on national and local networks and from the national network to the measurement points between a distribution network and another network concerning the open supplies they are balance responsible for.

Fingrid is the national balance power unit and settles the balances of the balance responsible parties. The balance difference between the national balance power unit and the balance responsible parties is the same as the balance difference between Finland and other countries. In Finland, production differences and consumption differences are netted in the hierarchical reporting and calculation of imbalances. There are no separate production and consumption imbalances in Finland.

Norway: The balance responsible parties report planned production and bilateral trade to Statnett. The figures on bilateral trade are being used as input for the balance settlement. Planned consumption is not reported by the balance responsible parties. The basis for Statnett's assessment of the situation in the operational hours to come is therefore not balance plans from the balance responsible parties but reported planned production, reported elspot trade with other countries and Statnett's forecast of the Norwegian consumption in different grid areas.

The balance responsible parties with production plants shall report to Statnett before 19.00 about their own production schedules for each hour during the next day. The production schedules may be changed in accordance with decisions adopted by Statnett.
Bilateral trade between balance responsible parties can be reported in advance for the coming week. Reported bilateral trade can be increased (but not decreased) after operational hour until balance settlement.

The reported real values from the network operators to Statnett are gross for production and consumption. However, Statnett calculates no separate production and consumption imbalances for the balance responsible parties.

Sweden: A balance responsible party shall report its balance plan no later than 16:00 the day before the operational day. Changes in the balance plan may be reported just before the operational hour. The balance plan includes for each hour production plan, consumption forecast, and agreed trade with other balance responsible parties. The balance between the three parts is planned balance.

The planned production of the balance responsible party is matched against its measured production. The difference is balance power – production.

The forecasted consumption of the balance responsible party is matched against its real total consumption. The difference is balance power – consumption.

There is no difference in the settlement regarding agreed trade with other balance responsible parties. The reason is that there are rules in the Swedish balance agreement – as in the Danish and Finnish balance agreements – how automatic corrections of data on agreed trade shall be done in the balance plan if two balance responsible parties give different data regarding agreed trade between them and they don't make corrections.

Planned balance in the balance plan is settled as balance power – planned. The reason for this third balance is to give the balance responsible parties an incentive to always plan themselves into balance in their balance plans.

3.6 Metering requirements, load profile systems and demands on data systems

The retail market working group of NordREG has commissioned a survey of technical aspects of the Nordic retail markets. The focus of the study has been a comparative analysis of metering requirements, load profile systems and data systems. The study was done by VTT in cooperation with SINTEF, EnergiPiano and Carl Bro.

Differences in metering between the Nordic countries include different requirements for mandatory hourly metering and different requirements for the frequency of meter reading (especially from 2009 when Sweden demands at least monthly reading). There are also different definitions of the metering point ID, different requirements for the interfaces and different meter reading data formats. Furthermore, there are no common requirements regarding future meters.

There are also fundamental differences in load profile systems. Grid area residual profiles are used in Denmark, Norway and Sweden while customer segment profiles are used in Finland. There is one profile per grid company in Denmark and Norway while there are two profiles per grid area in Sweden (one profile for customers with time of use tariff and one profile for other customers that are not hourly metered). The grid companies in Denmark shall use a special profile for network losses. In Finland, normally three customer segment profiles are used (one profile for dwellings with less than 10 000 kWh in yearly consumption, one profile for dwellings with more than 10 000 kWh in yearly consumption and one profile for other customers that are not hourly metered).

In Finland, load profiles are used for customers that purchase electricity from another supplier than the supplier with obligation to supply in the network area. The supplier with obligation to supply in the network area is instead responsible for the balance between the infeed and the sum of hourly metered consumption, estimated profiled consumption and estimated losses.
In Denmark, Norway and Sweden, there are no differences between the suppliers regarding the use of load profile systems.

In Norway, the profile shares are calculated per customer instead of the calculation per balance responsible parties used in other countries. The calculation per customer facilitates the management of switches in the settlement process.

The different load profiling methods in the Nordic countries require different and tailor made software for the handling of profiled customers in the balance planning and the balance settlement. The result is increased costs and risks for suppliers that operate in different countries.

There are some common standards and recommendations in the Nordic countries regarding data systems and information exchange but most standards and recommendations are only national. The external data exchange is based in all countries on Ediel but the usefulness of standard is reduced because the use of Ediel is slightly different. There are differences in the standard messages used for external data exchange. There are also differences in the content of messages and the naming of objects. Also the communication protocols used for exchange of messages are different. The result of the differences regarding data systems and information exchange are barriers that compel a Nordic retailer to use individual systems for each country and prevent benefits of scale.

3.7 Management of measurement corrections from network operators

Denmark: The main principle is that measurement values reported by the network operators are obliging. The network operators are responsible for controlling the quality in measurements and shall report the measurements three working days after the operational day. Corrections can be reported by the network operators until five working days after the operational day. Thereafter a balance settlement for the operational day is performed by Energinet.dk. A further and final balance settlement is made three months later. For profile customers, preliminary profiles are used in the final settlement.

Corrections after final settlement (including profile settlement) are handled by the network operators. Companies with “rolling” yearly reading (e.g. 1/12 of the meters every month) shall make profile settlement within 15 months. Companies with simultaneous reading of all meters shall make profile settlement within six months from the reading.

Finland: Finland applies a hierarchical balance settlement procedure which is carried out by distribution network operators, balance providers and Fingrid. There are definite deadlines for the completion of the settlement. Fingrid carries out a weekly preliminary balance calculation within three working days after delivery that is sent to the balance responsible parties for information and control. The national monthly balance settlement is completed no later than within two months from delivery. If errors are noticed after the completion of the national balance settlement, the balances shall not be changed. However, the errors can be settled through a monetary compensation between the balance responsible parties.

Norway: A balance responsible party shall within three banking days from the date of invoice complain about errors in the calculation. A correction settlement will be done by Statnett if it is an error done by Statnett and the error is significant. If it is an error done by a distribution company, the distribution company has to arrange corrections between balance responsible parties if needed. Final profile settlement is handled by the distribution companies.

Sweden: Svenska Kraftnät carries out the first balance settlement on the day after the delivery. The results are distributed to the balance responsible parties who shall check the results and report any errors as soon as possible. Within a period of at least five days after the delivery, the balance settlement is repeated automatically once per day to take into account any measurement correction from the network operators. Ordinary invoicing is normally carried out within twelve days after the end of a half-month period. If delays occur in the reporting of measurement values, the ordinary invoicing can be delayed.

When measurement values are corrected after ordinary invoicing, Svenska Kraftnät performs a further settlement. Corrective invoicing settles the difference between a previously settled amount and the corrected amount for the half-month period. Normally corrective invoicing is implemented within three months after the end of a half-month period.

Final settlement concerns calculation of the final power, i.e. the difference between final calculated profile supplies and preliminary calculated profile supplies. Svenska Kraftnät is thus the only Nordic TSO that executes the final profile settlement. In the other Nordic countries, the final profile settlement is executed by the network operators after the final balance settlement executed by the TSOs. The final power is calculated as monthly energy divided into two periods. The peak demand period is Monday – Friday 6.00 – 22.00 h and the low demand period is other times. Final power is priced as a calculated average of the spot price (Sweden area), weighted according to the sum of all consumption profiles in each constraint area. Different prices apply for the peak demand period and the low demand period and also for the different constraint areas. When final profile shares have been received for a profile calculation area, Svenska Kraftnät communicates the shares so that the balance responsible parties can check them. Svenska Kraftnät performs final settlement during the 14th month after the delivery month. The invoice or the credit note shows bought or sold final power for the delivery month.

3.8 Invoicing and terms of payment

Denmark: Invoicing of imbalances is done once a month. Invoices or credit notes are sent seven working days after the end of the month. Invoices shall be paid into the account of Energinet.dk no later than eight days after the invoice date.

Finland: Fingrid carries out a preliminary balance calculation of purchased and sold energy and volume fees of the preceding week within three working days after delivery. The calculation is sent to the balance responsible parties for information. If the net sum of the preliminary balance calculation for a calendar month exceeds the guarantees given by the balance responsible party, the sums due on the basis of the preliminary calculations will be invoiced immediately. The due date of that invoice is seven days from the date of the invoice. Interest on arrears is calculated in accordance with the current interest legislation.

The completion of the national balance settlement is done within two months after the delivery. The invoicing period is one month and invoices are sent within two weeks after the completion. Payments related to possible preliminary invoices are taken into account in the final invoice. The due date of the final invoice is 14 days from the date of the invoice.

Norway: Invoicing of balancing[1] power is done once a week. Invoices or credit notes are sent in the week after the delivery week when the basis for the balance settlement is compiled and controlled, The due date of an invoice is six banking days after the date of the invoice. Statnett may because of a credit risk assessment decide a shorter payment period. Interest on arrears is calculated in accordance with the current interest legislation. Statnett has together with its customer forum organised a working group to study the issue of daily settlement and daily invoicing.

Sweden: Invoicing is done for a delivery period covering half a month. Ordinary invoicing is normally carried out within 12 days after the end of the delivery period. Corrective invoicing is normally implemented within three months after the end of the delivery period. Final invoicing is done during the 14th month after the delivery month as a result of the final settlement. Amounts less than 200 SEK per period are not processed. The due date of an invoice is 15 days after the invoice date. Each invoice and credit note shall under normal conditions be treated separately (i.e. no netting except during abnormal circumstances). In the event of late payment, penalty interest is calculated in accordance with the current interest act.

3.9 Collaterals and guarantees

Denmark: The balance responsible party shall place needed securities as on-demand bank guarantees or other corresponding securities for its commitments. The amount is decided on an individual basis but shall at least be 2 MDKK.

For consumption in Western Denmark the amount is 5 % of the previous month's consumption multiplied by the forward price for DK1 for the current calendar year. The amount can be changed at fortnight's written notice.

[1] Norway does not differentiate between balance power and regulating power.

For Eastern Denmark the amount is at least 10% of the maximum monthly turnover multiplied by the forward price for DK2 for the current calendar year. It is the responsibility of the balance responsible party that sufficient collaterals always are placed. If they are not sufficient a demand for increased collaterals is sent. The demand must be fulfilled the next day. Otherwise will balance plans giving increased risk for the system operator not be approved.

Energinet.dk is now preparing a common balance agreement covering both Eastern and Western Denmark.

Finland: The balance responsible party shall make sure that his guarantee covers the total guarantee requirement continuously. If the total guarantee requirement is going to exceed the guarantee given, the balance responsible party shall increase the guarantee immediately at its own initiative.

The basic guarantee shall be EUR 100 000 and the additional guarantee shall be the highest monthly average (MWh/h) of the hourly sums of consumption and deliveries included in the balance responsibility multiplied by EUR 1 200. Fingrid has the right to change the coefficient used in the calculation if the monthly average price of Elspot FIN has exceeded 75 EUR/MWh or if the price of any financial season product within the agreement period exceeds 75 EUR/MWh.

Norway: Every balance responsible party shall place collaterals for economic settlement. A basic security on minimum 200 000 NOK shall be placed. The demand for additional securities is calculated by Statnett the first working day in every week according to a special formula taking into account the trade of the balance responsible party. Sufficient collaterals have to be reported by the banks Tuesday 10:00 or Wednesday 10:00 at latest. Exemption from the requirement for collaterals can be done for governmental or municipal companies.

Balance responsible parties in Norway placed earlier common collaterals for Nord Pool and Statnett for the trade in the Elspot and the regulation power market. That cooperation ended May 2004. Statnett administers now the collaterals for imbalances and trade in the regulation market.

Sweden: The balance responsible party shall place collaterals for the right fulfilment of his obligations according to the balance agreement. Svenska Kraftnät has the right to demand basic and additional collaterals based on an assessment of the credit worthiness and the possible credit exposure of the balance responsible party. When changes occur, Svenska Kraftnät has the right to change its demand for collaterals. The balance responsible party is liable to comply with new demands for collaterals without delay.

3.10 Organisational requirements on balance responsible parties

Denmark: The principal basis in Denmark is that all parties with network access are balance responsible. The balance responsibility can be transferred to another party. Changes in balance responsibility shall be reported to the network owner. A balance responsible party has to be

approved by Energinet.dk and sign a balance agreement.
A balance responsible party has to be a registered company within an EU- or EES-country. The business shall be registered for value added tax in Denmark. The balance responsible party shall maintain the necessary organisation in order to fulfil its balance responsibility.

The number of balance responsible parties was 39 in November 2005.

Finland: Every party in the Finnish electricity market shall have an open supplier. An open supply is defined as a supply where the supplier delivers all the electricity demand of the customer or a supply where the supplier balances the customer's difference between production and purchase on one side and consumption and sale on the other side. An open supplier shall for its open supply to a party decide a balance responsible party or another open supplier that have a balance responsible party or another open supplier for its open supply. A balance responsible party has Fingrid as its open supplier and shall have a balance service agreement with Fingrid.

A balance responsible party shall be registered as a company liable to pay value added tax in Finland. Fingrid shall be able to reach the balance responsible party or its authorised representative 24 hours a day every day of the year. The persons or authorised representative specified shall be entitled, in a manner that binds the balance responsible party, to receive notifications given by Fingrid and to take any immediate action relating to balance maintenance to which the agreement obliges the balance responsible party.

The balance responsible party shall arrange its balance management so that it can correct a balance deviation, which is extensive with respect to the volume of its balance, no later than within four hours from the moment on which the balance deviation arose. Sufficient arrangements in this respect include for instance electricity trade (such as Elbas) close to the hour in question or possibility to regulate production or load included in the balance.

The number of balance responsible parties was 23 in November 2005.

Norway: Without licence from NVE no one else than the state can trade and supply electricity. The requirements on companies applying for licence include that the company is divided in separate fields of activity with separate budgets and accounts. Companies with licence to supply electricity as well as end-users and network companies that take part in the regulation power market are balance responsible parties. A balance responsible party shall have a balance agreement with Statnett. The agreement gives access to the wholesale electricity market in Norway.

The number of balance responsible parties was 137 in the end of 2005.

Sweden: A supplier of electricity can only supply in a withdrawal point from the electrical network if there is a balance responsible party for that point. The balance responsible party has to have a balance agreement with Svenska Kraftnät. The balance responsible party shall be registered at the tax authority as liable to energy taxes.

The number of balance responsible parties was 39 in the end of 2005.

3.11 Legal framework and supervision

Denmark: Energinet.dk is responsible of overall balance regulation in Denmark. Energinet.dk is an independent public entity owned by the Danish state under the authority of The Ministry of Economic and Business Affairs. The objective of Energinet.dk is to ensure efficient operation and expansion of the overall electricity and gas infrastructure and to ensure open and equal access for all users of the grids.

Governance of Energinet.dk is laid down in the provisions of the Danish Electricity Supply Act and a special act concerning the creation Energinet.dk as the merged Danish TSO responsible of both electricity and gas. (*Lov om elforsyning and Lov om Energinet.dk* and *Lov om naturgasforsyning).*

Secondary legislation is set concerning system operation and cost recovery *(Bekendtgørelse om systemansvarlig virksomhed og anvendelse af eltransmissionsnettet m.v. and Bekendtgørelse om økonomisk regulering af Energinet.dk)*

Energinet.dk is obliged to engage in transmission system operation activities as well as electricity transmission and gas transmission activities. Furthermore, the TSO may exercise the purchase obligation of the Danish state concerning transmission grid between 100-200 kV and concerning the international connections exceeding 100 kV and engage in the establishment of new transmission grids and material changes to the existing grids subject to the establishment of a sufficient need for such expansion, taking into account security of supply, safeguard of preparedness, creation of a well functioning competitive market and the incorporation of renewable energy.

The main provisions on the rules on balancing are found in section 27 (a, c) of the Electricity Supply Act, stating that Energinet.dk is responsible of sustaining technical quality and balance within the coherent system and provide for generation adequacy. Energinet.dk has as a special task according to the provisions in section 27 to provide for balancing of renewable electricity. Energinet.dk is as authority entitled to set market rules (*markeds forskrifter*) and has issued regulations concerning connecting of generation and load to the transmission grid, regulations on the obligations of market participants and metering. Rules and obligations of balance providers are as well set as regulations.

The Danish Energy Regulatory Authority in Denmark monitors the balance tarification methodology as part of approval of general cost recovery of Energinet.dk

Finland: The legal basis for balance responsibility and balance settlement is given in the Electricity Market Act. The Act states that electricity network operation calls for a licence issued by the Energy Market Authority. In the licence, the Energy Market Authority orders one grid operator to be responsible for the technical operability and reliability of Finland's electricity system and to discharge the duties involved in national balance responsibility in an appropriate manner that is equitable and non-discriminatory to all electricity market participants (system responsibility). The Energy Market Authority has ordered Fingrid Ltd to be the system responsible grid operator in Finland.

According to the Electricity Market Act the system responsible grid operator shall upkeep and develop its activities and services within the system responsibility and maintain, operate and develop its electricity system and other equipment needed for fulfilling the system responsibility and the connection to other systems, so that the prerequisites for an efficiently functioning electricity market can be ensured. In order to meet the responsibilities, the system responsible grid operator may impose terms and conditions on the use of the power transmission system, as well as on the use of the power plants and loads connected to the power transmission system. These terms and conditions shall be submitted to the Energy Market Authority for approval. In addition the grid operator under the system responsibility shall publish, and make known to the Energy Market Authority, the currently valid terms of services associated with the system responsibility.

Within national balance responsibility the terms of acquisition for electricity needed for maintaining national balance responsibility, and the terms of trade for balancing electricity, shall be equitable and non-discriminatory to all electricity market participants, and they shall not contain any conditions or limitations that would be unfounded or that would obviously restrict competition within electricity trade. However, these terms shall take account of the conditions necessitated by the reliability and efficiency of the electricity system. The pricing of balancing electricity shall be reasonable.

As regards to balance responsibility in Electricity Market Act an electricity market participant shall be responsible for ensuring that the electricity generation and electricity acquisition contracts of the said participant cover the participant's electricity use and supplies during each hour. Further provisions on the contents of balance responsibility may be issued by Government decree.

According to the Act the system operator and other parties to the electricity market are responsible for balance settlement. Balance settlement shall be based on electricity metering, or on a combination of metering and type-loading curves, and on supply reports, as provided in more detail by decree. Further provisions on the content of balance settlement and on the methods to be applied in the balance settlement are given by Government decree.
Network operators must offer balance settlement services on equitable and non-discriminatory terms to the electricity market participants. The balance settlement services offered may not include any conditions or limitations that would be unfounded or that would obviously restrict competition.

Electricity market participants are required to provide measurement data and other information on electricity generation, use and supply needed for fulfilling the balance responsibility and for balance determination. Further provisions on the notification procedure may be given by ministerial decree.

The Electricity Market Act also includes general obligations regarding system operation (i.e. are applicable to all network operators whether operating the distribution network or the transmission network). The most essential general obligations are the obligation to develop the network, the obligation to connect and the obligation to transmit. Network operators should also keep their prices at the reasonable level and terms of the network services equitable and non discriminatory to all users.

Certain provisions regarding the duties and obligation of the system responsible grid operator are also included in the Fingrid's licence. For example it has been stated in the conditions of the licence that Fingrid must keep the unbundled accounts for balancing services.

According to the Electricity Market Act the task of the Energy Market Authority is to supervise that the provisions of Electricity Market Act and any rules and regulations issued under it, as well as Regulation (EC) No 1228/2003 are complied with. However, the construction of cross-border power lines, and the import and export of electricity are supervised by the Ministry of Trade and Industry.

By its decision, the Energy Market Authority shall confirm the following terms of services and methods of pricing services before their take-up to be complied with by the system operator and the grid operator under the systems responsibility:

- methods to determine the system operator's return on its system operations and the fees charged for the transmission service during the surveillance period;
- terms of the system operator's transmission service;
- terms and methods of the system operator's connection service to determine the fees charged from the connection;
- terms of the services under the systems responsibility of the grid operator subjected to the systems responsibility and methods to determine the fees charged for the services.

Where anyone infringes against or neglects his obligations laid down in the Electricity Market Act or any provisions issued under it, or in Regulation (EC) No 1228/2003 the Energy Market Authority shall oblige him to correct his mistake or omission. The Energy Market Authority may impose a conditional fine to make a decision effective.

Norway: The overall balance regulation is a major activity of the system operator, which is Statnett SF. The set of rules for ensuring momentary balance are set out in the Regulations relating to the system responsibility in the power system and the Statnett's licence for exercising the power system operation, §4.

All the players that are buying or selling electricity in the wholesale market shall have a trading licence issued by NVE. In the regulations it is stated that licensees' bids are to be submitted in the respect of each individual in the individual elspot areas. Furthermore the licensees shall ensure that they achieve the planned balance between their commitments and rights, including their own production. For each elspot area, the licensees shall report to the system operator, on a daily basis, before 7 pm, about their own production schedules on an hourly basis for the day ahead. These production schedules shall be prepared in accordance with the licensee's commitments and rights. The licensees are obliged to adhere to the submitted production schedules.

The system operator shall obtain information from the entity with settlement responsibility to uncover systematic violations contained in the paragraph that is mentioned above and report any non-compliance to NVE. Moreover, NVE is responsible for the overall supervision of these regulations.

In accordance with the Licence for the Power System Operation, Statnett is obliged to contribute to the aim of the Energy Act and the Regulations pursuant to it by ensuring that the market players comply with the aim of efficient markets. To fulfil these requirements the System Operator shall arrange for routines of exchange of information in cooperation with the Settlement Responsible Party in Statnett and the Market Supervision Unit of Nord Pool.

The legal system of the settlement of the Regulating power is set out in the regulations governing metering, settlement and coordinated action in connection with electricity trading and invoicing of network services. The purpose of these regulations is i.a. to ensure an efficient settlement of regulating power, exchange of information during a change of supplier and transmission of settlement data. The rules require that a grid company, acting as an impartial player, shall facilitate an efficient exchange of information during changes of suppliers, metering and settlement so that the competition in the power market will be as efficient as possible.

In accordance with the trading licence of Statnett, all the balance responsible entities must also sign the balance agreement with the settlement responsible entity, Statnett, in order to get access to the wholesale power market. The balance agreement states how the guarantees for the settlement of balance power are calculated. It is also stated that if a balance responsible party is not able to prove its planned balance of the day ahead on an inquiry made by Statnett, it is considered as a breach of the balance agreement.

Sweden. The legal base for Svenska Kraftnät as a TSO is constituted by the framework given in the Electricity Act, where chapter 8 deals with the system responsibility, the Electricity Regulation of system responsibility and the Instruction from the Government to Svenska Kraftnät. Since Svenska Kraftnät is a state utility, it gets its instructions directly from the Government in decrees and in special assignments. In general, the monitoring that Svenska Kraftnät carries out its tasks in an acceptable way is done in the same way as other authorities are supervised.

The following parts of Svenska Kraftnät's responsibility as a TSO are subject to regulation by the regulator – the Energy Markets Inspectorate:

- The transmission network tariffs have to be reasonable – the regulation is carried out ex post.
- The connection fees and conditions have to be reasonable – the Energy Markets Inspectorate has to scrutinize cases brought to it by customers.
- The conditions in the balancing agreements have to be objective and non-discriminatory. Svenska Kraftnät cannot enter into balancing agreements until the conditions have been approved by the regulator. If a balance responsible party complains to the Energy Markets Inspectorate, the inspectorate has to scrutinize whether the company has been treated objectively and non-discriminatory.

In the areas where the regulator has a role, it has also a role to scrutinize the way Svenska Kraftnät has dealt with specific questions raised by a customer connected to the main grid, or a balance responsible part.

In a broader sense, the Energy Markets Inspectorate has the role to follow the market and to notify the Government of problems regarding the functioning of the market, including the functioning of the system responsibility. The most important way this responsibility is carried out, is by participating in the market design process. The Inspectorate also follows the functioning of the market.

4 Interviews and comments from market players

The interviews have been carried out with four to eight companies in each country.
The companies were balance responsible parties, retailers or big consumers known for their interest in balancing issues and the development of a competitive electricity market. The purpose was more to get input to the analysis than to get a statistical correct picture of the positions of the players in each country.

A workshop was held in Stockholm on the 9th of January 2005 together with the retail market working group. Comments from invited market players are also added into the following summary of the interviews.

4.1 Denmark

4.1.1 Background

Interviews with four Danish balance responsible companies were carried out in November 2005. The companies were chosen to represent different profiles of balance responsibility in Denmark. The interviews took place together with the interviews of the NordREG Retail Group. The interviewed companies were: DONG Naturgas A/S, NESA EL A/S, ELRO Handel A/S and Energi Denmark A/S.

The DONG Group is owned by the Danish state by the Minister of Finance. Electricity power trading is carried out in DONG Naturgas A/S., a fully owned subsidiary of the holding company. DONG Naturgas supplies a spot product and different time-based products. DONG Naturgas is operating in both Danish system areas and has recently entered the electricity market.

The NESA Group is owned by ELSAM (86 %) and the DONG group (12 %) and is listed on the Copenhagen Stock Exchange. Being the biggest Danish retail supplier, the distribution and default company supplies 535.000 customers of which 475.000 are household customers.
The company offers financial and physical trade, currency risk and portfolio management.
NESA EL A/S holds balance responsibility in trading and consumption in both Danish system areas and holds balance responsibility for production in Eastern Denmark.

ELRO Handel A/S is a subsidiary of ELRO Holding. The holding company is the parent company of a joint stock company having subsidiaries in distribution, default supply and trading. ELRO is in electricity business in the mid and eastern part of Jutland supplying 16 municipalities and 60.000 retail customers. ELRO offers services in telecommunication in other countries and supplies the greatest market share of Danish non-mobile telecom customers.

Energi Denmark A/S is owned by distribution companies in Jutland (Energi Nord Handel A/S in Aalborg (27%), NRGI a.m.b.a. in Aarhus (24%), TRE-FOR El-handel in Kolding (24%), ESS Erhverv in Sønderborg (16%) and Energi Horsens (9%). The company is a supplier and offers

financial and physical trade, currency risk and portfolio management. Energi Denmark is supplying and trading in both Danish system areas.

4.1.2 Importance of common rules and market design

The overall message on what is needed to provide a common Nordic balancing market was common and transparent rules known to market participants well in advance and applied in a uniform manner in all of the Nordic countries. Of course different aspects of the overall Nordic set up of market design were commented upon, but what was considered really important was, that the chosen rules or market design was implemented in the same manner in all Nordic countries

4.1.3 Pricing of the balance services

None of the companies found that the Danish methodology of pricing imbalances was considered as a barrier to entry or a barrier of a well functioning balancing market. However, it was underlined that the signals to market participants in pricing of imbalances might be unclear as the net effect of recovering all imbalance costs is calculated into the grid tariff.

One of the companies underlined, that in the case of few suppliers, the TSO should be responsible of running the balancing market also in economic terms in order to prevent that profits in the balancing market would lead to decreased competition within supply of retail customers.

Pricing of reserves and tight situations was not considered as an important issue as long as cost recovery is done in a transparent way.

4.1.4 The option of being a cross border balance responsible

Being a balance responsible in another Nordic country was considered an option but was presently not given high priority in any of the companies. One of the companies expressed that the design of the German balancing market was considered very difficult to approach, due to the size of fees and collaterals. Yet another company found the German market much more interesting than the Nordic market.

However, two companies expressed that the way to be a balancing responsible in another Nordic country would be by taking over an already existing company in that particular Nordic country. Otherwise balancing business would be too costly due to the overall national differences in not energy related issues such as legislation and taxation.

4.1.5 Types of balances

Several of the companies pointed out that the Danish concept of separate balances on production, consumption and trading is seen as a result of the tradition of the regime before unbundling and deregulation. The design of balances was not considered as a barrier but simply something you had to adapt to. One of the companies expressed that the balancing market was quite risky and several of the interviewed companies had entered into balancing risk agreements with other companies.

4.1.6 Governance and market design

General public supervision of pricing in the balancing markets was not considered a supporting mean.

The Danish regulation of the default suppliers (forsyningspligt reguleringen) was considered a too tight a regulation, not allowing a profit in the Danish market, where traded volumes are low compared to traded volumes in Sweden or Norway.

Present rules regarding balance adjustments, fees, collaterals, balance settlement is considered as something you have to take into consideration but not as an obstacle in the market.

Metering and data delivery in the very first years after deregulation was mentioned as an obstacle but the situation has improved. Hourly metering was pointed out as one of the important prerequisites of a common Nordic market and also of a common Nordic balancing market.

4.1.7 General statements from the interviews concerning a common Nordic balancing market

A well functioning wholesale market was considered as a prerequisite for a well functioning balancing and retail market and poor conditions in the wholesale market would be a barrier of efficient balancing and retail markets.

An increased level of cross border capacity and more actors in the market would increase competition in the Nordic market in general and in a common Nordic balancing market as well.

In some of the interviews it was mentioned that the general cost of balancing did differ within Denmark and also that the rules of being a balance responsible in one of the system areas was considered difficult to cope with.

An important prerequisite for a common Nordic balancing market was that the same system operation rules are applied in the same manner in all of the Nordic countries. One common Nordic system operator might turn out to be an improvement but the option is not considered vigorous in the very near future. It was also mentioned that the needed level of harmonisation of system operation rules might be implemented by other means than one Nordic system operator.

A higher level of common Nordic market design might turn out to be a helpful step in creating a common Nordic balancing market. Some standardisation of the billing process was mentioned and hourly metering of all customers in the Nordic countries was highlighted as important in all of the interviews.

4.2. Finland

4.2.1 Background

Parts of the interviews were made together with the Retail Group and therefore some of the interviewees were mainly experts on sales and marketing and the answers regarding balance management and settlement were less extensive. The interviewed companies were Kymppivoima Myynti Oy, Turku Energia Oy, St1 Finland Oy, Vattenfall Sähkönmyynti Oy, Fortum Oy, Energiameklarit Oy, MVM Energiatieto Oy and Helsingin Energia Oy.

Kymppivoima Myynti Oy (Kymppivoima Sales) is a part of Kymppivoima Corporation. Kymppivoima is a nationwide energy supplier and is owned by four electricity companies. It is acting as a balance provider. Kymppivoima has totally ca. 360 000 customers and energy volume in 2004 was 5,7 TWh. Kymppivoima corp. is not currently active retail supplier in other Nordic countries.

Turku Energia Oy is owned by the city of Turku (Åbo) and is a nationwide energy supplier and balance provider. Turku Energia is a retail supplier only in Finland but a wholesale supplier and producer also in Norway. Turku Energia has totally ca. 77 000 customers with a 1,5 TWh energy volume in 2004.

St1 Finland Oy has started acting as a retail supplier for electricity in February 2005 and supplies energy nationwide. St1 has ca 120 GWh volume in energy and 10 000-20 000 customers in 2005. ST1 is not currently active in other Nordic countries. MVM Energiatieto Oy is the balance provider for St1.

Vattenfall Sähkönmyynti Oy (Vattenfall Sales Finland) is a nationwide energy supplier and a retail supplier also in Sweden. Vattenfall has ca 360 000 customers in Finland. Vattenfall is acting as a balance provider.

Fortum Oy/ Fortum corporation is active as a retail supplier in Finland, Norway and Sweden. Fortum has ca 1,1 mill. customers and supplied ca 42,7 TWh of energy in 2004 in the Nordic countries.

Energiameklarit Oy is providing risk and portfolio management in the Nordic electricity markets. Energiameklarit is acting as a balance provider in Finland.

MVM Energiatieto Oy is a consultant company specialised in providing services to the energy industry. MVM Energiatieto is acting as a balance provider in Finland.

Helsingin Energia Oy is an energy supplier and a service provider for the electricity industry. Helsingin Energia is not currently active retail supplier in other Nordic countries. Helsingin Energia has over 300 000 customers and supplied 5,6 TWh of electrical energy in the year 2004. Helsingin Energia is acting as a balance provider in Finland.

4.2.2 General comments

All interviewees agreed that a common balance management with a possibility to have only one balance provider in all the countries is a prerequisite for the common Nordic retail market. Thus, Nordic harmonisation was seen as a key issue to reach this goal. Harmonisation of the rules and procedures was seen more important than the rules themselves. Nevertheless, as the production sources differ from country to country, some interviewees considered separate systems to be more feasible. It would help the market participants if the existing procedures in different countries were collected to a single place and translated to English.

Elbas market should be expanded to cover the whole Nord Pool area to increase the efficiency and liquidity of the intra-day market. This was also seen important considering European development. In general, the interviewees were quite content with the current balance management and settlement procedures in Finland.

4.2.3 Pricing of the balance services

All interviewees regarded the current model with one balance and two prices for the imbalance satisfactory. It gives all players good incentives to minimise imbalance (two prices) and is yet simple to administer (one balance). The three balance model was seen complicated and bureaucratic regarding settlement procedures. The CHP has a significant role in Finland and the production of electricity is heavily dependent on unpredictable demand for heat, so binding production plans were not seen sensible. It was also questioned if the three balances would increase the accuracy of the forecasts. However, some big players considered though the number of balances to be a minor factor, because efficiency already drives the players to use three balances in their own work. Harmonisation was seen more important than the number of balances.

Generally the balance providers pass the costs of balance service collected by the TSO directly to their customers. In the case of one-price system some balance providers would even be forced out of the market as one price does not create any surplus to them. The one-price model was also seen to create incentives to move the purchase to the balance market.

The pricing should be cost-reflective and mainly based on the amount of balance energy to keep the threshold low for the new players and to give incentives to avoid imbalances. Last change in balance plans should be accepted as late as possible, but the current situation (20 minutes before the operation hour) was seen satisfactory. Active balancing during the hour of delivery was seen important only by one balance provider. It was considered better if all the balancing bids were accepted through the markets to avoid adjustments in both directions. It was argued that the big balance providers have an incentive to offer balance services with low margins in order to collect information on the behaviour of the other market participants.

Fingrid's current pricing of the balance services was seen quite reasonable and the threshold for the new actors lower than e.g. in Sweden. Securities in the present form (large fixed securities) were seen as an obstacle to the smaller actors. Securities based on the consumption of the balance energy were seen more suitable to keep the threshold low for smaller actors.

A common view was that the capital costs of the reserves should be paid mostly in the grid tariffs. TSOs should always acquire the reserves through tendering procedures.
The Swedish capacity reserve should be discarded, as it now distorts the market mechanism by affecting the spot prices and the building of new capacity. To avoid further distortion of the markets the allocation of the costs should be the same in all the countries. Smaller players wished a maximum price (e.g. 5 times the actual spot price) in shortage situations while the bigger players wished for a minimum price (e.g. two times the spot price) to avoid spot purchase bids optimised below the expected demand and the resulting risk for security of supply.

4.2.4 Consumption profiles

In general, the three category model currently in use in Finland was seen advantageous by the suppliers compared to the area model. Different types of users need different profiles to improve the accuracy. In some cases customers can fall into an unsuitable category, which can yield to higher errors especially to smaller suppliers. It was argued that the area model would add unnecessary complexity to the issue if the supplier would operate in several network areas which would be the case in the open markets. The three category model was seen easier to administer. The area model was even seen as a barrier to stay in the markets. However, it was stated that the problem is diminishing with the AMR and further development of the profile settlement should not be encouraged.
The profile settlement model should still be harmonised in the transition period and most simple solution should be chosen.

Errors caused by the profiled customers were seen in most times negligible for the larger balance providers and sometimes considerable for the smaller players. Different time-of-use profiles used by the DSOs were considered to cause extra errors and complicate the settlement. If the supplier switching activity in a grid area would rise above ca. 35%, it would cause unbearable errors for the default supplier in the category model.
All interviewees agreed that the pricing of reconciliation energy should be based on the spot-price without additions to remove the incentives from the DSOs to play with the price difference. It was seen unacceptable if the final settlement would take 14 months to be completed as it does now in Sweden. When reduced to two months with the AMR the situation would be better. After the final settlement the corrections should not be made by the suppliers but between the balance providers.

4.2.5 Metering and data exchange

Current development towards the AMR was seen to be the right direction regarding better competition and credibility of the industry as a whole. Even though there is no legislation in Finland concerning the AMR for the small customers, the DSOs are already installing meters capable of monthly reading. The lack of guidance through legislation is seen as a flaw as some DSOs might change the meters to such models which are not capable of storing and transferring hourly data. This could eventually slow down the development when the DSOs want to have a long enough transition period for their investments. Sufficient and harmonised technical solutions should be implemented already from the beginning. When the new meters are installed, the most accurate data should be available for all the market participants without extra costs. If a meter capable of hourly measurements is installed, the balance settlement should be based on real measured values instead of profiles. DSOs should take responsibility for the validity of the data they are transmitting to the suppliers, regardless of their system's status.

It was seen advantageous in the terms of balance accuracy if the DSOs complete their settlement in a week compared to a month at present. Missing data should then be estimated as accurate as possible and corrected later on.

All interviewees agreed that standardized and automated handling of customer data transfer between the DSOs and supply companies is crucial for the development of the Nordic retail market. There is an urgent need for harmonising the data transfer. Different handling of consumer data (e.g. the meter reading frequency, procedures during supplier switching, data formats etc) was seen as a barrier to the entry to a new market. The number of network areas was not seen as an issue if the data formats are harmonised. There are though still problems on national level concerning the integrity of Ediel messages as some DSOs do not comply with the industry recommendations. It wouldn't be anything new if the DSOs in other countries would have similar problems as well. In balance settlement it was considered better if only the TSO would deal with the measured data.

4.3 Norway

4.3.1 Background

The companies that were interviewed are: Bergen Energi, Fjordkraft, Markedskraft and Hafslund. All these Norwegian companies also have some experience in at least one of the other Nordic markets.

Bergen Energi is an energy broker that is also providing energy and transmission services such as invoicing, monitoring metering values and other settlement services. The typical client is an industrial group. Bergen Energi is a balance responsible entity in all the Nordic markets apart from Norway. All their Norwegian clients are formally balance responsible entities themselves. But by doing all the job related to the balance responsibility on behalf of their Norwegian clients, Bergen Energi has an in-depth knowledge of the set of rules in the Norwegian power market.

Markedskraft is an independent provider of services to players in the Nordic and European wholesale market for electricity through wholly owned subsidiaries. The services include among others portfolio management, physical handling and settlement. The company is a balance responsible entity in Norway, Sweden and Denmark, but not in Finland.

Fjordkraft is a nationwide supplier that has relatively large market shares in a majority of the largest grid areas in Norway. (Given that the incumbent suppliers often have about 90% market share within their area, market shares of other suppliers within the grid areas are in general very small.) In the period from 1998 to 2003 Fjordkraft had an associated company in Sweden, Fjordkraft AB, supplying about 50 000 customers. However the project was not particularly profitable. The portfolio was sold in 2003 and Fjordkraft AB was closed down in 2004.

Hafslund is the largest supplier in the Norwegian market and is also the largest grid company. The activity in the Swedish market is by a 50% owner's share in Göta energi AB together with Öresundskraft.

4.3.2 The Model for pricing of imbalances

All the interviewees are strong advocates of a one-price model in the balancing market like the Norwegian one. This model is simple, transparent and cost efficient because the price reflects the current real marginal cost of regulating the imbalance. The two-price model of the other Nordic countries is considered to imply large and unpredictable costs of imbalances. As such this two-price model represents a barrier for entry into new markets.

One of the interviewee that is active in the Swedish market of balancing services said: The two-price model means an entry barrier for small players to the Swedish market. Having succeeded to enter this market offering balancing services, however, it turns out that our company profits by the complexity of the system. – It leads to large demand for our services in Sweden.

Another company, a large supplier in the Norwegian market, having gained some experience of the Swedish market by a joint venture with a medium-sized Swedish company put it this way. - Even though we might possibly profit by the two-price system by becoming a relatively large future Swedish player, we would not advocate this system because it does not enable fair competition. - The competition had better be on equal terms.

Some of the companies also pointed to the fact that the one-price model does give enough incentive to being in balance in the operational hour, as there are normally small imbalances in the Norwegian market.

4.3.3 Consumption profiles and settlements

All the interviewees were in favour of a simple system for consumption profiles. The Norwegian system with one profile in every grid area was preferred. The interviewees with some experience in the Finnish market clearly asserted that the system of six different profiles in every grid area creates at lot of mess and confusion. These companies also stressed that the set of rules of settlement are not very precise and their juridical status is also not clear. The only Norwegian company that is still left in the Finnish market put it this way: – Sometimes it turns out that not even the grid company knows which profile that has been used for the settlement of their customers.

One of the interviewees, which is also a balance responsible entity in the Swedish market, commented on the system with separate balances of consumption, production and trading like the Swedish and Danish model, compared to the Norwegian model with one balance per Elspot area. -To some extent this model of separate balances might reduce the discrimination against none integrated companies that is inherent in the two price model. And it does not mean more effort.

On the other hand, the Swedish system of consumption profiles is connected to the balance of supplier rather than the balance of the grid area as in the Norwegian system. Some of the companies also emphasized that this leads to chaos in the settlement process when there is a considerable amount of supplier switches within the same grid area during a month.

The frequency of the consumption data reports was also mentioned. In Norway there are weekly reports of the consumption the previous week to the responsible parties whereas in Sweden

there are daily reports of the consumption the previous day to the balance responsible parties. According to one company that is balance responsible in Sweden as well as in Norway, the daily reports of consumption data is the reason why there might be smaller imbalances in the Swedish balancing market than in the Norwegian market. – To the extent there are smaller imbalances in the Swedish market, this has nothing to do with the incentives of the two-price model versus the one-price model. It is due to the daily process of reporting metering values in the Swedish market so that the players are daily updated on consumption data of the previous day. This information enables more accurate balance planning which in turn mean lower imbalances.

Among the interviewees that mentioned the frequency of the balance settlement process, there seems to be divergent points of view. At present Statnett does the settlements weekly whereas the Swedish and Danish TSOs do the settlements twice a month. Statnett has raised the issue of making daily balance settlements.

A large supplier in the Norwegian market, whose experience in the Swedish market is mainly through a joint venture with a Swedish supplier, is clearly in favour of the present Norwegian model of balance settlements not more than once a week. The proposed amendment into daily balancing settlements might naturally reduce the collaterals in the balancing market, which are rather costly. The administrative costs relating to a possible daily settlement, however, would be far much higher.

Another company that is a balance responsible player in both the Swedish and the Danish market perpetuated the opposite view. - By being forced to do the daily settlement, our experience from the daily settlement at Nord Pool is that we have developed more simplified and cost effective routines.

4.4 Sweden

4.4.1 Background

The interviewed companies were Dala Kraft AB, Energibolaget i Sverige AB, Markedskraft AB, Stora Enso AB and Telge Kraft AB.

Dala Kraft is owned by eight energy companies in Dalarna with 120 000 grid customers. It supplies about 2 TWh per year. An essential part of the supply is to customers outside Dalarna. Dala Kraft is a balance responsible party in Sweden.
Energibolaget i Sverige is an independent supplier with a rapid expansion. The focus is on small industries and customers in apartments. It has outsourced the administration of supplier switching to a network company. Energibolaget gets 5 – 6000 new customers per month and has now about 170 000 customers. A subsidiary, Suomen Energiayhtiö Oy, started its business in Finland in May 2005 with a focus on customers in apartments. It gets about 2 000 new customers per month. Energibolaget and its subsidiary buys balance administration from one balance responsible party in Sweden and one in Finland.

Markedskraft is an independent provider of services to players in the Nordic and European wholesale market for electricity. The services include fundamental market analysis, advisory services, risk management, financial portfolio management, physical handling and settlement

and capital management. Markedskraft has offices in Arendal, Stockholm, Århus and Berlin. Markedskraft is a balance responsible party in Norway, Sweden and Denmark but not in Finland.

Stora Enso (SE) has a total electricity consumption of 6 TWh in Sweden. It buys the physical power and balance services from one big supplier. The electricity is bought for spot price, price area Sweden. SE sends bid curves for each mill direct to the supplier. If a machine stops, Stora Enso has the option to sell back electricity to its supplier at spot price minus a settled deduction. The purchase of electricity according to spot price is hedged via a portfolio of different financial and physical contracts with many different participants in the power market. Stora Enso optimizes its electricity consumption according to the spot price. It has also sold 200 MW load reductions in mills south of cut 2 into the Swedish capacity reserve. The reason why Stora Enso was able to make such an offer was that this potential opportunity was very clear settled in the contract with its supplier as a part of the balance service.

Telge Kraft AB provides portfolio management and other services in the power market. The company is owned by the city of Södertälje (60 %) and Scania, Ericsson and AstraZeneca. It is independent from power production and manages about 7 TWh physical power for industries, public enterprises and suppliers as Telge Energi. It has a subsidiary for financial trading (Telge Krafthandel AB) with a licence from Finansinspektionen. Telge Kraft is a balance responsible party in Sweden and is also a participant in the Elbas market.

4.4.2 Views on common Nordic retail market

Four of the companies stress that a real integrated retail market would mean that a company can supply in all Nordic countries with only one balance agreement, only one system for customer management and only one system for reporting. Only one competence would be needed and the start-up costs and the risks associated with possible wrong understanding of national rules would be reduced when no extra systems for each country are needed. Risks related to different national rules regarding energy taxation and VAT should also be abolished.

Dala Kraft has an ongoing cooperation with Energiamäklarit and has now announced a cooperation with Agder Energi. The purpose of the cooperation is for Dala Kraft primarily to be able to enter into group agreements with Swedish groups with operations in Finland and Norway. The cooperation can also give other possibilities for business development as the possibility to provide electricity certified “Bra miljöval”. This strategic alliance was needed because of the differences in the Nordic markets. It would not be cost-effective for Dala Kraft to try to expand on its own because of these differences and because of the need to establish subsidiaries. Now, Dala Kraft can buy (and sell) balance responsibility services at cost price plus an administrative mark-up. However, a strategic alliance means also a cooperation between the partners that at some point can risk being in conflict with the competition law. If it was a real common Nordic market, alliances like the one Dala Kraft has entered would not be needed

Energibolaget has a focus on the selling process and the supplier switching process. According to the total numbers of supplier switches, 30-35 % of all supplier switches in Sweden in 2004 were to Energibolaget and 70-80 % of all supplier switches in Finland during this autumn are to Energiayhtiö. It is important for the competition in the retail market that the network companies facilitate an electronic supplier switching process without need for manual interventions.

A problem in Finland is that there are guidelines from the energy association but not binding rules from the regulator. Network companies have wanted payments for changes in IT systems, for extra meter readings in relation to switches and overtime work because of administration of supplier switches. Energibolaget hopes that these problems will be temporary and that the network companies will realize that their role is to facilitate competition.

Energibolaget says that the rules and regulations regarding customer moves is the biggest barrier for independent suppliers. Energibolaget has about 2 500 customers who moves per month. Most of these moves go at least temporary to the default supplier and are therefore the biggest loss of customers for Energibolaget. When a customer moves within a city, he believes that his supply contract will continue when he reports his planned move to the network operator. However, after a period he gets a message that he has not reported any supplier and that he will get the default supplier. Energibolaget has therefore four persons calling customers who have moved. Even if the customer reports his planned move to Energibolaget, he ends nonetheless often with the default supplier one month or two because he does not know the new identification number. The rules in the Swedish telecom market are different. The customer keeps automatically his supplier when he moves.

Markedskraft has chosen not to be a balance responsible party in Finland because of the requirements on accessibility in the Finnish balance agreement. If a common Nordic balance settlement is implemented, Markedskraft will probably be a balance responsible party also in the Finnish area. Markedskraft emphasizes that different systems and standards are not only costly but they give extra risks and they require special competence in order to develop and manage them. Especially important is the harmonisation of the supplier switching process and the standards for EDI.

Stora Enso stresses that it is of utmost importance for the industry that Sweden has competitive electricity prices. It is therefore more important with new production plants than new transmission links. New production plants will lower the price but new transmission links will only increase the grid tariffs without strengthening the overall power balance. As a consequence, Stora Enso accepts price areas within Sweden. It is against a common Nordic TSO since such a change will most likely result in increased grid tariffs in Sweden.

Telge Kraft is interested in selling to industry groups with consumption also outside Sweden and is therefore interested in a common Nordic balance settlement.

The view of Telge Kraft is that they are not competing on equal terms with the three big producers in Sweden. The two-price system and the guarantee system give incentives to pooling and favours big producers. The present uncertainty regarding maximal regulation prices gives also an extra risk for the independent suppliers and an extra advantage for the producers. A cap on regulation prices should be decided. In addition, when the big producers give offers to the large-scale industry, they are not demanding their costs for balance services and they give very favourable terms of payment.

4.4.3 Views on principles for balance settlement

All companies want separate settlements for production and consumption imbalances and the one-price model for consumption imbalances instead of the present two-price model in Sweden.

It reduces the advantages of pooling and being a big player and makes it easier for new players to be balance responsible parties. It is more pedagogical for their customers. It simplifies also the settlement. Corrections can be done without damage for the suppliers because all suppliers are facing the same imbalance price.

Stora Enso adds that bigger industries will certainly choose to be balance responsible parties if consumption imbalances are settled with the one-price model. An industry that is a balance responsible party can improve its results by load reductions in situations with high regulation prices. Such load reductions are helping the society and should not be blocked with a two-price model. Another consequence of a one-price model for consumption imbalances would probably be that more regulation objects are actively bidden to the regulating market. It is much easier for an industry to bid load reductions to the regulating market if it is a balance responsible party on its own. It would also be better over-all competition in the electricity market if the industries are balance responsible parties on their own and their elasticises in bid curves are not direct known by the producers.

4.4.4 Views on balance settlement corrections

All companies emphasize that the balance settlement should be finalised much earlier than today and that the possibility for balance settlement corrections because of corrections from network owners should be reduced.

Telge Kraft mentions that they are not allowed to change their renewable certificates declaration even if Svenska Kraftnät makes a correction settlement. Another strange issue is that the settlement can be changed if the network company afterwards reports a customer move. Although there are very strict time limits for reports of supplier switching there are apparently no time limits for retroactive reports of moves.

Markedskraft believes that the quality of measurement reports in Sweden would be much better if Svenska Kraftnät refuses to make resettlements and the network owners know that it will be their duty to perform resettlement if there are failures. Shorter time-lag for settlement will also reduce the need for placing collaterals. The recalculation of shares of load profiles after all annual measurements are effected should not result in a resettlement by Svenska Kraftnät. It should be the network owners that accomplish that task. The demand for monthly measurements will reduce the time-lag for these resettlements.

4.4.5 Views on management of capacity shortages

Dala Kraft thinks that a rather low price-cap is needed in shortage situations in order to keep the existence of independent suppliers. The mark-up on plants in the capacity reserve is too high when they are bid into the market. The network companies should be allowed to sell load reduction measures. There are many possibilities for demand side response that are not bidden into the market at present. Dala Kraft has load reduction possibilities in some customer agreements.

Telge Kraft holds up that an efficient handling of capacity shortages requires that the customers are invoiced according to their real consumption. The supplier can offer products stimulating efficient demand side response only if the network company reports hourly measurements.

It is a risk that should be observed by the regulators that the network companies will in the future report only monthly measurements from smaller customers as required according to the law, although many of the companies will invest in meters for hourly measurements for all customers. However, from a market perspective it is vital that a stricter demand for investments in hourly metering is thoroughly analyzed and compared with the total savings in the market. Telge Kraft wants also a cap on regulation prices in order to reduce the risks related to the present uncertainty regarding maximal regulation prices.

Markedskraft thinks that a shortage situation will probably be mitigated if it occurs already in the spot market. It is possible for the players to do a lot of measures after elspot during the 15 hours to the morning peak or the 25 hours to the afternoon peak. More problematic is it if the shortage situation emerges later. It is important in such a situation for avoiding forced load shedding that all players have incentives to reduce their consumption even if they are not able to bid in load reductions into the regulation market. The one-price model for consumption imbalances gives such an incentive and is a necessary component if it is decided that a market-based solution shall substitute the temporary Swedish capacity reserve.

Stora Enso has the opinion that the present Swedish capacity reserve is not in line with a real market economy and shall not be prolonged. Stora Enso believes that many industries in a situation with demand for “capacity options” will choose to emit such options to other parties or enter into agreements with their suppliers regarding load reductions in extreme situations. The concept that an industry can reduce its costs if it accepts some load reductions is not new for the industry. The old “plustariff” in Sweden meant that an industry could lower its electricity cost if it accepted reductions in electricity supply during some hours of the year.

4.5 Comments from workshop 9 January 2006

A workshop for invited stakeholders was held in Stockholm on the 9th of January 2006 together with the retail market working group in order to discuss the interim results of the work done so far and to enable the exchange of views and information before the finalisation of the reporting.

All players wanted a common Nordic balance settlement. A repeated reminder was however that a badly designed common system is worse than well-designed national systems. The message was that it is important that the change to a common balance settlement is so thoroughly investigated that the common system gives a basis for a well-functioning market. A step by step approach was proposed. No one emphasized that the timetable is more important than the design of the common balance settlement. However, some asked for the timetable.

The need of having the customer in focus when developing the market was emphasized. Freedom of choice, transparent prices, improved offers and better competition was seen as important for the customers.

It was mentioned that an integrated market can give problems for many customers such as vocabulary problems, language problems, lack of harmonisation of price indications and contract terms and difficult access to advice and dispute settlement.

One player stressed that the regulators have another role than the TSOs regarding the change. It is therefore important that the regulators develop their positions in an independent way.

Retailers and balance responsible parties wanted that it would be possible to use only one customer management system in all Nordic countries. It was emphasized that such a change requires besides common balance settlement also a common system for reporting of customer switches, common standards regarding data systems and data exchange and that all countries charges the energy tax via the grid companies instead of via the retailers.

The issue of one-price model or two-price model was debated. Proponents for the one-price model said the two-price model is a fence that shuts out demand side responses from the market. It was also mentioned that a one-price system allows bilateral corrections without a total rerun of the balance settlement. Proponents for the two-price model were worried that a one-price model will result in higher consumption imbalances.

Another comment from a balance responsible party was that high frequency in balance settlement is important because it reduces the total work load and it gives faster correction of errors. Weekly balance settlement was mentioned as the maximum period but daily balance settlement was preferred.

5 Vision and tasks for the development of a common Nordic balance settlement

5.1 Towards a vision

The Nordic Energy Regulators (NordREG) has in its work programme defined "A truly common Nordic retail market with free choice of supplier" as one of its four strategic objectives for its work regarding the Nordic electricity market. The retail market working group identifies in its report the various obstacles to the formation of a truly integrated Nordic electricity retail market and proposes recommendations for future work. The balancing working group has dealt with one already identified main obstacle, namely differences regarding balance settlement.

Eleven areas that are parts of balance settlement have been analysed and it has been found differences in all areas and even in the definition of the concept of imbalance. The differences in Nordic balance settlement were described in section 3. No one of the differences forbids or is in itself of such a nature that it stops a supplier to enter another Nordic country. However, the differences add up to substantial extra costs and risks for a supplier entering a new country and create thus obstacles and barriers. There are only a few suppliers active in more than one Nordic countries and some others have tried to be pan-Nordic and withdrawn.

NordREG finds it essential for the customers that the Nordic retail markets become more competitive and that a truly common Nordic retail market with free choice of supplier is created. A common Nordic balance settlement is one important part of such a change.

However, attention has to be paid to the comments in the workshop on 9 January 2006 that a badly designed common system is worse than well-designed national systems. It is thus important that the change to a common balance settlement is so thoroughly investigated that the common system gives a basis for a well-functioning market. An important basis for such a change is an agreed vision for the process.

Vision:

NordREG proposes the following framework for the development of a common Nordic balance settlement:

> The present different systems for balance settlement shall within a few years be replaced by a common Nordic balance settlement.

This means that:

- It will be possible for a supplier to sell to the whole Nordic market from one legal entity and using only one system for customer management and reporting.

- The common Nordic balance settlement will be designed in such a way that it contributes to a well functioning market. This means for example that it will be attractive even for small suppliers and some end-users to be balance responsible parties.

The reasons for the proposed vision are the following:

- It is essential for the customers that the present integrated Nordic wholesale market is accompanied by a truly common Nordic retail market with free choice of supplier.

- It is in the interest of the customers that it is possible to have a wide choice of suppliers. A wider choice can be achieved for instance if a supplier is able to reduce the costs of operating in different countries by operating from one legal entity and using the same system for data management and reporting in all countries.

- It is crucial for the development of such a common Nordic retail market that the present national systems for balance settlement are replaced by a common Nordic balance settlement.

- It is in the interest of the customers that most suppliers find it worthwhile to be balance responsible parties and that some end-consumers also find it worthwhile to be balance responsible parties.

- It is in the interest of the customers that the common Nordic balance settlement is designed in such a thorough way that it contributes to a well functioning market. The change process should be stepwise, laid down in a roadmap and monitored.

- NordREG believes that it is possible to develop and execute such a common Nordic balance settlement even if a common Nordic system operator has not been formed.

- The management of congestions within the Nordic area requires that balance planning and settlement is executed per Elspot area.

5.2 Road map to a common Nordic balance settlement

NordREG believes that the fulfilment of the vision is facilitated if there is appropriate time for thorough discussions in the first phase. Year 2007 can be a feasible control station for decisions regarding the further work aiming at implementation of a common Nordic balance settlement.

The stepwise change process has to include all the relevant aspects of a common Nordic balance settlement. NordREG has the following comments and recommendations for further work regarding the eleven areas described in section 3.

5.2.1 Purpose of balance settlement

It is a prerequisite for the further work that a common definition of balance settlement and the purpose of a common balance settlement is agreed already in the first phase. The definition shall include how the common Nordic balance settlement shall interact with the balance control

and the balance regulation of the interconnected power system and the balance settlement between countries performed by the TSOs.

5.2.2 Cost-base for balance settlement

One of the big differences relates to the definition of system responsibility and the cost-base for system responsibility. The task of defining the core activities of system responsibility (including balance settlement) has been analyzed by another working group within NordREG. This is the first step on the way to create a common view of how to allocate and finance the costs of system responsibility and balance settlement and thus a common cost base for balance settlement.

This issue also includes the definition of the product “imbalance” that is settled in the common Nordic balance settlement. Not even the concept of imbalance is commonly defined.

Without a common definition it is not possible to decide what costs shall be included in the balance settlement.

It is obvious that the costs for balance settlement and the costs for managing deviations from balance plans shall be included in the cost-base.

However it is probably not feasible to create a cost-base that includes all system responsibility costs in the Nordic countries. Extra TSO financing for other system responsibility costs than those that are parts of the cost-base for the settlement is therefore needed.

There are also differences in the fee structure for the balance settlement. More detailed issues regarding fee structure and cost-base for the settlement can be postponed to later phases in the process.

5.2.3 Model for pricing of imbalances

There is one difference that is fundamental for the further development of a common balance settlement, namely whether a one-price model or a two-price model or a combination of the two models shall should be used for the pricing of imbalances. It is important to find a balance between inter alia the need for simplicity and the need to reduce imbalances.

It is important that this issue is discussed and agreed in the first phase.

5.2.4 Imbalance pricing in shortage situations

There are some important differences in the national market designs regarding the pricing of imbalances in capacity shortage situations including situations when load shedding is needed. It is important for a common Nordic balance settlement that harmonised rules regarding imbalance pricing in shortage situations are considered. This issue has to be analyzed but can be postponed to later phases in the process.

5.2.5 Balance plans and calculation of imbalances

There is one difference in this area that is fundamental for the further development of a common balance settlement, namely the number of balances that shall be planned and settled.
The work group comprehends that there are advantages for vertically integrated companies if they can net their imbalances. These advantages might be reduced and competition in the retail market enhanced if the balance settlement includes separate consumption imbalances and separate production imbalances per Elspot area. It is important that this issue is further analyzed and agreed in the first phase. Other differences related to balance plans and calculation of imbalances can be postponed to later phases in the process.

5.2.6 Metering requirements, load profile systems and demands on data systems

This area includes many differences that are discussed in more detail in the report from VTT ordered by the retail market working group. The difference in load profile systems is a fundamental obstacle for a harmonised balance settlement regarding customers without hourly measurements.

Most differences in this area have to be solved before it is possible to reach the proposed vision for a common balance settlement. It is difficult and costly to harmonize this area but it is crucial that it is done in order to have a common Nordic retail market. Therefore it is important that a road map for the necessary harmonisation and standardisation of these differences is agreed in the first phase.

5.2.7 Management of measurement corrections from network operators

The present differences are not fundamental obstacles. The issue of common rules for management of measurement corrections from network operators can be postponed to later phases in the process.

5.2.8 Invoicing and terms of payment

The present differences affect the need for collaterals and guarantees but are not fundamental obstacles. The issue of defining a common system for invoicing and terms of payment can be postponed to later phases in the process.

5.2.9 Collaterals and guarantees

The present differences constitute one of the barriers to a common retail market but are not of fundamental nature in the first phase of the further process. The issue of defining a common system for administration and posting of collaterals and guarantees can be postponed to later phases in the process.

5.2.10 Organisational requirements on balance responsible parties

The present differences constitute one of the barriers to a common retail market but are not fundamental in the first phase of the further process. The issue of organisational requirements on

balance responsible parties can be postponed to later phases in the process. The vision is that it should be possible for a supplier to sell to the whole Nordic market from one legal entity.

5.2.11 Legal framework and supervision

The legal framework and supervision regarding a common Nordic balance settlement has to be defined within the wider context of a well functioning Nordic retail market. The present legal differences between the countries will have to be addressed before the common retail market can be realized.

The issue of defining legal system and supervision should be postponed until the overall structure of a common balance settlement has been defined.