

Report on regulation and the electricity market

Norway



Norwegian Water Resources and Energy Directorate (NVE)

30th of June 2009

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1 Foreword

The Norwegian electricity market was formally opened up for competition when the Energy Act came into force the 1st of January 1991. The regulatory tasks are ensured by the Norwegian Water Resources and Energy Directorate (NVE). A regulatory office (department in NVE) was set up in 1990. As electricity regulator, NVE has played an active role in developing network regulation, real market access for all customers, easy procedures for customer switching, security and quality of supply and efficient regulation of system operation.

The development of the Norwegian market has been followed by similar market opening in the other Nordic countries, and today we have an open and integrated electricity market in the Nordic region with a common Nordic power exchange. The Nordic market is also interconnected with the continental European market and Russia.

Norway is member of EFTA and a party to the European Economic Area agreement (EEA) EEA procedures regarding adoption of new EU directives apply for Norway.. The electricity directive 2003/54/EC and Regulation 1228/2003 passed through the EEA Committee in December 2005. The report is based on the reporting requirements in the directive 2003/54/EC articles 3(9), 4 and 23 (1 and 8), and directive 2005/89/EC article 7.

This report follows the common reporting structure created by the Commission and ERGEG. NVE is a member of CEER and participates as an observer in the ERGEG procedures.

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Main developments in the electricity market

Introduction – about NVE

The main statutory objectives for NVE concerning energy, and which the regulatory functions is a part of, is to promote social and economic development through efficient and environmentally sound energy production, and promote efficient and reliable transmission, distribution, trade and efficient use of energy.

For NVE, both for regulatory tasks as well as for other tasks, the responsibility and field of work are defined in law, regulations and decisions from the Parliament and Government and in the annual allocation letter from the Ministry of Petroleum and Energy.

NVE is delegated powers according to the Energy Act. NVE has powers to issue regulations on economic and technical reporting, network income, market access and network tariffs, non-discriminatory behaviour, customer information, metering, settlement and billing, organised physical power exchange, system responsibility, quality of supply, rationing, energy planning and emergency preparedness. NVE can take necessary decisions to fulfil the delegated powers according to the energy act. For instance, in 2008 NVE issued Agder Energi Nett (network company) a fine of 500 000 NOK due to the lack of internal routines in order to avoid discriminatory behaviour.

NVE is the national independent regulatory authority for the electricity market in Norway. The Director General acts as regulator. NVE has no ownership interests in the electricity industry and is independent from the economic interests in the electricity industry. NVE is an independent legal entity with its own budget adopted by Parliament and power to act in the scope of its competences.

There is an agreement on co-operation between NVE, the Competition Authority (mergers, etc) and the Financial Supervisory Authority of Norway (financial markets). NVE also has an agreement on co-operation with The Directorate for Civil Protection and Emergency Planning (DSB).

Wholesale market

In 2008 the total Nordic net generation was 393,1 TWh, which is 0,7 TWh lower than registered in 2007. The reduction was basically due to the decrease of thermal generation in Denmark and Finland.

The Norwegian net generation was 142,4 TWh in 2008 (137,7 TWh in 2007). This is the highest net generation since 2000, when the total net generation was 142,8 TWh. The share of the hydro plant generation accounted for around 99 % (140,3 TWh) of the total Norwegian net generation in 2008.

The Norwegian wholesale market is integrated in the Nordic wholesale market through price coupling on a common power exchange, Nord Pool Spot. In 2008 the volume traded was 297,6 TWh (290,6 TWh in 2007) at Nord Pool Spot, which accounted for 70,1 % (60,9 % in 2007) of the physical power exchanged in the Nordic region. The remaining volume of the Nordic market was traded bilaterally.

During 2008 the Nordic market experienced increased differences in price between its spot areas. This was to a high degree due to the physical constraint on exchange capacity out of the Norwegian southern area (NO1), together with the high level of inflow to the hydro reservoirs in that area.

In 2008 the total volume of financial contracts traded at Nord Pool was 1 437 TWh. Besides, Nord Pool Clearing cleared a total of 2 577 TWh. Nord Pool has a total of 420 members.

The standard terms for trading in Nord Pool Spot AS' physical markets include rules for disclosure of information. Participants (both generators and other participants trading in the market) shall immediately disclose to NPS any of the price relevant information.

Retail market

In week 25 there were 26 suppliers with offers in all grid areas in Norway and a total of 97 suppliers in the whole country. Only five suppliers for the retail market had a market share of 5 % or more calculated by volume. Again three out of those five companies supply 32 % of the total volume delivered to households.

About 727 000 customers in the household market were registered with another supplier than the incumbent supplier at the beginning of 2009. This was about 30 percent of all metering points in the household market.

Infrastructure

In May 2008 the new 580 km, 700 MW undersea cable, between Norway and the Netherlands, was commissioned. The cable will be part of the regulated asset base and incomes for the TSOs in both countries.

A license application from Statnett SF for a new 25 km 420 kV OH line from Nea eastwards to the border with Sweden has reached concession and investment decision. The OH line will also be renewed from the border to Järpströmmen in Sweden by Svenska Kraftnät. The new OH line removes a bottleneck by replacing the existing 300 kV OH line, which is an upgrade from 220 kV and cannot be upgraded further. The project on Norwegian side of the border was ready May 2009, but the projects will not be finished and commissioned before spring 2010.

Regulation/Unbundling

There were no major changes in the unbundling requirements on the network companies in 2008.

The Norwegian provisions regarding legal unbundling applies mainly to Distributions System Operators (DSO's) serving more than 100 000 residential customers. There are 7 DSO's in Norway with over 100 000 residential costumers, and they cover more than 66 % of the total residential customers.

The current structure of the Norwegian retail market implies that the majority of the DSO's are exempted from the provisions regarded legally unbundling, a fact NVE emphasize in the

requirements to and supervision of the different players in the market. Several indicators reveal that there is a high level of integration between monopoly (network) activities and activities subjected to competition (generation and supply) within network areas. The latest numbers indicates that more than 70 % of households are served by the dominant suppliers, but as 50 % of household customers have contracts directly linked to the spot price, the gains from switching are relatively low. .

However, NVE has the authority to claim that DSOs serving less than 100 000 customers must be unbundled in accordance with the provisions on legal and functional unbundling. This authority is limited to cases of mergers, acquisitions and establishment of new activities.

Security of Supply

The electricity generation in Norway in 2008 was 142.4 TWh, an increase by 4.7 TWh from 2007. At the end of 2008 the mean annual generation in the Norwegian power system (hydro-, wind- and thermal power) is estimated to about 130 TWh. For hydro- and wind power only, the mean annual generation is 123.7 TWh. Due to hydro dependency the generation from hydro power will vary between 90 and 150 TWh dependent on the precipitation and inflow from one year to another.

Total installed generation capacity (at the end of 2008) is 30 811 MW¹.

3. Regulation and Performance of the Electricity Market

3.1 Regulatory Issues

3.1.1 Management and Allocation of interconnection capacity and mechanisms to deal with congestion

According to regulations and concessions pursuant to the Energy Act, cross border electricity exchange shall be set out by implicit auctioning. Congestion management concerning Norwegian interconnectors to Sweden, Denmark and Finland is fully integrated with the functioning of the wholesale market and are handled by implicit auctioning through the power exchange (Nord Pool Spot).

Rules governing information from the Transmissions System Operator (TSO) in the context of congestion management is regulated in the regulations given for the System Operator (Regulations relating to power system responsibility). The relevant information is published at Nord Pool.

For “long and stable” bottlenecks (congested areas), Statnett is according to regulation in principle obliged to establish elspot areas. In most of 2008 Norway was divided in three elspot areas: Southern-, Middle and Northern-Norway (NO1, NO2 and NO3). Between 17. November 2008 and 13. April 2009, Statnett merged Middle- and Northern-Norway to one

¹ This does not include 150 MW reserve capacity reserved for use in highly critical power situations only.

elspot area with a common price. Congestions within an elspot area are mainly to be handled by counter trade.

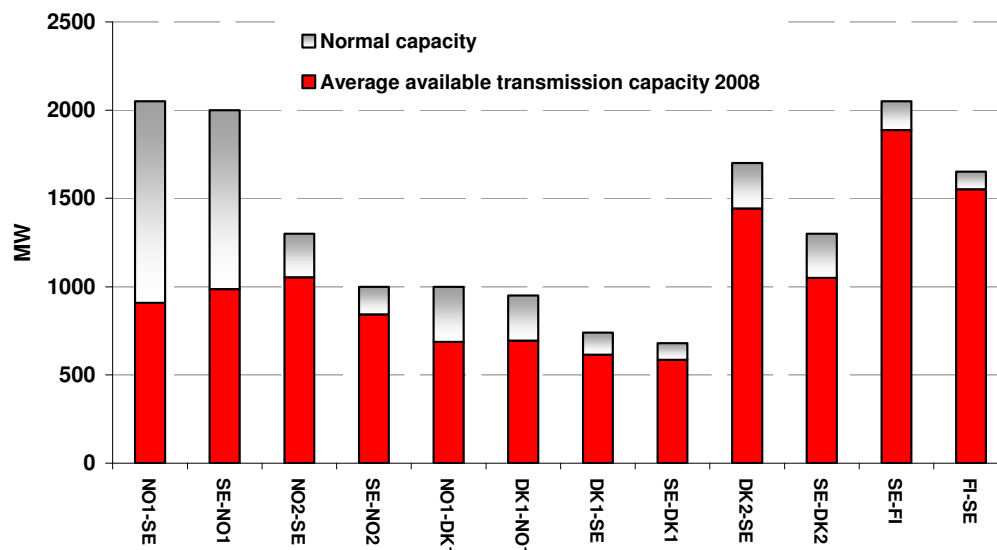
The TSO shall, according to the regulation, determine the maximum permitted limits for transmission capacity between the elspot areas on an hourly basis (trading limits). The system operator shall provide information about the trading limits two hours before gate closure of the elspot market of the Nordic power exchange. Trading limits are published on the web pages of the Nordic power exchange, Nord Pool Spot.

Actions have been taken to harmonise and improve the Nordic principles and practices with respect to congestion management. According to a declaration of the Nordic Council of Ministers in 2008, the Nordic TSOs shall start the process with splitting the Swedish and Finnish market into additional elspot-/bidding areas. Necessary actions shall be executed within 2010.

Since May 2008 the NorNed cable between Norway and the Netherlands has been in commercial operation. The capacity on this interconnector is allocated through explicit auctions. This is a temporary solution and not in line with prerequisites of Statnett's licence. The temporary explicit auction solution is approved until 31. Desember 2009. The reason for the delay in establishing market coupling is deviating gate closure time of the Dutch power exchange.

The extent of the congestions in Norway fluctuates over time. Both the hydro situation and the trading capacities affect the extent of congestions. The diagram below shows the average available transmission capacity on different Nordic interconnectors compared to normal capacity. The transmission capacity on the interconnector between Southern-Norway and Sweden has been reduced to about half of its normal capacity on average in 2008. The reason is a failure on the Oslofjord cables. One of the interconnectors between Norway and Denmark has been out of operation from the autumn 2007 to the summer 2008, and on average 70 percent of normal capacity has been available on this interconnector. For the other interconnectors there have been small periods with capacity reductions, but on average more than 80 percent of normal capacity has been available.

Reduced transmission capacity out of Southern-Norway combined with a good hydrological situation in this area has contributed to a high degree of congestions on the interconnectors linked to this area. The table below shows the time (in percentage) were there are price differences between the different elspot areas. Southern-Norway had lower price than all the other elspot areas more than 70 percent of the time in 2008. In 2007 the level was closer to 40 percent.



2008		Lower elspot price than:							
		NO1	NO2	NO3	SE	FI	DK1	DK2	Kontek
Higher Elspot price than:	NO1		3.4 %	3.9 %	3.7 %	5.2 %	8.8 %	3.9 %	14.7 %
	NO2	79.8 %		28.8 %	13.9 %	15.8 %	21.2 %	13.7 %	19.4 %
	NO3	77.9 %	3.4 %		9.2 %	11.2 %	18.1 %	8.9 %	18.3 %
	SE	73.7 %	9.0 %	22.7 %		2.3 %	13.5 %	1.7 %	15.4 %
	FI	73.2 %	9.1 %	22.7 %	0.3 %		13.4 %	1.8 %	15.3 %
	DK1	72.2 %	44.4 %	49.8 %	40.7 %	42.3 %		23.6 %	10.0 %
	DK2	75.2 %	32.8 %	40.4 %	27.8 %	29.7 %	24.2 %		14.3 %
	Kontek	76.5 %	62.0 %	64.5 %	59.9 %	60.7 %	43.3 %	42.1 %	

NO1: South- Norway (Oslo)
 NO2: Mid-Norway (Trondheim)
 NO3: North- Norway (Tromsø)
 SE: Sweden
 DK1: Denmark (Jutland)
 DK2: Denmark (Zealand)
 FIN: Finland

3.1.2 The regulation of the tasks of transmission and distribution companies

Network Tariffs

For regulatory purposes, in particular connected to the setting of revenue caps and tariffs, the electricity network is divided into three levels; the central grid (transmission system), the regional grid and the distribution network. Statnett SF is the TSO, and is responsible for the Central Grid (Transmission) tariffs and the system responsible entity according to the regulations. Statnett SF owns 85 pct. of the components in the Central Grid (measured by its share of the revenue cap). The rest is owned by 25 different companies.

The general principles for the tariff structure are the same for all network levels. In addition to the current tariff, network companies may charge an investment contribution to cover the costs of new network connections. The tariff structure consists of different components such as a usage-dependent energy component and a fixed component.

For feeding into the network the fixed component of the tariff is independent of the grid level of connection. The procedure for setting network tariffs has been unchanged. The annual national G has been 0.7 €/MWh in 2008 (NOK 5.6, exchange rate € 1 = NOK 8).

Within the framework of regulations of tariff structure given by the NVE, the network companies are responsible for the actual tariff levels in their network, given their expected revenue cap and CENS (cost of energy not supplied) for the coming year. Complaints and disputes regarding the regulation, including the tariffs are handled by NVE.

On January 1st of 2007 a revision of the revenue cap (RC) regulation based on a yardstick formula was introduced. The RC yardstick formula is based on 40 pct. cost recovery and 60 pct. of the cost norm resulting from the benchmarking exercises, with a two year lag.

Overall, the methodology and procedures for the regulation of transmission and distribution companies have been unchanged in 2008. However, there have been some minor technical changes in the norm cost model from 2008. The changes are related to the calculation of network losses and super-efficiency in the efficiency analysis, and adjustments of the efficiency results. The aim of the changes is increased goal achievement.

Quality of electricity supply

NVE has a wide legal power as regards quality of electricity supply regulation. This includes setting requirements for all parties connected to the Norwegian power system including network companies, the TSO, power producers and end-users regardless of whether they hold a license according to the Energy Act or not. In short, the Norwegian quality of electricity supply regulation has had the following development since the Energy Act entered into force:

- 1991 – The Energy Act entered into force; focus on socio-economic optimization. Companies obliged to provide customers with information about the quality of supply. Results from a customer survey regarding long interruptions (>3min).
- 1995 – Mandatory reporting of long interruptions (>3min) to NVE based on standardised method. Mandatory of reporting of operation disturbances occurring in the grid at 110 kV or above to the TSO based on standardised method.
- 1997 – Mandatory reporting of operation disturbances occurring in the grid at 33 kV or above to the TSO based on standardised method. Revenue cap regulation introduced – five year regulatory period.
- 2001 – Standardised method for calculation energy not supplied introduced. Customer divided into 26 end-user groups. Incentive based regulation of continuity of supply (CENS-arrangement) was introduced divided into two customer groups, and for each of them notified and non-notified.
- 2002 – New five year regulatory period. Updated results regarding customers' costs divided into six customer groups, and for each of them notified and non-notified.
- 2003 – Updated incentive based regulation on continuity of supply based on the survey finalised in 2002. Number of end-user groups was extended to 27.
- 2005 – Introduced a separate quality of supply regulation containing minimum requirements regarding continuity of supply, voltage quality and customer complaints and information regarding the same issues. Companies obliged to collect data on short interruptions. Decision that mandatory monitoring of voltage quality shall be performed by the companies from 2006.

- 2006 – Mandatory reporting of short interruptions to NVE based on standardised method. Modifications to the requirements for collecting continuity of supply data.
- 2007 – Adjustments to the revenue cap regulation, introduced two year regulatory period. Interruption costs are now more harmonised with the companies' other costs. Mandatory reporting to the TSO of operation disturbances at voltage levels above 1 kV up to and included 22 kV. Direct payment to customers at all voltage levels due to very long interruptions (>12 hours) introduced.
- 2009 – The incentive based regulation on continuity of supply extended to include also short interruptions. Dynamic specific interruption costs introduced (kr/kW) depending on the time occurrence of the interruption (intraday, week day, month). Number of end-user groups extended to 36.

Voltage Quality

The Norwegian Quality of Supply Regulation includes minimum requirements for the voltage frequency, slow supply voltage variations, voltage dips, voltage swells, rapid voltage changes, flicker, voltage unbalance, and harmonic voltages. NVE are able to set requirements for other disturbances as well if and when considered necessary.

Interruptions

NVE publishes annually an interruptions statistic report providing continuity of supply levels at country level, county level, company level and end-user level.

The TSO, Statnett SF, publishes annually operational disturbance statistic report providing reliability levels for the system.

In Norway, network companies have been obliged to report specific data on interruptions since 1995. From the start, the data were reported with reference to so-called *reporting points* in the network. A *reporting point* is a distribution transformer or an end-user connected above 1 kV. NVE used the energy not supplied as input to the incentive based regulation on continuity of supply from 2001. For energy not supplied the exact number of customers is not important, but more separating for various end-user and customer groups.

From 2005, the interruption data are also referred to end-users. This was important to introduce due to two main reasons (1) easier to understand for non-technical customers and (2) better possibility to compare with other countries.

Only incidents at voltage levels above 1 kV are reported, and the reported data can be summarised as follows for *long and short interruptions starting from 1995 and 2005 respectively*.

- Number (ref reporting point + ref end user from 2005)
- Duration (ref reporting point + ref end user from 2005)
- Interrupted power (from 2006)
- Energy not supplied (ENS)
- SAIDI, SAIFI, CAIDI, CTAIDI, CAIFI (from 2005)
- Notified and non-notified

Common indices with reference to customers are presented in the table as regards short and long interruptions. SAIDI and SAIFI represent respectively the mean duration and the mean frequency of short and long interruptions experienced by Norwegian end-users. CAIDI represents the mean duration of each (single) short or long interruption.

	SAIDI [hours]	SAIFI	CTAIDI [hours]	CAIDI [hours]	CAIFI
2005	2.3	1.9	2.9	1.2	2.4
2006	2.6	2.1	4.6	1.3	3.4
2007	2.4	2.0	3.6	1.2	3.1
2008	2.5	2.1	3.9	1.2	3.3

Continuity of supply indices with reference to the end users as regards long interruptions in Norway

Energy not supplied reported is up to and including 2008 divided into 27 end user groups, from 2009 the number of end-user groups has been extended to 36. Energy not supplied was a direct input to our financial incentive based scheme on continuity of supply (the CENS arrangement) up to and including 2008. From 2009 customers' costs are calculated using the interrupted power on a given reference point in time (typically worst case), and then adjusted for the time occurrence of the interruption. The regulation includes specific interruption costs (kr/kW) as a function of the duration of the interruption for six different customer groups. The interruption costs are reduced by given factors if the interruptions are notified in advance.

All collecting of data, reporting and calculation of indices are standardised. A standardised system is important in order to get the large amount of network companies to collect and report and calculate the different indices in the same unique way. Energy not supplied is calculated taking into account a lot of factors and by using customers' load profiles. Hence, energy not supplied is the energy that would have been supplied during the interruption if it hadn't occurred in the first place. The development in the energy not supplied relative to the energy supplied gives a good indication of the development of the continuity of supply level in the power system, from our point of view.

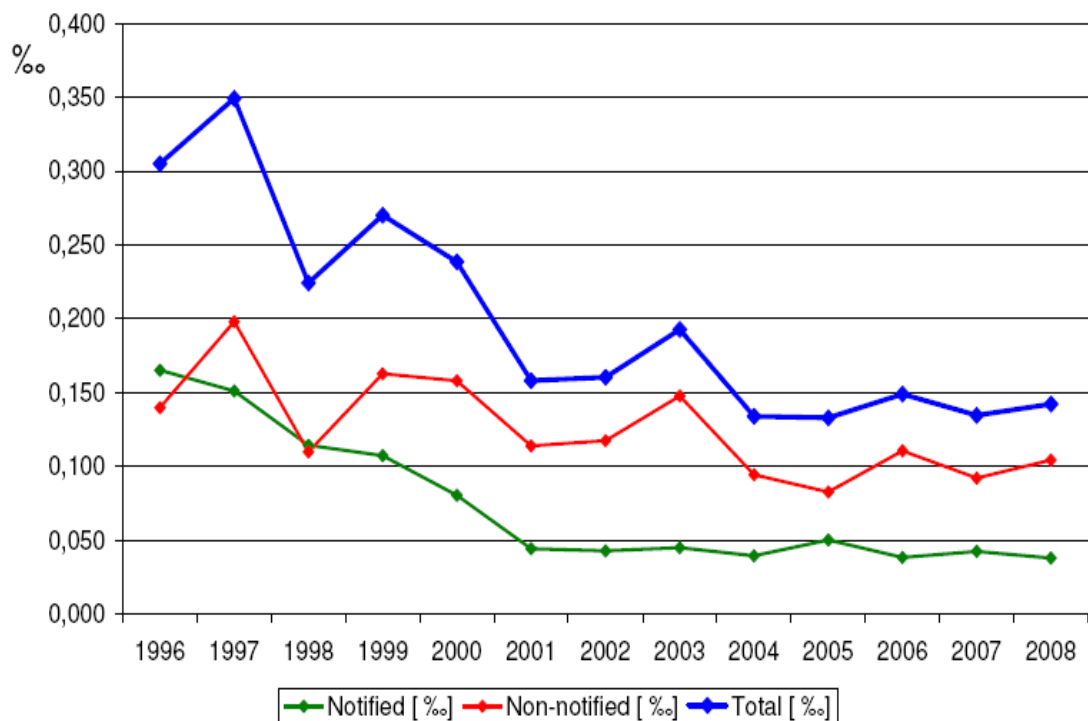
The main objective of the CENS arrangement is to give the network owners incentives to operate and maintain their networks in a socio-economic optimal way and thereby provide an acceptable level of continuity of supply. The companies are forced to internalise the customers' costs related to interruption.

Year	Energy supplied GWh	Energy not supplied - notified interruptions GWh	Energy not supplied - non-notified interruptions GWh	Energy not supplied in total GWh
1996	98571	16.8	15.8	32.6
1997	101987	16.5	24.0	40.5
1998	106228	13.9	13.6	27.6
1999	106525	11.8	19.0	30.8
2000	104193	8.9	18.1	27.0
2001	108361	5.1	14.2	19.3
2002	107656	4.9	15.0	19.9
2003	105145	4.9	16.9	21.8
2004	109306	4.4	11.6	16.0
2005	111804	5.7	9.9	15.6
2006	106380	4.1	11.7	15.8
2007	109 712	4.7	10.1	14.8
2008	109570	4.2	11.4	15.6

Energy supplied and some continuity indicators in Norway, as regards long interruptions.

Two major incidents occurred in 2003 and 2006, caused by hurricane, resulting in a high amount of energy not supplied even when energy supplied had a normal level. **Error!**

Reference source not found. shows the development of energy not supplied in per thousand of energy supplied for the last 13 years in Norway.



Energy not supplied (ENS) in per thousand of the energy supplied (ES) to end users in Norway since 1996

Balancing

Norway participates in the common Nordic balancing market, known as “the Nordic regulation power market”. It is based on a TSO-TSO model with a common merit order. The market is for manually activated reserves, where both generators and large consumers can submit bids to meet the TSOs need for regulating power to balance the system. In 2008 there were no changes in the market model for regulation power.

However, the Nordic TSOs developed a common Nordic settlement mechanism, which was approved by the respective regulators in 2008. The common Nordic platform for imbalance settlement is to be implemented in 2009, and it is seen as an important step towards a common Nordic retail market.

The price in the regulation power market varies around the spot price (day ahead) for electricity. In periods with up-regulation the regulation price will typically be above the spot price, and vice versa in periods with down regulation the regulation price will typically be below the spot price. In spring and summer there are usually several hours during which the regulation price is zero or very close to zero.

The regulation power price varied within 15 % of the spot price 70 % of the hours, and within 30 % from the spot price nearly 95 % of the hours. There was an incident on 5 January which led to unusually high prices in the regulation power market; it was the unexpected outage of Finnish nuclear power combined with low temperatures in the Nordic region, and for two hours during the 5 January, the regulation price rose to five times that of the spot price for the same hours.

The Norwegian part of the Nordic regulation power market had up to 32 active participants in 2008 (32 in winter, and 22-25 during summer). The regulation power market is relatively un-concentrated with a fair framework for competition. There have not been any causes for action against dominant market players in the regulation power market. NVE has close collaboration with the Norwegian Competition Authority in following the wholesale market, including the regulation power market.

3.1.3 Effective unbundling

There were no major changes in the unbundling requirements on the network companies in 2008. In the following, the main issues regarding the implementation of unbundling in Norway are described.

The Norwegian practice of legal unbundling is stricter than the requirement in the directive. While the directive enables undertakings performing functions of generation or supply to own undertakings performing activities of transmission or distribution, the Norwegian Energy Act requires that the undertakings performing functions of generation or supply can not own undertakings performing the activity of transmission or distribution, and vice versa.

There is only one TSO in Norway, namely Statnett SF. The TSO has been legally unbundled in a separate company since 1992, and has to comply with the ordinary functional provisions. Statnett is state owned and does not form part of any integrated undertaking. The TSO

Statnett SF and the state owned generator, Statkraft AS, are moreover since 2002 owned by two different ministries, complying with requirements for ownership unbundling. Statnett's offices are not located together with any production or supply company.

The 7 companies with more than 100 000 residential customers in Norway are legally unbundled, and hence they have to comply with the provisions covering functional unbundling. These companies count for over 66 % of the total mass of residential customer. The 7 companies are also obliged to participate in the compliance program, in accordance with the directive. The compliance program serves NVE in its monitoring of the DSO's fulfilment of the provisions regarding legal unbundling. Besides the 7 DSO's with over 100 000 residential customers, there are 34 more legally unbundled DSO's in Norway. There is a total of 162 DSO's in Norway, and they are mainly in public ownership.

As noted above the structure of the Norwegian retail market implies that the majority of the DSO's are exempted from the provisions regarded legally unbundling and more than 70 % households of the are served by the dominant supplier. All 162 DSO are however under regulations concerning neutral and non discriminatory behaviour in relation to information to customers, customer switching, handling of new connections, measurement data and billing and these regulations are subject to supervision by NVE.

3.2 Competition Issues

3.2.1 Description of the wholesale market

The Norwegian wholesale market is integrated in the Nordic wholesale market through price coupling on a common power exchange, Nord Pool Spot. In 2008 there were traded 297,6 TWh (290,6 TWh in 2007) at Nord Pool Spot, which accounts for 70,1 % (60,9 % in 2007) of the physical power exchanged in the Nordic region. The remaining volume of the Nordic market was traded bilaterally. NVE regulates Nord Pool Spot through the market place licence, in accordance with the Norwegian Energy Act (1990).

Nord Pool Spot is organized as a market place where producers, distributors, traders, energy companies, large consumers and TSO's are able to buy or sell physical power. The Nordic area is divided into several spot areas. Since 20 September 2006 Norway was divided into three spot areas, due to a supply deficit in the central region of Norway. However, from 17 November 2008, Norway had two spot areas, before it went back to three spot areas again the 13th of April 2009.

The price calculation in Nord Pool Spot is based on the intersection between the Nordic markets supply and demand curve. This equilibrium price is called the system price. If there are no bottlenecks between the spot areas, the system price will be the price in the whole market. When bottlenecks occur between Nordic countries and within Norway, there will be different prices in each spot area.

The generation structure in the Nordic area consists of hydro, nuclear, wind and various conventional thermal sources. The hydrological situation and hydropower production possibilities determine to what extent other generation sources are demanded. In a seasonal context this determines the value of the water which is the opportunity cost of production in the future. In the short-term hydro produces little when demand (and prices) is low and much

when demand is high. In some cases the hydropower flexibility is large enough to level out price differences over the day. In winter peak periods, however, prices may be set by peak thermal capacity.

During 2008 the Nordic market experienced increased differences in price between its spot areas. This was to a high degree due to the physical constraint on exchange capacity in the Norwegian southern area (NO1), together with the high level of inflow to the hydro reservoirs in that area.

Nord Pool provides a wide range of derivative power products available in the financial market, varying from future forward contracts on daily, weekly, monthly and yearly basis. The total volume of financial contracts traded at Nord Pool was 1 437 TWh in 2008. Besides, Nord Pool Clearing cleared a total of 2 577 TWh. Nord Pool has a total of 420 members

Generation:

In 2008 the total Nordic net generation was 393,1 TWh, which is 0,7 TWh lower than registered in 2007. The reduction was basically due to the decrease of thermal generation in Denmark and Finland.

The Norwegian net generation was 142,4 TWh in 2008 (137,7 TWh in 2007). This is the highest net generation since 2000, when the total net generation was 142,8 TWh. The share of the hydro plant generation accounted for around 99 % (140,3 TWh) of the total Norwegian net generation in 2008. This percentage shows the importance that the weather conditions have on the net generation capacity. 2008 was a relatively wet year, which resulted in above average inflow to the hydro reservoirs in Norway.

3.2.2 Description of the retail market

History on market opening

The Energy Act of 1991 opened up the possibility of consumer switching in Norway. There was a maximum switching charge of NOK 5.000 preventing most household customers from switching. The maximum switching charge was reduced to NOK 4.000 in 1994, but it was not until the next year that the retail market was practically opened up in Norway. In 1995 consumers could switch supplier every quarter and the maximum charge was reduced to NOK 246. Still each supplier had to pay a fee of NOK 4.000 per distribution area where it was active. These fees prevented the development of a true retail market in Norway. In 1996 the fees were all removed and in 1998 consumers could change supplier on a weekly basis.

Until 1997 there had been only 2.500 consumer switches in the Norwegian household market. Since then the activity in the retail market has increased significantly. In the third quarter of 2004 the accumulated number of switches since 1997 passed 1.5 million. In 2003 there was a record high of 441.000 switches due to large differences in prices between suppliers after a rapid increase in household prices following the high spot price of the winter 2002/2003. In the business market there were roughly 24 000 switches last year. There are just about 2.7 million metering points in Norway. Totally since 1997 there have been just about 2 494 000 customer switches in the household market. In the business market there have been 268 000

switches since 1999. In 2008 we saw approximately 194 000 household consumers switching suppliers in Norway.

The price-difference impact on the customers switching behaviour is quite clear. NVEs price-data shows that on average the spot market contract and the standard variable contract (offered by the 15 least expensive nationwide suppliers) is the same. This fact is also shown by The Norwegian Competition Authorities latest work; Competition in Norway. The average price similarity between these contracts can partly explain the decline in annual switch rates that Norway has experienced the last years.

Description of the retail market

Each entity operating in the electricity market and/or in the network business is required to hold a trading licence. Status in June 2008 was that the Norwegian Water Resources and Energy Directorate (NVE) kept about 450 trading concessions under surveillance. In week 25 there were 26 suppliers with offers in all grid areas in Norway and a total of 97 suppliers in the whole country. Some of these nation-wide suppliers are former incumbent suppliers while others are independent suppliers established after liberalisation. Only five suppliers for the retail market have a market share of 5 % or more calculated by volume. Again three out of those five companies supply 32 % of the total volume delivered to households.

By June 2009 there are 162 DSOs in Norway. Of these, there are only seven large DSOs, that'll say, with more than 100.000 customers. The rest of the country is covered by smaller DSOs.

On average most end users are still customers of the incumbent supplier. The number of residential customers with suppliers other than their local supplier has steadily increased over time. About 727 000 customers in the household market was registered with another supplier than the incumbent supplier at the beginning of 2009. This is about 30 percent of all metering points in the household market.

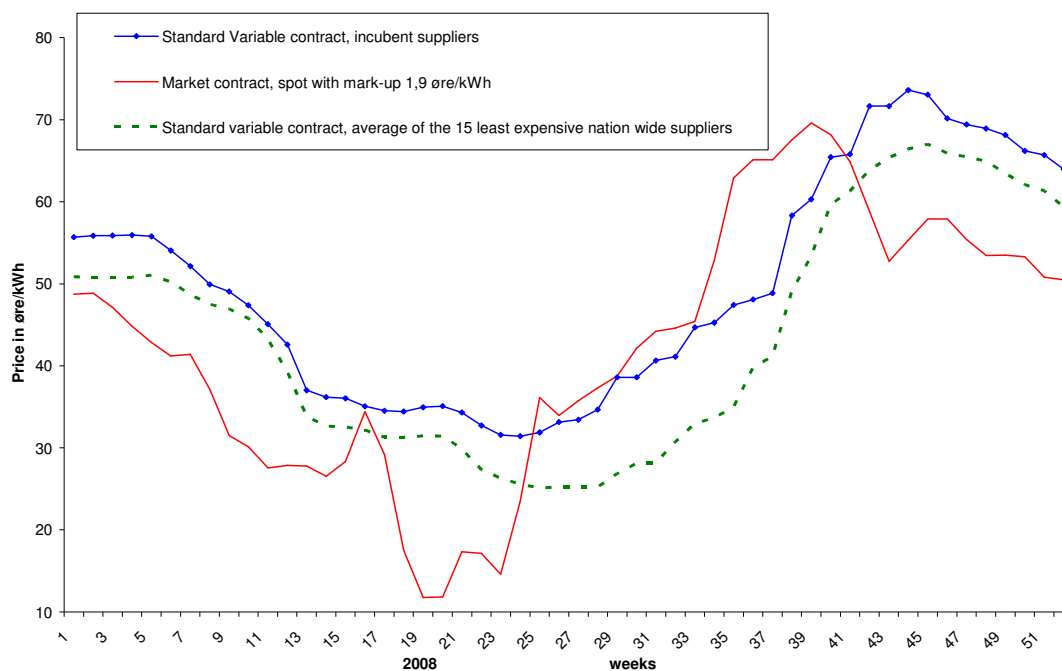
The dominant supplier within a network area is most often a vertically integrated supplier or a supplier within the same corporation as the DSO. The market shares of the dominant suppliers within each grid area measured in numbers of metering points vary from 31 to 91 percent within the household market. On average, the dominant supplier has 74 percent of the household customers in their grid area in Norway in 2009.

Customer switching procedures

A new model for supplier switching was implemented the 1st of January 2008. The aim of the new model was to make the end-user market more efficient by automatisation of information exchange procedures and tighter deadlines for switching. In the new model the switching process takes averagely two weeks, and no longer than 21 working days. Besides a few start – up problems, the process around supplier switching has improved for both suppliers, DSOs and end users since the introduction of the new model. The time of the switching procedure has been reduced and the resources in DSOs in regards of communicating customer information have gone down.

Price development

In Norway there is one official website for price comparison, run by the Norwegian Competition Authority. It compares the three most common contracts of the market. The customer can easily carry out an evaluation and make the choice of supplier using a price calculator. There are no regulated prices except electricity delivered to those customers who have not yet chosen a supplier (supplier of last resort) and information on prices and contracts is public information. The arrangement of the market lead to competition, but still, as the demand side sometimes fails to act rationally, prices between suppliers vary.



The figure shows price development of two main contracts for household customers in 2008 inclusive value added tax. The Standard variable contract (spot led contract where the supplier is obliged to inform about price modifications two weeks before they take place) is considered the default contract. Approximately 46 percent of the household customers had a standard variable contract in 2008. In comparison, roughly 45 percent of the customers had a market contract in 2008. The rest had a fixed priced contract, normally of one year duration. On average nation wide suppliers had a lower price than vertically integrated suppliers or suppliers within the same group of companies as the DSO (incumbent suppliers).

3.2.3 Measures to avoid abuses of dominance

General competition legislation (The Norwegian Competition Act and the competition rules applicable to undertakings of the EEA Agreement) apply, and the Norwegian Competition Authority has full responsibility.

The physical power exchange, Nord Pool Spot AS, operates under a market place licence given by NVE. There were no major changes to the framework in 2008. In the following, the relevant framework for 2008 is described.

Rules governing conduct of generation companies in the wholesale markets:

The standard terms for trading in Nord Pool Spot AS' physical markets include rules for disclosure of information. Participants (both generators and other participants trading in the market) shall immediately disclose to NPS any of the information specified below (price relevant information):

- Any matters related to the relevant entity's business in the markets that are likely to have a substantial impact on the prices. This does not, however, apply to information regarding own plans and strategies for trading. If the participant or the clearing customer concerned is in doubt as to whether a matter constitutes price relevant information, he shall contact NPS in order to be advised on how to handle the situation.
- The following matters relevant to plants or facilities for production, consumption or transmission within or directly connected to the Nordic electricity exchange area, of which the participant or clearing customer concerned owns or controls in whole or in part:
 - Any plans or changes of plans for maintenances or limitations concerning more than 200 MW in the next 6-week period, as soon as the plan has been adopted by the proper corporate body.
 - Any plans and changes of plans for maintenance or limitations concerning more than 400 MW to plants or facilities for production, use or transmission for the current year and three years forward, as soon as the plan has been adopted by the proper corporate body.
 - Any outage or failure concerning more than 200 MW, as soon as possible and under no circumstances later than 60 minutes after the event occurred. The requirement on reporting within 60 minutes does not apply between 8:00 pm and 7:00 am. The participant or the clearing customer concerned shall within 4 hours after the event occurred inform NPS of the cause of the event based on available information, as well as of the duration of the outage or failure

Nord Pool Spot publishes total volumes for demand and supply in each hour, transmission capacity between elspot areas within the exchange area, elspot system prices, local prices and prices on financial products.

- bidding behaviour,
 - The standard terms for trading in Nord Pool Spot AS' physical markets includes rules for bidding
 - See also "market surveillance"
- market surveillance,
 - As a regulated exchange and market place, Nord Pool Spot has an obligation to provide market surveillance. Nord Pool Market Surveillance monitors trading activities and market conduct on Nord Pool's spot market and market for financial power contracts. Nord Pool must ensure that market participants play by the rules to maintain the markets confidence in the exchange. Consequently, all transactions are monitored as to comply with participants' duty to disclose

price-sensitive information to the market, and to avoid prohibited insider trading, price manipulation, or unfair exercise of market power.

- Further, NVE and the Norwegian Competition Authority are using a model for monitoring of the competition in the market where the actual market price should be compared with an expected price calculated from model simulations of efficient utilisation of reservoir-water. Differences that can not be explained as price-taker behaviour should be investigated by looking at the different participants bidding on the market place.

NVE has no experience with virtual power plant auctions or other capacity release measures as this is not applied in Norway.

Rules governing conduct of companies in the retail market

In retail market, network and supply companies may be bundled if the number of customers does not exceed 100 000. NVE monitors network companies and ensures compliance with the neutrality criteria as laid down in the Energy Act of 1990 and Regulation no 301, from 11 June 1999.

The neutrality criteria require clear separation of monopoly activities (network) and supply (power sales). E.g. the network part of the business is not allowed to give information about customers to the supply side of the business. In 2008 NVE inspected several network companies with specific focus on compliance with the neutrality criteria. The inspections in them self have an educational and disciplining effect on the network companies. On the basis of the neutrality criteria, NVE did not have cause to effectuate sanctions towards network companies in 2008.

Security of Supply

4.1. Electricity

A general description of supply and demand

Electricity peak demand

Domestic gross consumption in 2008 was 126,7 TWh (125.8 TWh in 2007).

The Norwegian peak demand occurs during winter season. The current levels of electricity peak demand for season 2008/2009 was 21 884 MW and measured in January 2009.

The table below shows the peak demand for the last 8 seasons.

Year	Weekday	Date	Hour	Demand [MW]
2002	Friday	04.01.2002	11	20 689
2003	Monday	06.01.2003	10	19 085
2004	Monday	21.01.2004	9	20 675
2005	Wednesday	03.02.2005	9	21 401

2006	Monday	06.03.2006	9	21 575
2007	Wednesday	21.02.2007	19	21 450
2008	Thursday	14.02.2008	10	21 589
2009	Monday	05.01.2009	9	21 884

According to demand forecast developed by the Norwegian TSO, Statnett, the expected peak demand for Norway season 2012/2013 will be 23 800 MW with temperatures corresponding to a ten years winter day. The same forecast based on average winter temperatures shows a expected peak demand of 22 700 MW.

Currently available generation capacity

The electricity generation in Norway in 2008 was 142.4 TWh, an increase by 4.7 TWh from 2007. At the end of 2008 the mean annual generation in the Norwegian power system (hydro-, wind- and thermal power) is estimated to about 130 TWh. For hydro- and wind power only, the mean annual generation is 123.7 TWh. Due to hydro dependency the generation from hydro power will vary between 90 and 150 TWh dependent on the precipitation and inflow from year to another.

Total installed generation capacity (at the end of 2008): 30 811 MW². Available generation capacity during a cold winter is about 25 000 MW.

Current and expected generation fuel mix

The generation capacity can be broken down as follows:

Hydro: 29 490 MW
Wind: 429 MW
Thermal: 1 042 MW (150 MW reserve capacity)

Expected increase in generation capacity in 2009:

Hydro: 138 MW
Wind:
Natural gas: 150 MW

Expected developments (2009 included) as of 31.12.2008:

	Hydro	Wind	Natural gas
Currently under construction:	587 MW		430 MW
Authorised:	780 MW	1600 MW	1720 MW

Assumed forthcoming generation investment for the next three years:

For the next three years:

Hydro	Wind	Natural gas
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² This does not include 150 MW reserve capacity reserved for use in highly critical power situations only.

2010:	500 MW	18 MW	280 MW
2011:	250 MW		
2012	250 MW		

Actual investment commissioning during 2008

Net increase in hydropower generation capacity during 2008 has been 407 MW and 45 MW wind power has been commissioned.

A description of other tasks of the Norwegian Water Resources and Energy Directorate –NVE

Authorisation criteria for new generation investments and long term planning

For all new projects (wind power plants, gas power plants, hydro power plants, power lines, transformers) development concession must be granted. In additions to being the regulatory authority in line with the directive, NVE has been delegated the authority for licensing new energy installations. For all projects NVE consider the project economy public and private interests and environmental issues. For larger projects a more extensive process EIA (Environmental Impact Assessment) is required.

NVE has been delegated a responsibility for power system studies to appointed concessionaire in a given grid area. The main task of the work on the power system studies is to contribute to a socio-economic rational development of the regional grids and the national grid. In this connection the energy carriers in question are for stationary energy usage. The power system studies will continue to be an important base document in the NVEs handling of the applications for a concession to construct an energy plant or installation. This is especially of importance regarding applications for the larger overhead line projects.

Implicit and explicit incentives

In special regional areas with constraints in transmission capacity Statnett has introduced a “grid efficiency phasing-in tariff”. This will give a reduced grid tariff on new production facilities localised within certain areas, compared with the current level, for a period of 15 years. The criteria that must be satisfied in order to be eligible for the phasing-in tariff are that new production must be established within those areas and within those energy volumes where it is documented that new production will bring grid savings.

Progress in major infrastructure projects

The new 580 km, 700 MW undersea cable, between Norway and the Netherlands, was commissioned May 2008. The cable will be part of the regulated asset base and incomes for the TSOs in both countries.

A license application from Statnett SF for a new 25 km 420 kV OH line from Nea eastwards to the border with Sweden has reached concession and investment decision. The OH line will also be renewed from the border to Järpströmmen in Sweden by Svenska Kraftnät. The new OH line removes a bottleneck by replacing the existing 300 kV OH line, which is an upgrade

from 220 kV and cannot be upgraded further. The project on Norwegian side of the border is ready May 2009, but the projects will not be finished and commissioned before spring 2009. This project is one of five infrastructure projects given priority by the Nordic countries.

The TSO processes for planning new network

The grid system planning process in Norway is made compulsory from NVE through power system studies. The country is divided in 17 regional planning areas where one of the DSO's has the responsibility of coordinating the planning process among the DSO's in the area, and make a regional grid development study.

In the national grid the TSO (Statnett) has the responsibility for the planning process and issuing of the national grid study. The yearly updated grid studies are submitted to the NVE for consent. The study period for the grid development is minimum 10 year. The measures to improve upon the grid are only a part of a study that also covers other topics as energy and plant statistics, security of supply, spare parts situation, environmental, economical and technical presumptions, specific circumstances for the area, description of the existing grid, operating conditions, tariffs and future grid development.

The studies must describe bottlenecks, and how operational situations may create and influence congestion situations in the grid. Measures to reduce or eliminate congestions in the grid are one goal of the study. Congestion management in the operational phase and the market issues of the grid development including costs of congestion situations are not part of the studies. When applying for a concession to build grid, the applied solution must be part of the latest grid study submitted to the NVE.

5. Public Service Issues - electricity

Public Service Issues (PSI) are in general taken care of in acts, regulations and the contracts between the customer and each network company / electricity supplier. The utilities common association and the Office of the Consumer Ombudsman have negotiated standard agreements which set up a balanced set of conditions. There are separate agreements for connection and use of the grid system, and electricity supply. Some utilities practices may be at variance with these agreements.

Regarding labelling of primary energy source, the requirements have been implemented in regulation and came into force from the 1st of January 2007.

The obligations set out in Annex A are fulfilled in the Norwegian system. Reference is made to the updated table of correspondence as submitted to the Authority by letter of 7th of April 2008 from the Ministry of Petroleum and Energy (MPE).

To secure appropriate treatment of vulnerable customers, all distribution companies in Norway have an obligation to be supplier of last resort. In addition, the social security system takes care of those unable to pay for necessities.

Customers are protected from disconnection when life or health is at risk. If the social services have guaranteed for the payment of the customer, disconnection is prohibited. There are no data available on the number of disconnections in Norway.

In Norway there are no regulations of end user prices for electricity supply. The electricity market is fully opened for all customers, and the prices are set in the market. All network companies are regulated with an income cap, covering all cost elements. Customers can file complaints regarding the tariffs to the regulator.

To ensure transparency of the terms and conditions of supply contracts, the network companies have an obligation to act in a neutral and transparent manner. Further on the network tariffs are regulated, in addition to the income cap mentioned above.

The Norwegian Parliament grants annually a certain amount of support to reduce network tariffs for certain customers. The aim of the arrangement is to directly reduce the tariffs for customers in areas of Norway with high distribution costs. The arrangement do not influence on the incentives in the income regulation described above. The criteria for allocation is average cost per kWh, measured as total income cap in the network company divided on delivered energy measured in kWh. The scope of this arrangement is dependent on the annual budgets decisions of the Parliament.

According to regulations managed by the Norwegian Competition Authority, all electricity suppliers are obligated to publish their prices on certain standard products/contracts offered to household customers at a Website hosted by the Norwegian Competition Authority for price comparison.

Further, all suppliers are obliged to state the price on the products/contracts they are offering in a certain way according to regulations managed by the consumer ombudsman.

Change of supplier has been free of charge for all customers since 1997.