

The Swedish Energy
Markets Inspectorate's
report in accordance
with the EC Directives
for the internal markets
for electricity and
natural gas 2007

A report from the Energy Markets Inspectorate

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Foreword

On the instruction of the Government, the Energy Markets Inspectorate has prepared a report in accordance with the reporting requirements pursuant to Article 4 and Article 23.1, second paragraph of the Electricity Market Directive (2003/54/EC), and Article 5 and Article 25.1, second paragraph of the Natural Gas Market Directive (2003/55/EC). The reporting comprises regulation matters, competition matters and matters related to security of supply.

The report also includes a presentation of the Swedish Competition Authority assignment to report on certain competitive issues on the electricity market in accordance with Article 23.8, second paragraph of the Electricity Market Directive. This presentation is in section 2.2.3 of the report.

The report follows the structure for the national report drawn up in cooperation with other European supervisory authorities and the EU Commission. The purpose of the reporting structure is to specify the information that shall be included in the reporting by the member states in accordance with the Electricity and Natural Gas Market Directives.

The report has been produced in consultation with the Swedish Competition Authority in the section on competition matters and regulation issues on the electricity market. The sections on security of supply on the electricity and natural gas markets have been produced in consultation with the Svenska Kraftnät grid operator.

Håkan Heden
Chief Executive

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1 Introduction

1.1 Organization of the Energy Markets Inspectorate

The Energy Markets Inspectorate (EMI) has been reorganized on 1 January 2007. The purpose of the new organization is to make it better able to meet the requirements being made, since the field of activity of the Inspectorate has been broadened and the number of assignments has increased. From 1 January 2007, operations are pursued in three departments; a legal secretariat and a staff unit (see Figure 1).

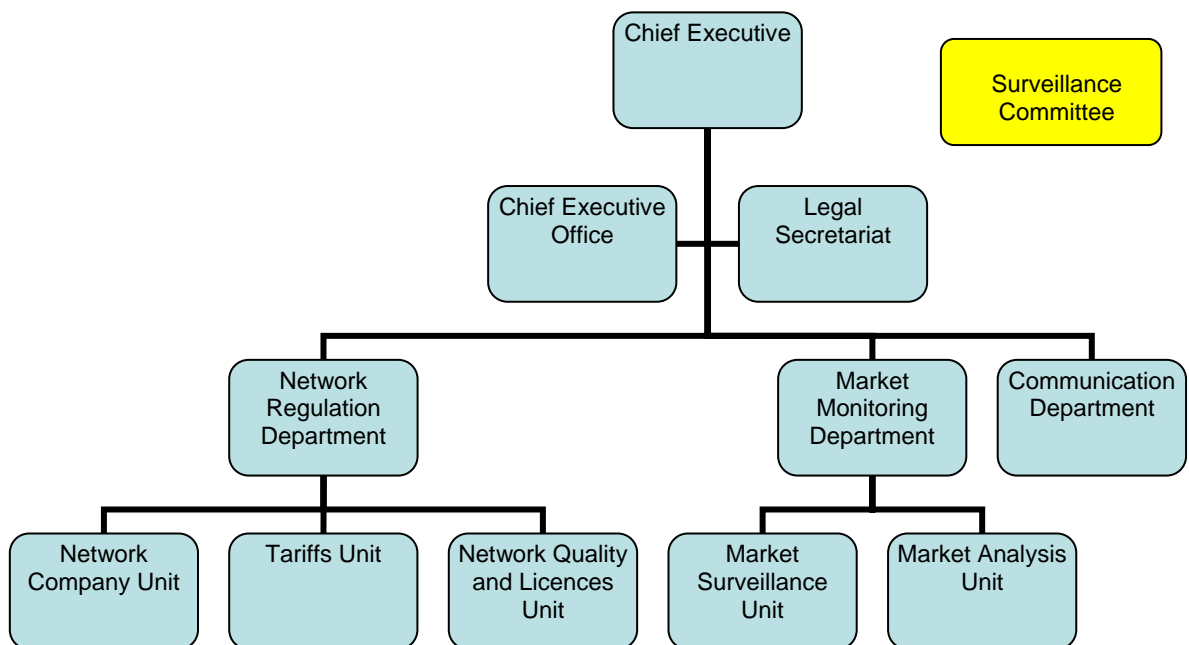


Figure 1. Organization of the Energy Markets Inspectorate as from 1 January 2007

The EMI is led by a Chief Executive, who is appointed by the Government. The Chief Executive makes regulatory decisions and rules on other matters within the Inspectorate's areas of responsibility, such as issuing licences and secondary legislation.

There is no board; instead there is a committee, the Market Surveillance Committee, responsible for supervising consumers' rights regarding access to the electricity and natural gas networks and network tariffs. The Committee has no decision-making powers, but is given the opportunity to state its opinion about issues of greater importance and in issues of regulations. The Committee also has insight into the activities of the EMI in accordance with the Electricity and Natural Gas Acts. The Committee is appointed by the Government and consists of, among others, representatives of the Parliament, consumer organisations and energy companies.

The Energy Markets Inspectorate strives to achieve efficient and open markets for electricity, district heating and natural gas, offering services that meet the customers' needs. The work of the Inspectorate covers the following four areas:

- Supervision of the network companies in the electricity and natural gas markets
- Market monitoring
- Information to consumers
- International collaboration

The Energy Markets Inspectorate makes decisions on matters that concern electricity, natural gas and certain pipe network legislation¹. This legislation includes, among other things, the need for the authority to grant concessions, make inspection decisions and issue regulations. The Inspectorate has the competence to issue directives so that it can fulfil its function as a supervisory authority. Failure to conform to such directives can be punishable by fines.

There are a number of regulatory authorities that supervise different parts of the electricity and gas markets. Apart from the Energy Markets Inspectorate, there are the Swedish Competition Authority (Konkurrensverket), Svenska Kraftnät (the Swedish Transmission System Operator), the Swedish Consumer Agency (Konsumentverket) and the Swedish Electrical Safety Board (Elsäkerhetsverket). The Swedish Competition Authority is the authority that monitors the compliance of companies with competition legislation, which includes companies in the electricity and gas markets. Svenska Kraftnät is the authority responsible to ensure that the balance is maintained between production and consumption of electricity, along with the input and withdrawal of natural gas in the national natural gas system. The Swedish Consumer Agency is the authority entrusted with preserving the interests of consumers. The Swedish Electrical Safety Board supervises the safety of electrical installations and strives to prevent personal injury and damage to property by electricity. In addition, the Swedish Financial Supervisory Authority (Finansinspektionen) supervises the Swedish members of the Nord Pool power exchange financial market. Nord Pool is located in Norway and is under supervision of the Norwegian Kredittilsynet (Financial Supervisory Authority of Norway).

1.2 Summary of developments on the electricity and gas markets

1.2.1 Electricity market

The Swedish Electricity market was reformed in 1996, when supply and generation of electricity were opened to competition, while network operations remained a regulated monopoly. Much has happened since then, including the fact that new price-affecting factors, such as trading with emission rights and electricity certificates have come into the picture.

¹ Electricity Act (1997:857), Natural Gas Act (2005:430) and Act (1978:160) on Certain Pipelines.

In 2006, the three largest electricity generators in Sweden accounted for 87 per cent of the total electricity generated in the country. Vattenfall alone accounted for 45 per cent of the Swedish power generation. The three largest power generators in the Nordic countries together accounted for 42 per cent of the Nordic electricity generation.

During 2006, the total electricity generated in Sweden amounted to 140.3 TWh, which is a drop of around 9 per cent compared to 2005. Sweden imported a net of 6.1 TWh of electricity in 2006, compared to a net export of 7.4 TWh in 2005.

The three largest electricity suppliers in Sweden - Vattenfall Elförsäljning, E.ON Försäljning and Fortum Markets – had a market share of around 50 per cent in 2006. The number of electricity suppliers in 2006 amounted to less than 130.

The average spot price on the Nordic electricity exchange during 2006 was at its highest level since the dry year of 2003. The average system price during 2006 was 48.59 EUR per MWh, compared to 29.99 EUR per MWh during 2005. The relatively high price in 2006 can be explained by factors such as extremely low inflow of water to the Nordic hydro power reservoirs and the fact that several Swedish nuclear power reactors were shut down during the summer and autumn. The price of emission rights also rose during the first part of 2006, and then dropped again during the second half of 2006.

New rules were introduced in the Electricity Act from 1 January 2007 in order to strengthen the position of customers on the electricity market. The aim is to create better conditions for customers to utilize the opportunities offered by a competitive electricity market. Some of the factors in the new rules are a reduction in the notification time for switching to a different electricity supplier from one month to half a month and electricity suppliers must report their prices on electricity and delivery terms to the Energy Markets Inspectorate. The rules for quota obligations were also altered, whereby the cost of electricity certificates is no longer reported to the customer separately.

More than half of all households in Sweden, i.e. 55 per cent have changed their electricity suppliers or renegotiated their existing agreements since the electricity market reform came into force². Single-family house customers are more active than customers who live in apartments. Among single-family house customers, 63 per cent have switched to a different electricity supplier or renegotiated their agreements. The corresponding figure for customers living in apartments is 42 per cent.

The work of integrating the European electricity markets has continued in 2006. The conditions for and obstacles to a common Nordic end-customer market have been clarified in reports from NordREG, the cooperation organization for the Nordic supervisory authorities, which were submitted to the Nordic Council of Ministers in March 2006. During 2006, ERGEG launched so-called regional initiatives aimed at working with increased harmonization in order to develop regional markets³.

² Annual study by Temo on assignment from the Swedenergy trade organization.

³ ERGEG (European Regulators' Group for Electricity and Gas) is a collaboration authority for the European supervisory authorities. ERGEG was formed by the EU Commission with the aim of assisting the Commission in the creation of the EU internal market for electricity and gas.

1.2.2 Natural gas market

On 1 July 2007, the Swedish natural gas market was opened fully to competition. This means that all of the roughly 55 000 customers can choose freely their gas supplier.

The Swedish natural gas market is relatively undeveloped and geographically limited. Sweden has no domestic production of natural gas and is dependent on imports from other countries, principally from the Danish natural gas fields in the North Sea. In January 2007, there were eight natural gas companies in Sweden, six of which sold natural gas to end customers. Out of the natural gas consumed in Sweden, around half was imported by E.ON Sverige, and half by Dong Energy. In 2006, the three biggest gas suppliers accounted for around 88 per cent of sales to end customers (E.ON Sverige 53 per cent, Dong Energy 21 per cent and Göteborg Energi 14 per cent).

Prices to end customers increased during 2006 compared to 2005 for all customer types. The prices to domestic customers increased by 36 per cent, whereas gas intensive industry faced price increases of 37 per cent.

A number of plans for additional supply routes to the Swedish natural gas system were presented in recent years. In Nynäshamn, Fortum in cooperation with AGA and Nynäs Refining is planning to build a terminal for liquefied natural gas (LNG). The terminal allows for alternative supply routes for natural gas into Sweden and access to natural gas in the Lake Mälaren region and the Bergslagen mining district in central Sweden. Moreover, a number of Swedish interested parties, including major manufacturing industries, participate in the Scaled project for building a connection pipeline to the West Coast from the planned natural gas pipeline from Stavanger to the Oslo region. Another conceivable supply route is a branch pipe planned by E.ON Sverige from the Nord Stream pipeline planned to be run on the Baltic Sea bed from Viborg in Russia to Greifswald in Germany. In addition, E.ON Sverige is planning to extend the existing pipeline up to Central Sweden.

1.3 Activities of the Energy Markets Inspectorate

The Energy Markets Inspectorate is working towards achieving efficient electricity and gas markets. The Energy Markets Inspectorate's duties cover the areas of supervision, market monitoring, information to customers and international collaboration. Some of the main points of the EMI operations during 2006 are presented below.

1.3.1 Electricity market

Supervision of network companies

According to the Electricity Act, the Energy Markets Inspectorate is a regulatory authority. This means that the Inspectorate ensures that the companies covered by the Electricity Act conform to the Act and the regulations in the field.

The Energy Markets Inspectorate annually examines the reasonableness of the network tariffs. Supervision of the electricity network tariffs is carried out ex post, i.e. after the companies have set them. Provisional supervision of the 2005 network tariffs indicates that the network companies have overcharged their customers by an average of 4.6 per

cent in 2005. This corresponds to around SEK 924 million. Work is continuing on deciding whether the tariffs of the selected network companies were unreasonable, and the results of the more detailed supervision of the first companies are expected to be completed during the autumn of 2007.

During 2006, the Government set up an investigation of the regulation of the electricity network tariffs. The study will submit proposals for legislation and other regulations necessary for introducing a new arrangement, whereby the supervisory authority approves or sets the network tariffs in advance, known as *ex ante* regulation. The results of the study will be reported during 2007.

During the year, the Energy Markets Inspectorate began supervision of annual meter reading, supplier switching, hourly metering and what happens when customers move into new premises. The purpose is to ensure that the network companies read their customers' meters and that the readings are reported in time so that the supplier switching works efficiently. Supervision has been initiated for eight network companies in each area. The companies were selected at random.

The Energy Markets Inspectorate annually examines the methods used by Svenska Kraftnät for drawing up standardized balance agreements for electricity. During 2006, the Inspectorate examined the standard agreement for 2007. The Inspectorate did not find anything in the agreement that is in conflict with the objectivity and non-discrimination requirements specified in the Electricity Act.

Market supervision

The Energy Markets Inspectorate has the overall responsibility for the performance of the electricity market and an operative role as expert authority for electricity trading matters. The work done by the Energy Markets Inspectorate during 2006 on supervision of the electricity market is presented below.

From 1 January 2007, electricity suppliers are obliged, according to the Electricity Act, to submit data regarding their prices and delivery terms to the Energy Markets Inspectorate. The purpose of this new regulation is to provide consumers on the electricity market with access to price comparisons to enable them to be active on the market. The information shall be presented on the website of the Energy Markets Inspectorate from January 2008.

In March 2006, the Inspectorate published the report entitled "*Price Formation and Competition on the Electricity Market*". The report was produced in consultation with the Competition Authority. In the report, the Inspectorate notes that price formation on the Nordic electricity market works well and that the price increases in recent years are due to fundamental factors such as the introduction of trading in emission rights, increased prices of fossil fuels, etc. The effects of increased electricity prices have led to substantial wealth redistribution from customers to electricity generators.

In December, the Energy Markets Inspectorate submitted to the Government the report entitled "*Power Situation during the 2006/2007 Winter*". The extremely low levels in the water reservoirs during the autumn of 2006 served as the background to the report. The report presents two scenarios for the power situation during the coming winter. The

report also presents the measures available to avoid an electricity shortfall during the coming winter.

The report entitled "*Electricity Consumer as User and Market Player*" describes the electricity market from the consumer perspective and submits proposals for improvements that could be made on a voluntary basis by electricity trading and network companies. One of the proposals made by the Inspectorate is the introduction of an official quality marking of electricity suppliers in Sweden.

In May 2007, the Energy Markets Inspectorate, Svenska Kraftnät, Swedenergy and the Confederation of Swedish Enterprise completed a common study on congestion management in the Swedish transmission grid. The study proposes that congestion within the price areas should be handled by counter trade. The general ambition should be as large price areas as possible in the Nordic wholesale market, in order to support efficiency, competition and market integration.

However, there is a structural border between the hydro based power system in Norway and the northern parts of Sweden and Finland and the thermal based power system in the southern parts of the Nordic market. Considering the large variations in power flows from the hydro based power system, the study proposes an Elspot border between the two systems. Such a border would go from east to west in the middle of Sweden and probably through northern Finland and south-eastern Norway. The four organisations propose that the Nordic Council of Ministers, Nordel or NordREG assess whether an Elspot border between the hydro- and the thermal based power system in the Nordic electricity market would support efficiency, competition and market integration.

Information

The Energy Markets Inspectorate contributes by means of information work to increased competition on the electricity market by improving the customers' understanding of the function of the electricity market, thus also increasing the mobility of customers on the market.

The Energy Market Inspectorate launched its own website in 2006. The purpose of the website is to create an active information channel, with focus on two-way communication with the target groups of the Inspectorate, above all customer groups, network companies and other organizations operating on the energy markets. The website contains statistics in the field of electricity market, such as information on electricity generation and electricity prices.

The Energy Markets Inspectorate is one of the principals behind the Consumer Electricity Advisory Bureau. The purpose of the Bureau is to strengthen consumer protection by providing guidance to consumers and companies in various issues on the electricity market. The Inspectorate participates in decisions on the orientation of the Electricity Advisory Bureau work by being represented on the management of the Bureau.

International cooperation

The Energy Markets Inspectorate actively participates in cooperation with various European supervisory authorities through the cooperation organizations CEER, ERGEG and NordREG⁴.

During 2006, the focus in the European cooperation was on the regional initiatives aimed at developing the regional markets within the EU. During the year, the Inspectorate participated in the work of the Northern Region, together with regulatory authorities from Norway, Finland, Denmark, Germany and Poland.

During 2006, the Chief Executive of the Energy Markets Inspectorate held the chairmanship of the Customer Focus Group (CFG) of the ERGEG. During the year, the CFG was focused on matters related to consumer protection, supplier changes and price transparency. During 2006, the Energy Markets Inspectorate had the chairmanship of NordREG. The work of NordREG plays an important part in the ongoing work of creating a common end-customer market for electricity in the Nordic countries. During 2006, NordREG submitted the following reports to the Nordic Council of the Ministers:

- An integrated Nordic end-user electricity market
- A common definition of the system operators' core activities
- Development of a common Nordic balance settlement
- Handling extreme situations in the Nordic countries

1.3.2 Natural gas market

Supervision in accordance with the Natural Gas Act

The Energy Markets Inspectorate is the regulatory authority in accordance with the Natural Gas Act. This means that the Inspectorate ensures that the companies covered by the Natural Gas Act conform to it and to the regulations within the field.

During 2005, the Energy Markets Inspectorate decided on a method of evaluating whether the revenues of the natural gas companies were reasonable. During 2006, the Inspectorate began the work of examining a selection of transmission tariffs of the companies. This work will continue during 2007.

The Energy Markets Inspectorate annually examines the methods used by Svenska Kraftnät for drawing up standardized balance agreements for natural gas. The standard agreement for 2007 was examined during the year. The Inspectorate did not find any agreement that is in conflict with the requirements for objectivity and non-discrimination in accordance with the Natural Gas Act

Three concession applications were processed during 2006. These cover three of the E.ON Sverige planned stages in the Natural Gas Central Sweden project and relates to the Gislaved – Oxelösund stretch. The Inspectorate decided to approve the application for the

⁴ Council of European Energy Regulators (CEER), European Regulators' Group for Electricity and Gas (ERGEG) and the Nordic Energy Regulators (NordREG).

first stage between Gislaved and Jönköping. Ultimately it is the government that decides whether to grant a concession or not.

Market supervision

The Energy Markets Inspectorate follows and analyzes the developments on the natural gas market, with the aim of contributing to the establishment of an effective natural gas market with real competition.

In the report entitled "Evaluation of Market Models for Natural Gas", the Energy Markets Inspectorate analyzes alternative market models for natural gas from a national economy perspective. The term market model relates to the conditions for how the market should operate and defines the roles of the players, rules of the market and relations between the players. Given the present conditions, the Energy Markets Inspectorate recommends that the market model employed today on the natural gas market in Sweden should be retained.

Information

The Energy Markets Inspectorate launched its own website in 2006. The website includes general information on the function, players and roles of the natural gas market, which includes information on the agreements needed on the competitive market and how natural gas suppliers can be changed.

International

During 2006, the Energy Markets Inspectorate participated in international work aimed at developing further the reform of the gas market, so that an efficient natural gas market with competition could be developed. During the year, the Inspectorate participated in work within CEER and ERGEG. This enables harmonization within the EU to be influenced at an early stage and to benefit from the experience gained by other supervisory authorities.

During 2006, so-called regional initiatives in the field of natural gas were launched within ERGEG. During the year, the Inspectorate participated in the work of the northern region, together with supervisory authorities from Denmark, Germany and the Netherlands.

During 2006, the Energy Markets Inspectorate held the chairmanship of the ERGEG Customer Focus Group (CFG), which is a working group in ERGEG. During the year, the CFG focused on matters related to consumer protection, supplier changes and price transparency.

2 Electricity market

2.1 Regulation matters

The Swedish electricity market was reformed in 1996. Electricity generation and electricity trading were thereby opened to competition. However, the network operations remained a regulated monopoly.

In Sweden, the transmission and distribution networks are divided into three levels: the national grid, regional networks and local networks.

- 1) The *national grid* consists of 220 kV and 400 kV lines, and is owned by Svenska Kraftnät.
- 2) The *regional network* is connected to the national grid, and operates at a lower voltage, usually 70-130 kV. The regional network carries electricity from the national grid to the local networks and, in some cases, directly to larger electricity users.
- 3) The *local networks* are connected to the regional networks, and supply electricity to domestic users and to most industrial plants. These networks operate up to 20 kV, with power being transformed down to the normal domestic voltage of 400/230 V.

The national grid is owned by the state via Svenska Kraftnät. Five companies run the regional network operations, and 174 companies run the local network operations.

2.1.1 System responsibility of Svenska Kraftnät

Svenska Kraftnät manages and operates the national grid and has system responsibility, the core purpose of which is to maintain instantaneous balance in the Swedish electrical network system. This is handled by the balance service, with responsibility for two functions: balance regulation, i.e. physical regulation up and down for the purpose of maintaining the frequency at 50 Hz, and balance settlement, i.e. financial regulation of any imbalance that may arise.

Balance regulation

Balance regulation takes place by primary regulation and secondary regulation. In primary regulation, fine adjustment is made of the physical balance in the electrical system by the output of a number of hydro power stations being automatically increased or decreased. Secondary regulation involves manual upward or downward regulation of a control object and takes place in the form of power transactions with balance providers who have concluded agreement with Svenska Kraftnät to participate in balance regulation.

By agreements with Svenska Kraftnät, balance providers undertake balance responsibility for one or several electricity suppliers. Being a balance provider involves economic responsibility for supplying every hour as much electricity as that consumed by those for

which the balance provider has balance responsibility. All balance providers and other players can trade in electricity on the commercial market in order to plan their physical balance right up to just before the operating hour. When the operating hour begins, Svenska Kraftnät takes over balance management. Balance providers who are able to adjust their generation or consumption during the operating hour can submit bids to Svenska Kraftnät for upward or downward regulation. The bids are normally submitted no later than 30 minutes before the beginning of the operating hour and state the price and quantity. It must be possible to convert these bids into practice at short notice, which means 10 minutes. The bids are ranked according to rising price on a common Nordic regulation list in accordance with agreements between the Nordic system operators. Assuming that there are no transmission constraints, the cheapest Nordic regulation bid will be given first preference.

Balance settlement

The costs of the balance providers' imbalances are settled by Svenska Kraftnät in the so-called balance settlement. The purpose of the settlement is to calculate the costs of imbalance for every balance provider and to distribute the costs of the balance regulation among the balance providers who have contributed to the imbalance in the system. Balance settlement takes place for every hour of the day and night, and all the year round.

A two-price model is used for pricing imbalances, where negative imbalances are settled to the relevant upward or downward regulation price for the respective hour. Nord Pool's spot price is used instead for the regulation price when the balance providers have a positive imbalance during an upward regulation hour, or a negative imbalance during a downwards regulation hour. At the end of each hour, the regulation price is set in accordance with the most expensive measures on upward regulation (the balance service purchases electricity) or the cheapest measure on downward regulation (the balance service sells electricity) that have been used during the hour. This final regulation price applies to all who have been chosen to regulate the balance up or down. The balance providers pay SEK 0.5 per MWh of consumption and production. For imbalances, a fee is paid of SEK 1.0 per MWh. On top of this, there is a fee of SEK 500 twice a month and per reported party in bilateral deals.

Three models for pricing imbalances are used in the Nordic countries. In order to achieve the target of a common Nordic end-customer market, the pricing models must be harmonized. Nordel, the organization for the system operators in the Nordic countries, has developed a harmonized model for pricing the balancing power in the Nordic countries. NordREG is favourably inclined to the model developed. Both Nordel and NordREG are working in parallel on the introduction of a common Nordic balancing service.

Peak load reserve

According to the Peak Load Reserve Act, Svenska Kraftnät is responsible for a power reserve of up to 2000 MW being available during the winter half of the year⁵. The reserve must meet the consumption in extreme situations that may occur during the winter when normal power generation is insufficient. Svenska Kraftnät undertakes two procurement processes every year, one of which is for power generation with generators

⁵ Peak Load Reserve Act (2003:436).

who can increase their generation of electricity and one for consumption reduction of major electricity users who can reduce their demand for electricity.

During the winter of 2006/2007, the power reserve included 1989 MW, more than a quarter of which consisted of reduction in consumption. The power reserve is financed by a special charge on the balance provider companies. The cost of the power reserve dropped in 2006 by 16 per cent compared to 2005, which enabled the power reserve charge to be reduced.

The Act on Power Reserve is temporary and will be rescinded at the end of February 2008. In May 2007, the Energy Markets Inspectorate suggested in a memorandum to the Government that the Act on Power Reserve should be extended for a further three years. The background to this proposal is that the Energy Markets Inspectorate considers that there are still no prerequisites for a market-based solution.

2.1.2 Transmission constraints

The need to transmit electricity within Sweden and within the Nordic countries is traditionally mainly affected by variations in access to hydro power and seasonal variations in consumption. In recent years, the flows have increasingly become controlled by price differences – mainly between hydro and thermal power-dominated areas.

The Swedish national grid is not designed to be able to meet the need for power transmission at all times, and transmission capacity congestion may therefore occur. Transmission constraints in the Swedish national grid normally occurs at high hydro power generation rates in the north, which leads to a high demand for transiting southwards (to Denmark, Poland and Germany) or at high transiting northwards from Denmark and the Continent to the Swedish West Coast and onwards to southern Norway.

Transmission constraints within Sweden are dealt with by a combination of reducing the trading capacities for import/export in the planning phase and counter-trading in the operating phase. At national borders, or between the electricity spot areas, congestion is dealt with in the first place by market splitting. The Nordic market is at present divided into eight potential price areas - the Nord Pool Spot bidding areas. Sweden is a coherent price area.

When the quantity of power the market wishes to transmit exceeds the capacity, the Nordic market is split into separate price areas. This means that within the Nordic countries, two or more area prices are calculated. An individual spot bidding area can form its own price area, or form a common price area together with one or more other spot bidding areas. The system price, that is to say the unitary Nordic price, applicable when the transmission capacity is sufficient for the needs of the market, is expressed in such a situation as the price that would have applied if there had been no congestion.

As a consequence of Sweden's central location among Nordic countries, it forms a common price area with at least one other spot bidding area virtually at all times. During 2006, Sweden comprised its own price area during only 0.1 per cent of the time. During the year, the transmission capacity was sufficient to form a common price area for the whole of the Nordic countries during more than one third of the time. During around 65

per cent of the time, a maximum of one electricity spot area was an isolated price area, while the other spot areas formed a common price area.

The loading of the Swedish network is dependent to a high degree on the amount of precipitation to the water reservoirs, and thereby the interaction between hydro power in the North and thermal power in the South. There can be wide variations in precipitation from one year to another. The trading capacity in the Swedish network was restricted in 2006 by the southward flow during 21 per cent of the time. The corresponding figure in 2005 was 39 per cent. The trading capacity was restricted in 2006 by the northward flow during 30 per cent of the time. The corresponding figure in 2005 was 8 per cent.

The trading capacity, that is to say the amount of capacity that is at the disposal of the spot market, is determined bilaterally by the responsible system operators the day before the operation hour. The basis for determining the available trading capacity is that the criteria for secure system operation are met. These criteria are defined in the Nordic system operation agreement. Those responsible for the system in each country make an assessment of how much free capacity is available for trading. These assessments are based on, among other things, the existing network conditions, line maintenance and forecast consumption and production. Those responsible for the system then determine the available capacity between areas. In the Nordic market, the available trading capacity is placed at the disposal of the spot market, i.e. all sharing takes place in connection with the trading on Elspot (implicit auction)⁶. Any remaining capacity can be utilised for trading during the day via Elbas or the regulated power market⁷.

Those responsible for the Nordic systems guarantee the trading capacity that has been given to the spot market, i.e. transmission constraints in the operating phase are dealt with in Nordic countries by counter-trading. If the flow of electricity somewhere in the network exceeds the permitted limits, the system operator orders upward regulation of generation in the deficit area and/or downward regulation of generation in the surplus area. The costs of the counter-trade are borne by the system operator and signal that the network needs to be strengthened.

2.1.3 Supervision of network companies

Supervision of network tariffs

The Energy Markets Inspectorate annually examines the reasonableness of the network tariffs. Supervision of the electricity network tariffs is carried out ex post, i.e. after the companies have set them. If the supervision results in the Inspectorate adjudging that a network company has set a tariff that is too high, the company is obliged to lower the tariff and repay money to its customers.

During 2006, the Government appointed an investigation of the regulation of the electricity network tariffs. The investigation is to submit a proposal for legislation and

⁶ The opposite of implicit auction is explicit auction, which is characterized by the buyers placing their bids and then receiving information on the trading capacity they are allocated at the price they have quoted in the bid.

⁷ Elbas is a short-term market on which the players can handle their balance up to the hour before the operating hour.

other regulations that are required for introducing an examination of the electricity network tariffs in advance, known as “ex ante” regulation. The investigation is to submit its report during 2007.

The network charge that the customer pays to the local network company consists of the costs of transmission incurred in the national grid, the regional networks and the local distribution networks, together with a mark-up for profit. The Electricity Act specifies that the income from network operations shall be reasonable, both in respect of the network company’s performance, and in the company’s objective circumstances in running network operations. An important factor in the network company’s performance is the quality of supply. The objective circumstances are those which the company cannot influence, e.g. the number of customers, the geographical locations of the connection points, the amount of transmitted energy, the climate and the costs of the regional network. Network tariffs shall also be objective and non-discriminatory. The Energy Markets Inspectorate does not participate in shaping the tariff structure.

The Performance Assessment Model is a part of the Energy Markets Inspectorate supervision method for assessing the reasonableness of the electricity network company tariffs. Each network company submits an annual report with the information concerning its distribution area. This information is used in the model to create a reference network. The model then calculates a financial value for the performance of the network company, called the network utility. The performance includes operation and administration of electrical distribution, for example dealing with power failures. The network utility coefficient is then compared with the amounts the company has invoiced to its customers and a debiting rate is calculated. A debiting rate that exceeds 1.0 indicates that the network company has invoiced for more than its performance is worth.

Another part of the supervision method is an analysis of the cost-effectiveness of the network companies by means of DEA⁸. In addition, key ratio analysis and general benchmarking are used as a supplement. To enable these analyses to be carried out, the Inspectorate obtains annual reports from all network companies in Sweden. The annual report contains a separate economic report of the network operations and a section containing technical information.

Table 1 shows the average network tariff for three customer types (in accordance with the Eurostat classification) as per 1 January 2007. The network tariff includes the cost of transmission in the transmission network. The tariff also includes official charges amounting to 5.98 EUR annually for low-voltage subscribers (Dc and Ib) and 396.76 EUR annually for high-voltage subscribers (Ig).

⁸ Data Envelopment Analysis is a type of benchmarking method for estimating the efficiency of individual production units by comparison of companies.

Table 1: Network tariffs as per 1 January 2007

	Number of electricity network companies	Network tariff (€/MWh) ¹		
		Ig ¹	Ib ²	Dc ³
Transmission	1	-	-	-
Distribution	174	10.21	40.04	44.92

Source: SCB

¹ Industrial customer with an annual consumption of 24 GWh, max. power demand 4000 kW.² Industrial customer with an annual consumption of 50 MWh, max. power demand 50 kW.³ Domestic customer with an annual consumption of 3500 kWh.

Note: 1 EUR = 9.0155 SEK (1 January 2007).

The average domestic customer in Sweden differs from the customer type used in the Eurostat statistics. The most common customer type in Sweden is a single-family house with an annual consumption of 20 000 kWh (fuse: 20 A). For this household, the median of network tariff is 499 EUR over one year, which corresponds to 24.96 EUR per MWh. The span between the network tariffs of electricity network companies is relatively wide, with the lowest charge of 300 EUR and the highest charge of 766 EUR for one year at a consumption of 20 000 kWh annually⁹. Compared to the median on 1 January 2006, the network tariff has increased by 0.8 per cent.

During 2006, half of the electricity network companies have either lowered their network tariffs or left them unchanged. However, the true median price has dropped slightly for all customer groups. After the market reform in 1996, the prices increased up to 2005, but then dropped and remained fairly constant during 2006.

Supervision of reliability of supply

Table 2 shows the development of power cuts per customer and the average duration of power cut during the period 2000 – 2005. The information relates to power cuts in local networks. The Energy Markets Inspectorate defines a power cut as complete or partial loss of power to the electrical plant of a subscriber for more than three minutes.

Table 2: Power cuts in local networks

	2000	2001	2002	2003	2004	2005
Number of power cuts per customer						
Notified power cuts	0.6	0.24	0.26	0.21	0.22	0.20
Not notified power cuts	0.93	1.13	0.92	0.93	0.75	0.96
Average power cut duration, min						
Notified power cuts	37	34	37	25	30	21
Not notified power cuts	81	143	86	98	51	309

Source: Energy Markets Inspectorate

Note. Information on power cuts is included in the annual reports that network companies are obliged to submit, according to the Electricity Act, to the Energy Markets Inspectorate no later than 31 July.

⁹ The price is based on information as per 1 January 2007. The price is the total network tariff.

Supervision of Svenska Kraftnät balance agreements

The Energy Markets Inspectorate is responsible for supervising that the conditions in the Svenska Kraftnät balance agreements are objective and non-discriminatory. Balance agreements must not be concluded before the methods used for drawing up the agreements have been approved by the Energy Markets Inspectorate. The balance agreements are valid for one year at a time, starting on 1 November. An important area in the make-up of the balance agreements is to give the incentive to balance providers to plan and act in balance.

Supervision of connection charges

The Inspectorate can examine whether or not the connection charge on new connections of electricity is reasonable. The examination takes place afterwards. However, the Inspectorate cannot issue regulations in this area, which means that no binding rules can be made for the electricity network companies. Examination of the reasonableness of the charge is made by a reference standard method and a standard charge.

Other supervision

The Energy Markets Inspectorate also exercises supervision of the electricity network companies in the following areas: supplier switching, moving to or within a network area, annual meter reading and hourly metering. The purpose of the supervision in the first three areas is to ensure that end customers on the electricity market are not obstructed in acting on the free market. The purpose of the supervision of hourly metering is to check that the network companies follow the provision of the electricity Act on hourly metering¹⁰.

2.1.4 Separation of network operations from competitive operations

Transmission

The Svenska Kraftnät grid operator is the transmission system operator in Sweden and is owned by Swedish State. Svenska Kraftnät is ownership unbundled from competitive operations.

Distribution

At distribution level, a requirement was introduced in Swedish legislation on 1 January 1996 for legal unbundling of network operations and competitive operations (electricity generation/trading in electricity). According to the Electricity Act, a company that pursues network operations may not pursue generation of electricity or trading in electricity.

On 1 July 2005, tightened-up requirements for unbundling of electricity distribution operations from electricity trading and/or electricity generation operations were introduced in the Electricity Act. According to the new requirements, in a company conducting network operations and which is part of a larger group that has an electricity network with a total of more than 100 000 electricity users, a Board member, the Managing Director or authorised company signatory may not, at the same time, be a Board member, Managing Director or authorised company signatory in a company that

¹⁰ Electricity Act 1997:857, Chapter 3, Section 10, first paragraph.

pursues generation of or trading in electricity. Most Swedish network companies are not covered by this requirement, since they have less than 100 000 customers. Six groups have electricity networks with more than 100 000 customers. These groups have more than 60 per cent of the total number of customers in Sweden.

There is no requirement in Swedish legislation that a network company may not be included in a group that pursues trading in or generation of electricity. Nor does Swedish legislation require that network companies may not be part of a group that carries out production or supply of electricity. Network companies that are part of a group that carries out generation of or trading in electricity use in most cases the group name, with the addition of “electricity network” or similar to distinguish the network operations from the generation and supply operations. If a network company is part of a group whose business is generation and/or trade, the same logotype is generally used, and the group website is most often divided into electricity network and electricity trading.

According to the Electricity Act, all electricity network companies are obliged to produce an annual report that is a separate financial report for the network operations. The annual report also contains a special report comprising technical data, including information on the power cut frequency in the company’s electricity network. The report must be signed by the Board of Directors and be examined by an auditor. The report is public and must be submitted to the Energy Markets Inspectorate. The Inspectorate has the possibility to open supervision of network companies that fail to comply with the provisions of the Electricity Act or with the regulations of the Inspectorate. As an example, network companies may have to pay a delay charge if they submit their annual reports too late. The Energy Markets Inspectorate can also direct a network company to take action in order to meet the requirements of the Electricity Act. Failure to observe the directive may be punishable by a fine.

On 1 July 2005, a requirement was introduced in the Electricity Act that all network companies must prepare a compliance programme. The purpose of the compliance programme is to ensure that the network owner acts objectively and does not unduly favour any other player on the market. In this compliance programme the company must state what measures are being taken to counter discriminatory behaviour against other players in the electricity market. The network owner shall annually produce a report that describes the measures taken in accordance with the compliance programme. The report shall be sent to the Energy Markets Inspectorate no later than 15 March every year.

The Energy Markets Inspectorate has been instructed by the Government to analyze the effects of unbundling between supply of electricity and generation of electricity. The purpose is to analyze how separation of supply from the generation of electricity affects matters such as the structure of the electricity market, performance of the electricity market and the competitiveness of individual companies. The background to the assignment is that the matter of vertical separation between generation and supply has attracted attention. The report is expected to be completed in the latter part of 2007.

2.2 Competition matters

2.2.1 Developments on the wholesale power market

The Nordic wholesale power market

The Swedish wholesale market is part of the integrated Nordic market¹¹. Hydro power dominates the Nordic wholesale market and, in a normal year, accounts for over half of all electricity generation. Nuclear power accounts for just under a quarter, conventional thermal power stations about one fifth, while the remaining generation is from wind power and other renewable sources.

During 2006, the three largest electricity generators in Sweden, i.e. Vattenfall, E.ON and Fortum, accounted for 87 % of the total electricity generation in Sweden. The three largest generators in the Nordic countries are Vattenfall, Fortum and Statkraft. Out of a total power generation in the Nordic countries, these companies had a market share of 42 per cent. Vattenfall is the largest Nordic power generator and generates more than one fifth of the electricity used in the Nordic countries. Vattenfall is owned by the Swedish State. The Finnish Fortum is the second largest with 13 per cent of the market, and the Norwegian Statkraft generated 10 per cent of the total Nordic generation in 2006. Fortum is owned predominantly by the Finnish State, whereas Statkraft is owned by the Norwegian State. During 2006, more than 383 TWh were generated in Sweden, Norway, Denmark and Finland. The corresponding figure for 2005 was more than 395 TWh.

Trading volumes on Nord Pool and bilaterally

In 2006, more than 60 per cent of all electricity consumed in the Nordic countries was traded on the Nord Pool spot market. The corresponding figure in 2005 was 45 per cent. The reason for the increase is that a larger number of players have undertaken to trade basically all of their physical power via the physical spot market on Nord Pool. In the past, most energy groups traded via Nord Pool only a volume corresponding to the net between their own generation and the power demand of their own group. Increased trading on Nord Pool increases both the liquidity of the electricity exchange and the transparency in the market, and thus also the general confidence in the performance of the electricity market.

The bilateral market is an alternative to purchasing and selling on the spot market. It is mainly larger electricity-intensive industrial plants and smaller electricity suppliers that purchase their electricity via bilateral agreements with major power generators. Table 3 shows the total purchase volumes in the Sweden area on the spot and derivative markets, and the turnover in bilateral financial trading cleared on Nord Pool.

¹¹ The term Nordic countries used here denotes Sweden, Norway, Denmark and Finland (i.e. not Iceland).

Table 3: Turnover of Swedish players on Nord Pool and bilaterally, TWh

	Purchased volumes in Sweden area on Elspot¹	Turnover on electricity derivative market²	Bilaterally OTC/clearing of electricity derivative to trading³
2002	40.4	387	624
2003	41.7	237	469
2004	64.3	288	506
2005	60.8	300	526
2006	110.8	235	357

Source: Nord Pool

¹ The values show the total purchased volumes in the Swedish Elspot Bid Area. On a yearly basis from 2002 to 2005, the corresponding total sales volumes in the Swedish Elspot Bid Area have been 34.1 TWh, 32.6 TWh, 67.8 TWh and 64.9 TWh. The difference between purchase and sales in the Swedish Bid Area in a given year represents the net import/export in the Elspot Market for the Swedish Area to adjoining bid areas (in Norway, Finland and Denmark).

² Refers to financial contract volumes traded by Swedish registered companies via Nord Pool ASA.

³ Refers to financial contract volumes that have been reported in for clearing at Nord Pool Clearing ASA by Swedish registered companies.

Players on Nord Pool

The players on Nord Pool are electricity generators, electricity suppliers, industrial companies and other end users, as well as portfolio managers. In 2006, Nord Pool had roughly 350 registered players. The proportion of players from outside the Nordic countries was around 10 per cent in 2006.

Price formation on Nord Pool

The electricity price on the Nord Pool spot market is determined hourly by the respective market players using an auction system to make purchase and selling offers to Nord Pool. The players can make different types of offer, of which the simplest form is price-independent purchasing or selling of a specified amount of electricity¹². All the purchasing bids are compiled in a purchasing curve and the selling bids in a selling curve. Figure 2 presents a typical selling curve (supply) and purchasing curve (demand) on the Nordic countries' wholesale market. After the bids have been ranked, the market price is determined on the basis of the bids made for the last generation unit that is needed in order for the demand to be met.

¹² Players on the market can also make price-dependent bids and so-called block bids.

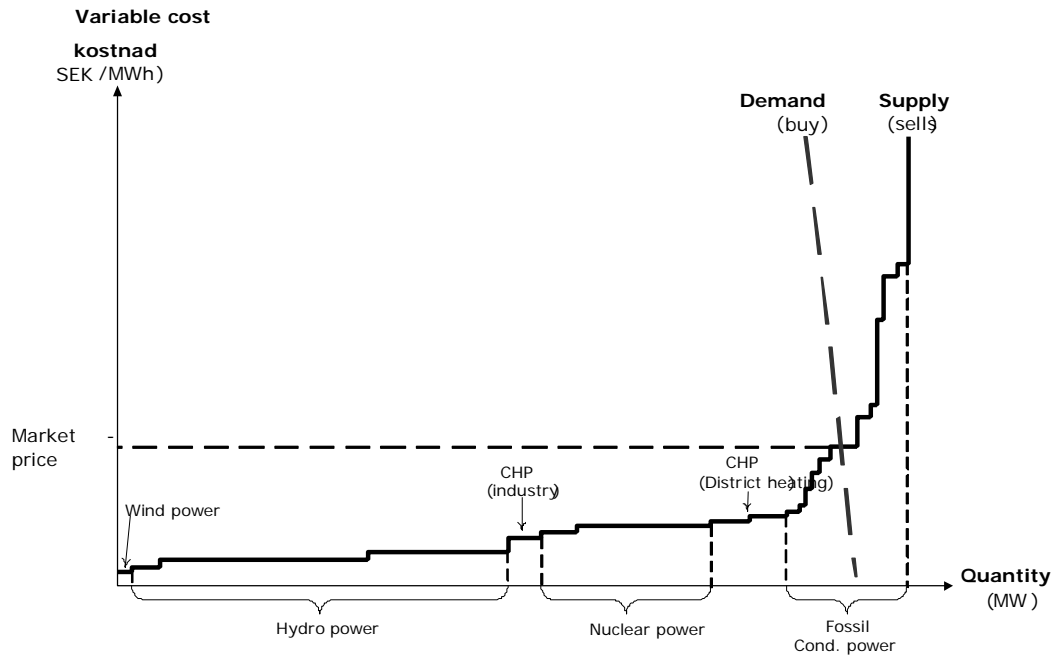


Figure 2. Pricing principle on the Nordic wholesale market

Wind and hydro power generation have the lowest variable generation costs on the Nordic countries' electricity market. After these come industrial back-pressure, nuclear power and district heating generation in district heating plants. Often, however, none of these generation technologies have their prices set by Nord Pool, since this type of generation is not sufficient to meet the demand. As can be seen in the figure, it is often some form of fossil-fired condensing power that is the marginal unit and that thereby sets the price for all generation.

Market concentration in the wholesale market

Market concentration on a market can be measured by determining the HHI for the companies competing on the same market¹³. During 2006, the Nordic countries formed a common price area on Nord Pool during 33 per cent of the time. During this time, the HHI amounted to 880, which is normally regarded as low concentration¹⁴. In view of the fact that there are certain special characteristic features on the electricity market, it is reasonable to assume that the limit value should be lower than on a general market¹⁵. However, during about 64 per cent of the time, the HHI was below 1000 for the price area to which Sweden belonged. During 2006, Sweden was an isolated price area during only 0.1 per cent of the time. The HHI value for Sweden as an isolated area is 3177, which can be regarded as a high concentration.

¹³ Herfindahl-Hirschman Index (HHI). The HHI is calculated by adding the square of the market shares for every company competing on the same market.

¹⁴ Given the US Department of Justice and Federal Trade Commission definition the HHI limit value for a moderate concentration on a general market is 1000 and for a high concentration, is 1800. The general market with an HHI below 1000 is considered to have a low concentration.

¹⁵ The difficulty of storing the product (electricity), the relatively low flexibility on the demand side and the character of the "repeated game" that reduces the uncertainty regarding the behaviour of other players.

2.2.2 Developments on the retail market

The electricity retail market is a competitive market, and customers can purchase electricity from whichever electricity supplier they wish. Unlike the wholesale market, the retail market is mainly national. This is due to the balance responsibility being tied to the customers' extraction point. A foreign seller must therefore himself or through agreement be responsible for the balance for all the customers in the country in which the electricity is being sold. Since there are differences in conditions between the Nordic countries, the balance responsibility can be both expensive and technically complicated. Swedish end users therefore normally purchase electricity from electricity suppliers that are established in Sweden and have balance agreements, directly or through proxies, with Svenska Kraftnät.

The conditions for and obstacles to a common Nordic retail market have been clarified in a report from the cooperation organization for the Nordic supervisory authorities, NordREG, which was submitted to the Nordic Council of Ministers in March 2006¹⁶.

Market concentration in the Swedish retail market

The number of electricity suppliers in Sweden has fallen since the electricity market reform. In 1996, there were more than 220 electricity suppliers in Sweden. In 2006, the number had dropped to less than 130. The reduction in the number of electricity suppliers is due principally to take-overs and mergers. Most of the electricity suppliers on the Swedish market are included in groups with network and/or generation companies.

In 2006, the three largest electricity suppliers, i.e. Vattenfall, E.ON and Fortum, had a market share of around 43 per cent, based on the number of customers in the electricity supplier of each group. If the market share were also based on customers in subsidiaries, associated companies and other electricity suppliers that purchase their electricity from any of these companies, i.e. other electricity suppliers within the sphere of interest of the respective company, the market shares would be appreciably higher. At the end of 2004, this figure for E.ON, Vattenfall and Fortum was 57 per cent¹⁷. It is only these three companies that have a market share in excess of 5 per cent. Foreign ownership of electricity suppliers in Sweden amounts to about 40 per cent.

Table 4 shows the market concentration on the Swedish retail market for electricity on the basis of the number of customers and the sales volume in 2006. The table shows that Vattenfall is the player that has the highest sales volume on the Swedish electricity retail market.

¹⁶ (NordReg 2006) "The integrated Nordic end-user electricity market", Report 2/2006.

¹⁷ Energy Markets Inspectorate (2006) "Ownership structure on the electricity market – Who owns what on the Swedish electricity market?"

Table 4: Market concentration based on the number of customers and the quantity of electricity delivered in 2006.

	Market share ¹	Market share ²	Market share ³
E.ON	16.4 %	11.8 %	14.6 %
Fortum	13.5 %	7.6 %	13.6 %
Vattenfall	12.8 %	30.4 %	36.3 %

Source: Swedish Competition Authority, background memorandum reference No.408/2006

¹ Based on the number of customers

² Based on the quantity sold (volume delivered) to own end customers

³ Based on the total volume delivered by the group

Supplier switching

Active customers are a prerequisite for an efficient electricity market. The ways a domestic customer can act in the market is to change his electricity supplier or renegotiate his agreement with the existing supplier. A total of around 55 per cent of the electricity customers in Sweden have been active at some time since the electricity market reform by either changing their electricity supplier or renegotiating their agreements. A comparison of the months of February 2006 and February 2007 shows that the number of changes increased by 32 per cent for all customers¹⁸. A comparison between two 12-month periods (March 05 – Feb 06 and March 06 – Feb 07) will show that the number of changes increased by 18 per cent for all customers. For domestic customers, the increase between these 12-month periods was 24 per cent.

A customer who wants to switch supplier signs an agreement with the new electricity supplier who then notifies the supplier change to the network company used by the customer. Since 1 January 2007, electricity suppliers are obliged to notify and provide information on the change to the network company no later than the fifth day of the month before the month when the supplier change is to take place, compared to one month previously. The purpose of the change in law is to speed up the supplier change process in order to make it simpler for electricity users to be active on the electricity market. The consumer pays no charge for switching to a different electricity supplier.

Electricity price to end customer

The total price of electricity to the end customers consist of:

- Price of the network service (network tariff)
- Price of electrical energy
- Price of electricity certificate
- Taxes, VAT and charges

¹⁸ Households/private persons and other customers. Comparison between the monthly value of the two months, and thus does not relate to the annual value.

For a customer with an annual consumption of 20 000 kWh and with a normal price agreement, the network tariff amounted to around 19 per cent¹⁹. Table 5 shows the distribution of the total price of electricity to the end customer on 1 January 2007 according to the Eurostat category classification of customers.

Table 5: Price of electricity to the end customer, €/MWh on 1 January 2007

	<i>Ig</i> ¹	<i>Ib</i> ²	<i>Dc</i> ³
Network tariff ⁴	10.21	40.04	44.92
Price of electrical energy ⁵	44.59	48.8	64.66
Taxes and charges (Euro/kWh)	0.55	0.55	28.51
Total (incl. taxes) ⁶	55.36	89.40	138.09

Source: SCB

¹ Industrial customer with annual consumption of 24 GWh/ year, subscribed maximum power of 4000 kW.

² Commercial customer with annual consumption of 50 MWh / year, subscribed maximum power of 50 kW.

³ Household customer with annual consumption of 3 500 kWh/ year.

⁴ Including fees to authorities

⁵ Including electricity certificate price

⁶ Excluding VAT

Note: 1 EUR = 9.0155 SEK (1 Jan 2007)

2.2.3 Measures aimed at preventing the abuse of market power

Monitoring of the electricity market

Several authorities and bodies collaborate, formally and informally, in the supervision of the electricity market, with the aim of adopting various measures to prevent the exercise of market power. The Energy Markets Inspectorate has the collective responsibility for the operation of the Swedish electricity market. The Competition Authority has the responsibility for applying the competition rules. The Swedish Financial Supervisory Authority exercises supervision of the Swedish players on the Nord Pool financial market. Extensive internal supervision of trading and the actions of companies also takes place within Nord Pool. Nord Pool, which has its seat in Norway, is supervised by the Norwegian regulatory authorities NVE (Norwegian Water Resources and Energy Directorate) and Kredittilsynet (Financial Supervisory Authority of Norway). The Swedish Competition Authority is also involved in the supervision of the electricity market and, in collaboration with Swedenergy, amongst others, has drawn up general terms of agreement with the aim of achieving a reasonable level of conditions for consumers on the electricity market.

Field of responsibility of the Swedish Competition Authority and its activities in the electricity market

The Swedish Competition Authority is the supervisory authority that ensures that companies on the Swedish electricity market do not infringe any of the bans on competition-limiting actions specified in the Competition Act²⁰ or the EU Treaty²¹. The Competition Act is aimed at removing and counteracting obstacles to effective

¹⁹ The information refers to 1 January 2007.

²⁰ Competition Act (1993:20).

²¹ Articles 81 and 82.

competition in the production of and trading in goods, services and other commodities. The Competition Authority can take action on its own initiative or on receipt of notifications from companies and the general public against competition-limiting cooperation between companies and against companies that abuse their dominant position on the market by exercising market power. The Competition Authority must also contribute to effective competition by submitting proposals for changes in rules and other measures aimed at removing existing competition obstacles.

Application of competition rules

In June 2006, the Competition Authority began an investigation aimed at identifying any breaches of the competition rules on the electricity market. Against the background of factors such as the electricity price increases that have occurred in recent years, customers and other players on the market have voiced suspicions to the competition Authority that competition-limiting actions occur on the electricity market. Above all, suspicions have been levelled that the companies, principally Vattenfall, E.ON Sverige and Fortum, which jointly own the Swedish nuclear power plants, have acted in a competition-limiting way, which has affected the supply and pricing on the wholesale power market. The Competition Authority therefore focused special investigation work onto these three companies. Extensive material was analyzed in this work – including agreements, statistics, minutes of meetings and other documents related to the jointly owned generation plants.

Joint ownership of the nuclear power companies presupposes that the part-owners determine how production planning, fuelling and operation, etc. shall be decided. This decision process takes place in a similar manner in all nuclear power companies. The investigation by the Competition Authority showed that production for the nuclear power plants was previously planned, to some extent, jointly at meetings between the part-owners Vattenfall, Fortum and E.ON and the respective nuclear power company. The planning process in the jointly owned nuclear power plants has gradually been changed with the aim of reducing the risk of insight into the business circumstances of the various part-owners. According to unanimous information on the subject, all joint planning of power generation at the jointly owned nuclear power plants ceased in 2001. Although the earlier coordination of production would be covered by the ban in Section 6 of the Competition Act and in Article 81 of the EU Treaty, the Competition Authority considers that it had ceased more than five years ago. According to the relevant limitation rules, the Competition Authority thus had no grounds to instruct the companies to cease any breaches or to institute any action for a competition damages charge.

The Competition Authority investigation also analyzed whether the three large energy companies on the market, which both have their own electricity generation and sales of electricity to end customers, have limited the competition by their pricing on the electricity retail, contrary to the provisions of the Competition Act. According to information from electricity suppliers, each of these companies has been offering its end customers, on several occasions ever since the autumn of 2004, prices that are lower than the purchase prices on the Nord Pool Nordic electricity exchange. According to the electricity suppliers, this has caused difficulties to electricity suppliers that have no access to their own generation in competing on the electricity retail market. In addition to this, electricity suppliers and other have drawn the attention of the Authority to the fact

that the so-called security agreements (price guarantees and renegotiation rights) that Vattenfall, Fortum and others offer their end customers may be anti-competitive.

Sales of electricity to end customers at prices that are lower than the exchange price for a corresponding contract period may represent abuse of a dominating position and be in conflict with the ban in Section 19 of the Competition Act and Article 82 in the EC Treaty. If the pricing of a dominating company is below what the company would normally need to cover its costs and profit, this is known as under-pricing. Abuse may also consist of so-called margin squeeze, whereby the margin between the end-customer price and the exchange price does not cover the seller's additional costs for supplying electricity to consumers. Margin squeezing occurs when a vertically integrated dominant company applies more favourable prices in relation to its own operations than to competitors in the later stages of trading.

If the ban against abuse of a dominating position is to be applicable, the company or companies must have a dominant position on the relevant market and the procedure must represent an abuse. The Competition Authority made the judgement on the subject that the procedure questioned affected two relevant product markets, i.e. the wholesale market and the market for sales of electricity to the end customer (electricity retail market). In the opinion of the Competition Authority, there were strong reasons in favour of the wholesale market being Nordic or, in any case, larger than Sweden, whereas the electricity retail market was considered to be mainly national.

Considering the Vattenfall, Fortum and E.ON market shares and other circumstances in the matter, the Competition Authority found it impossible to establish that any of the companies, either individually or together, had a dominant position on any of the relevant markets. Against this background, the Competition Authority was unable to take action against the procedures described. The Competition Authority therefore decided not to take any action on the ground of the Competition Act in this matter.

Proposed measures for improving the competition on the market

In conjunction with the decision not to take any action on the grounds of the Competition Act in the matters mentioned, the Competition Authority issued a memorandum to the Government²². In this, the Competition Authority drew attention to the general risks of mergers and other circumstances that may restrict or limit competition on the electricity market. The memorandum included proposals for action that the Government could take in order to contribute to increased competition on the electricity market. Attention was also drawn to these circumstances in the Competition Authority report entitled *Competition in Sweden in 2006*²³, in which a number of additional proposals were outlined for competition-improving measures.

The Competition Authority proposal comprises a number of conceivable measures that the Government could take, particularly in its role of owner of the largest company on the market, i.e. Vattenfall, in order to restrict joint ownership and collaboration in electricity generation. Limited joint ownership would reduce the risks of undue information exchange that could restrict competition and reduce the confidence in the market

²² Competitive conditions on the electricity market, 7 May 2007, reference No. 408/2006.

²³ Competition Authority report series 2006:4, chapter 11 and sections 16.2.3 and 16.3.2.

function. It is also important not to create new forms of joint ownership and forums for collaboration and information exchange on the electricity market.

- If possible, joint ownership of nuclear power companies should be entirely broken up and the present reactors should be distributed between the owner companies.
- If the present joint ownership cannot be entirely broken up, the nuclear power companies should be made more independent in relation to the owner companies. Nuclear power companies should also be responsible for all players on the market being simultaneously given information on the operating conditions of the nuclear power plants, etc. via Nord Pool.
- The Government should consider that possibilities of dividing the electricity generating units of Vattenfall onto several companies with their own accounting responsibilities and also consider whether any electricity generating plants could be sold or be given a broader ownership circle.
- The Government should desist from initiating the formation of a new joint industrial body/company for procuring the so-called power reserve.

In addition, the Competition Authority has proposed a number of additional measures that the Government and industry should consider in order to contribute to increased competition on the electricity market:

- The Government should reduce as far as possible the present restrictions on investments in electricity generation and actively stimulate new entries and opportunities for capacity increases.
- It should be assured that Svenska Kraftnät has adequate resources and incentives for expanding the national grid and transmission links within the Nordic countries and to the remainder of Europe, which are justified from the national economy aspect in a Nordic perspective.
- Scope for flexibility on the demand side should be increased by developing regulations, etc. Hourly metering should be introduced in order to allow for agreement forms in which electricity customers can react to price differences on the electricity exchange and adjust their consumption accordingly.
- A system should be created that handles all the necessary communication in a competition-neutral manner in conjunction with electricity supplier changes, i.e. all exchange of information that takes place between Svenska Kraftnät, network owners and electricity suppliers.
- Separation should be tightened up between competitive operations and network monopoly in the energy sector. Clearer functional and organizational separation would counteract cross-subsidizing and inappropriate information exchange, and facilitate effective supervision of the network companies.

Nord Pool regulations – price-affecting information and market supervision

All players on Nord Pool are obliged to follow the electricity exchange regulations. These regulations concern, for example, the handling of price-affecting information. Players (generators and other players) are obliged to notify Nord Pool immediately of the following typical (price-affecting) information:

- All company information that may seriously influence price. On the other hand, this does not cover the company's own plans and strategies for trading.
- The following information on generation plants, consumption, transmission within or in direct connection to the Nordic electricity spot area:
 - Planned maintenance or generation limitations affecting more than 100 MW during the coming six-week period.
 - Planned maintenance or generation limitations affecting more than 400 MW of generation, consumption or transmission plant during the current year or the three coming years.
 - Breakdown of generation plants with a capacity in excess of 100 MW as soon as possible or no later than 60 minutes after the breakdown has occurred (the 60-minutes limit does not apply between 2000 and 0700 hours). The players affected shall notify Nord Pool within four hours of the reason that the breakdown had occurred and the estimated duration.

A player on the market is not allowed to trade on Nord Pool if he has exclusive access to any form of price-affecting information. This applies both to trading with electricity on the physical market and to trading with financial contracts on the forward market as well as trading with Swedish electricity certificates and emission rights within the EU emission trading system (EU ETS). However, if a unit of a supplier has price-affecting information, trading is permissible if the company can document for Nord Pool that there are physical or other obstacles to the transfer of information between the various units in the company ("chinese walls"). The regulations also include provisions for the obligation of employees and management within the companies to maintain confidentiality, so that price-affecting information of which Nord Pool has not been notified is not revealed to outsiders.

Nord Pool publishes information on matters such as supply, demand, transmission capacities between electricity spot areas, and prices for different areas and products. As regards transmission capacities, Nord Pool has been publishing since the spring of 2007 both allocated transmission capacities and the type of reason and transmission limitation that have given rise to any reduction in capacity. Nord Pool now also publishes a limited part of the bid curves (buy and sell bids for different volumes) and the so-called price intersection for the system price on each individual hour. The information is updated once a week and is published after a delay of one week.

Nord Pool regulations include provisions for bidding on the spot market. Nord Pool has a special market-monitoring unit that continually follows trading in order to supervise the bidding and create confidence in the pricing. All transactions are therefore followed to ensure that the players submit the information they are obliged to submit in order to prevent insider dealing, price manipulation and exercising of market power. The players are also obliged to provide Nord Pool, as soon as possible, with all information that Nord Pool considers relevant to being able to supervise trading. The market-monitoring unit regularly publishes reports on investigations carried out into suspected breaches of the regulations on the Nord Pool home page. If a breach of regulations is found, a sanctions system is available that includes warnings, fines and withdrawal of trading permit.

2.3 Security of supply

2.3.1 Generation and consumption of electricity

Electricity generation and consumption in Sweden

Swedish electricity generation is based principally on nuclear power and hydro power. During a normal year, these sources of power account for more than 90 per cent of the total power generation in the country. The remaining 10 per cent consist of fossil fuel fired and biofuel fired generation, and also wind power. In 2006, the total electrical energy generated in Sweden amounted to more than 140 TWh, which is around 10 per cent lower than in 2005.

Electricity consumption in Sweden varies widely with the outdoor temperature. This is due to the fact that space heating in dwellings and premises accounts for a significant part of the total electricity consumption. The total electricity consumption in Sweden in 2006 amounted to just over 146 TWh, which is somewhat lower than in the previous year.

In 2006, Sweden imported a net of just over 6 TWh, compared to a net import of 7.4 TWh in 2005.

Table 6: Sweden's total consumption, generation and net imports in 1996 - 2006, TWh

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total consumption	142.	143.9	143.3	146.6	150.3	148.4	145.4	146.4	147.3	146.2
Generation										
Hydro power	68.2	73.8	70.9	77.8	78.4	65.8	53.0	59.5	72.1	61.2
Nuclear power	66.9	70.5	70.2	54.8	69.2	65.6	65.5	75.0	69.5	65.0
Other thermal power	9.9	9.9	9.4	8.8	9.5	11.3	13.5	13.1	12.2	12.7
Wind power	0.2	0.3	0.4	0.5	0.5	0.6	0.6	0.9	0.9	1.0
Total	145.2	154.5	150.9	141.9	157.6	143.3	132.6	148.5	154.7	140.1
Net imports²⁴	-2.7	-10.7	-7.5	4.7	-7.3	5.2	12.8	-2.1	-7.4	6.1

Source: SCB

²⁶ Minus signs before the figures denote exports.

The precipitation in Sweden in the summer of 2006 was exceptionally low. For long periods, the inflow of water into the hydro power reservoirs was far lower than normal. In addition, several Swedish nuclear power reactors were shut down during the summer and autumn as a result of technical problems. During November – December and February – March 2006, when the consumption was at its highest, the availability of nuclear power was reduced by about 15 per cent. In total, this contributed to limited availability potential for power generation during the autumn of 2006.

The outdoor temperature affects electricity consumption, since a large proportion of the electricity consumption is for space heating in dwellings and premises. In 2006, the annual mean temperature for the whole of the country was 1.8 degrees Celsius higher than normal, in spite of a cold beginning of the year. The precipitation spread over the whole of 2006 was 15 per cent higher than normal.

Installed electricity generation capacity

The installed power in all of the country's power stations at the end of 2006 was 33 819 MW, excluding stand-by capacity in diesel-generator stations and hydro power stations, etc. The distribution onto the various sources of power is presented in the table below, in which the figures are also compared with the levels in 2005.

Table 7: Installed power production capacity in 2005 and 2006, MW

Installed power, MW	31 Dec. 2005	31 Dec. 2006
Hydro power	16 150	16 180
Wind power	525	580
Nuclear power	8 961	8 965
Other thermal power		
combined heat and power, industrial	1 029	1 229
combined heat and power, district heating	2 626	2 954
condensing	2 298	2 298
gas turbines, etc.	1 623	1 613
Total	33 212	33 819

Source: Swedenergy

The electricity generation capacity in Sweden distributed onto the various generators shows that the three largest generators had a total generation capacity of 26.7 GW on 1 January 2007. This represents 79 per cent of the total installed power in Sweden. None of the remaining electricity generators had more than 5 per cent of the country's total installed power.

Power balance

Power balance means energy balance during a short period of time, normally one or a few hours.

Since the electricity market reform, the installed power in the electricity generation system had fallen. The capacity margin between supply (including imports) and demand dropped by almost 20 per cent between 1996 and 2000. This involves increased risk of certain customers in the country being isolated if a major power plant should fail in a very cold winter situation. Against this background, the Government introduced a law on power reserve²⁴. The power reserve is created by Svenska Kraftnät concluding agreements with electricity generators and electricity users to make additional generation capacity available or to enable consumption to be reduced. The law is temporary and will expire at the end of February 2008.

Via the appropriations grant document, Svenska Kraftnät has received a number of assignments for maintaining the reliability of the electrical system and for maintaining the power balance during extreme consumption peaks. The assignments include using

²⁴ Peak Load Reserve Act (2003:436).

relevant measures that can be taken for reducing the risk of power shortages in Sweden, monitoring the availability of high load capacity in the Swedish electrical system, and promoting increased integration and harmonization of the electricity markets of the Nordic countries.

Svenska Kraftnät provides continual information on the power situation in Sweden on its home page, with an hour-by-hour forecast for the coming 24 hours and an indication for subsequent days. The measures that Svenska Kraftnät adopts in the event of a strained power situation are also reported. The players on the market are informed by means of urgent market messages (UMMs) that are published on the Nord Pool home page. The purpose of UMMs is to simultaneously provide all players on the market with information that may affect pricing. Svenska Kraftnät participates in working groups in Nordel and Etso, which concern power demand.

Forecasts for power balance

Svenska Kraftnät presents annually a detailed forecast for the power balance for the coming winter²⁵. Forecasts are given for two scenarios. One scenario (A) shows the situation in which consumption is normal and the availability of generation capacity and imports is relatively favourable. The second scenario (B) shows a situation in which the electricity consumption is a maximum at temperatures that can be expected every tenth year and factors that lower the availability in the generation system. The two scenarios are shown in Table 8.

- Scenario A: Power peaks at normal winter temperatures. High availability of generation capacity and imports.
- Scenario B: Power peak for a ten-year winter²⁶. Reduced availability of hydro power and thermal power, and reduced imports due to cold weather.

²⁵ Svenska Kraftnät, “Swedish power balance in the winters of 2005/2006 and 2006/2007”.

²⁶ The term 10-year winter denotes three-day mean temperatures that statistically recur every 10 years

Table 8: Power balance forecast for the winter 2006/2006, MW

	Scenario A	Scenario B
Generation		
Hydro power	14 100	13 700
Nuclear power ¹	9 250	9 250
Back-pressure	3 550	3 375
Condensing	1 700	1 700
Gas turbines (excl. disturbance reserve)	500	500
Wind power, power value 5 % ²	30	30
Total generation	29 130	28 555
Imports	2 400	1 100
Total supply	31 530	29 655
Consumption	27 200	28 900
Consumption reduction	550	550
Margin	4 880	1305

Source: Svenska Kraftnät (2006)

¹ Full availability of the ten nuclear power units is assumed.

² Percentage of time during which the rated power output is available

The highest winter power consumption occurred on 21 February 2007 and amounted to 26 200 MWh/h, which was somewhat lower than the Svenska Kraftnät appraisal in Scenario (A). In 2005, the highest power consumption was 25 800 MWh/h.

Svenska Kraftnät also forecasts the power balance in Sweden up to 2011/2012 as regards future expected demand and available deliveries of electricity²⁷. Table 9 describes the Svenska Kraftnät assessment of the Swedish power balance between 2007 and 2010.

²⁷ Svenska Kraftnät, "Power availability after February 2008".

Table 9: Sweden's power balance for 2007 - 2010

	Normal winter			Ten-year winter		
	2007/08	2008/09	2009/10	2007/08	2008/09	2009/10
Generation						
Hydro power	14 100	14 100	14 100	13 700	13 700	13 700
Nuclear power ¹	9 380	9 620	9 730	9 380	9 620	9 730
Back-pressure	3 640	3 820	4 350	3 460	3 630	4 130
Condensing	1 700	1 700	1 700	1 700	1 700	1 700
Gas turbine (excl. disturbance reserve)	500	500	500	500	500	500
Wind power, power value 5 % ²	35	65	85	35	65	85
Total generation	29 355	29 805	30 465	28 755	29 215	29 845
Imports	2 300	2 200	2 100	1 000	900	800
Total supply	31 655	32 005	32 565	29 775	30 115	30 645
Consumption	27 400	27 600	27 700	29 000	29 100	29 200
Consumption reduction	600	650	700	600	650	700
Margin	4 855	5 055	5 565	1 375	1 665	2 145

Source: Svenska Kraftnät (2006)

¹ Full availability of the ten nuclear power units is assumed.

² Percentage of time during which the rated power output is available

Given that the power increases which are planned will be implemented and that power generation capacity is available, Svenska Kraftnät estimates that power balance can be achieved for the period up to the winter of 2011/2012. Moreover, if the current electricity price level persists, the conditions will be increasingly reduced for generation being mothballed. The increase in generation capacity planned for the immediate future is expected to have clear positive effects on the Swedish power balance. During the period, the import opportunities are expected to decline and the electricity consumption is expected to increase slightly.

2.3.2 Investments in new generation capacity and planned uprating

Investments in new generation capacity in Sweden will take place on market-based grounds. Swedish legislation prevents the construction of new nuclear power and to some part also new hydro power plants²⁸. On the other hand, uprating of existing power stations can be made, thus enabling generation by nuclear power and hydro power plants to be increased. The new investments currently planned for Swedish power generation comprise principally combined heat and power generation, wind power and uprating of nuclear power plants.

Combined heat and power generation

The Rya combined heat and power generation plant was taken into operation in the autumn of 2006. The plant is a gas-fired combined cycle plant with an electric power output of 261 MW and an expected annual electrical energy generation of more than 1.2 TWh. A further new gas-fired combined heat and power generation plant is planned for Malmö – the Öresund Power Station. The plant has a planned electric power output of

²⁸ Act (1984:3) on Nuclear Engineering Operations.

440 MW and an expected annual electrical energy generation of around 3 TWh. The new Öresund Power Station is expected to be commissioned by the winter of 2009/2010.

Wind power

The target set by Swedish Parliament for the construction of Swedish wind power is that it will generate 10 TWh of electrical energy annually by 2015. The Government has appointed the Swedish Energy Agency as national expert authority for wind power. The aim is to facilitate substantial expansion of wind power in Sweden by measures such as spreading knowledge on the properties of wind power and the opportunities for leading, in the long term, to Sweden basing the whole of its energy supply on renewable energy. During 2007, the focus is on a number of offshore wind power projects. One of these at the present time is the Lillgrund wind farm outside the coast of southern Sweden, where Vattenfall is the project leader. Lillgrund consists of 48 wind turbines with an estimated annual electrical energy generation of 330 GWh. The wind farm is scheduled to begin generating at the 2007/2008 turn of the year. Moreover, Vattenfall is examining the possibility of building an offshore wind farm comprising 128 wind turbines at Kriegers flak in the southern part of the Baltic Sea, between Sweden and Germany. The estimated annual energy generation is around 2.1 TWh. The Government decided in June 2006 to give Vattenfall permission for Kriegers flak. The Board of Vattenfall has not yet taken the decision to build the wind farm. If this is decided, construction will be carried out in stages between 2008 and 2014.

Upgrading of nuclear power plants

An extensive investment project was launched at the Ringhals nuclear power plant in 2002. The investment programme will continue up to 2012 and, at the end of the project, will enable Ringhals to generate 4 TWh more than today. Upgrading is also planned at the Forsmark nuclear power plant. The three reactors are scheduled to be upgraded by 410 MW which will enable the energy generated to be increased by 3.3 TWh annually. The project is expected to be completed in 2011. Upgrading work is also planned for reactor 2 at the Oskarshamn nuclear power plant, and permission applications will be submitted in the autumn of 2007 to the Environmental Court and the Swedish Nuclear Power Inspectorate. If the application is approved, this will enable the output to be increased by 180 MW.

Network investments

Five projects have been identified in Nordel, the cooperation body for the system operating network companies in the Nordic countries, for strengthening the electricity network between the Nordic countries. The investments are aimed at reducing the constraints in the required transmission capacity, preventing overloading of the network and strengthening the Nordic security of electricity supply. According to Nordel, the following five sections should be built:

- Southern link between central and southern Sweden
- The Great Belt link in Denmark
- Fenno-Skan 2 between Finland and Sweden
- Nea-Järpströmmen connection between Norway and Sweden
- Skagerak link between Denmark and Norway

Decisions have been taken to build all cross-sections, with the exception of the Skagerak link²⁹. The four decided links are scheduled to be commissioned between 2008 and 2012.

In addition, Svenska Kraftnät is running a number of projects for extending the national grid and regional networks in Sweden, e.g. the Stockholms ström project, which is an investigation being run on the instruction of the Government with the aim of investigating the design of the future national grid and regional networks within Stockholm County.

The permission process

According to both the Environmental Code and the Planning and Building Act, permission is needed for building a new plant for electricity generation in Sweden. Investments in new electricity generation capacity are generally capital-intensive, while the lead times for decisions are long. In 2005, Swedish Parliament decided to shorten and simplify the environmental appraisal process in Sweden. The new draft laws have been in force since 1 August 2005.

Network connections or the construction of transmission lines or submarine cables may not be done without permission, which is known as network concession. Network concession is granted by the Energy Markets Inspectorate or by the Government for links with neighbouring countries or lines in the national grid.

2.3.3 Quality of the electricity network

The Swedish electricity network consists of 528 000 km of conductors, of which 268 000 km are underground cables and 260 000 km are overhead lines. The system can be classified into three levels: national grid, regional networks and local networks. The national grid comprises 400 and 220 kV lines and interconnects generation plants, regional networks and networks in neighbouring countries. The regional networks consist of power lines for around 40/130 kV and connect local networks and certain large industrial customers to the national grid.

Local networks can be classified into low-voltage network (400/230V) and high-voltage network (10 – 20 kV).

In 2005, the total length of the regional networks amounted to around 30 000 km. Out of these, 98 per cent were overhead lines and 2 per cent were underground cables. In 2005, the total length of the local networks was around 477 000 km, of which 42 per cent were overhead lines and 58 per cent were underground cables.

Security of supply in the electrical network

Svenska Kraftnät, the system operator responsible for the national grid, is responsible for security of supply in the national grid. Local and regional network companies are responsible for the maintenance level in the networks being sufficient for guaranteeing that security of supply will be maintained within their own networks.

Security of supply is affected by factors such as the type of conductors used. As a general rule, an underground cable is more secure than an overhead cable since it

²⁹ Prioritized cross-sections Reinforcement measures within the Nordic countries, Nordel 2006.

is less sensitive to rough weather than an overhead cable. The proportion of underground cables in the local networks has increased. In 2001, the proportion was 53 per cent, and five years later the proportion had risen to 58 per cent. However, there are risks associated with underground cables, such as cable failure in conjunction with excavation or plant work. In the overhead line network, an insulated cable is more robust than an uninsulated line. Out of the overhead lines in local networks, around 45 per cent are insulated.

The electrical network companies concluded an agreement in 2001 for weather protection of all uninsulated cables through forests, amounting to a total of 57 000 km. The violent storm in January 2005 led to investments in the electrical networks being intensified, and around half of the investments have been completed by the end of 2006. The electricity network companies have also set up an organization for collaboration in the event of disturbances in the electricity network. New rules on power cut compensation were introduced in the Electricity Act from January 2006 as a consequence of the storm in 2005. The new rules state that an electricity consumer whose supply of electricity is interrupted for 12 hours has the right to compensation by the electricity network company to which the customer is connected. Compensation shall be payable automatically. The Electricity Act also regulates the right to damages from the electricity network company in the event of personal injury, material damage or property damage.

2.3.4 Roles of the authorities

Svenska Kraftnät

The Svenska Kraftnät public utility is an authority with system responsibility and is thereby responsible for maintaining the instantaneous balance between the supply of electricity to and delivery from the Swedish electrical system. Svenska Kraftnät is also responsible for the reliability of the national grid for electricity.

Swedish Energy Agency

The Swedish Energy Agency is the central management authority for the supply and use of energy. The task of the Energy Agency in the field of dependable energy supply means that the agency shall promote matters such as securing the availability of electricity and other energy in the short term and long term, and monitoring the development of the energy markets and energy system. The Energy Agency has coordination responsibility for the general security of supply in the field of energy in the event of shortage situations. The Agency participates in the work of both the EU and IEA for secure oil and gas supplies, and in the field of secure electricity supply at Nordic level within, among others, NordBER.

The Energy Agency has a crisis organization that undergoes training for being able to handle various types of crises.

Energy Markets Inspectorate

The Energy Markets Inspectorate shall work towards improving the performance and efficiency of the energy markets. The task of the Inspectorate within secure energy supply includes matters such as annual preparation of a report on its supervision of security of supply for the electricity market in accordance with Article 4, Directive 2003/54/EC.

Swedish Emergency Management Agency

The task of the Swedish Emergency Management Agency is to contribute towards strengthening the emergency management capabilities of municipalities, county councils, county administrative boards and central authorities. The Agency shall also promote collaboration between public bodies, organizations and industry, and shall give support to public bodies in emergency situations.

The Emergency Management Agency shall contribute towards strengthening the emergency management capabilities of central authorities, municipalities, county administrative boards and county councils by providing advice and expert assistance in matters concerning emergency communication, management methodology and technical management support.

Municipalities and county administrative boards

In their respective geographical areas, the municipalities shall analyze and adopt various measures for acting to reduce the risks of consequences after disturbances in areas such as energy supply. In this context, the county administrative board has a coordinating function between local players and the national level (so-called sector authorities). Moreover, in their planning, the municipalities shall promote conservation of energy and shall act to ensure safe and adequate energy supply³⁰. This includes the availability of a current plan for the supply, distribution and use of energy in every municipality.

2.3.5 Measures for meeting peak demand

It is important from the market perspective to allow the market to handle on its own any shortage situations and avoid measures that encroach on the way of working of the market, e.g. by resumed regulation of the entire market or parts of it. Such measures are likely to disturb the pricing on the market and would thus damage the confidence in the way of working of the market, which could lead to reducing the long-term incentive for investments in new electricity generation plant.

System and balance responsibility of Svenska Kraftnät

Instantaneous balance between supply and demand is a clearly indicated responsibility of Svenska Kraftnät. Svenska Kraftnät bears the responsibility for maintaining short-term balance between the generation and consumption of electricity in the whole of the country, within the framework of system responsibility.

The Peak Load Reserve Act came into force in 2003. According to the Act, Svenska Kraftnät shall procure a power reserve of up to 2000 MW annually. The Act on Power Reserve will remain in force up to and including February 2008. In a memorandum to the Government, the Energy Markets Inspectorate proposed to the Government in May 2007 that the Peak Load Reserve Act should be extended for a further three years. The reason for this proposal is that the Energy Markets Inspectorate considers that there are still no conditions for a market-based solution.

³⁰ For every new mandate period, the municipalities shall decide a plan for how they should deal with extraordinary events, i.e. events that deviate from the normal, which involve a serious disturbance or imminent risk of a serious disturbance in important social functions and require urgent action.

In its capacity of system operator, Svenska Kraftnät also has the right to deal with power shortage situations by ordering the isolation of electricity consumption. This may currently take place in the form of Manual isolation (MFK) and Automatic isolation (AFK).

Project for reducing the consequences of power shortage

The Energy Agency is working on the Government assignment in cooperation with Svenska Kraftnät aimed at improving the possibility of assigning priorities in the event of electricity shortage situations in peacetime. The aim is that, by more structured planning, any electricity shortage situations should be managed with the lowest possible social impact. The results of the assignment will be reported to the Government during autumn 2007.

Elforsk, the Swedish Electric Utilities' R&D Company, has a research programme for developing the electricity market – Market Design. The research programme is working on a number of studies concerning reduction in consumption. An important point of departure in the projects is that the action taken shall be profitable to both the electricity supplier and the electricity user. The Elforsk studies show in total that there is appreciable willingness and capability of electricity users to reduce their electricity consumption, as long as there are the right incentives.

3 Natural gas market

3.1 Regulation matters

As from 1 July 2007, all customers on the Swedish natural gas market will be entitled to free choice of their natural gas supplier. Table 10 shows the various stages in the development process of a Swedish competitive natural gas market.

Table 10: Gradual opening of the natural gas market

	Limit value (Nm ³ /year)	Proportion of volume open to competition
1999		0 %
2001	25 million Nm ³ *	N.A.
2003	15 million Nm ³ *	50 %
2005	Non-household customers	95 %
2007	0	100 %

* m³ at standard temperature and pressure

3.1.1 System responsibility of Svenska Kraftnät

Svenska Kraftnät is the authority that has system responsibility on the Swedish natural gas market. System responsibility includes general responsibility for maintaining the short-term balance between supply and delivery of natural gas in the national natural gas system. However, system responsibility does not cover responsibility for operation of the Swedish natural gas system. The owners of the respective natural gas pipeline bear the responsibility for operation, maintenance and extension of the pipeline system.

Svenska Kraftnät uses the market mechanism as far as possible to handle imbalance. If the market solution is inadequate, Svenska Kraftnät orders the network owners to limit or suspend the transmission of natural gas to their customers. Rules concerning this are embodied in the Natural Gas Act.

In order to maintain the instantaneous balance in the natural gas system, Svenska Kraftnät concludes agreements with natural gas companies for balance provision. According to the balance responsibility agreement, the balance provider must plan for balance between supply and delivery of natural gas. A balance plan must be sent in to Svenska Kraftnät no later than 12:00 on the day before delivery. Svenska Kraftnät's balance settlement is done on a daily basis no later than 11:00 on the day after delivery, and is based on the reported values from the network owners and the reported trading values from the balance providers.

The balance providers have a balance account in which imbalances are accumulated. If the credit/debit balance in the balance account exceeds the permissible maximum limit or falls below the permissible minimum limit, the difference is called the balance gas. The principle for setting a price on the balance gas is based on the average value of the day-ahead price in the Dutch TTF (Title Transfer Facility) plus a regulation charge. The intention is to provide an incentive to those responsible for maintaining balance to plan in such a way that the accumulated balance is always within the permitted range.

The permitted range of the balance accounts of balance providers is calculated by Svenska Kraftnät on the basis of an assessment of how much the limits of gas pressure in the transmission network may vary without causing problems to users. Operating restrictions and operational safety assessments are taken into account in the calculations.

Differences between the preliminary metered values reported by the network owners after the day of delivery and the final values reported after the delivery month are regulated with correction gas. Before regulation with correction gas readings are taken from customers with monthly reading and actual thermal values are determined. This takes place in the final settlement with the balance provider that Svenska Kraftnät performs no later than the 25th of the month after the month of delivery.

Invoicing takes place once per month and includes balance gas, correction gas and a consumer's energy fee of SEK 1.30/MWh. The balance provider company must provide security for the credit exposure that may arise against Svenska Kraftnät through the company's ongoing activities.

3.1.2 Transmission constraints

The available capacity of the Swedish transmission system is around 15 TWh/year. The consumption during 2006 was just over 11 TWh. Around 2 per cent of the energy demand in Sweden is met by natural gas. The Swedish transmission system currently has no transmission constraints, neither nationally nor on the import connection from Denmark. No second-hand market is currently available in Sweden for transmission capacity, whereby unutilized primary capacity is made available for trading.

3.1.3 Supervision of network companies

The gas transmission system in Sweden is owned and operated by Swedegas (formerly Nova Naturgas) and E.ON Sverige. E.ON Ruhrgas International HE and Statoil ASA have a holding of about two thirds in Swedegas, the remainder being owned by DONG Energy and Fortum Heat and Gas Oy. The distributions operations are run by Göteborg Energi, Varberg Energi, Lunds Energi, Öresundskraft, Ängelholms Energi, Swedegas and E.ON Sverige.

Supervision of transmission tariffs

According to the new Natural Gas Act that came into force on 1 July 2005, the owner of a natural gas pipeline network may not begin to apply a network tariff before the method used to determine the tariff has been approved by the Energy Markets Inspectorate. The Inspectorate has developed guidelines for how the assessment of the network owner's

method applications shall function. The tariffs must be reasonable, objective and non-discriminatory.

According to the Natural Gas Act, each natural gas network company is obliged to prepare an annual report, which is a financially unbundled account of the network operations. The Inspectorate shall be in receipt of the report no later than seven months after the end of the accounting year. The information in the report is used for assessing the reasonableness of the tariffs.

There are currently no official statistics showing the distribution between the price of the natural gas and the price of transmission. However, the natural gas companies have been reporting their tariffs to the Energy Markets Inspectorate since 2006. An objective of the reporting is to enable the Inspectorate to produce statistics for the transmission tariffs for a number of typical customers.

Supervision of the balance agreements of Svenska Kraftnät

The responsibility of the Energy Markets Inspectorate is to check that the conditions of the Svenska Kraftnät balance agreement are objective and non-discriminatory. The authorised system operator, Svenska Kraftnät, may not enter into a balance agreement with balance providers until the methods used to set out the agreement have been approved by the Inspectorate³¹. In addition, according to the Natural Gas Act, Svenska Kraftnät is obliged to make public the conditions applicable to the balance agreement and, on request, to provide written information concerning these conditions.

3.1.4 Separation of network operations from supply operations

Transmission

Svenska Kraftnät has been the system operating authority on the Swedish natural gas market since 2005. The role of Svenska Kraftnät on the natural gas market can be described as virtually an Independent System Operator (ISO). System responsibility means that Svenska Kraftnät is responsible for supervising the natural gas system. However, system responsibility does not include operation of the Swedish natural gas system. Responsibility for operation, maintenance and extension of the pipeline system rests with owners of the respective gas pipeline.

Distribution

According to the Natural Gas Act, a company that pursues gas network operations must not pursue gas supply operations within the same company (legal unbundling).

In a company that has a concession for a natural gas pipeline, a member of the Board, the Managing Director or a signatory for the company must not simultaneously hold the same post in a company that pursues trading with natural gas. However, there is no provision in Swedish legislation that a gas network company must not be a part of a business group that pursues production of or supply of natural gas.

According to the Natural Gas Act, natural gas companies are obliged to prepare separate annual reports for the transmission, distribution and storage operations. The annual report

³¹ Natural Gas Act (2005:403).

is a set of financially unbundled accounts. The Board shall sign the annual report and it shall also be audited by an auditor who prepares a certificate. The report is public and shall be sent to the Energy Markets Inspectorate.

If a natural gas company breaches the regulations embodied in the Natural Gas Act or the Energy Markets Inspectorate regulations, the Inspectorate is authorised to set up a supervision process against the company. The Inspectorate can also order the company to take measures to meet the regulations. An injunction may be associated with penalties. If an annual report is sent in too late, the company will have to pay a delay fee.

From 1 July 2005, there are rules in the Natural Gas Act requiring companies that pursue transmission of natural gas also to have a supervision plan. Moreover, they must publish an annual report that gives particulars of the measures taken in accordance with the plan. The purpose of the supervision plan is to ensure that companies act objectively and do not unduly favour any player on the market. The supervision plan shall include particulars of the measures that the company must take to counteract discriminatory action in relation to other players on the market. During 2006, the Energy Markets Inspectorate has drawn up regulations concerning the contents of the supervision plan and the publication of the annual report.

3.2 Competition matters

3.2.1 Developments on the wholesale market

Sweden does not extract its own natural gas. All natural gas consumed in Sweden is imported through a pipeline running between Denmark and Sweden. From Denmark the pipeline runs to the Continent, which means that the Swedish natural gas network is connected to the Continental system. In 2006, the consumption was just over 11 TWh, which corresponds to just under 2 per cent of the total energy consumption in Sweden.

Two companies, i.e. E.ON Sverige and Dong Energy (formerly Dong Sverige AB), sell natural gas on the Swedish wholesale market. During 2006, E.ON Gas Sverige AB sold around 5.3 TWh on the wholesale market. This represents a market share of 48 per cent. However, the figure does not take into account the fact that part of this volume was sold to companies within the E.ON Group that, in turn, sold the natural gas on to end customers. Table 11 shows developments on the Swedish wholesale market.

Table 11: Developments on the wholesale market

	Demand	Production	Import capacity (TWh)	No. of companies with >5 % production and import capacity ¹	No. of companies with >5 % of gas market
	Total (TWh)		total		
2001	9	0	15	1	4
2002	9.5	0	15	1	4
2003	9.5	0	15	1	4
2004	10	0	15	1	5
2005	8.9	0	15	2 ¹	5
2006	9.2	0	15	2 ¹	5

¹ Sweden has no production of natural gas. There are two importers of natural gas

The Danish state has a 73 per cent holding in Dong Energy, and 55 per cent of E.ON Sverige are owned by E.ON Nordic and 45 per cent are owned by Statkraft, whereas other natural gas companies are owned by Swedish municipalities. E.ON Ruhrgas, which is a company in the E.ON Group, owns around one third of Swedgas.

3.2.2 Developments on the retail market

Out of about 55 000 natural gas users in Sweden, around 2600 are corporate customers and the remainder are household customers. The number of customers has remained relatively stable in recent years.

More than 30 municipalities in Sweden have access to natural gas. In the municipalities that are connected to the natural gas network, the natural gas supply accounts for around 20 per cent of the energy supply.

About 40 per cent of the natural gas are consumed by industry, and the same amount is used in CHP plants and district heating plants. The remaining 20 per cent are used in dwellings, commercial premises and certain small industrial plants. A small proportion is used as vehicle fuel.

Market concentration

Since the introduction of natural gas in 1985, the Swedish natural gas market has been characterized by a small number of players and a high degree of vertical integration. In 2006, the three largest gas suppliers accounted for around 88 per cent of sales to end customers (E.ON Sverige 53 per cent, Dong Energy 21 per cent and Göteborg Energi 14 per cent). No new natural gas player has established itself on the Swedish natural gas market since 1 July 2005, when all non-household customers became entitled to choose their gas supplier. Dong Energy has chosen to sell only to corporate customers.

Supplier switching

No statistics are currently available for supplier changes on the Swedish natural gas market. However, a large number of major industrial customers have changed their gas

suppliers since 1 July 2005. Table 12 shows developments on the end-customer market in Sweden.

Table 12: Developments on the gas retail market

	Total consumption	No. of companies with >5 % of end-customer market	No. of independent gas suppliers	Market shares of 3 largest gas suppliers (%)
2001	9 TWh	N.A	0	N.A
2002	9.5TWh	N.A	0	N.A
2003	9.5 TWh	N.A	0	N.A
2004	10 TWh	5	0	78
2005	8.9 TWh	5	0	81
2006	9.2 TWh	5	0	88

Natural gas prices to end customer

No official statistics are available to show the distribution between the natural gas price and the transmission price in accordance with the Eurostat typical customers. The information in Table 13 therefore relates to the total price paid by the customer. The prices in the table are those on 1 January 2007, expressed in €/MWh in accordance with the Eurostat typical customers. For a customer with an annual consumption of 23 260 kWh (D3) of domestic gas, the transmission tariff is 22.52 €/MWh.

Table 13: Natural gas price to end customer

	I4 ¹	I1 ²	D3 ³
Total (incl. taxes) ⁶	N.A	53.02	96.39

Source: SCB

¹ Typical customer with consumption of 116 300 MWh annually. No typical customers in Sweden.

² Typical customer with consumption of 116.3 MWh annually.

³ Typical customer with consumption of 23 260 kWh annually.

⁶ Excluding VAT

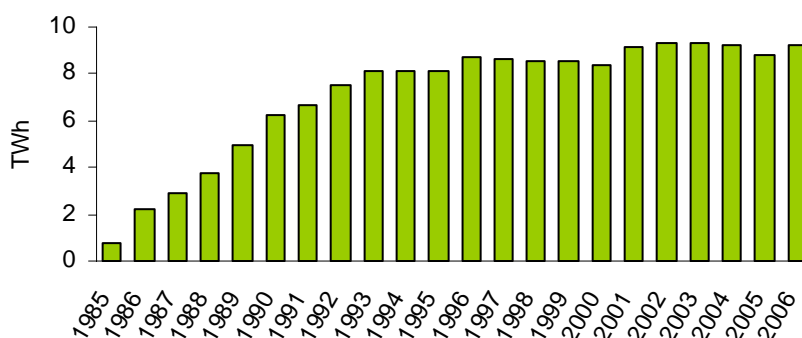
Note: 1 EUR = 9.0155 SEK (1 Jan 2007)

3.3 Security of supply

3.3.1 Natural gas consumption

Figure 3 shows the development of natural gas consumption in Sweden since its introduction in 1985. In 2006, the consumption was just over 11 TWh, which corresponds to less than 2 per cent of the total energy consumption in Sweden.

Figure 3. Natural gas consumption in Sweden



Source: SCB

The Swedish natural gas consumption is expected to increase somewhat in the coming few years as a result of the Rya CHP plant being taken into operation in the autumn of 2006. The plant is the biggest individual natural gas consumer in Sweden, with an estimated annual consumption of around 3 TWh. Moreover, the existing Öresund plant in Malmö will be modernized by the installation of a gas-fired CHP plant with a generation capacity of 440 MW elec. and 250 MW thermal. The plants together are expected to consume a total of about 8 TWh of natural gas per year when fully operational.

3.3.2 Natural gas system

All natural gas consumed in Sweden is imported via the pipeline running between Denmark and Sweden. From Denmark, the pipeline runs to the Continent, which means that Sweden is interconnected with the Continental system. The Swedish market is concentrated to the West Coast, along the pipeline network running from Trelleborg in the south to Stenungsund in the north, with a branch pipe to the Småland region.

The natural gas system can be divided into transmission and distribution systems and storage. Long-distance transmission takes place at high pressure, normally between 50 and 65 bar. Then pressure reduction takes place in metering and regulation stations (MR stations) before the gas is delivered to the local distribution network for onward transport to the customers. The distribution system is normally designed for pressures between 4 and 30 bar, depending on the needs of the customer. In 2006, the Swedish natural gas system consisted of about 650 kilometres of transmission pipeline and about 3 000 kilometres of distribution pipeline.

The existing transmission pipeline between Malmö and Gothenburg has an annual transmission capacity of around 20 TWh. Compressors could increase the capacity to around 30 TWh. At times when the load factor is high, the possible transmission capacity is restricted to around 15 TWh without compressors and 20 TWh with compressors.

Natural gas storage

The first Swedish natural gas storage facility was taken into commercial operation on 1 May 2006. The storage facility is owned by E.ON Sverige AB. The plant is located in southern Halland and is principally a demonstration plant. The storage facility is relatively small, with a volume of 10 million Nm³. In the foreseeable future, Sweden will be relying on storage in other countries, storage in transmission pipelines (linepack), or will adjust deliveries to meet the consumption variations on the market.

3.3.3 Plans for new supply alternatives

The following plans for new supply to the Swedish natural gas system were being considered in 2006:

Fortum in cooperation with AGA and Nynäs Refining is planning to build a terminal for liquefied natural gas (LNG) adjacent to the Nynäs Refining refinery in Nynäshamn. The plant will be used for intermediate storage of LNG, which is gasified before use. The storage volume is around 20 000 Nm³ (m³ at stp). The LNG terminal would allow for other supply routes for natural gas to Sweden and would make natural gas available in the Mälardalen and Bergslagen regions in central Sweden.

In addition, the construction of a submarine gas pipeline is being planned between Stavanger and Grenland, south west of Oslo. The project is code-named Scanled. This would enable the Swedish pipeline system to be connected directly to the Norwegian natural gas fields. The planning of the pipeline run also covers Jutland in Denmark. The project is being sponsored by 18 companies. A number of Swedish interested parties, including major natural gas users, are working to ensure that the Norwegian gas pipeline will be sized for the Swedish consumption potential. A decision regarding construction is expected to be taken during 2009.

In addition, plans are afoot for the construction of a gas pipeline on the bed of the Baltic Sea between Viborg in Russia and Greifswald in Germany. The project is code-named Nord Stream, and is expected to make its first deliveries of gas in 2010. E.ON Sverige is planning to build a branch from the Russian pipeline for connection to the Swedish east coast. In addition, E.ON Sverige is planning to extend the existing pipeline up to central Sweden.

3.3.4 Quality of the natural gas network

Transmission system

The Swedish transmission system consists principally of steel pipelines. The status of the system is checked at regular intervals, and defects are corrected and equipment is changed. According to the players, the pipelines are expected to have a useful life of at

least 40 years, whereas some monitoring, control and regulation equipment is expected to have a useful life of between 15 and 20 years.

Table 14 below gives a summary of the checks carried out, the frequency at which they are carried out, and how they are carried out.

Table 24: Own inspection of the transmission system

Inspection of transmission system	Time interval	Methods
Supervision of work in the vicinity of the pipeline	6 times/year	Inspection by aircraft
Inspection of protection zone close to built-up area	Once a year	Inspection from the ground
Inspection of Öresund pipeline	Every 3 years	Echo sounding
Inspection of protective coating around the pipeline	Every 8 years	Inspection by "intelligent pig"
Inspection of material thickness of the pipe	Every 8 years	Inspection by "intelligent pig"

Source: Energy Markets Inspectorate

Distribution system

The distribution pipelines are made mainly of polyethylene, PE. If transmission to customers requires a gas pressure higher than 4 bar, a certain amount of steel piping is used. The guidelines for the implementation, operation, care and maintenance, etc. of the distribution network at a maximum operating pressure of 4 bar are compiled in the Energy Gas Standards (Energigasnormerna), EGN 01, which have been prepared by the Swedish Gas Association.

3.3.5 Roles of the authorities

Svenska Kraftnät

The Svenska Kraftnät is the authority that bears system responsibility on the Swedish natural gas market. System responsibility involves ensuring that short-term balance is maintained between the supply and demand of natural gas in the system, and that correct settlement takes place between the balance providers. System responsibility does not cover operation of the natural gas system. The respective owner of the natural gas pipeline is responsible for operation and maintenance.

Swedish Energy Agency

The Swedish Energy Agency is the central management authority for the supply and use of energy. The task of the Agency in the field of secure energy supply means that the energy Agency is to promote areas such as reliable supply of electricity and other energy in the short term and long term, monitor the development of the energy markets and energy system, and promote improvement of the function and efficiency of the energy market. Annual reports shall be prepared concerning the supervision of the security of supply on the natural gas market. The Energy Agency has the coordinating responsibility for the general security of supply in the field of energy in the event of shortage situations.

The Energy Agency participates in the work of both the EU and IEA for secure oil and gas supply.

The Energy Agency has an emergency organization that undergoes exercises to be able to handle various types of energy crises.

Energy Markets Inspectorate

The Energy Markets Inspectorate shall act for improving the performance and efficiency of the energy markets. The tasks of the Inspectorate in the field of secure energy supply include annual preparation of a report on its supervision of the security of supply for the natural gas market in accordance with Article 5 of Directive 2003/55/EC.

Emergency Management Authority

The Emergency Management Authority shall contribute towards strengthening the crisis management capabilities of municipalities, county councils, county administrative boards and central authorities. The Agency shall also promote collaboration between official bodies, organizations and industry, and shall provide support to public bodies in crisis situations.

The Emergency Management Agency shall also contribute towards strengthening the crisis management capabilities of central authorities, municipalities, county administrative boards and county councils by providing advice and expert support in matters related to crisis communication, management methodology and technical management support.

Municipalities and county administrative boards

Within their respective geographical areas, the municipalities shall analyze and adopt various measures to reduce the risks of consequences following disturbances in areas such as energy supply. In this context, the function of the county administrative board is to coordinate local players with the national level (so-called sector authorities). Moreover, the municipalities should promote energy conservation in their planning, and shall act to ensure secure and adequate energy supply³³. This includes that every municipality shall have an up-to-date plan for the supply, distribution and use of energy.

Rescue Services Agency

The Rescue Services Agency prepares regulations for the natural gas market concerning the design, construction and operation of the pipeline system for natural gas. The regulations principally concern matters related to preventive protection against explosion and fire in the natural gas system.

³³ For every new mandate period, the municipality shall draw up a plan for dealing with extraordinary events, i.e. events that deviate from the normal, involve a serious disturbance or imminent risk of a serious disturbance in important social functions and demand rapid action.

3.3.6 Measures for meeting peak demand

Demand peaks and delivery shortages are normally managed by Svenska Kraftnät by using the capacity available by varying the gas pressure in the transmission network, known as linepack. Storage facilities can be used in a corresponding manner down to a technically lowest pressure for emergency operation. At the present time, there is one storage facility in Sweden. If measures beyond this are necessary, Svenska Kraftnät uses, as far as possible, the market mechanisms for dealing with imbalances. This means that balance providers and possibly also major users are contacted with the aim of achieving possible changes in consumption, storage or supply of gas to Sweden.

In situations in which market agreements are not considered to be sufficient for dealing with imbalances in the natural gas system, Svenska Kraftnät can order isolation of district heating and industrial plants.

3 Public service issues

Labelling for primary energy source

With effect from 1st April 2006, electricity users will be provided with information, either on or in connection with their invoices, and in advertising material, on the proportion of each type of energy source making up the average composition of energy sources used to produce the electricity delivered by the supplier during the previous calendar year. With effect from the same date, electricity users will also receive information on the environmental effects of such power production in the form of carbon dioxide emissions and of the quantities of nuclear fuel waste resulting from production of the electricity.

Vulnerable customers

The Swedish Electricity Act includes a section that regulates consumer protection.³² This prohibits the disconnection of supplies in the event of a disputed claim for payment, or if there is a risk that such interruption of supply would cause not inconsiderable personal injury or ill-health or extensive damage to property. In addition, the regulations state that the social services must be contacted if a domestic consumer is at risk of having his/her supplies disconnected. The social services can then help to resolve the situation by providing certain economic assistance.

There is no particular authority that supervises individual cases concerning the disconnection of supplies, and EMI does not therefore have any data about disconnection of customers.

Implementation of Appendix A and transparency of terms and conditions

Sweden has ensured the implementation of Appendix A of the Directive through the Swedish Electricity Act with associated regulations. These documents then form the basis of the general agreement terms that exist. The majority of suppliers and network companies apply these general terms and conditions that have been negotiated by, and agreed with, the trade association Swedenergy and the Swedish Consumer Agency.

It is important that customers should be aware of these general terms and conditions, therefore Swedenergy, the trade organization for electricity companies, has undertaken to recommend its member companies to inform their customers about these general terms and conditions. Consumers are also provided with information on the general terms and conditions via the Swedish Consumer Agency, local authority consumer advisers and the Consumers' Electricity Advice Bureau³³. If a dispute arises between a consumer and an electricity supplier, the consumer is assured of having the dispute examined at no charge by the Swedish National Board for Consumer Complaints in accordance with Appendix A of the Directive.

³² Section 11 of the Electricity Act (1997:857).

³³ Provides advice and guidance to consumers in various matters, concerning the electricity market

End-user price regulation

Trade in electricity takes place in a competitive market. The Energy Markets Inspectorate has no supervision of electricity prices. The Inspectorate follows the general pricing developments, but not for any particular customer category. On the other hand, the Energy Markets Inspectorate does supervise the reasonableness of the network tariffs, since network operation is run as a local monopoly. An overview of the organization of end user price regulation in Sweden is presented in table 14.

Table 14: Regulation of end user prices.

	Electricity				Gas		
	large and very large	medium industrial and commercial	small commercial and household	power plants	large and very large	medium industrial and commercial	small commercial and household
Existence of regulated tariff	N	N	N	N	N	N	N
% customers still on tariff	0	0	0	0	0	0	0
Possibility to switch back to regulated tariff	N	N	N	N	N	N	N
Number of suppliers covered by the obligation to supply at tariff	0	0	0	0	0	0	0

