

Report on regulation and the electricity market

Norway



Norwegian Water Resources and Energy Directorate (NVE)

15th of July 2005

1 Foreword

The Norwegian electricity market was formally opened up for competition when the new energy act came into force 1 January 1991. As the 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.

As an EEA country the EEA procedure regarding transposing of new EU directives applies for Norway. At this stage in the process the directive 2003/54/EC has not yet formally passed through the EEA Committee. For this reason Norway is not yet formally obliged by the reporting requirements in the directive.

Information on the Norwegian electricity market has been incorporated into the former benchmarking reports issued by the European Commission. To follow up on this NVE find it appropriate to publish a report that follows the Proposed Structure for the Regulators' Annual Report to the European Commission. The proposed structure is the result of input from CEER and has been agreed in ERGEG. NVE is a member of CEER and participates as an observer in the ERGEG procedures.

The report does not cover the gas market. NVE is at present not delegated powers as a regulator in the gas market. The Norwegian downstream gas market is immature and infrastructure is still in an early development.

Jon Sagen

acting director
Energy and Regulation Department

2 Summary

The Norwegian Water Resources and Energy Directorate (NVE) is the electricity regulator in Norway.

NVE is a subordinate agency of the Ministry of Petroleum and Energy, and is responsible for administration of Norway's water and energy resources. It is the duty of NVE to ensure an integrated and environmentally sound management of the nation's water resources, to promote an efficient energy market and cost efficient energy systems, and to promote efficient use of energy. NVE plays a central role in flood and accident control planning and is responsible for maintaining the national power supply.

NVE is headed by a Director General and has five departments; Energy and Regulation, Licensing and Supervision, Water Resources and Hydrology and Administration.

NVE has 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, neutral 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.

Market opening in the Norwegian electricity market is 100 per cent. The right to market access on non-discriminating conditions was given to all customers in the energy act from January 1991. Practical market access for small customers has developed since 1995 when settlement based on load profiling was introduced followed up by abolishment of all fees on customer switching in 1997 and the possibility to change supplier on a weekly basis in 1998. Since then the number of customer switches in the household market has increased to 441.000 in 2003 and 240.000 in 2004. The high number in 2003 reflect volatile market prices in this year,

Network tariffs in Norway are regulated through ex-ante income regulation with incentive mechanisms and regulations on tariff structure. Tariffs are completely independent of trading transactions. Allowed income is adjusted by an efficiency factor calculated through benchmarking of all the network companies.

In 2005 there was a small reduction in the national average network tariff paid by households compared with 2004. Compared with 1993 the real value of tariffs in 2005 is about the same level.

The income regulation has mechanisms to encourage quality of supply in the network. In case of interruptions to customers the network income is reduced by the estimated social value of energy not supplied. The volume of energy not supplied because of both notified and non-notified interruptions was 0.33 per thousand of energy supplied in total in 1996. In 2004 this number was reduced to 0.15.

The day-ahead elspot market at the Nordic power exchange NordPool operates under a concession given by NVE. The Norwegian Financial Inspectorate regulates the financial forwards and future markets. There is a close co-operation between these authorities and the Competition Authority. A forum for contact between the authorities on a Nordic level is also established.

The volume of trade in the Nordic Elspot market was 167 TWh in 2004. This equals about 40 percent of the Nordic electricity consumption in the common Nordic market. A total of 1207 TWh bi-lateral financial trading was cleared in 2004. First half of 2005 shows a 50 per cent increase in cleared volumes compared with first half of 2004.

Major congestions in Norway and between the Nordic countries are handled in the elspot market through implicit auctions. In 2004 the interconnections with Denmark was congested about 40 percent of the time, while the interconnections with Sweden was congested about 30 percent of the time. Capacity at the borders is sometimes reduced by the TSOs due to internal capacity problems. Common Nordic rules on capacity allocation are an issue of concern to the authorities.

As of 30 June 2005 NVE has sent several amendments to the regulation on a public hearing.

There is a proposal of changes in the economic regulation of the networks. The proposal is to strengthen the use of yardstick competition, based on annual efficiency comparisons of the networks. It is also proposed to introduce a more frequent updating of the income caps. The objectives of the proposals is both to ensure increased network security by giving a more efficient framework for new network investments, and that the customers shall not pay more than is deemed necessary for efficient operation and development of the network, Proposals to further strengthen the incentives to avoid lengthy disruptions is also put forward. The proposals will be effective from when the new regulatory period start in 2007.

Several amendments to the regulation on tariffs are proposed. The requirement to directly inform all customers on all changes in tariffs is strengthened, as well as more binding and explicit rules on use of connection payments in relation to investment for new connections.

There are also proposal for amendments to the regulation on quality. Compensation for non-delivered energy, which in the present regulation is limited to disruptions above 3 minutes, is proposed to also include shorter disruptions. There is also proposed requirements to report information on new indexes to make international comparisons of quality.

In the regulation on metering, settlement etc. there also are several new proposals. The objective of the proposal is to increase the efficiency of switching procedures, enhance competition and increase requirements on network companies to be neutral in relation to suppliers. The time it takes to complete a change of supplier will be reduced from three to two weeks, and it is proposed to require separate billing for network services and supply of electricity.

The Ministry of Petroleum and Energy has sent on a public hearing a proposal for changes in the energy act. One of the proposal is a legal requirement on unbundling. It is proposed that such a requirement will be applied to all companies with more than 10 000 or 20 000 customers. In practice all Norwegian electricity companies with more than 100 000 customers are legally unbundled today.

3 Regulation and Performance of the Electricity Market

3.1 Regulatory Issues

3.1.1 General

The market opening in Norway is 100 %.

Electricity Market Opening Table

Year	Threshold GWh/year	% Market Open
1995		100 %
1997		100 %
1999		100 %
2001		100 %
2003		100 %
2005		100 %
2007		100 %

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

Because of the hydro dependency, the extent of congestions in Norway fluctuates over time. The table below shows the time (in percentage) that the interconnections between elspot areas within Norway and on the cross border interconnections have been congested.

Area/ percentage	2002	2003	2004	Average
NO 1- SE	30	27	35	31
NO1 – DK 1	53	59	41	51
NO1- NO2	37	29	44	37
NO2 - SE	22	11	27	20

NO1: South- Norway (Oslo)

NO2: North- Norway (Tromsø)

SE: Sweden

DK1: Denmark (Jutland)

According to regulations and concessions pursuant to the energy act, cross border electricity exchange shall be set out by implicit auctioning.

Rules governing information from the 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.

Congestion management is fully integrated with the functioning of wholesale market and are handled by implicit auctioning through the power exchange (Nord Pool Spot).

The TSO shall, according to the regulation, determine maximum permitted limits for transmission capacity between the elspot areas on an hourly basis (trading limits). The system operator shall provide the trading limits in reasonable time before they are used.

The Nordic System Operation Agreement defines the principles for determining the transmission capacities before spot trade is fixed day-ahead. The TSOs guarantee the firmness of the given day-ahead capacity during operations after the spot market is cleared.

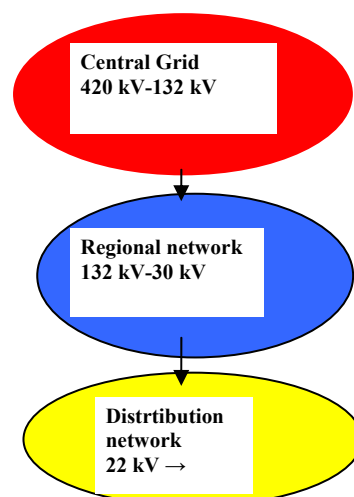
There is still a need to set common principles and practices as to determination of trading capacities on the borders and solving of congestions inside TSOs own control area.

3.1.3 The regulation of the tasks of transmission and distribution companies

For regulatory purposes there are three different network levels.

There are 31 different owners in the Central Grid, but Statnett SF is the dominating with about 87 percent. Statnett SF is the TSO and is responsible for the Central Grid (Transmission) tariffication and is the system responsible entity according to the regulations.

There are 170 different network owners in the regional/distribution network (Distribution System Operators). 149 of these own and operate local distribution networks, and 75 of these also own and operate regional networks. Tariffs are paid at all physical exchange between the network levels, and network owners pay the same tariffs as end-users connected to the same network level.



Down transformation from central grid voltage are included in the Central Grid, and thus in the transmission network.

Information collected

All information needed for regulation on income, benchmarking/efficiency requirements and quality of supply is gathered annually from the concessionaires.

Data is collected through a yearly technical and economic reporting from all concessionaires.

The economic and technical reporting comprises information like: profit and loss statement, asset property, equity and debt, specific comments/notes on: customer specific data (number of customers, delivered energy, income from different tariff components etc.), excess income, information on cost of energy not supplied (CENS), network losses, technical network information etc.

All changes in network tariffs shall be reported.

Regulation of income

The regulatory model is income cap regulation.

The Regulator decides an income cap for each network company based on information from economic and technical reporting that the companies are obligated to submit each year.

The regulation period is five years. The present regulation period is 2002-2006. The income cap set for this period is based on company specific historical costs for the years 1996-99. The composition of the income cap in this regulation period is:

O&M costs 1996 - 1999

Depreciation in 1999

Average technical network losses 1996-99

Capital employed 31 December 1999

A given rate of return on capital including 2 percent risk premium

The regulatory model gives incentives to the companies to reduce their costs during the regulation period.

There are two specific regulatory instruments, the efficiency requirements and quality adjustments, that both give the network owners incentives to operate their network as efficient as possible.

To provide an incentive for efficient operation the companies are given an individual efficiency requirement. This requirement is found through efficiency analyses (DEA – data envelopment analysis) where companies are benchmarked against each other on distribution and regional level, while the TSO is benchmarked internationally against other TSOs.

An efficiency requirement is set for each network company. The requirement consists of a general component of 1.5 % and an individual component that can vary from 0 -5.2 %. The total requirement can thus vary from 1.5 % to 6.7 % (2003) per annum.

Quality adjusted income caps were introduced in 2001. This arrangement takes into account all incidents in the network with voltage levels above 1kV that results in outages longer than 3 minutes. Based on expected level of energy not supplied (ENS) and average specific outages-costs for each customer category, every company are assigned expected interruption costs (IC). Enduring differences between expected and actual IC can be added to or subtracted from the income cap

The network companies are responsible for working out tariffs for their network within their income cap, and within the framework of regulations on tariff structure given by the Regulator. The Regulator decides on disagreements and complaints from the network customers.

The Regulator will each year examine whether the network company has higher income through their tariffs than the income cap allows. If this is so, the Regulator makes a legal decision obligating the company to pay their excessive income back to the customers through lower tariffs the following years. If the opposite is the case the companies *can* recover the lower income from the customers through higher tariffs the following years.

Tariff structure in Transmission (and regional level)

The tariff structure in general consists of an energy component that shall cover the cost of marginal losses at location and a residual component that will give cost recovery for the network owner.

Energy component

The energy component in the tariff shall cover the cost of marginal losses. The loss factors shall be calculated for each connection point for generation and load. The marginal loss component shall as far as possible be calculated based on the system load in the total (national or preferable Nordic) network and based on a production- and load situation that is representative for each time period. The loss factor is multiplied by volume and the elspot price hour by hour. The energy component is time differentiated. The same rules apply for generation and load (with opposite sign) as far as the energy component is concerned.

Residual component for generation

The residual component in the tariff for feeding into the network is based on average annual production over the last ten years and is a kWh-based component.

Residual component for outtake in the transmission grid

The residual component for load is based on average consumption in the max load hour over the last five years.

This number is then reduced with a k-factor (K) depending on whether there is both production and consumption behind the connection point.

Tariff structure in local distribution

Legal regulation says that customers that use more than 100 000 kWh per year should be metered hourly. Household customers with an annual consumption over 8000 kWh per year (average annual consumption for households in Norway is around 18 000 kWh/year) should be metered at least four times a year. The network company themselves decide how often the rest of the customers should be metered.

Although the principles for the tariff structure given in the legal regulation are basically the same for the different network levels, the practical regulation of the tariff structure is somewhat different for different network levels. This is mainly because the technology available for metering and settlement is different for the different voltage levels.

Tariffs for input from generation are the same both in level and structure on all network levels in Norway. The transmission level tariff serves as a reference.

The energy component in distribution shall at least cover the cost of marginal network losses and may in addition cover some of the residual costs.

Other components (to recover residual costs) for customers taking energy from the network may be different for different tariff groups and customer size. These components may consist of a fixed component and/or a load or capacity based components.

Interruptions

Average interruption time per customer is at present not available in Norway (will be available from 2006).

The following table however describes energy not supplied to end-users because of both notified and non-notified disruptions. As can be seen there has been a substantial reduction from 1996 until 2004.

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

Information to market participants on tariffs, and connection charges and conditions

Estimated national average network charges

- Dc: household customer with annual consumption of 3 500 KWh/ year
- Ib: commercial customer with annual consumption of 50 MWh / year, subscribed maximum power 50 KW
- Ig: industrial customer with annual consumption of 24 GWh/ year, subscribed maximum power 4000 KW

Categories/Eurostat customer definition	Dc *)	lb	lg
Transmission charge (excl. all regulatory levies)	3	3	3
Distribution charge (excl. all regulatory levies) **)	25	22	11
Regulatory levies on network charges ***)	14	2	2

*) Based on an average Norwegian household with 18 000 kWh annual consumption

***) Transmission not included

***) Levies comprise general electricity tax and environmental energy funding

Exchange rate: 8 NOK / €

Balancing

The Regulating Power Market (RPM)

The balancing market in Norway is called The Regulating Power Market (RPM). The RPM is a collection of regulating objects to compensate for any imbalance between production and demand during the operating phase, and a market for the subsequent settlement of the individual market participants' imbalance in relation to their overall obligations. The market participants submit bids for physical power regulation on an hourly basis for the following day. The size (MW) and the price of the individual regulating objects are specified, and they are sorted by price. The objects are used in merit order to minimise the cost of any necessary power regulation during the operating phase.

Potentially all market participants can participate in the RPM, but there is a minimum requirement for each bid of 25 MW.

When it comes to settlement Norway makes use of the single price model. The single price model is favourable to small participants because there is no extra economic risk other than the balance price of having imbalances. In the single price model there is also no "penalty" of having imbalances, if the imbalance is opposite of the total imbalance.

The Nordic TSOs have created a common balancing list in the Nordic synchronous area. The goal is to create a common regulating power market for all the Nordic countries.

The TSO is responsible for the balancing arrangement according to the energy act.

The main principles of the Nordic RPM:

Each TSO receives power bids within its system area and enters the bids to NOIS (Nordic Operational Information System), which is a web-based information system for exchange of operational information between the TSOs. In NOIS a merit order list of all regulating power bids are put together and form a staircase visible to all TSOs. Balance regulation is activated in order of price of operation from the common regulating power list. At the end of operating

hour, the common regulating power price is determined in accordance with the marginal price for the operation. For situations with congestion in the grid, the regulating power market is correspondingly divided into different price areas, and bids that are locked in are excluded from the staircase. Under such circumstances different regulating power prices occur for different sub systems.

The regulators role:

NVE sets the principles for the Norwegian balancing market in the Regulations relating to power system responsibility. According to this regulation the system operator shall operate and develop a regulation energy market in order to deal with deviations from planned production and expected consumption during the operational hour, as well as other undesirable situations in respect of the energy system.

The principles for the Nordic regulating power arrangement are set in The Nordic System Operation Agreement. Statnett as the Norwegian system operator is part in the System Operation Agreement. Any changes in the agreement (with relevance for Norway) shall be approved by the Regulator (NVE).

Indicators on balancing

- balancing interval in minutes,

The balancing bid is put in for one or several hours. The TSO activates the balancing bids in merit order. There is no balancing interval.

- a description of the relevant balancing areas,

The balancing area is the Nordic power system. When there is congestion between different elspot areas that leads to different prices, the balancing areas are equal to the elspot areas.

- interaction between areas, whether bids from other areas or MS, can be accepted by TSOs and to what extent this occurs,

The balancing areas are the Nordic power system. The Nordic balancing bid is put together in merit order. With no congestion, balancing bid is used within the Nordic power system.

- time for gate closure

Time for balancing bids gate closure is 19.30

- opportunities for intra-day trading and revision of nominations

There are opportunities for revision of nominations (1 hour before). Prices in Elspot day-ahead and in the Regulating Power Market are both based on 1 hour intervals.

- typical prices charged to network users to resolve imbalances

Market clearing price every hour based on the bids in the RPM

The TSO activate regulating bid when needed (continuous).

The TSO publish the different terms for participating in the RPM. After every regulating hour the TSO publish regulating (balancing) volumes and prices.

The process and timetable for settlement of imbalances

The entity with settlement responsibility (In Norway the TSO) shall calculate the regulating power balance for each entity with balancing responsibility.

The regulating power balance shall be calculated on the basis of the three following settlement data:

1. Data from the distribution system operators (DSOs):

The DSOs shall calculate settlement data for regulating power balance for each entity with balancing responsibility and transmit settlement data for regulating power balance to the TSO. Settlement data for regulating power balance shall be transmitted within three working days of the end of the settlement week. Settlement data for regulating power balance shall be stated in whole kWh/h.

2. Purchase and sale obligations in organised markets:

The market place concession holder (Nord Pool Spot) shall transmit to the entity with settlement responsibility an overview of the purchase and sale obligations in organised market of each entity with balancing responsibility. Purchase and sale obligations shall be transmitted within three days of the end of the settlement week.

3. Purchase and sale obligations outside organised markets:

Entities with balancing responsibility shall transmit to the entity with settlement responsibility an overview of the latter's purchase and sale obligations outside organised markets, within three days of the end of the settlement week.

The TSO shall on the basis of these reported data calculate payment obligations or accounts outstanding for each entity with balancing responsibility based on each such entity's regulating power balance. Payment obligations or accounts outstanding shall be notified to each entity with balancing responsibility within **nine** working days of the end of the settlement week. The regulating power balance shall be calculated for each hour and be stated with a precision equivalent to kWh/h. The regulating power balance shall be calculated for each price area in the RPM.

3.1.4 Effective unbundling

Unbundling requirements on the network companies and how they are implemented

Indicators:

- whether legal ownership has been implemented yet for DSOs and TSOs
 - The Electricity Directive II is not yet formally implemented in Norway
 - However, there is only one TSO in Norway (Statnett SF), and the TSO is legally and functionally unbundled.
 - Regarding DSOs, the statutory basis at present is not sufficient to demand legal unbundling according to the directive apart from in case of mergers, acquisitions and establishment of new activities that implies vertical integration. A proposal for necessary changes in the energy act has recently been sent on a public hearing.
 - 28 % of the DSOs are now organised in separated companies. However, all network companies with more than 100 000 customers are legally unbundled.
- details on the ownership of TSOs and an overall review of the ownership structure for DSOs
 - The Norwegian TSO is state-owned.
 - About 60 % of the DSOs are 100 % publicly owned, mainly by municipalities? About 10 % are 100 % privately owned, while 30% are partly publicly owned and privately owned.
- whether the TSOs and typically DSOs are located separately from production and supply affiliates
 - The TSO is not part of a vertically integrated undertaking.
 - In case of mergers, acquisitions and establishment of new activities that involves vertical integration, restructuring of the company into separate companies for monopoly activities (network) and activities subject to competition (production and trade/supply) may be required. There are no regulations in the Norwegian legislation demanding separate physical location of the network-companies.
- the extent to which the TSOs and DSOs present themselves to customers as separate entities: name of company, logos, websites etc.
 - The TSO is not part of a vertically integrated undertaking.
 - DSOs within a vertically integrated company where both activities subject to competition and network-activities are executed within the same legal entity, don't have a separate name, logo or website.
 - DSOs organized as separate companies within a group of companies with production- and supply affiliates will have a separate name, but this name is often related to the holding company's and other affiliates' names. The group of companies is often using the same logo, and in most cases the holding company and the affiliates have a common website, phone number etc
- whether unbundled accounts are published or not for both TSOs and DSOs
 - The TSO is publishing the accounts in the annual report.
 - The DSO is obliged to publish unbundled accounts in the annual report; information about capital employed, operating result and rate of return for the

network-activities must be stated. In addition, NVE is publishing data for the network-activities from all the network companies, profit and loss statements and balance sheets.

- whether the regulator sets detailed rules or guidelines on the compilation of unbundled accounts (for example relating to cost allocation) and the consequences of infringements of these guidelines,
 - All network-companies, suppliers and production utilities have to submit annual financial and technical data to NVE. This reporting must be kept in accordance with requirements given in the energy act and regulations to the act. In addition, NVE gives detailed guidelines. In case a company doesn't submit the reporting in time, NVE might issue a compulsory fine until the company has submitted the reporting to NVE. NVE also has the possibility to make a decision on what the figures should be if a company doesn't accomplish the reporting in accordance with the requirements.
- whether the unbundled accounts are the subject of a separate audit from a certified accountant and the extent to which this audit is addressed to the requirements of the regulator
 - Yes. The report has to be validated by the company's CPA, who must conduct certain controls and sign a statement. The CPA must control that the reporting is in accordance with certain requirements and with the company's annual report.
- the role of the compliance officer in this process
 - N/A
- in the cases that there is no legal unbundling, the proportion of the costs of the network operators that are typically shared with other business units of the company
 - N/A
- in the case of legal unbundling, the proportion of the costs of the network operators that are typically shared with other affiliated companies,
 - N/A
- in the case of legal unbundling, the proportion of the costs of the network operators that are typically contracted out to other affiliated companies,
 - N/A
- what other sanctions are available to regulators for companies failing to comply with management or accounts unbundling requirements?
 - All network-companies, suppliers and production utilities are obliged to hold a trade concession issued by NVE. If the concessionaire violates the energy act or regulations pursuant to the act, NVE has the possibility to withdraw the concession.
 - Compulsory fines
 - Legal prosecution

3.1 Competition Issues

3.2.1 Description of the wholesale market

A description of the structure of the generation and wholesale market.

Indicators:

- size of the relevant national market in terms of total consumption (TWh) and maximum demand (GW)

Total consumption in Norway, 2004: 121.5 TWh

Maximum demand, February 5th, 2001: 23.056 GW

- the amount of installed available generation capacity (GW)

27.970 GW

- the number of companies estimated to have at least a 5% share of installed available capacity

Four companies

- the proportion of installed available capacity owned by the largest three companies

42.5 percent

- a description of the market structure at different points in the merit order (e.g. base load, mid merit, peak plant)

Norwegian hydropower producers participate in the Nordic wholesale market. The Nordic market consists of hydro, nuclear, wind and various conventional thermal power producers. 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 are low) and much when demand is high. In many 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.

- a description of the market for ancillary services (e.g. frequency response) including as far as possible each companies' shares of ancillary services traded (ideally by volume and value).

The TSO has a standard agreement that is used for payment for the different ancillary services. Each company's shares of ancillary services trade are not available.

- the volume of electricity traded:
 - on the basis of standardised power exchange products,

In the day-ahead spot market there has been traded a total of 45.4 TWh during 2004. This is the Norwegian share of the total 167.0 TWh traded in the physical Nordic Electricity Market. About 41 percent of the total Norwegian production in 2004 was traded in the physical day-ahead market. This gives that 64.6 TWh of the production was covered through bilateral trades (59 percent).

There is a wide range of different products in the financial market, varying from future contracts for the next days and weeks to monthly and yearly forwards (up until 2008). Norwegian participants have traded a total of 314.6 TWh in the financial market at Nord Pool in 2004. The total amount of financial contracts traded at Nord Pool was 590.2 TWh.

- in bilateral “over the counter” trading for products covering 1-5 years
- in longer term contracts between producers and suppliers

In the last couple of years the bilateral trading has amounted to roughly 40 percent of the total production. The volumes from the OTC trades cleared at Nord Pool's Clearing House in 2004 were 1207 TWh.

- the existence of active demand side participation in the wholesale market (by volume) should be reported

The demand side is active in the markets. Specific volumes are not available.

Since 1991 there have been 45 mergers or acquisitions involving production companies in the Norwegian Electricity sector. In 2004 however, there was not reported any mergers or acquisitions.

For further assessment regarding competition the relevant regulatory body would be the Norwegian Competition Authority. In 2003 they published a report focusing on competition issues in the Nordic Power Market, in collaboration with the other Nordic Competition Authorities.

http://www.konkurransetilsynet.no/archive/internett/publikasjoner/Nordisk_rapport/powerful_competition_policy.pdf

3.2.2 Description of the retail market

Per 1 August 2003 the Norwegian Water Resources and Energy Directorate (NVE) had issued 415 trading concessions.

Each entity operating in the electricity market and/or in the network business is required to hold such a concession.

Of the total 183 were network companies. This is down from 217 in 1999. The eight largest network companies stood for more than half the transmission revenue in 2003.

There are about 130 suppliers in the retail market, and of these about 20 can be considered to compete nationally.

According to an investigation in 2004 more than 30 suppliers are active in most network areas. The number of residential customers with suppliers other than their local supplier has steadily increased over time. In the largest 27 network areas the proportion of household consumers with another supplier has increased from 5 per cent in 1999 to 23.5 percent at end of 2004.

73.2 percent of the companies in the Norwegian energy market are vertically integrated. These are smaller companies of which only 6 have more than 20.000 customers. Their total transmission revenue adds up to 25.7 percent of total transmission revenue from distribution networks in Norway.

The supply side is getting increasingly concentrated. From 1997 to 2003 the three largest suppliers have increased their total market share from 37.2 percent to 56.2 percent. Most network companies have a vertically integrated supplier or a supplier within the same corporation that is the dominant supplier within the network area. The market shares of these suppliers vary from 30 to nearly 100 percent of all customers. Overall, 76.2 percent of Norwegian households are customers of the dominant supplier within the local network area.

Private households consumed 30.8 TWh of electricity in 2003. Total electricity consumption was 115 TWh, the lowest number since 1994. This was due to an extraordinary dry autumn in 2002 followed by high prices in the winter for 2002/03 and somewhat higher temperatures. Private households consumed 34.6 TWh of electricity in 2002.

Steps and status of market opening (briefly)

The Energy Act of 1990 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 great differences in margins between different suppliers after a rapid increase in household prices following the high spot price of the winter 2002/2003. Last year we saw 240 000 consumer switches in the household market in Norway. In the business market there were 30 660 switches last year. There are about 2.5 million metering points in total.

Companies with a market share above 5 %

Private households:

4

Medium sized industrial and commercial sector:

4

Large and very large industrial customers:

2

Companies can not be identified due to rules on confidential information

Integration between generators and suppliers

A larger part of the suppliers are integrated in company structures with generators.

Suppliers without any affiliate connection to TSO or DSO since the introduction of competition

There are approximately 5 independent suppliers in the household and commercial market. These suppliers have relatively small market shares.

Customer switching procedures

The customers sign a contract with his new supplier who sends in a notification to the distribution company by Ediel (standard communication system for the power market). The distribution company checks the customer data and collects the customers meter value. One week before the change of supplier, the distribution company notifies both the old and the new supplier. Without any delays due to incorrect data in the notification from the new supplier, the process takes three weeks. The Norwegian Water Resources and Energy Directorate (NVE) has proposed to decline the time-limit on the process to two weeks.

Customer switching data for 2004 and since 1997

In 2004 there were 240 000 customer switches in the household market.

In the business market there were 30 660 switches in 2004.

Totally since 1997 there have been 1 642 941 customer switches in the household market. In the business market there have been 189 916 switches since 1999.

Prices and tariffs 2004-2005

Categories/Eurostat customer definition	Dc *)	lb	lg
Wholesale electricity price	26	26	26
Transmission charge (excl. all regulatory levies)	3	3	3
Distribution charge (excl. all regulatory levies) **)	25	22	11
Regulatory levies on network charges ***)	14	2	2
Estimated margin to Cover retail supply costs	7	5	3
Total (€/ MWh)	78	58	45

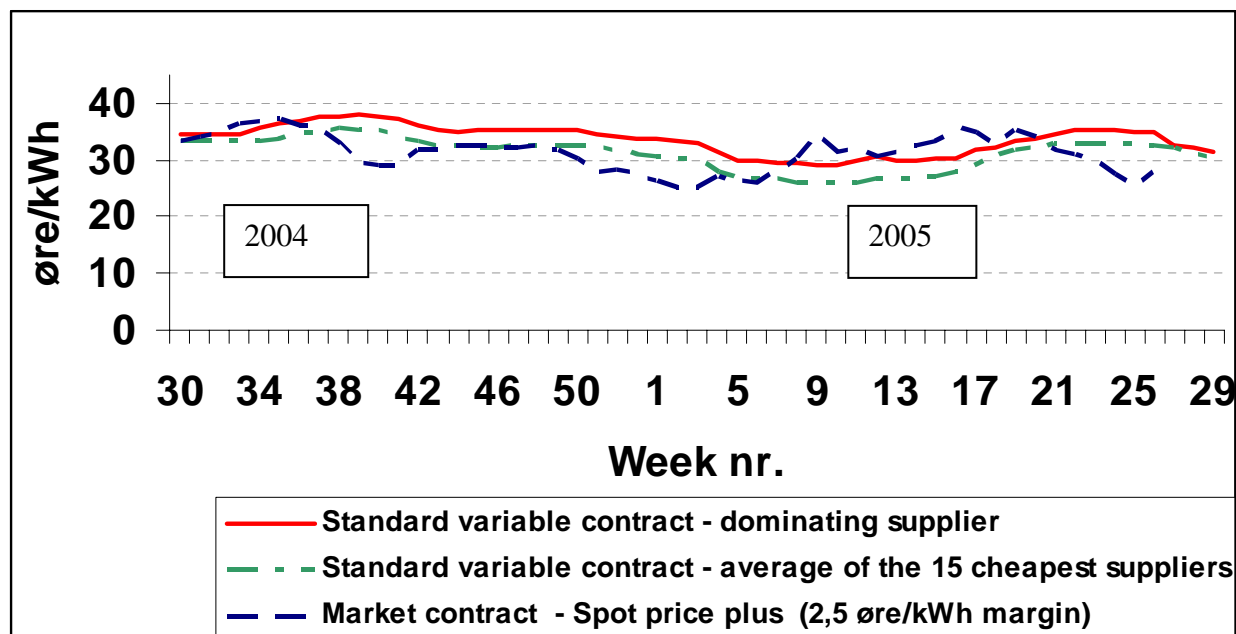
*) Based on an average Norwegian household with 18 000 kWh annual consumption

**) Transmission not included

***) Levies comprise general electricity tax and environmental energy funding

Exchange rate: 8 NOK / €

Price levels 2004-2005 Household contracts:



3.2.3 Measures to avoid abuses of dominance

Rules governing conduct of generation companies in the wholesale markets including,

- transparency (which information on availability is required, how near to real time, forecasts?)
 - The standard term for trading in Nord Pool Spot AS' physical markets includes 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 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 has an obligation to provide market surveillance, and 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 compliance 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.
- experience with virtual power plant auctions or other capacity release measures
 - No experience

Rules governing conduct of supply companies including

- transparency,
 - According to requirements in the legislation managed by the Norwegian Competition Authority, supply companies must publish their prices on certain standard products/contracts offered to household customers at a website for price comparison.

- rules concerning contract structure,
 - The regulations to the energy act require a written supply contract between the supplier and the end-user. Other contract conditions are only regulated by general private law, as f. ex. Norway's contract act and marketing practices act. However, the Norwegian Electricity Industry Association and the Office of the Consumer Ombudsman have worked out standard contracts,

- provision of information.
 - The supply company must give 2 weeks notice before changing the price of standard variable contracts.

4 Security of Supply

4.1 Electricity

The electricity generation in Norway in 2004 was 110.4 TWh, an increase of 2.9 percent compared to 2003. At the end of 2004 the mean annual generation from the Norwegian power system (hydro-, wind- and thermal power) is estimated at 120 TWh.

From 2007 an obliged Norwegian/Swedish electricity certificate market based on renewable energy sources is planned. This will increase the electricity supply in the Norwegian/Swedish power system.

Domestic gross consumption in 2004 was 121.9 TWh, an increase of 5.9 percent from 2003.

- Current levels of electricity peak demand (MW) and expectations for the next three years (i.e. 2006-08)

The electricity peak demand in 2004 was 20675 MW (January 21) and so far this year 21400 MW (March 2). Expected values for the next three years:

2006: 22000 MW
2007: 22400 MW
2008: 22800 MW

- Currently available generation capacity

Total installed generation capacity (at the end of 2004): 28310 MW. The generation capacity can be broken down as follows:

Hydro:	27900 MW
Wind:	160 MW
Thermal:	250 MW

Available generation capacity during a cold winter is about 23000 MW.

Changes in generation capacity in 2004:

	New	Retired
Hydropower:	423 MW	193 MW
Wind power:	60 MW	-

Expected increase in generation capacity in 2005

Hydropower:	460 MW
Wind	110 MW

Expected developments (2005 included):

	Hydro	Wind	Natural gas
Currently under construction:	480 MW	110 MW	
Authorised:	880 MW	700 MW	430 MW

- Forthcoming generation investment for the next three years:

For the next three years:	Hydro	Wind	Natural gas
2006:	180 MW	170 MW	-
2007:	24 MW	170 MW	430 MW
2008	350 MW	170 MW	-

A description of the role of regulatory or other authorities:

- Authorisation criteria for new generation investments and the role of long term planning.

For all new projects: Development concession must be granted

- Implicit and explicit incentives to build capacity (e.g. explicit payments, capacity options, design of balancing mechanism)

Hydro and natural gas power are based on market conditions with no support.

Wind power: Development support up to 25 percent of investment costs. No operation support.

In certain areas new generation have a reduced G-charge in order to reduce need for new investments in transmission.

Progress in major infrastructure projects and in particular important interconnection projects:

A new cable between Norway and the Netherlands (700 MW) is under construction and expected in operation in 2008. The cable will be part of the regulated asset base and incomes for the TSOs in both countries.

A new cable between Sweden and Finland (500 MW) is approved for development. This opens for increased transit of electric energy through Sweden to Norway, particularly in years with low inflow.

The TSO processes for planning new network

The grid system planning process in Norway is compulsory from the regulator. The country is divided in 18 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 grid development study.

In the national grid the TSO (Statnett) has the responsibility for the planning and issuing of the national grid study. The study cycle for all studies is yearly, and the grid study for the area has to be submitted to the regulator (NVE) for consent. The study period for the grid development is minimum 10 year. The measures to improve upon the grid is only a part of the study among other topics as energy and plant statistics, security of supply, spare parts situation, environment, economic and technical presumptions, peculiar circumstances for the

area, description of the existing grid, operating conditions, tariffs and future grid development.

The studies must describe bottle necks, and how operational situations ('coupling pictures') may create and influence congestion situations in the grid. Measures to reduce or eliminate congestion 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, the applied solution must be part of the latest grid study submitted to the regulator.

6 Public Service Issues

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.

Most of the obligations regarding PSI, which are stated in the directive, are complied in Norway. Still there is a need for some amendments in the regulatory framework.

Regarding labelling of primary energy source, the requirements are planned to be implemented by regulation. The practical implementation is under consideration as amendments in existing regulations.

The obligations set out in Annex A are in practise fulfilled in the Norwegian system. Still some amendments in regulations and/or possibly concessions are needed to formalise the obligations.

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. 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 costs. 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.

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.