

EI R2010:12

The Swedish electricity and natural gas markets 2009



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The Energy Markets Inspectorate
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Foreword

The Energy Markets Inspectorate is the regulatory authority for the electricity, natural gas and district-heating markets.

The report aims to describe trends on the electricity and natural gas markets in 2009. In accordance with its instructions, the Inspectorate shall undertake tasks that stem from the EU Electricity and Natural Gas Market Directive, including the preparation of an annual report in compliance with the reporting requirements contained therein, which are to address issues relating to regulation, competition and security of supply.

The report describes the remit on the part of the Swedish Competition Agency to report on certain issues of competition on the electricity market, and this account comprises the chapter entitled *Measures to prevent market power*. The report also describes the duty of the Swedish Energy Agency to report, in consultation with the Swedish state grid utility Svenska kraftnät, on measures to ensure a secure natural gas supply, which account is contained in the chapter entitled *Security of supply – natural gas*.

This report follows the national report structure that was devised in collaboration with other European regulatory authorities and the EU Commission. As part of this joint European initiative, a report summarising all the national reports will be published during the autumn of 2010 and will be available, together with all the national reports of the member states, at www.energy-regulators.eu, the website of the Council of European Energy Regulators (CEER).

Eskilstuna, June 10, 2010

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Summary

The electricity market

The Swedish wholesale power market is part of an integrated Nordic electricity market, which during periods of insufficient transmission capacity is divided into smaller sub-markets. In 2009, a common electricity price prevailed throughout Scandinavia for 26% of the time, which is three times higher than in 2008. A common price implies that all regions are integrated within a common market that creates better pre-conditions for viable competition. During the 2000s, a common price throughout Scandinavia usually prevailed for between 30% and 40% of the time.

In 2009, the five largest Swedish electricity producers accounted for over 85% of the country's total production, while Vattenfall, E.ON and Fortum together accounted for 79%.

Trade on the Nordic electricity market takes place primarily on Nord Pool, and in 2009, over 72% of the total power consumed in Scandinavia was traded on the spot market, which is the highest level ever, while high liquidity increases transparency and confidence in price formation among the market actors.

In 2009, the price trend at Nord Pool was marked by the global economic recession, which contributed to lower demand for electricity and falling fuel prices, thus depressing electricity prices. In Sweden, the average spot price decreased by over 20% compared with 2008, from 49 to 39 öre/KWh. In November and December, however, power prices began to rise again, which can be explained by falling temperatures increasing the demand for power at the same time as nuclear power capacity was low, having dropped by 17% against 2008.

Unlike the wholesale market, the end-user markets in Scandinavia are national ones and for several years now there has been a political will to establish a common Nordic end-user market, which would mean that consumers in Scandinavia could freely choose their suppliers across national boundaries. In time for the next meeting of Nordic energy ministries, scheduled for the autumn of 2010, NordREG (the cooperative organisation of Nordic regulatory authorities) will draw up a detailed implementation plan for the measures needed to establish a common user market by 2015.

A total of almost 1.8 million domestic customers were active on the electricity market during the year, as they either switched supplier or changed their contract with their existing one. This represents around 40% of the total number of such customers on the Swedish electricity market.

For the first time ever, variable-price contracts were the most common type of supply contract among Swedish households and in December 2009, 30% of

customers had variable-price contracts as opposed to 22% in December 2008.

The total cost of power to the customer consists of supply charges, distribution charges, energy taxes and VAT. In 2009, supply charges comprised 41% of the total cost for a domestic customer, while distribution charges represented 19%, and energy tax and VAT, 40%. The proportion of the total cost attributable to supply charges has risen during the 2000s.

The Energy Markets Inspectorate provides the independent, web-based price comparison site *Elpriskollen*, which brings together prices and terms and conditions for all Swedish electricity supply companies in order to facilitate the choice by consumers of the supplier that best suits them.

The Energy Markets Inspectorate carries out annual checks to ensure that network companies have reasonable charges, and the fairness of these charges is retrospectively assessed up to and including the year 2011. With effect from 2012, the Inspectorate will do this in advance. This new model implies that the Inspectorate will decide in advance on the volume of revenues that the companies may be permitted to amass during a four-year period. This new regulatory method is designed to prevent unreasonable distribution charges and ensure that network operations are run efficiently. These revenues shall cover acceptable costs for these operations and also provide a reasonable return on the capital invested during the period, while account will also be taken of the transmission quality of the companies.

For domestic consumers these distribution charges have remained virtually unchanged between 1997 and 2008. In 2009, they rose for the majority of customer categories. Between 2009 and 2010, almost 90% of network companies increased their charges for domestic customers, on account, among other factors, of increases in regional and national distribution charges, investments in remote meter reading systems and greater investment in the network.

Several projects are being undertaken to raise the operational and delivery reliability of the Swedish and Scandinavian power system. Svenska kraftnät¹ the Swedish state-run grid utility has, together with the other Nordic grid companies responsible for the system, identified a number of areas where the grid should be strengthened in order to increase the power transmission potential among the Nordic countries. The utility also plans a DC link between Sweden and Klaipėda in Lithuania.

Investments in new power production capacity are being made in Sweden based on commercial rationale and in 2009, the generating capacity of Swedish power stations increased by 1,532 MW to a total of 35,713 MW, while installed wind power capacity increased by 53% compared with 2008.

In accordance with the Swedish Energy Agency² long-term forecast³, Sweden is expected to export 25 TWh of electricity in 2030, thanks to increased generation and a modest rise in consumption. In 2030 production is estimated to total 175 TWh as against the current figure of 134 TWh. Nuclear power, wind and co-generation are all expected to increase and consumption is estimated at 150 TWh as against 138 TWh today.

¹Svenska kraftnät is a state-run utility whose primary task is to operate and administer the national grid as well as to supervise the national electricity system.

²The Swedish Energy Agency is a government body that works within different sectors of society to create conditions for effective and sustainable energy use and a cost-effective Swedish energy supply.

³The Swedish Energy Agency, Långsiktsprognos 2008, (ER2009:14)

In accordance with the Electricity Act (1997:857), a company that undertakes network operations may not undertake generation of electric power or trade in it, although a network company may belong to a group that does so. All network companies are obliged to establish a supervision plan that is to ensure they act objectively and do not improperly favour any market actor. In the case of network companies whose total network has at least 100,000 consumers, more far-reaching rules apply, for example, a member of the board, the managing director or the authorised signatory of the network company may not simultaneously hold these positions in a company that generates or trades in electricity. Through its ownership structure, Svenska kraftnät, which administers and operates the Swedish transmission grid, is, in terms of its ownership, separated from operations open to competition.

The natural gas market

There is no natural gas extraction in Sweden, which imports all the natural gas consumed there from Denmark via a pipeline that links these two countries. There are also pipelines from Denmark to the rest of Europe, which means that Sweden is linked to the continental system.

E.ON Sverige and Dong Energy are the two companies that sell natural gas on the Swedish wholesale market, and there are no figures available on their respective market shares in 2009, although there is no indication that there have been any major changes in recent years. In 2006, E.ON had a 48% market share.

In 2009, 285 households switched natural gas supplier, an increase of over 70% on the previous year. However, the total number of switches remains at a low level and is equivalent to little more than half of a percent of the total number of domestic customers. The corresponding figure for non-domestic customers was 185, or 7% of the total.

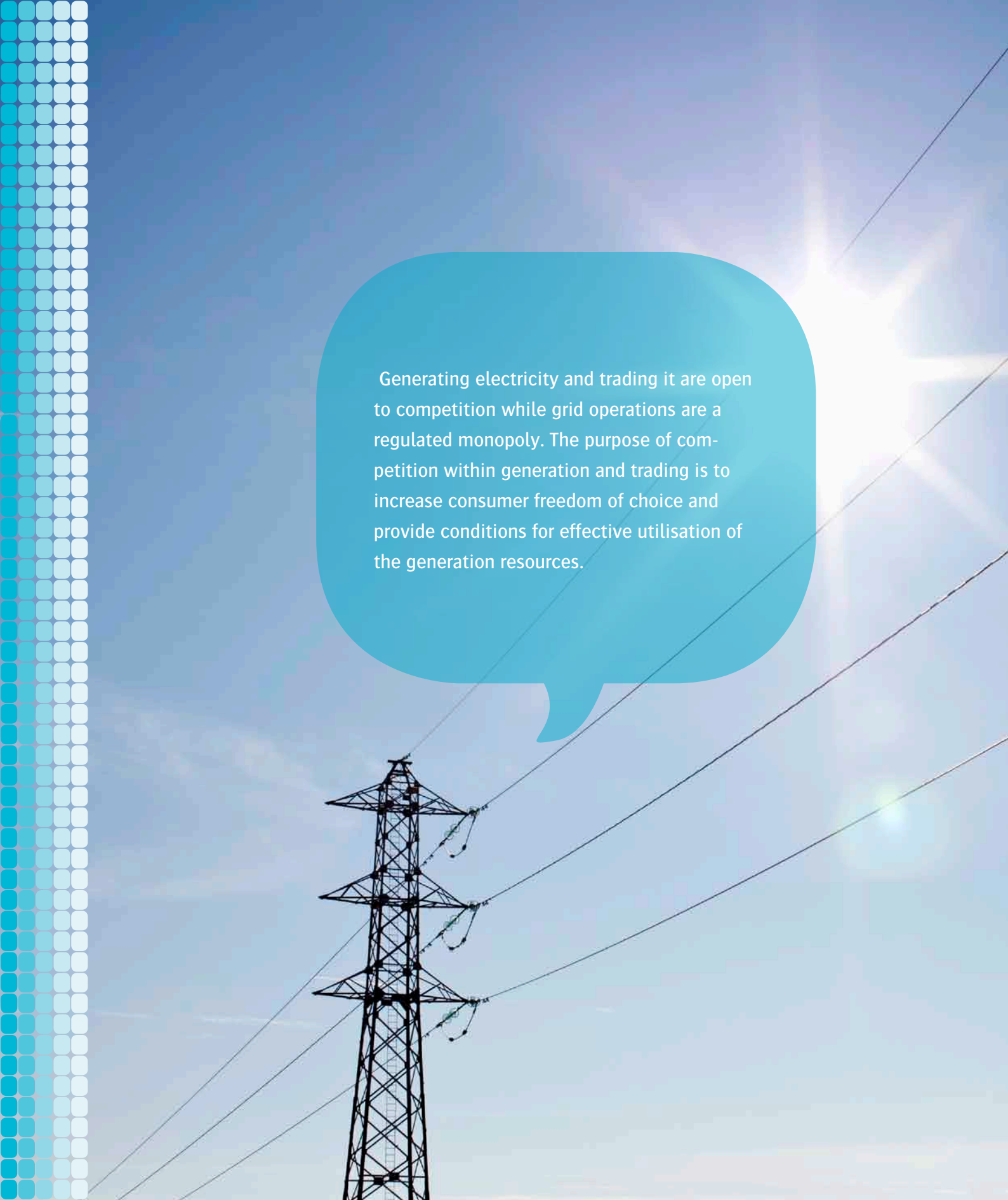
The total natural gas costs for households can be divided into supply charges and distribution charges as well as energy taxes and VAT. In 2009, a domestic natural gas heating consumer paid an average charge of 98.5 öre/kWh, where supply charges accounted for 28%, distribution charges for 29% and energy taxes and VAT for 43%.

The Energy Markets Inspectorate regulates the gas network companies and approves the methods they use to calculate their distribution charges. Its preliminary audit of the methods that provide a basis for establishing charges, aims to ensure that they are objective and non-discriminatory in accordance with the Natural Gas Act. This audit of the fairness of these distribution charges is currently performed retrospectively, but with effect from 2011, there will be a switch to advance regulation. This method means that a four-year inspection period will be introduced, and the first one will run from 2011 to 2014.

The existing pipeline between Malmö and Gothenburg has an annual transport capacity of around 22 TWh, which can be increased to around

30 TWh by means of compressors. However, as the market does not experience an even withdrawal over the year, the maximum transportable quantity of energy is around 15 TWh without, and 20 TWh with compressors, while there are currently plans for a new supply for the Swedish natural gas system. During the spring of 2010, the Energy Markets Inspectorate approved the government's granting of a permit to the Norwegian state company Gasco and Sweden's Swedegas to build and operate a new pipeline, to be called Skanled, between Norway, Sweden and Denmark. This project is currently mothballed due to the uncertain economic situation but it can be resumed once conditions improve. In the autumn of 2009, the Swedish government decided to grant Nord Stream AG a permit to build a natural gas pipeline through the Swedish economic zone in the Baltic, from Russia to the European gas network, but no plans have been presented for a connection to Sweden.

In accordance with the Natural Gas Act, a company that undertakes the transport of natural gas may not trade in it. In a company that has a permit for a natural gas pipeline, a member of the board, the managing director or authorised signatory may not at the same time play these roles in a company that trades in natural gas. In those cases where a natural gas company does not comply with the regulations of the Natural Gas Act, the Energy Markets Inspectorate has the power to enjoin it to take measures to observe the rules and this injunction can be combined with a fine.



Generating electricity and trading it are open to competition while grid operations are a regulated monopoly. The purpose of competition within generation and trading is to increase consumer freedom of choice and provide conditions for effective utilisation of the generation resources.

The electricity market

The electricity network

The Swedish electricity network consists of 528,000 kilometres of conductors, of which 300,000 kilometres are underground cables and 228,000 kilometres are overhead lines. It can be divided into three levels, i.e., the national grid, regional networks and local networks. The national grid transmits power over long distances at high voltage levels, while the regional networks take power from the grid to local networks and, in some cases, directly to major consumers. The local networks connect to the regional networks and carry power to households and other end-users. Svenska kraftnät is responsible for maintaining the power balance and the operational reliability of the Swedish grid system. The local and regional network companies are responsible for ensuring an adequate network maintenance level in order to guarantee that security of supply is maintained within their own networks. In Sweden in 2009, five companies undertook regional network operations and 170 companies, local network operations.

Transmission limitations result in Nordic sub-markets

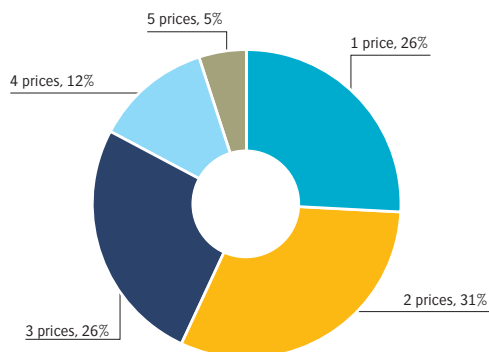
The need to transmit electric power within Sweden and Scandinavia is affected primarily by the availability of hydropower as well as seasonal variations in consumption. However, the Nordic grid has certain limitations in its transmission capacity. Transmission limitations within the Swedish national grid are usually associated with a high level of hydropower generation in the north, which results in a great need to transmit power southwards. Transmission limitations also occur in situations when there is a high level of northwards transmission from Denmark and the rest of Europe to the Swedish West Coast and then on to southern Norway. During periods of transmission capacity that is insufficient to meet market transmission needs, small sub-markets arise on the Nordic electricity market, which, as a result of these transmission limitations, Nord Pool has divided into different bidding areas, which are termed *spot price areas*. The prices in these individual price areas are determined by production and consumption within the area and the transmission of power to and from it.

The most usual price areas in Nord Pool are Sweden, Finland, eastern Denmark, western Denmark, northern Norway, central Norway and also southern Norway, and this country can during periods of extensive transmission limitations be split into further price areas. As a result of Sweden's central geographical location within Scandinavia, it forms a common price area with at least one other power spot area virtually all the time. Sweden

was isolated from all other price areas 0.1% of the time in 2009, while southern Norway deviated from all other areas almost 40% of the time.⁴

In 2009, Scandinavia had a common power price for 26% of the time, three times higher than in 2008, when the price was common for only 9% of the time. This difference can be explained by the extensive cable breaks between Sweden and South Norway in 2008.

Figure 1: Proportion of the time during which there were one or more area prices in 2009



Source: The Energy Markets Inspectorate and Nord Pool

Transmission limitations within Sweden are handled by two methods, *adaptation of trading capacity and counter trading*. By allocating the trading capacity based on predicted conditions, the flow through Sweden can be kept at safe operating levels. This is often seen in the form of a reduction of the southwards export capacity during those hours when there is a high level of transmission through the country. Decisions on how much trading capacity can be allocated to the market within the limits of safe operation are taken in the twenty-four hours prior to operation and made public to the market actors before the spot market closes.⁵ If a reduction in trading capacity is insufficient to avoid overloading the grid, or if conditions change between trading on the spot market and operating hours⁶, Svenska kraftnät uses *counter trading* to keep the load within safe operating limits, which means that it orders increased generation in the area where there is a shortage and/or decreased generation in the area where there is a surplus.

These costs, which are termed *counter trading costs*, are born by Svenska kraftnät and thus provide an indication that the grid needs to be strengthened. In 2009, these costs totalled SEK 340,000,000.

With effect from November 1, 2011 the Swedish electricity market will be divided into four application areas⁷ for trading on the Nordic power exchange. This decision stems from the undertaking given by Svenska kraftnät to the European Commission after an anti-trust investigation lasting several years that arose from suspicions of possible discrimination by Svenska kraftnät against foreign customers as well as other offences. During the interim period up to the establishment of these areas, Svenska kraftnät has also undertaken to allocate extra trading capacity by increasing counter trading.⁸

⁴Source: The Energy Markets Inspectorate.

⁵Trading capacity is determined jointly among the system managers of the respective countries. A system manager in each country assesses the capacity that may be available for trading in order to meet the criteria for safe operation, which are laid down in the Nordic system operation agreement.

⁶Svenska kraftnät thus does not alter set trading capacities made public to the market actors.

⁷Also called price areas.

⁸For a more detailed account of the content of the undertaking given by Svenska kraftnät, please refer to the actual undertaking published in the Official Journal of the European Union, or the Svenska kraftnät homepage (<http://www.svk.se/Publicerat/RapporterRemisser/Rapporter/>).

Transmission limitations generate bottleneck revenues

Transmission limitations (bottlenecks) between different price areas give rise to what are termed *bottleneck revenues* on account of price differences between different areas. When the market is divided into different price areas, the bottleneck revenues for any particular hour are made up of the price difference between a high- and a low-price area multiplied by the volume transmitted.

In accordance with the regulation on cross-border exchanges of electricity⁹, Svenska kraftnät, together with other Nordic national grid operators, has decided to use the revenues from handling bottlenecks for investments designed to strengthen grids and connections between countries¹⁰. According to EU regulation¹¹, the Energy Markets Inspectorate shall, no later than July 31 of every year, give an account of the bottleneck revenues received by Svenska kraftnät during the most recent twelve-year period, together with a description of how they were used. In 2009, such revenues totalled SEK 289,000,000. The Energy Markets Inspectorate considers that these revenues were used for objectives permitted by the regulation.

Higher distribution charges in 2010

The Energy Markets Inspectorate annually collates details of network company distribution charges for some twenty typical customer groups in order to allow easy comparisons of these charges. These distribution charges comprise costs for transmission, administration, network operation and maintenance, as well as meter reading and reporting. They also include official fees and transmission costs in higher-level networks such as regional ones and the national grid.

Figure 2 shows that distribution charges for a typical Swedish house owner were virtually static between 1997 and 2008. The rising total costs to the consumers during this period were due instead to increasing supply charges and rising taxes.

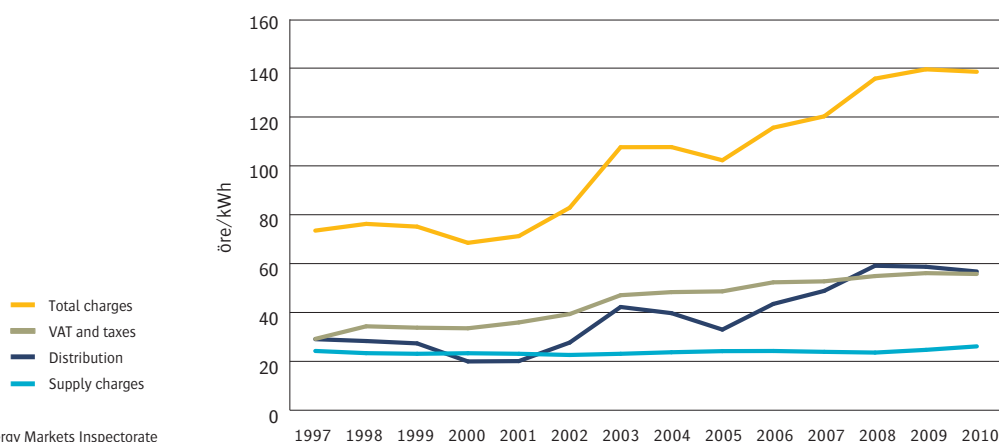


⁹ The proposal of the European Parliament and Council regulation (EC/1228/2003) on conditions for access to networks for cross-border exchanges in electricity.

¹⁰ Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity.

¹¹ This complies with Congestion Management Guidelines relating to EC Regulation 1228/2003 conditions for access to networks for cross-border exchanges in electricity.

Figure 2: Change in the total electricity costs for a detached house owner (20A) with a consumption of 20,000 kWh per annum at 2010 prices



Source: The Energy Markets Inspectorate

Distribution charges often have both a fixed and a variable element. In the case of an electrically heated¹² detached house, the fixed component comprises on average somewhat less than 50% of the distribution charge. The variable element can be modified by the customer's pattern of consumption. In the past year, the fixed element has risen, especially in the case of low-consumption customers such as those living in a flat.

Distribution charges have risen for most types of consumer since 2008, with a sharper increase between 2009 and 2010, when almost 90% of network companies raised their charges to domestic consumers. The most commonly cited reason for these increases was the increases in regional network charges as a result of Svenska kraftnät increasing its charges. Some other explanations cited were increased costs for network losses, investments in remote reading systems and higher investment in the network. Table 1 shows distribution charges for some typical consumer groups in Sweden.

Table 1: Distribution charges as of January 2010 for typical consumer groups in Sweden

	Median 2010, SEK	Change since 2009
Flat owners, 2,000 kWh/year	1 096	+8,5 %
Owners of electrically heated houses (20A) 20,000 kWh/year	5 218	+4,9 %
50 A 100,000 kWh/year	19 800	+4,8 %
160 A	68 224	+6,2 %

Source: The Energy Markets Inspectorate

Distribution charges vary widely among network companies, and for flat dwellers, the lowest charge is SEK 688 per annum and the highest, SEK 2,364, a difference of all of SEK 1,676. For the owner of an electrically heated house, these charges vary between SEK 3,108 and SEK 8,454 per

¹²With a 20A fuse rating and an annual consumption of 20,000 kWh

annum. These differences are due primarily to the number of consumers per metre of cable, and to geographical conditions. As a rule, charges are lower in urban areas and higher in sparsely populated districts where distances are great and there are few customers.

Low-consumption customers have fewer alternatives than high-consumption customers, and the majority of network companies offer small customers only a single type of charge, a single tariff where the same charge is paid irrespective of the time of day at which power is consumed. A time-based tariff is available as an alternative and in this instance the customer pays an amount that depends on when power is consumed. In general, the price is lower at night and higher during the day.

Some network companies have introduced capacity-rated charges for domestic customers where a small part of the distribution charges comprises a fixed price that is linked to the fuse rating, which decides the maximum possible power consumed. In addition, a power charge is levied according to how the household makes use of the power network. The network charge is differentiated within a given fuse rating and different prices may be applied, both at different times of day and at different seasons.

Distribution charges will be examined in advance

The Energy Markets Inspectorate will make annual checks to ensure that network company distribution charges are reasonable and the Inspectorate can order them to lower these charges and refund their customers. Assessment of the fairness of the distribution charges will be undertaken retroactively up to and including the year 2011.

In June 2009, the Swedish Parliament decided on new rules for the Electricity Act (1997:857) which mean that the Energy Markets Inspectorate will, with effect from January 1, 2012, examine network company distribution charges in advance, instead of retroactively as is currently its practice. In this new model the Inspectorate shall decide in advance on the level of revenue that the companies will be allowed during a four-year period. The Inspectorate has the task of devising an inspection method for preliminary regulation of distribution charges for electricity so that revenue frameworks can be decided for all network companies (local, regional and grid) for the first inspection period running from 2012 to 2015.

This new inspection method will prevent unfair distribution charges and ensure effective network operations, while revenues will cover reasonable costs for such operations and give a reasonable yield on capital invested during this period. Company transmission quality¹³ will also be taken into consideration.

The new provisions relating to preliminary examination will give the Inspectorate the right to issue regulations as to what is meant by good quality in the context of power transmission.

During the intervening regulation period 2008 to 2011 the Inspectorate is retroactively examining distribution charges, i.e., in 2009 it audited charges

¹³The Energy Markets Inspectorates Report Kvalitetsbedömning av elnät vid förhandsreglering (EI R2010:08) published in June 2010 states the quality indicators that will be used. The first inspection period will include supply interruptions only.

levied by the network companies in 2008. Inspection is based on the details already obtained from the companies.¹⁴

Audit of distribution charges for 2008

In 2009 the Energy Markets Inspectorate audited distribution charges levied by the *local network companies* and related their revenues to the general costs trend. Yield, efficiency and security of supply were all considered at the same time as account was taken of the trend shown by the companies' charges in recent years. The charges were assessed on the actual networks and circumstances of each company and the audit shows that the charges levied by them in 2008 were fair.

The Inspectorate also audited charges for 2008 levied by the *regional network companies* and its audit was based on the revenue and cost trend in recent years. The Inspectorate found that the trend in their charges was in line with the underlying cost trend, for which reason no company was selected for a more detailed audit in respect of its charges in 2008.

In its role of system operator, Svenska kraftnät is responsible for designing the *national grid tariff*, and its total revenues from its network operations should be fair in relation to its objective and subjective pre-conditions for undertaking grid operations. The Inspectorate examines the fairness of the grid tariff and The Energy Markets Inspectorate and obtains annual economic and technical data from Svenska kraftnät in the form of an annual report.¹⁵ The annual report shall contain a comprehensive account of the network operations, with a profit and loss account and balance sheet. After completing its examination of Svenska kraftnät's compliance with the rules, the Inspectorate does not find anything that requires any further comment.

Harmonisation efforts for balance regulation in Scandinavia

What is termed *balance regulation* is the means by which Svenska kraftnät remedies the imbalance in the grid that occurs during the hours of its operation. Its central control room is manned around the clock so that the frequency in the grid is constantly maintained at between 49.9 and 50.1 Hz. The legal basis for balance regulation is found in the Electricity Act¹⁶, according to which electricity suppliers or other actors who supply electricity to end-users must have a valid balancing responsibility agreement with Svenska kraftnät.

The balancing responsibility agreement means that an actor accepts financial responsibility for ensuring that as much electricity is taken from the network as is fed into it, since the electricity network must always be in balance. The actor who accepts economic responsibility for the electricity network being in balance is known as a balance provider. The electricity supplier may be the balance provider itself or may purchase this service from some other actor.

In order to manage balance regulation as efficiently as possible Norwegian and Swedish system operators co-operate on a common Nordic regu-

¹⁴ By law network companies have to produce a separate financial account of network operations in the form of an annual report that must reach the Inspectorate no later than seven months after the end of the financial year and contain a profit and loss account and a balance sheet.

¹⁵ This is done on the basis of the "National Swedish Board for Industrial and Technical Development regulations and general advice (1995:1) on reporting of network operations" revised by NUFTS 1998:1.

¹⁶ Chapter 8 of the Electricity Act (1997:857).

lation electricity market. They are jointly responsible for maintaining the frequency within Nordic synchronised systems, while each system operator is responsible for safe operation within its respective system responsibility area.

Balance regulation takes place through *primary* and *secondary* regulation. Primary regulation means that fine adjustment is performed on the physical balance in the electrical system in that generation in a number of hydropower stations is automatically increased or decreased. Secondary regulation involves manual upward or downward regulation of generating plants and is undertaken in the form of power deals with the balance providers who have concluded an agreement with Svenska kraftnät on participation in balance regulation. Regulation has a price and is priced for every delivery hour. The cost of the imbalance of each balance provider is then calculated in the balance settlement,¹⁷ which is the responsibility of Svenska kraftnät.

According to the Electricity Act, Svenska kraftnät cannot conclude balance agreements with a balance provider before the methods used for drafting the agreements have been approved by the Energy Markets Inspectorate. Svenska kraftnät has drawn up a standard agreement that provides a basis for the way in which the individual balance agreements will be drafted. In June 2009, the Inspectorate approved the methods used by Svenska kraftnät to draw up balance agreements for electricity during the period from October 1, 2009 onwards, and it found that these methods result in the agreements meeting the requirements for objectivity and non-discrimination.¹⁸

A process is currently in progress to harmonise the terms for the balance providers in each Nordic country, with the aim of facilitating a common Nordic end-user market. This process of harmonisation is supported by the regulatory authorities in the Nordic countries, and its first stage was implemented in principle on January 1, 2009, when the Nordic system managers harmonised rules on such matters as a cost base for the balance settlement and methods of calculating and pricing imbalances. In addition, more technical aspects of balance regulation were harmonised in 2009. Harmonisation continues within the framework of the NordREG¹⁹ mission to establish a common Nordic end-user market.

New price model with respect to balance settlement

The cost of balance provider imbalances is calculated by Svenska kraftnät in arrears in what is termed the balance settlement, which is undertaken per balance provider for Sweden as a whole, based on metered values per settlement area. The purpose of settlement is to calculate the costs of the imbalance between the measured and the planned generation and purchase respectively, and also between consumption and sales, with respect to every balance provider. In addition, the costs for balance regulation undertaken by Svenska kraftnät among those balance providers who have contributed to the imbalance in the system are to be allocated.

Balance settlement takes place for every hour of every single twenty-four hour period and for the whole of the year. The network companies

¹⁷For further information about balance settlement, refer to the section New price model with respect to balance settlement.

¹⁸In April 2010 the Energy Markets Inspectorate approved the methods used by Svenska kraftnät to amend the terms of the balance agreement for electricity. (Ref no. 702-10-100860)

¹⁹The co-operative organisation for the Nordic inspection authorities.

are responsible for metering and reporting hourly and standard metered values to Svenska kraftnät. The Energy Markets Inspectorate undertakes inspections to ensure that the network companies follow the instructions for metering and reporting, while Svenska kraftnät checks that the balance providers follow the rules in the balance agreement.

The pricing of imbalances is carried out in accordance with two different models, while a two-price model applies to generation imbalances. This model means that the actor who has an imbalance in the same direction as the total imbalance pays a regulation price for the electricity purchased. On the other hand, if the imbalance is in the opposite direction compared with the total balance, the actor pays the spot price for the imbalance instead, and these prices are published by Nord Pool for every hour. The new single-price model applies with effect from January 1, 2009; this represents one aspect of Nordic harmonisation and aims to stimulate flexibility on the demand side.

Domestic electricity meters are read monthly

With effect from July 1, 2009, the network companies are obliged to read all the electricity meters for domestic customers throughout the country once a month, while previously this was to be done annually. One of the objectives of this reform is to allow customers to better monitor their consumption. Metered value reporting is the basis for ensuring a businesslike approach to electricity trading and the planning of the national electricity balance and end-user invoicing, and it is essential to the proper functioning of the electricity market that such reporting is done correctly.

The Energy Markets Inspectorate audited the reading and reporting of metered values by the five largest network companies in the autumn of 2009, in order to check whether they had complied with the new requirements. The results revealed shortcomings by four of the five companies audited that affected 100,000 customers, where in many cases customer invoices were not based on actual consumption. In the spring of 2010, the Inspectorate demanded the submission of action plans from the companies involved showing which measures will be taken to ensure that the supply companies will be receiving correct metered values.

Legislative changes for a clearer distinction between network operations and trading/generation

According to the Electricity Act, a company involved in network operations may not undertake generation or trade in electricity, but it may form part of a group that does so. Those network companies that are part of such groups generally use the group name with the addition of "network" or a similar term, in order to distinguish network operations from generation and trading. In such cases, the network company usually uses the same logotype and the group website is usually divided into separate areas for network and trading operations.

According to the Electricity Act, all network companies are obliged to produce both a separate financial report and a supervisory plan that will ensure that the network companies act objectively and do not illicitly favour any market actor.

The network company shall produce an annual report²⁰ on the measures taken in accordance with the supervision plan to combat discriminatory behaviour towards other actors on the electricity market.

Since January 1, 2010, the following applies to those network companies that are part of a group whose combined network has at least 100,000 electricity consumers²¹.

- Company organisation and decision-making shall be separate from the company that undertakes generation or trades in electricity.
- A member of the board, the managing director or authorised signatory of a company may not hold such a post in a company that undertakes generation or trades in electricity.
- The company may not grant employees in a leading position salary or other benefits that are based on the results of those parts of the group that undertake generation or trade in electricity.
- The company shall ensure that it has the right to make independent decisions with respect to assets that it requires to safeguard operations, maintenance and expansion of the network.

Svenska kraftnät, which administers and operates the transmission grid in Sweden, is separate from operations that are open to competition through its ownership structure.

The wholesale market

The Swedish wholesale power market is part of an integrated Nordic market. The Nordic countries, with the exception of Iceland, are linked together by electricity transmission connections, and electricity is bought and sold on the Nord Pool Nordic electricity exchange, between actors in the Nordic countries. The operative management of the power grid is undertaken within each country, where the system operator is responsible for the balance in the national system.

Swedish generation is based primarily on nuclear power and hydropower, and in a normal year, these two sources account for around 90% of the total.

Increasing market share for the Nord Pool spot market

Trading in physical power contracts is organised at Nord Pool, on what is termed the spot market (Nord Pool Spot AS). Nord Pool also has a market for financial trading, where longer-term power contracts are traded (Nord Pool ASA). Trading at Nord Pool's markets provides the basis for trading in

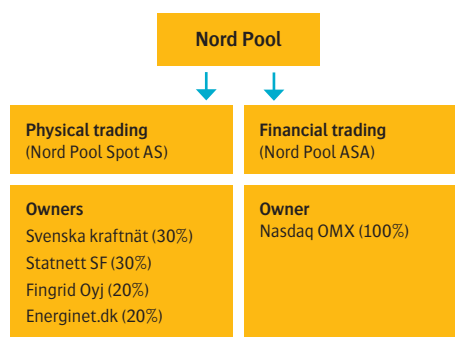
²⁰ The report on the separate financial statement and also that on the measures taken in accordance with the supervisory plan are public documents that must be sent to the Energy Markets Inspectorate.

²¹ The six groups in Sweden, whose networks have more than 100,000 customers, have over 60% of the total number of customers in Sweden.

electricity on the entire Nordic market, while apart from trading on Nord Pool, direct trading between buyers and sellers also takes place.

Nord Pool Spot AS is owned jointly by the Nordic system operators, while Nord Pool ASA was sold off in April 2010 by Svenska kraftnät and Statnett SF to Nasdaq OMX. The reason for this was that Svenska kraftnät did not consider that running a financial market was part of its core operations. Figure 3 below shows organisational structure of Nord Pool and its owners.

Figure 3: Organisational structure of Nord Pool



Source: Nord Pool

The price of electricity is set hour by hour on the Nord Pool spot market for the coming twenty-four hour period by each actor in an auction procedure submitting bids to Nord Pool on purchases and sales of electricity. The Nord Pool Spot AS market share of total consumption within the exchange area increased from 70% to 72% in 2009, which is the highest level ever. High turnover on Nord Pool increases confidence in price formation among market actors. By contrast, the total volume traded fell slightly in comparison with the previous year, i.e., to 286 TWh in 2009 from 298 TWh in 2008. In December 2009, there were 325 actors on the Nord Pool spot market.

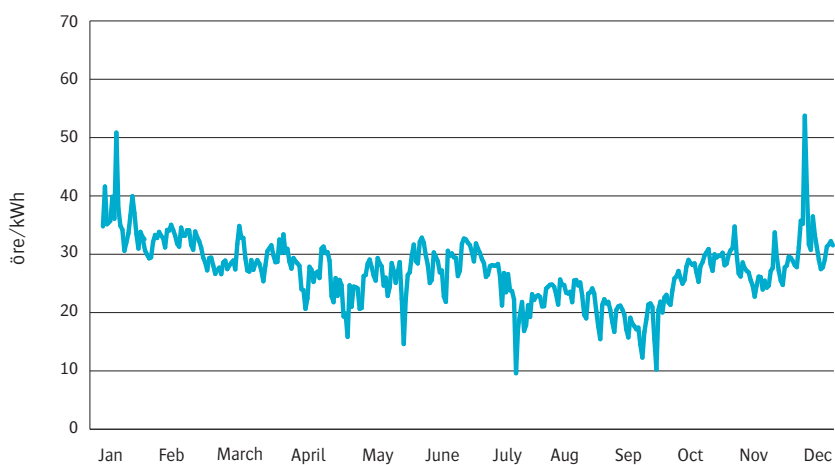
The financial electricity market allows risk management for buyers and sellers by offering long-term contracts available for periods of days, weeks, months, quarters and years, with a maximum validity of six years. The price on the spot market is the reference price for the financial contract on the market. Total turnover on Nord Pool is dominated by the financial market, which fell by 15% compared with the previous year and reached a total volume of 1,218 TWh. In December 2009, there were 399 actors on the Nord Pool financial market.

Falling system price

In 2009, the price trend was marked by the global recession, which contributed to lower demand for electricity and falling fuel prices, which depressed electricity prices. In November and December, however, electricity prices began to rise again, which can be explained by falling temperatures increasing the demand for power at the same time as nuclear power capacity was low, see Figure 4.

The system price is the common price in all spot price areas irrespective of physical transmission limits within Scandinavia. The average system price in 2009 was 37 öre/kWh as against 43 öre/kWh in 2008. The average price for Sweden as a single spot price area fell by over 20%procent to 39 öre/kWh in 2009 from a level of 49 öre/kWh in 2008.

Figure 4: System price trend in 2009



Source: Nord Pool

Lower Swedish generation and consumption

In 2009, total generation in Sweden was almost 134 TWh, a drop of 8% in comparison with 2008, as is shown in Table 2. This drop was due primarily to the problems that nuclear power was facing during the year, with nuclear generation over 18% lower than in the previous year. In comparison with the record year of 2004, this represented a decrease of no less than 33%. Hydropower generation fell by 5% compared with the previous year but it still accounted for 49% of total national generation. Wind power represented the highest increase of all generation types, recording an increase of 25% since 2008.

Tabell 2: The Swedish electricity balance 2005–2009, TWh

	2005	2006	2007	2008	2009
Domestic generation	155,0	140,3	145,0	146,0	133,7
Hydropower	72,0	61,1	65,5	68,4	65,3
Nuclear power	69,8	65,0	64,3	61,3	50,0
Other thermal power	12,3	13,3	13,8	14,3	15,9
Wind power	0,9	1,0	1,4	2,0	2,5
Domestic consumption	147,6	146,3	146,3	144,1	138,3
Network losses	12,4	11,0	11,9	11,0	10,2
Imports	14,6	20,5	18,5	15,6	16,4
Exports	-22,0	-14,4	-17,2	-17,6	-11,7
Net output	-7,4	6,1	1,3	-2,0	4,7

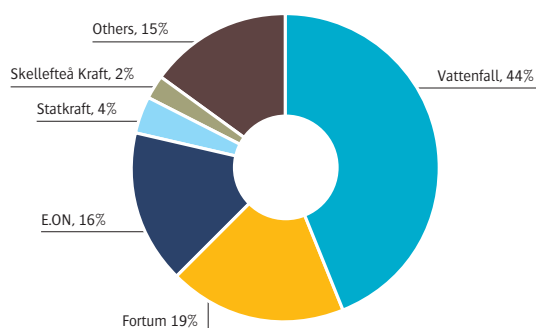
NB. Negative values denote exports
Source: Statistics Sweden and Swedenenergy

As a consequence of the global recession, total consumption in Sweden in 2009 was at its lowest since the end of the 1980s. Of all the various consumer groups, it was industry²² that cut its consumption the most, by around 12% in comparison with 2008. This drop was largely due to the fact that several industrial producers cut back production severely during the summer months due to falling orders. Domestic consumption remained virtually at the same level as in previous years. In the short term, domestic consumers have neither the same means nor the same incentive to cut consumption as do industrial users and companies.

Three major electricity producers

The five largest electricity producers in Sweden accounted for over 85% of total generation in 2009, see Figure 5. Vattenfall, E.ON and Fortum together accounted for 79% of total electricity generation in 2009.

Figure 5: The five largest electricity producers in Sweden in 2009



Source: Swedenenergy

²²Industry is defined in accordance with the classification employed by Statistics Sweden as mineral extraction and manufacturing.

Vattenfall is owned by the Swedish state and is the largest Swedish producer. In 2009, it produced 44% of Sweden's electric power, which was more than the total generation of E.ON Sverige and Fortum Sverige combined. The former is owned by E.ON, one of the world's largest privately owned energy companies. Fortum Sverige is one of the companies in the Fortum Group, whose parent company is 60% owned by the Finnish state. Statkraft Sverige is a wholly owned subsidiary of Statkraft, a state-owned Norwegian company, while Skellefteå Kraft is a wholly owned municipal company.

In all, the Swedish state, via Vattenfall, owns 41% of the installed generation capacity, foreign actors own 40% and Swedish municipalities 12%, while other categories account for the remaining 7%. In recent years the proportion of the total generation capacity in the hands of the Swedish state and foreign actors has declined while the other categories have increased their ownership.²³

The end-user market

The Swedish end-user market for electricity is a national one, and in the middle of the 1990s there were around 220 electricity suppliers. Since then, their numbers have fallen, due primarily to take-overs and mergers where many municipalities have decided to sell off their supply companies. In recent years, the number of such companies has remained virtually unchanged, and in 2008 there were 115 suppliers, a figure that had risen to 120 by December 2009. Of this number, around one hundred sell electric power throughout Sweden, and more than half of them are part of a larger group of companies that also generate electricity. The total number of domestic customers on the Swedish end-user market at the end of 2009 totalled around 4,100,000.

²³Source: Swedenenergy



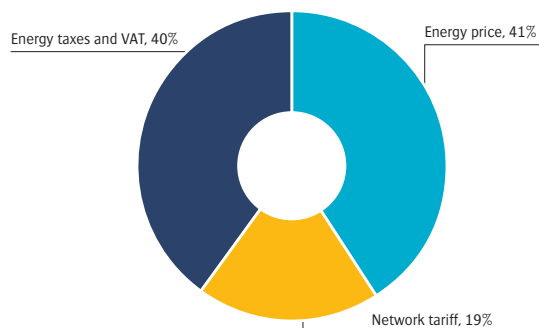
Supply charges make up the largest part of total electricity costs for private customers

Total consumer costs for electricity comprise

- Energy price
- Network tariff
- Energy taxes and VAT

In the past decade, energy price have accounted for an increasing proportion of the total cost of electricity, which, however, fell marginally between 2008 and 2009. For a domestic consumer living in an electrically heated house, energy prices represented 41% of the total cost on January 1, 2010, as compared to 42% one year earlier. Network tariffs made up a further 19%, while energy taxes and VAT together accounted for 40%, as shown in Figure 6.

Figure 6: Total electricity costs for a domestic customer living in an electrically heated house as of January 1, 2010.



NB: The cost to a customer living in an electrically heated house in an area of Sweden where energy taxes are payable in full. The prices refer to a one-year fixed-price contract and an annual consumption of 20,000 kWh. These figures have not been calculated in fixed prices.

Source: The Energy Markets Inspectorate

The web-based price comparison site Elpriskollen

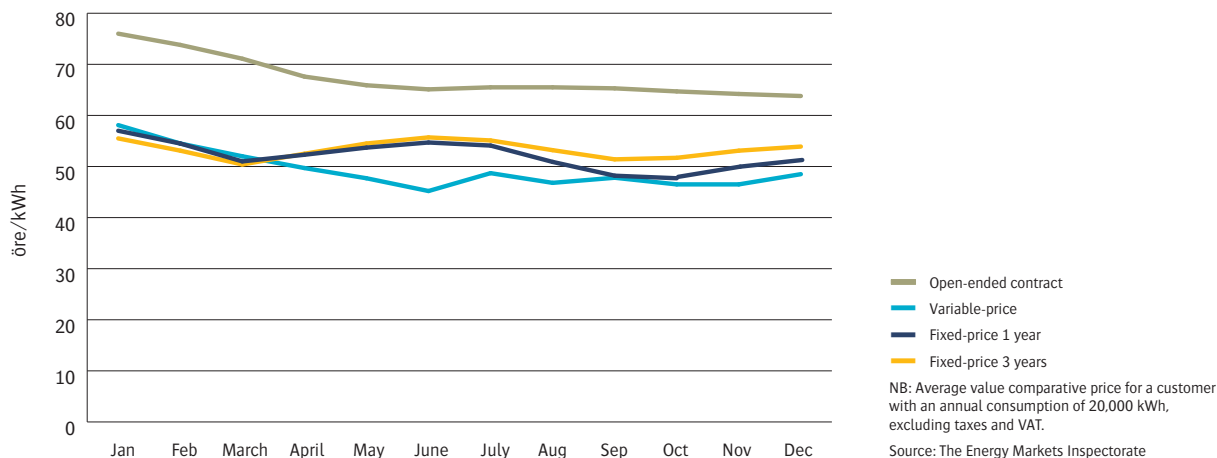
All Swedish electricity suppliers are obliged by law to supply the Energy Markets Inspectorate with details of the terms and conditions they offer the consumers. At the end of January 2008, the Inspectorate launched its independent, web-based price comparison site *Elpriskollen*, which brings together prices and terms and conditions for all Swedish suppliers in order to facilitate consumers choosing the supplier and the contract that best suits them.

Falling electricity prices

In 2009, the price trend was marked by the global recession, which contributed to lower demand for electricity and falling fuel prices, thus depressing electricity prices. In November and December, however, power prices began to rise again, which can be explained by falling temperatures, at the same time as nuclear power generation was at a record low.

Figure 7 shows the supply charges trend for the most common contract types of domestic customers with an annual consumption of 20,000 kWh. In 2009, those customers who had a variable-price contract generally paid less for their electricity than those who had chosen to fix the price during the year.

Figure 7: Supply charges trend for the most common types of contracts



Variable-price contracts the most common type

For the first time ever, variable-price contracts were the most common type of electricity supply contract among Swedish households, and in December 2009, around 30% of customers had variable-price contracts, as opposed to 22% at the same time in 2008. The type that declined the most in 2009 was the open-ended contract, where customers who have not made any active choice of supply contract, have to pay the price stipulated. In December 2009, around 26% of all customers belonged to this category, a drop of almost ten percentage points compared with the same month in 2008. The falling proportion of customers with open-ended contracts is probably a result of the fact that the customers on the electricity market have become more aware that the price is set higher than in the case of variable- or fixed-price contracts, which the customer actively concludes with a supplier. In December 2009, around 20% of customers were on a three-year fixed-price contract, while 14% opted for the one-year version.

New service answers electricity and gas consumer FAQs

In the spring of 2009, the Energy Markets Inspectorate launched a new service on its website, which provides electricity and gas consumers with a compendium of consumer-related questions and answers on everything from consumer rights to the information that should be provided on the invoice and how to change your supplier. The initiative originally came from the European Commission, and it aims to strengthen the position of consumers on the energy markets and provide an understanding of how they operate.

Increased activity among households

A total of almost 1.8 million domestic customers were active on the electricity market during the year, as they either switched supplier or changed their

contract with their existing one. This represents around 40% of the total number of such customers on the Swedish electricity market.

The number of supplier switches in 2009 was 31% higher than in the previous year and 23% higher than in 2007. In all, around 11% of all domestic customers in Sweden switched their electricity supplier during the year. This increased activity among the customers leads to more intense competition among the suppliers, which can squeeze prices and benefit the customers in the form of better offers. There may be several reasons why such switching is more frequent, including the fact that during the recession, customers may have been more inclined to review their outgoings. The increasing amount of information in the mass media may also have played a role in this greater customer activity.

A customer wishing to switch supplier signs a contract with the new supplier, who then reports this change of supplier to the customer's network company. Suppliers are obliged to report this switch and provide details of it to the latter company no later than the fifteenth day of the month before the month during which the switch is to take place, instead of one month before, as was previously the case. Customers are not charged for switching suppliers.

Besides switching suppliers, customers can be active on the electricity market by re-negotiating their contract with their current supplier. This may mean that a customer, who previously had not switched contracts and had therefore paid on an open-ended basis, chooses to conclude a fixed- or variable-price contract with the assigned supplier. Alternatively, a customer whose contract is coming to an end chooses to sign a new one with the same supplier. A total of 27% of all households in Sweden renegotiated their contracts in 2009, a rise of 5% and 13%, respectively, in comparison with 2008 and 2007.

An unchanged number of enquiries and complaints

Every year, the Energy Markets Inspectorate receives enquiries and complaints from consumers on the electricity market and in 2009, it replied to a total of around 1,1000 communications, the same number as in the previous year, comprising complaints, general questions and feedback. The greater part of these communications were made up of complaints and questions about distribution charges, questions relating to the Elkollen price comparison site, electricity supplies and also meter reading and records of power supplied. In addition to this correspondence, the Inspectorate also answers telephone enquiries and complaints.

The Consumer Electricity Advice Bureau also receives enquiries and complaints from consumers on the electricity market, and the Energy Markets Inspectorate is one of the bodies responsible for this organisation, which provides free information, advice and guidance on issues relating to the electricity market. In 2009, the Bureau received 4,200 questions and complaints, which was equivalent to the level of the previous year. Around 50% of the enquiries received were complaints and claims.

Political will for a common Nordic end-user market

For a number of years, there has been a political will for the establishment of a common Nordic end-user market for electricity, which would mean that the customers in the Nordic countries would enjoy a free choice of electricity suppliers across national borders.

In May 2009, the Energy Markets Inspectorate, together with its Nordic counterparts in NordREG, proposed that such an end-user market should be in place no later than 2015, and this proposal was presented in a report to the Nordic Council of Ministers. On 27th October, 2009, the Nordic energy ministers gave their backing to this proposal. In time for the next ministerial meeting, scheduled for the autumn of 2010, NordREG is to draw up a detailed implementation plan containing the necessary measures for the establishment of a common end-user market, which would help to improve competition and in turn bring benefits to the customers, in the form of improved service and a wider product range.

Measures to prevent market power

Several authorities monitor the electricity market

Several authorities and other bodies work together to monitor the Swedish and Nordic electricity market for the purpose of using various measures to establish a smooth-running market and prevent the exercise of market power.

The Energy Markets Inspectorate has the overall responsibility for the Swedish electricity market and the application of legislation relating to electricity and the law pertaining to certain pipelines.²⁴ The Competition Agency is responsible for applying the rules relating to competition, while the Swedish Financial Supervisory Authority regulates those Swedish actors who, with the permission of the authorities, operate on the Nord Pool financial market. The Swedish Consumer Agency also plays a part in monitoring the electricity market, through such actions as drawing up standard general contractual terms and conditions for the entire industry in order to ensure fair contracts for the consumers on the electricity market. In addition, Nord Pool operates an internal supervision of trading and corporate behaviour, while, located in Norway, it is itself supervised by the Norwegian regulatory authorities NVE (The Norwegian Water and Energy Directorate) and the Financial Supervisory Authority of Norway.

Areas of responsibility of the Competition Agency and its operations on the electricity market

The Competition Agency is the official body that monitors the companies on the Swedish electricity Markets to ensure that they do not infringe any of the prohibitions against anti-competitive behaviour in the Competition Act²⁵ and the EU treaty²⁶. The Act aims to eliminate and counter obstacles

²⁴ The Electricity Act (1997:857) and the law pertaining to certain pipelines (1978:160)

²⁵ The Competition Act (2000:579), Chapter 2, Section 1 (anti-competitive co-operation) and section 7 (abuse of dominant position)

²⁶ Articles 101 and 102 of the Treaty of Lisbon

to effective competition in the production of and trade in goods, services and other necessities.

In response to public or corporate complaints or on its own initiative, the Competition Agency can actively intervene against companies that abuse their dominant position on the market by exercising market power. The Competition Act also contains rules on monitoring corporate concentrations and the Competition Agency shall also contribute to effective competition by proposing amended rules and other measures to eliminate existing obstacles to competition. It is also charged with contributing funds for Swedish research in the fields of competition and procurement.

Since January 1, 2010, the Competition Act²⁷ has been amended so that the state, a municipality or a county council, or legal entities over which these have a dominant influence, can be forbidden to apply certain procedures in sales activities. In order for a ban to be imposed, these procedures must distort competition or be intended to distort the pre-conditions for effective competition. A municipality or a county council may, in an equivalent manner, be completely forbidden from engaging in a certain sales activity. An activity cannot be forbidden if it is deemed justifiable with regard to public interest or is in accordance with the law. These rules make it possible to examine and intervene against distortions of competition that may occur when the state, a municipality or a county council sells goods and services on competitive markets.

A current case of malpractice

In the previous year, the Competition Agency dealt with a case involving the network company Ekfors Kraft AB that related to its distribution of power to a street lighting network built by Haparanda Municipality. The matter arose from a conflict between the company, which has the exclusive right to distribute power within its concession area in Haparanda and the municipality. When the company wanted to raise its prices some years ago, the municipality protested, with the result that the company refused to power up its street lighting network. The municipality saw no other solution than to start building a network of its own. The company, however, refused to connect this newly built municipal network to its power network. In an interim judgement, the Competition Agency ruled that the company was obliged to do so and its ruling was enforced by the threat of a fine. This judgement was later confirmed by the Market Court. A preliminary agreement was reached on May 27, 2010, between the company and the municipality on the procedures for the final connection of the street lighting network in Haparanda.

Abolishing co-ownership

In a memorandum²⁸ to the government in 2007, the Competition Agency highlighted the general risk of co-ownership of electricity generation resources and other factors that may inhibit or restrict competition on the electricity market. Co-ownership in Swedish electricity generation implies

²⁷The Competition Act (2008:579), Chapter 3, Sections 27 to 32

²⁸The Competition Authority: Konkurrensförhållanden på elmarknaden (408/2006)

above all risks of an illicit exchange of information among competing companies. The risks of negative effects on competition in this case are especially great, as it is primarily the three leading companies on the market that co-own generating plants, and, in general, co-ownership diminishes confidence in a functioning market.

This was the background to the endorsement by the Competition Agency of the appointment by the government in 2008 of two negotiators with a remit to examine the potential for measures that could minimise the risks of anti-competitive restrictions due to co-ownership within the Swedish nuclear power industry. Prior to their negotiations with the owners of nuclear plants, the negotiators asked the Agency to elaborate on its view of co-ownership within this industry and on the risks attached to such co-ownership. It submitted its views to the negotiators in September 2008²⁹ and their final report appeared in April 2010. In it they stated that they had unfortunately been unable to reach an agreement as to how to change the ownership of the Swedish nuclear plants so as to abolish co-ownership. However, the government stated that the question of confidence in co-ownership still applied and the owners themselves had a responsibility to keep working on this issue, for example, by drawing up ethical rules for greater transparency.

In a report³⁰ commissioned by the government in March 2009, the Competition Agency presented a large number of proposals on competition-enhancing measures directed at the energy markets, among other areas. This report stated that the Nordic electricity market and the Nord Pool electricity exchange demonstrated satisfactory performance by European standards. However, the former possessed several particular features that implied risks for the exercise of market power and impaired competition. Apart from the aforementioned issue of co-ownership, the report also touched on a number of competition matters and also presented proposals on competition-enhancing measures.

Introducing hour-by-hour metering and a competitive electricity metering market

The report stated that important pre-requisites for a smoothly operating end-user electricity market are that the customers are well informed and active, and do not experience any obstacles to their choosing and, where necessary, switching, suppliers. An effective end-user market requires a body of rules, technical solutions and types of contracts that promote greater flexibility among electricity consumers. Hour-by-hour metering allows more advanced types of contract, where the consumers can react to hourly price differences on the electricity exchange and adapt their consumption accordingly. The prices on the exchange are high during consumption peaks when the grid is under severe pressure.

More flexible consumer demand for electricity would therefore also be positive for the output balance, ensure more effective use of the grid and thus reduce the need to expand its capacity. In the light of this, the Competition

²⁹The Swedish Consumer Agency: Bryt upp samägandet inom kärnkraften (500/2008)

³⁰The Swedish Consumer Agency: Åtgärder för bättre konkurrens – Förslag (2009:4)

Agency proposed that all electricity consumers should be offered hour-by-hour metering.

The Competition Agency also pointed out that the liberalisation of the electricity market should continue and that one part of the existing network monopoly that did not necessarily need to be regarded as a monopolistic operation, and could therefore be suitably opened up to competition, was the electricity metering market, as, for example, has recently been done in Germany. The principal reason for doing so is to ensure effective markets for meters and meter-reading services and ensure positive product and market development, for such purposes as promoting the emergence of new electricity supply contracts, thus contributing to even greater customer mobility. A well-developed electricity meter-reading market can also be expected to promote the development of tools to support various forms of energy efficiency efforts that are envisaged in the EU directive³¹ on energy end-use efficiency. The Agency thus proposed that a process be initiated to open up the Swedish electricity metering market to competition.

This was one of the factors behind several government initiatives in 2010 to achieve greater efficiency on the electricity end-user market. The Energy Markets Inspectorate has been commissioned to analyse the financial and legal consequences of a transition to hour-by-hour metering of consumer units, which is currently undertaken on a monthly basis. Another commission relates to the issue of how to facilitate advanced use of smart meters and intelligent electricity networks. Some of the government objectives are creating better conditions for more active electricity consumers, improving incentives for more efficient electricity consumption and reducing output at peak loads. In addition, the Swedish Consumer Agency has also been charged with producing an analysis of the electricity market for consumers, in consultation with the Energy Markets Inspectorate and the Competition Agency. This study is to identify and explain obstacles to the consumers' ability to make rational market choices, and also to propose measures.

Completing the integration of national electricity markets

In the above report, the Competition Agency also highlighted the need to complete the integration of the Nordic and northern European electricity markets. To this end, a number of measures that need to be taken were emphasized, primarily with regard to grid investments and measures to achieve a common Nordic end-user market. The grid transmission capacity must be improved both within the Nordic area and to countries outside it. The Nord Pool electricity exchange ought also to be actually linked to other electricity exchange areas by means of what is termed market coupling. The Nordic grid operators must above all assume responsibility for implementing the five joint priority grid extensions contained in what is termed the “package” as soon as possible and without any further delays. These investments will limit the occurrence of bottlenecks and contribute to the integration of the Nordic electricity system, making it more robust and boosting the

³¹ The Directive on energy end-use efficiency (2006/32/EG)

potential for functioning competition. The Competition Agency also stressed the need for the Nordic grid operators to consider further transmission links that in a Nordic context were profitable in macroeconomic terms.

Nord Pool regulations influence prices and market supervision

All actors on the Nord Pool electricity exchange must comply with its regulations on the handling of information that influences prices. All producers and other actors are obliged to inform Nord Pool of, among other things, the following immediately or at the latest within sixty minutes.

- All company information that may have a considerable effect on prices, although this does not include corporate plans and trading strategies.
- The following information on generating plants, consumption and transmission within or directly connected to the Nordic electricity spot area.
 - Planned maintenance or generation restrictions that affect more than 100 MW during the following six-week period.
 - Planned maintenance or generation restrictions that affect more than 400 MW with regard to plants for generation, consumption or transmission during the current year or the next three years.
 - Unscheduled generation stoppages and failures that affect a generation capacity in excess of 100 MW.

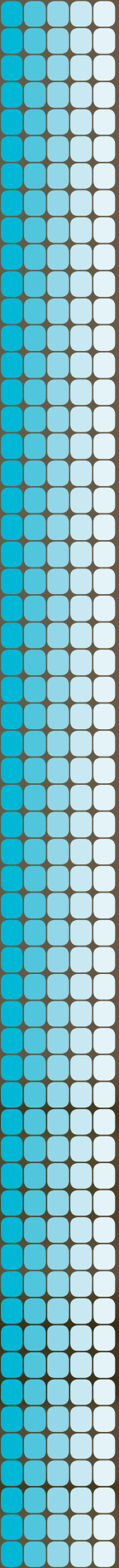
A market actor with access to some form of information that influences prices and which is unknown, may not trade until it has been made public at Nord Pool via what is termed a UMM (Urgent Market Messages). This applies to trading in electricity on the physical market and in financial contracts on the futures market, such as the trade in Swedish electricity certificates and emission rights within the EU emission rights trading system (EU ETS). If a single unit of a trading company is in possession of information that affects prices, trading may still proceed, if the company can document to Nord Pool that there are physical or other barriers to information transfer between the various units within that company. The rules also include provisions on employee and board member confidentiality within companies in respect of information that affects prices, which may not be communicated to Nord Pool.

Nord Pool publishes information on supply, demand, transmission capacities between electricity spot areas, and prices for different areas and products. With regard to transmission capacities, Nord Pool publishes allocated capacities as well as the transmission restrictions that may have led to capacity reductions. It also makes public a limited part of the bidding curves (the buying and selling bids for different volumes) and the equilibrium price every single hour. This report is updated once a week but is not published until one week later.

Nord Pool regulations contain provisions on bidding on the spot market, and in order to supervise bidding and create confidence in price formation, it has a special market supervision function that continuously follows trading. Consequently, all transactions are monitored with respect to the actors supplying the information that they are obliged to divulge, in order to prevent insider trading, price manipulation and the exercise of market power. The actors are also obliged to provide Nord Pool without delay with all information that it deems relevant to its ability to supervise trading. The market supervision unit publishes reports of completed investigations of suspected infringements of the rules on the Nord Pool website. If and when an infringement has been committed, there is a system of sanctions that include warnings, fines and the withdrawal of trading permits.

During the winter of 2009/2010, a number of price peaks occurred on the Nord Pool spot market, which sparked off a debate in the Nordic countries on the function of the electricity exchange and market transparency. As a result, Nord Pool is currently considering whether transparency with respect to price formation can be improved, for example, by making further bidding data available to researchers. These price peaks also led the Nordic regulatory authorities' co-operation organization NordREG to undertake an analysis of the price trend and its underlying factors. This study is being produced together with the Nordic competition authorities and a report will be presented at the end of 2010.





Unlike natural gas grid operations, trading is done on a competitive basis, after a gradual transition from local monopolies to completely free competition. The last stage in opening up this market was taken on July 1, 2007, when the natural gas markets of most EU countries, including Sweden, became fully competitive. This market reform means that all Swedish natural gas customers have a free choice of supplier. Around two percent of the country's energy needs are met by natural gas.



The natural gas market

The natural gas grid

The natural gas grid can be divided into transmission, distribution and storage operations. Gas is conveyed in pipelines over long distances under high pressure, after which it undergoes pressure reduction at metering and regulating stations before reaching the customers via a local distribution network. The Swedish natural gas grid consists of a 620-kilometre long transmission pipeline and around 2,600 kilometres of distribution pipeline. Svenska kraftnät has overall responsibility for short-term maintenance of the balance between injection and withdrawal of natural gas in the national system. The responsibility for operating, maintaining and enlarging the pipeline system rests with the owners of the respective natural gas pipelines.

Audit of gas distribution charges

The Swedish Energy Inspectorate regulates the gas network companies and approves the methods that they use to calculate their distribution charges. In setting charges for the transport of natural gas, particular attention should be paid to the number of customers supplied, their geographical location, the amount of energy transmitted, subscription costs for above-ground pipelines, security of supply and the pressure in the pipelines. The Inspectorate's preliminary audit of the methods that are the basis for the determination of charges aims to ensure that they are objective and non-discriminatory in accordance with the requirements of the Natural Gas Act (2005:403). The fairness of the distribution charges is examined by means of a retrospective follow-up.

In accordance with the Natural Gas Act, the gas network companies are obliged to draw up a separate financial account of their transmission, distribution and storage operations, in the form of an annual report³², which provides the basis for inspection and should reach the Inspectorate no later than seven months after the end of the financial year.

The Energy Markets Inspectorate will be switching to advance regulation of the fairness of gas distribution charges, and during 2008 and 2009 it developed a method for advance regulation of natural gas charges.

This implies the introduction of a four-year regulation period, the first of which will be introduced once the rules incorporate the required provisions.

³² The annual report shall contain a complete profit and loss account and a balance sheet for each respective operation.

No transmission restrictions in the natural gas grid

The available capacity of the Swedish transmission system is around 15 TWh/year. There are currently no transmission restrictions in the grid, either nationally or on the import link from Denmark. There is no secondary market for transmission capacity in Sweden, where unutilised capacity would be made available for trading. This is a consequence of the fact that the gas market model in Sweden diverges from that used within the EU.

Balance regulation

Since 2005, Svenska kraftnät has been the official system operator, which means that it is responsible for maintaining the short-term balance in the Swedish natural gas system. As far as possible, imbalances are managed through market mechanisms, but in those instances where a commercial solution proves ineffective, Svenska kraftnät instructs the pipeline owner to restrict or shut down natural gas supplies to customers.³³

In order to maintain the short-term balance in the natural gas system Svenska kraftnät enters into balance responsibility agreements with natural gas companies, according to which the balance provider shall plan to achieve a balance between his supply and withdrawal of natural gas. A balance plan shall be sent to Svenska kraftnät no later than 14.00 hours on the day before the delivery day. Balance settlement by Svenska kraftnät is done on a twenty-four hour cycle no later than 12 am on the day after the delivery day, and this is based on the reported metered values from the network owners and reported trading values from the balance providers.

According to the Natural Gas Act, Svenska kraftnät cannot conclude balance agreements with individual gas suppliers until the methods used for drafting the agreements have been approved by the Energy Markets Inspectorate. Svenska kraftnät has drawn up a standard agreement that provides a basis for the way in which the individual balance agreements will be drafted. In June 2009, the Inspectorate approved the methods used by Svenska kraftnät to draw up balance agreements for gas during the period from October 1, 2009 onwards, and it found that these methods result in the agreements meeting the requirements for objectivity and non-discrimination.

Separation between transmission of natural gas and trading in it

According to the Natural Gas Act, a company that undertakes transmission of natural gas may not trade in natural gas within the same company (legal separation), from which it follows that these operations should be accounted for separately. In a company that has a permit for a natural gas pipeline, a member of the board of directors, the managing director or an authorised signatory may not at the same time hold these posts in a company that trades in natural gas. However, Swedish law does not stipulate that a gas network company may not be part of a group of companies that produces or trades in natural gas.

³³ This is regulated in the Natural Gas Act

In those cases where a natural gas company does not follow the provisions of the Natural Gas Act, the Energy Markets Inspectorate has the power to enjoin the company to take measures to comply with the rules and this injunction can be enforced by means of a fine.

As from 1 July 2005, the Natural Gas Act includes rules requiring companies that transmit natural gas to draw up a supervision plan. In addition, the companies shall publish an annual report that describes the measures they have adopted according to the plan. The objective of the supervision plan is to ensure that companies will act objectively and will not unduly favour any market actor. The supervision plan shall describe the measures the company will take in order to counteract discriminatory behaviour in relation to other market actors

Metering and reporting customer consumption of natural gas

The opening of the natural gas market has meant that the metering and reporting of customer consumption of natural gas is now subject to higher standards. With this in mind, the Inspectorate drew up new instructions in 2008, which regulate how this consumption is to be metered and reported.

These instructions stipulate that the natural gas companies shall meter and report consumption by major consumers at least once in any twenty-four hours, at least once monthly in the case of medium-sized customers and at least once annually for domestic customers.

The wholesale market

At least thirty municipalities have access to natural gas, and in those where the network is extensive, it represents over 20% of final energy consumption, which is in line with the average in the rest of Europe.

No extraction of natural gas in Sweden

‘There is no natural gas extraction in Sweden³⁴, which imports all the natural gas consumed there from Denmark via a pipeline that links these two countries. There are also pipelines from Denmark to the rest of Europe, which means that Sweden is linked to the continental system. In 2009, 38% of this natural gas was consumed by industry and 47% by co-generation plants, with housing accounting for around 3%, and other commercial operations for the remaining consumption.³⁵

E.ON Sverige and Dong Energy are the two companies that sell natural gas on the Swedish wholesale market. Dong Energy is 73% owned by the Danish state, while E.ON Sverige is owned by E.ON, one of the world’s largest privately owned energy companies. There are no figures available on their respective market shares in 2009, although there is no indication that

³⁴ By contrast, biogas is produced, which is included in the term natural gas in the Natural Gas Act.

³⁵ These figures are based on preliminary data from Statistics Sweden.

there have been any major changes since 2006, when E.ON sold around 5.3 TWh on the wholesale market and thus had a 48% market share. However, this figure does not take into account that a part of this volume is sold to other companies in the E.ON Group, who in turn resell to end-users. Table 3 shows the trend on the Swedish wholesale market.

Table 3: Trend on the wholesale natural gas market

	Total consumption (TWh)	Total import capacity (TWh)
2005	10,5	15
2006	11,1	15
2007	11,8	15
2008	10,3	15
2009	14,0	15

NB. Consumption is expressed in upper thermal value, which is around 10% higher than in lower thermal value.

Source: Statistics Sweden, Svenska kraftnät and the Energy Markets Inspectorate

The end-user market

Sweden has around 47,000 natural gas consumers of who circa 2,600 are business customers and the remainder are domestic ones. In recent years, the number of end-users has declined due primarily to a drop in the number of households in Gothenburg and Malmö who use gas solely for cooking.

A low number of actors

Since the introduction of natural gas in 1985, the market has been characterised by a low number of actors and a high degree of vertical integration. In 2009, there were six natural gas suppliers operating on the Swedish market, where they sell gas to the consumers, both business and private customers. In 2007, sales by E.ON accounted for the largest market share at around 50%. The Danish-owned company Dong Energy sells natural gas exclusively to business customers and had around 20% of the market in 2007, while the third largest company is Göteborg Energy. Together, these three companies comprised more than 85% of the market in 2007. No data are available for 2009, although there is no indication that any major changes have taken place since 2007, and no new natural gas actor has established itself on the Swedish natural gas market since 2005.

Natural gas price for the end-user

The total natural gas cost for households can be broken down into the following:

- Energy price
- Network tariff
- Energy taxes and VAT

Table 4 shows the total natural gas cost for end-users in 2009, for a number of types of users.

Table 4: Total natural gas cost to the customer in 2009 in öre per kWh at nominal prices

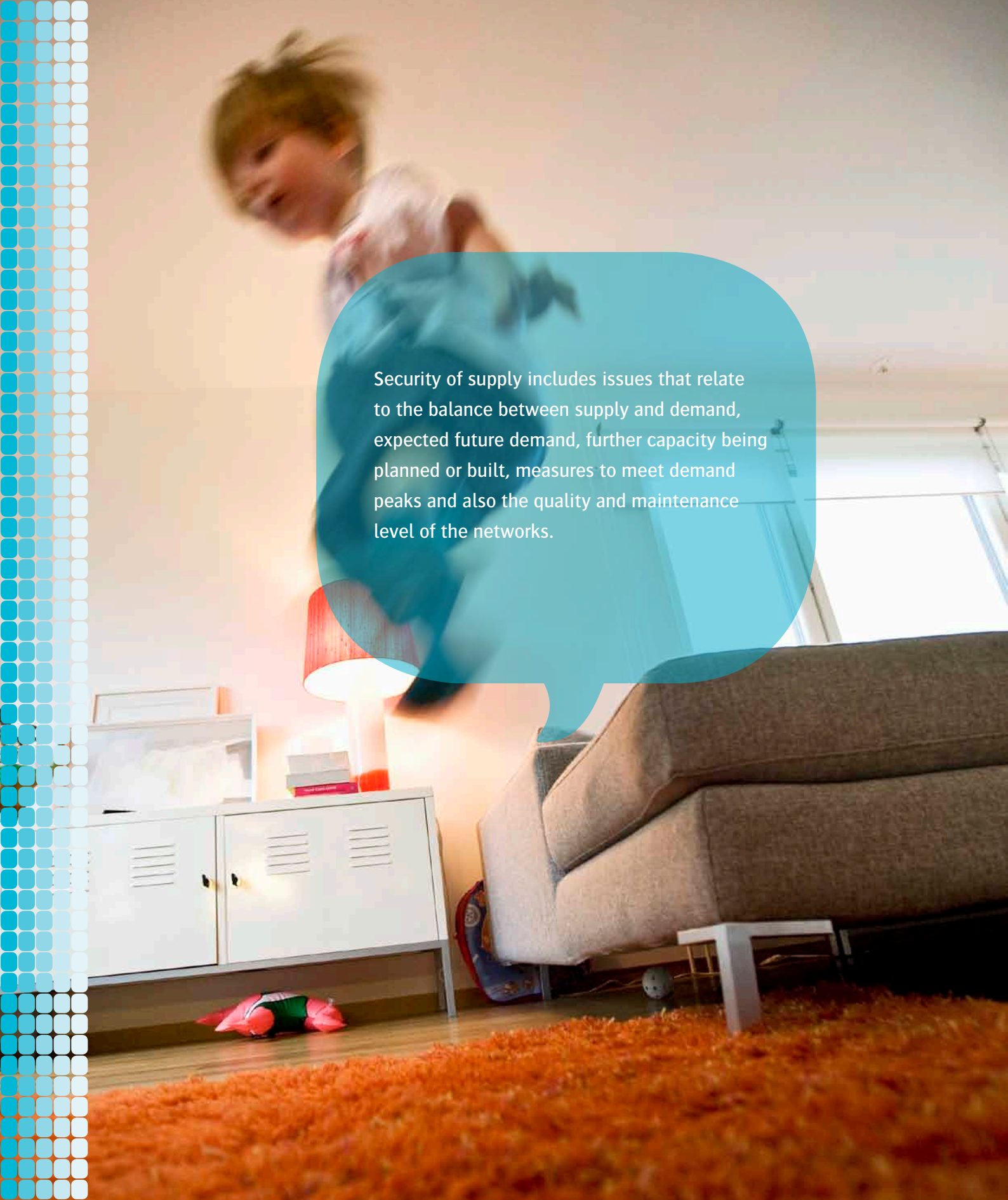
	Domestic gas	Heating and domestic gas	Central heating for at least ten households	Small industries	Medium-sized industries	Natural gas-intensive industries ¹
Supply charges	26,7	27,1	26,7	37,2	36,7	32,2
Distribution charges	67,0	29,0	25,0	17,0	12,0	8,0
Taxes	22,7	22,7	22,7	4,8	4,8	4,8
VAT	29,1	19,7	18,6			
Natural gas cost	145,5	98,5	93,0	59,0	53,5	45,0

Source: Statistics Sweden

More customers switched gas suppliers

In 2009, 285 households switched natural gas supplier, a 70% increase over the previous year. However, the number of switches remains at a low level that is equivalent to only slightly more than half a percent of the total number of domestic customers. The equivalent figure for non-domestic customers was 185, or 3% of all non-domestic customers. The Energy Markets Inspectorate produced a study³⁶ in 2008, which showed that only 13% of the domestic customers and 16% of the business customers on the Swedish market had actively been searching for a better natural gas contract since the market opened up in July 2007. A third of the customers surveyed were not aware of the possibility of switching supplier.

³⁶ The Energy Markets Inspectorate: Kundaktivitet på naturgasmarknaden (EL R2008:11).

A young child with brown hair is captured in mid-air, jumping joyfully in a living room. The child is wearing a light-colored t-shirt and dark shorts. The room features a grey sofa, a white cabinet with a red lamp, and a large orange shag rug. A teal speech bubble is overlaid on the image, containing text. The background is a plain wall with a window on the right. The overall atmosphere is warm and domestic.

Security of supply includes issues that relate to the balance between supply and demand, expected future demand, further capacity being planned or built, measures to meet demand peaks and also the quality and maintenance level of the networks.

Security of supply

Security of supply – electricity

The security of supply in the Swedish electricity system is generally high. Manual interruption of consumption, which is the method that Svenska kraftnät should employ in accordance with the Electricity Act, when there is no other means of achieving balance between input and output in the electricity system, has never proved necessary. The security of supply on the electricity market can be threatened by an inadequate power balance or a lack of transmission capacity.

Installed generating capacity increased

In Sweden investment in new generating capacity is undertaken on commercial grounds, while no permit from the Energy Markets Inspectorate is required, although such permits are mandatory in accordance with both the Environmental Code³⁷ and the Planning and Building Act³⁸. In 2009, the generating capacity of Swedish power stations was increased by 1,578 MW, while 46 MW were lost. Hence, the net increase was 1,532 MW and total capacity is 35,713 MW.³⁹

Table 5: Installed generating capacity in 2009 and the change since 2008, in MW

Power type	Installed generating capacity	Change since 2008
Hydropower	16 203	0 %
Nuclear power	9 342	+5%
Other thermal power	8 608	+7%
Wind power	1 560	+53 %
Total	35 713	+5 %

Source: Svensk Energi

Table 5 shows the change in generating capacity by power type compared with the previous year. Hydropower had the highest capacity at 16,203 MW, followed by nuclear power at 9,342 MW. The major part of the total net increase in generating capacity in 2009 came from wind power, which contributed 539 MW, thereby increasing the installed wind power capacity by 53% compared with 2008.

In March 2010, the Swedish Energy Agency⁴⁰ published its *short-term forecast*⁴¹, which covers the development of the Swedish electricity system

³⁷ The Environmental Code (1998:808)

³⁸ The Planning and Building Act (1987:10)

³⁹ Source: Swedenenergy

⁴⁰ The Swedish Energy Agency is a government body that operates within different sectors of society to create conditions for efficient and sustainable energy consumption and a cost-effective Swedish energy supply.

⁴¹ The Swedish Energy Agency, Kortsiktsprognos varen 2010, (ER2010:13)

during the period stretching from 2009 to 2011. It expects domestic electricity consumption to rise from 138 TWh in 2009 to 145 TWh in 2011, while Swedish generation in 2009 totalled 134 TWh, which, according to the forecast, will rise in both 2010 and 2011 to 145 TWh and 157 TWh, respectively. Its *long-term forecast*⁴² was published in March 2009, and this addresses the development of the energy system up to 2030. Sweden is expected to export 25 TWh of electricity by that date, due to increased generation and a moderate rise in consumption. In 2030, generation is estimated to total 175 TWh as against the present level of 134 TWh and that contributed by thermal, wind and nuclear power is expected to rise, while consumption is expected to reach 150 TWh.

Power reserve activated

The installed power of the Swedish generating system has been falling since the 1990s. The capacity margin between supply (including imports) and demand dropped by almost 20% between 1996 and 2000. This implies a greater risk of disconnection for certain customers if a major power station should break down in the severe winter weather, a scenario that prompted the government to pass a power reserve law.⁴³ in 2003. . This reserve will be formed by Svenska kraftnät concluding agreements with producers and consumers on making available further production capacity or cutting consumption. This law is a temporary measure that expires in March 2011. In February 2010, the government presented its draft law *The future of the power reserve*⁴⁴, which was largely based on the Energy Markets Inspectorate study from 2008⁴⁵. It proposed a gradual transition to a market solution during the period from 2011 to 2020 that envisaged the complete abolition of the power reserve by the end of the winter of 2019/2020.

Peak consumption in 2009 totalled 24,800 MW and was recorded on two occasions: on January 16, from 08.00 to 09.00 and on December 21, 2009, between 16.00 and 17.00. During the winter of 2008, the consumption peak was 24,500 MW and so far, the highest consumption in Sweden totalled 27,000 MW, recorded on February 5, 2001. On December 17, 2009, Svenska kraftnät activated the power reserve in order to maintain a stable operating situation. This occurred against the background of a drop in nuclear power generation in conjunction with low temperatures and thus higher consumption. On December 21, the situation was more critical, which led to around 200MW of reserve power being imported from Denmark.

New transmission links

The Swedish electricity system has links to Norway, Finland, Denmark, Germany and Poland. Swedish exports fell by 5.9 TWh in 2009, while a simultaneous rise in imports resulted in net imports of 4.7 TWh, which was equivalent to over 3% of total annual consumption. This can be compared with 2008, when net imports were 2.0 TWh. The principal reason for these net imports was the low level of availability within Swedish nuclear power generation.

⁴² The Swedish Energy Agency, Långsiktsprognos 2008, (ER2009:14)

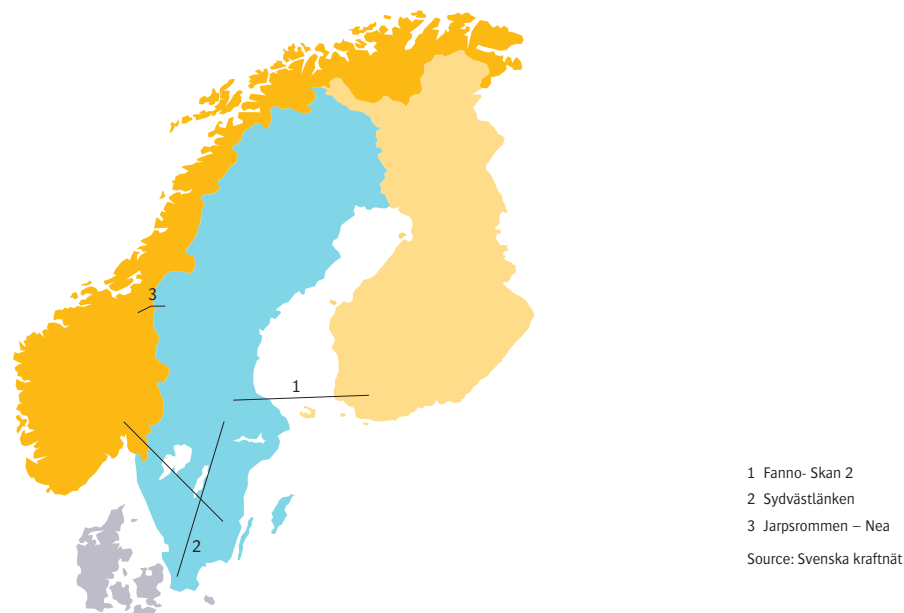
⁴³ The Power Reserve Act (2003:436).

⁴⁴ Draft law 2009/10:113 Effektreserven i framtiden.

⁴⁵ The Energy Markets Inspectorate, Effektfrågan – Behövs en centralt upphandlad effektreserv?

Several projects are currently under way to increase the capacity and operational reliability of the Nordic power system. Figure 8 shows the projects in progress on Swedish territory.

Figure 8: Current projects to reinforce the Nordic grid



As far back as 1989, a power link was constructed between Finnböle in Sweden and Rauma in Finland, which had a capacity of 800 MW. Due to the greater demands on transmission capacity, this link now needs to be extended. The new *Fenno-Skan 2* cable will follow the same route as the existing one and have a transmission capacity of 500 MW. Cable laying commenced during the spring of 2008, and the cable is estimated to come into service during the autumn of 2011.

The purpose of the *South-West Link* is to reduce the existing transmission restrictions from the Mälars Valley region to Southern Sweden and between southern Norway and Sweden. It will be built in three sections, with a junction point in Jönköping, with an estimated capacity of 1200 MW, from which three links will branch off. One will run south to the Skåne region, the other will run north to Hallsberg, and the third will extend westwards to Norway. Svenska kraftnät will build the Swedish section of the link, while the section to be built in Norway will be financed by Statnett, the Norwegian national grid company. The entire link is expected to be operational by 2015/2016.

The new 400 kV line between Järpsströmmen in Sweden and Nea in Norway came into service in March 2010.

Svenska kraftnät is also planning a direct-current link between Sweden and Klaipeda in Lithuania that is called NordBalt. A permit application has

been submitted to the Energy Markets Inspectorate, and a finished line is expected to be completed in 2015/2016.

Besides the projects mentioned above, there are a number of projects designed to strengthen the electricity networks in the major urban regions of Sweden. In addition, the Energy Markets Inspectorate is planning a grid link between Gotland and the Swedish mainland.

Security of supply in the electricity network

Electric heavy-current lines may not be built without a permit that is referred to as a network concession, and which is granted by the Energy Markets Inspectorate or the government in the case of overseas links or lines in the national grid.

Security of supply is also affected by the type of lines used. The proportion of underground cable in local networks has risen, as it is more weatherproof than an overhead line. However, there are risks attached to underground cables, which can be severed in the event of excavation or building operations. In the overhead line network an insulated line is more robust than an uninsulated one. Of the total length of lines in the local networks, around 80% is insulated or laid under ground, while at medium- and high-voltage levels around 55% of the lines are insulated or laid under ground⁴⁶.

In 2007, the Energy Markets Inspectorate issued instructions on the manner in which a network owner shall inform his customers about the outage compensation regulations of the Electricity Act. The rules state that consumers whose supply has been interrupted for at least twelve hours shall have the right to compensation from the network company of which they are a customer. This requirement relates to outages that are within the sphere of responsibility of the network owner. Such compensation is standardised and shall be paid automatically. The Electricity Act also includes provisions for damages from the electricity network company in the event of personal injury, material damage or damage to property.

In November 2007, the Energy Markets Inspectorate issued instructions on the obligation of the electricity network companies to report outages in accordance with the provisions of the Electricity Act. From 2011, annual detailed reporting shall be undertaken at customer level in respect of outages of both short and long duration. Lengthy and extensive outages are to be reported to the Inspectorate as and when they occur, with effect from January 1, 2008.

The purpose of such reporting is to enable assessment of the delivery quality of the electricity networks as well as timely intervention should the measures taken fail to ensure the delivery quality of a specific network. This assessment of delivery quality also serves as the basis for evaluating the fairness of supply charges.

Table 6 show outages in the local networks between 2000 and 2008.⁴⁷ The figures state average values per customer and are divided into notified and unnotified outages.

⁴⁶According to data for 2008.

⁴⁷Latest available statistics.

Table 6: Outages in the local networks, average values per customer

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Average number of outages per customer									
Notified outages	0,19	0,18	0,25	0,19	0,19	0,21	0,19	0,29	0,50
Unnotified outages	0,88	1,03	0,97	0,90	0,89	1,26	1,06	1,27	1,04
Average outage duration per customer (in minutes)									
Notified outages	27	27	29	27	25	32	22	22	26
Unnotified outages	89	128	123	118	72	890	88	298	103

Source: The Energy Markets Inspectorate

The electricity network companies gave a voluntary undertaking in 2001 to provide weather protection for all 57,000 kilometres of uninsulated conductors through the forests. The violent storm of January 2005 led to an increase in the rate of investment, and by the end of 2006, around half of these investments had been completed. Weather protection of the electricity networks is expected to be completed by 2011, when the mandatory function requirement⁴⁸ of the Electricity Act comes into force.

With effect from 1 January 2006, the electricity network companies have been obliged in accordance with the Electricity Act, to undertake risk and vulnerability analyses and to draw up an action plan describing how the delivery reliability of their own networks will be improved. These provisions aim to reduce network vulnerability and to facilitate compliance with the function requirement of the Electricity Act. Risk and vulnerability analyses and action plans shall be submitted to the Energy Markets Inspectorate, which has started its work on drafting instructions that are expected to be ready by the middle of 2010.

The Inspectorate has also started work on drafting instructions relating to the requirements that shall be fulfilled in order to ensure good transmission quality as stipulated by the Electricity Act. Parts of these instructions relating to technical requirements are expected to be ready by the middle of 2010, while those dealing with voltage quality are expected to be completed one year later, by the middle of 2011.

⁴⁸In 2005, the Swedish Parliament introduced a mandatory function requirement that stipulated that outages should not last longer than twenty-four hours. This requirement will apply with effect from 2011 and will be applicable to events that the network owners are legally obliged to monitor.

Security of supply – natural gas

Although, historically, the security of supply has been high, the Swedish natural gas market can still be considered vulnerable in both the long and short term. There is only a single supply point, which, together with the lack of any domestic production of this fuel, renders the market susceptible in the short term to external disruptions. In a longer perspective, Danish gas supplies will decrease as the supply of gas in the Danish gas fields starts to run out.

Increased natural gas consumption

Since natural gas came to Sweden in 1985, the consumption has increased, reaching a total of 14.0 TWh⁴⁹ in 2009, around 4 TWh higher than in the preceding year. Most of this increase is due to the coming into service in the autumn of 2009 of the Östersund co-generation plant in Malmö. Owned by E.ON, it has been modernised and is now a gas-fired co-generation plant with a production capacity of 440 MW of electricity and 250 MW of heat. A number of new plants are planned, for which reason gas consumption is expected to rise.

In the thirty or so municipalities where there is a natural gas distribution network, natural gas consumption accounts for 20% of the total energy consumed, which is on a par with other European countries with developed natural gas networks.

A number of projects associated with the Swedish natural gas system with regard to extraction, production, and other operations are under way. Among them the following can be mentioned.

- A gasification plant for bio-fuel is planned in Gothenburg, which should be able to produce 100 MW of gas of a similar quality to that of natural gas. Production capacity during the first stage is planned to be 20 MW. The first stage is expected to be completed in 2012 and the second, in 2016.
- Planning is in hand for a second gasification plant that is intended to be located in conjunction with the existing natural gas system. Once in service, in 2016, it may deliver 200 MW of gas, and a first preliminary investment decision may be taken in 2011.
- An LNG⁵⁰ reception terminal is planned in Gothenburg, primarily in order to supply ships with LNG as a fuel. The plan includes a gasification plant with a possible capacity of around 200 MW that can feed natural gas to consumers. This is expected to be ready by 2013.

⁴⁹ Expressed in upper thermal value.

⁵⁰ LNG (or liquefied natural gas) is natural gas converted into a liquid form for transportation or storage

- Pre-prospecting is being undertaken in Scania province, southern Sweden, in order to determine whether there is extractable natural gas in the local alum shale. There are no details of any evaluation of the potential, and pre-prospecting is expected to be completed in 2011.

A natural gas storage facility

Sweden does not have a storage facility for seasonal equalization of the consumption of natural gas. There is a smaller one that can equalise consumption peaks, which is owned by E.ON Sverige and is located in the south of the province of Halland. The volume of stored gas as of February 28, 2009, and of October 1, 2009, was 0.01 billion cubic metres. The daily withdrawal capacity varies from 0.6 to 0.9 million cubic metres, equivalent to between 10% and 20% of gas requirements on the Swedish market under winter conditions. This variation is due to the pressure prevailing in the facility and in the grid. For the foreseeable future, Sweden will have to rely on facilities in other countries or on storage in transmission pipelines (linepack), or, alternatively, adapt deliveries to manage market consumption variations, or take measures to address demand.

Plans for a new supply in the natural gas system

All the natural gas consumed in Sweden is imported from Denmark via the pipeline that links these two countries. There are also pipelines from Denmark to the rest of Europe, which means that Sweden is linked to the continental system. The Swedish market is concentrated on the west coast along the pipeline network that extends from Trelleborg in the south to Stenungsund in the north with a branch to Småland, see Figure 9.

Figure 9: The Swedish natural gas network



The existing pipeline between Malmö and Gothenburg has an annual transport capacity of around 22 TWh, which can be increased to around 30 TWh by means of compressors. Since the market does not experience an even withdrawal over the year, the maximum transportable quantity of energy is, however, around 15 TWh without, and 20 TWh with compressors.

The following plans for a new supply for the Swedish natural gas system are being pursued.

- During the spring of 2010, the Energy Markets Inspectorate approved the government's granting of a permit to the Norwegian state company Gassco and Swedish Swedegas to build and operate a new pipeline, to be called *Skanelled*, between Norway, Sweden and Denmark. *Skanelled* is an industrial collaboration that is being planned by Swedish, Norwegian and Danish actors, and this project envisages the possible laying at sea of a natural gas pipeline from southern Norway to the Swedish west coast, where three branch pipelines will connect to the Swedish natural gas network. This project is currently mothballed due to the uncertain economic situation but it may be resumed once conditions improve. However, efforts to obtain various permits will continue in order to facilitate a smooth resumption of the project.
- In the autumn of 2009, the Swedish government decided to grant Nord Stream AG a permit to build a natural gas pipeline through the Swedish economic zone in the Baltic. The Nord Stream project comprises a gas pipeline in the Baltic from Russia to the European gas network. It consists of two parallel pipelines that pass through the economic zones of five countries (Russia, Finland, Sweden, Denmark and Germany). Construction of the 1,220 kilometre-long gas pipeline will commence in 2010, and it is expected to come on line in 2011, followed by the second pipeline in 2012. Once this happens, total annual capacity will be fifty-five billion cubic metres. The objective of the project is to provide an alternative delivery route for the Russian gas reserves. Russia is now the single largest supplier of gas to Europe, and the bulk of this supply is currently transported by pipelines through the Ukraine. No plans have been presented with respect to a connection to Sweden.

Quality control of the natural gas network

The Swedish transmission system consists primarily of steel pipelines. The system status is inspected at regular intervals, and defective or worn equipment is replaced. In the actors' assessment, the pipelines have an expected useful life of at least forty years, while certain items of monitoring, control and regulation equipment are expected to have a useful life of between fifteen and twenty years. Table 7 gives a summary of the inspections carried out, inspection frequency and procedure.

Table 7: Company inspection of the transmission system

Inspection of the transmission system	Interval	Procedure
Supervision of works close to the pipeline	6 times/year	Aerial inspection
Inspection of the safety zone close to private dwellings	once/year	Inspection on the ground
Inspection of the Öresund pipeline	Every 3 years	Echo sounding
Inspection of the protective pipeline coating	Every 8 years	Inspection by intelligent pig
Pipeline thickness checks	Every 8 years	Inspection by intelligent pig

Source: The Energy Markets Inspectorate

The distribution pipelines are mainly made of polyethylene (PE) material, and steel pipelines are in some instances used to supply gas to customers who need pressures in excess of four bar. Guidelines for the design, operation, care, maintenance and other aspects of the distribution network for a maximum operating pressure of four bar are co-coordinated in the Energy Gas Standards⁵¹ drawn up by the Swedish Gas Trade Association.

Measures to address consumption peaks and delivery shortfalls

Consumption peaks and delivery shortfalls are managed in the first instance by the balance providers by means of the balancing window provided by pressure variations in the transmission network (linepack). If additional measures are required, Svenska kraftnät uses market mechanisms as far as possible to manage imbalances. In those situations where commercial agreements are not considered adequate for managing imbalances in the natural gas system, the Natural Gas Act allows Svenska kraftnät to order the owners of natural gas storage facilities and gasification plants to increase or reduce injection or withdrawal on commercial terms. Svenska kraftnät can also order network owners to limit or interrupt the transmission of natural gas to customers. If this is done, the supply to consumers must be assured.

The EU Gas Supply Directive⁵² has been incorporated into Swedish legislation by means of amendments to the Natural Gas Act. These new provisions mean that the actors on the natural gas market shall plan for, and take, necessary measures to secure the natural gas supply, that special minimum requirements for a secure natural gas supply for consumers are to be introduced and also that a national plan for crisis situations in the area of natural gas is to be drawn up.

In accordance with the Natural Gas Ordinance⁵³, natural gas companies shall, when planning and implementing necessary measures in accordance with the Natural Gas Act, secure the consumers' supply of natural gas in at least the following instances.

⁵¹ EGN 01⁵² The Gas Supply Directive (2004/67/EG)⁵³ The Natural Gas Ordinance (2006:1043)

- In the event of a partial disruption of the natural gas supply not exceeding twenty-four hours.
- Annually during the winter period from and including December, up to and including February.
- During periods where the temperature is four to five degrees below the normal winter temperature.


Owners of a natural gas pipeline, storage facility or gasification plant shall implement planning and other measures for crisis situations relating to the operation and security of their own installations. These measures shall comprise crisis management and information management in the event of a crisis situation as well as regular assessment of vulnerability and threat patterns. Owners shall draw up a plan for crisis management and information management in the event of a crisis situation and ensure that this plan is disseminated within their own organisation and that it is followed. The owners shall also notify the authority with responsibility for the system and other relevant actors of their plan. The natural gas companies submitted their plans to the Swedish Energy Agency for approval for the first time in 2009, while the latter drew up a national plan for crisis situations in the area of natural gas in 2007.

The measures described in the previous section are aimed at network owners and are not considered to affect the competitive situation of the gas market actors.

Extent of long-term agreements on gas supplies

There is no obligation for natural gas companies to report agreements on gas supplies that have been concluded, and the Swedish Energy Agency has not had any sight of such agreements.





The EU Electricity and Gas Directive comprises measures to strengthen consumer protection. The Member States shall implement suitable measures to protect end-users, especially in the form of clear and understandable contractual terms, general information, dispute resolution and also a means for those customers entitled to switch supplier to do so in practice.

Consumer matters

Electricity suppliers obliged to state the origin of the electricity

Electricity suppliers are obliged to provide consumers with details of the origin of the electricity either on or in connection with their invoices, and in advertising material. This involves information on the proportion of each energy source in the generation of the electricity supplied during the previous calendar year. In addition, the consumers are also to be given information on the environmental effects in the form of carbon dioxide emissions and on the quantities of nuclear fuel waste resulting from the generation of the electricity sold.

Implementation of consumer protection measures in the Electricity Market Directive

Sweden has implemented large sections of Annex A on consumer protection measures in the Electricity Market Directive⁵⁴ in the form of the Electricity Act and its associated instructions. Since legislation does not regulate in detail all aspects of the energy market, the General Contractual Terms and Conditions⁵⁵ provide supplementary protection. These have been agreed upon in negotiations between the Swedish Consumer Association and the trade organisation known as Swedish Energy⁵⁶ and have the same status as trade practice, while Swedish Energy encourages its member companies to provide its customers with details of these terms and conditions, which are applied by the majority of electricity suppliers and network companies.

The Energy Markets Inspectorate follows the general price trend but does not exercise any regulation of electricity or gas supplier charges. However, electricity suppliers are obliged to provide details of prices and delivery conditions appertaining to the supply of electricity to consumers. These details form the basis for an electricity price comparison website (www.elpriskollen.se) provided by the Inspectorate. This allows consumers to find information on the most important terms and conditions of supplier contracts, such as period of notice for termination of the contract, any charges for premature termination and whether the contract is renewed automatically when it expires. In addition, the Consumer Agency, municipal consumer advisors and the Consumer Electricity Advice Bureau also provide information about these general terms and conditions.

If a dispute should arise between a consumer and an electricity supplier, the consumer has the opportunity to have the dispute assessed free of charge by the National Board for Consumer Complaints in accordance with Annex A to the Directive.⁵⁷ However, the amount involved must exceed SEK 2,000 for the dispute to be considered.

⁵⁴ Directive of the European Parliament and the Council (2003/54/EG)

⁵⁵ Nät 2009 K and EL 2009 K, consumer terms and conditions with effect from July 1, 2009

⁵⁶ The Energy Markets Inspectorate is able to submit its views to each contracting party when new terms and conditions are being negotiated.

⁵⁷ The National Board for Consumer Complaints assesses the dispute, provided that it does not involve a sum below SEK 2,000.

Network company obliged to assign a supplier

The local network company has an obligation to assign a supplier in those cases where the customer does not actively choose one. It is also obliged to notify the customer of which supplier has been assigned and of the possibility of switching supplier. The assigned supplier shall without delay notify the customer of the terms and conditions that apply.⁵⁸ In the event that a supplier should be declared bankrupt or otherwise cease to trade, the network company shall allocate an electricity supplier to a customer who does not himself choose to conclude a contract.

Particularly vulnerable customers

The Swedish Electricity Act includes special provisions on the transmission and supply of electricity to consumers.⁵⁹ If a consumer neglects to pay for transmission, it must not be interrupted if the claim for payment is disputed, or if the circumstances give reason to fear that such interruption would cause not inconsiderable personal injury or extensive material damage to property. Before transmission is interrupted, the consumer shall be encouraged to make payment within a reasonable time, and shall be advised that transmission will otherwise be interrupted. If payment is made, transmission will not be interrupted. The Electricity Act also specifies that notification of failure to pay shall be submitted to the social welfare committee in the municipality where the transmission to the consumer takes place. The consumer then has an opportunity to receive assistance from the social welfare committee so that the debt can be cleared. Particularly vulnerable customers are thus protected by the mechanism found in social welfare legislation.

There is no obligation for the network companies to report the number of disconnections, and no compiled statistical data on this are therefore available.

⁵⁸The Electricity Act (1997:857) Chapter 8, Section 8

⁵⁹Chapter 11 of the Electricity Act (1997:857). By consumer is meant a natural person to whom electricity is transmitted or supplied for purposes that fall outside business operations.

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