

# THE SWEDISH ELECTRICITY AND NATURAL GAS MARKET 2014



Swedish Energy Markets Inspectorate

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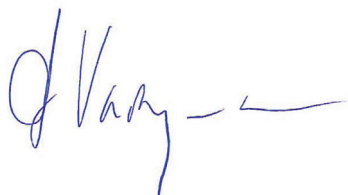
# Foreword

The Swedish Energy Markets Inspectorate (Energimarknadsinspektionen, Ei) is the agency that regulates the electricity, natural gas and district heating markets in Sweden and closely follows developments on these. The aim of this report is to provide an account of the development of the electricity and natural gas markets over the course of 2014.

According to Ei's instruction, the Inspectorate is to fulfil duties relating to the electricity and natural gas market directives. This includes the production of an annual report in accordance with the reporting requirements resulting from these directives. The reporting includes matters of regulation, competition and security of supply.

This report uses the structure that has been worked out in collaboration with other European regulatory agencies and the European Commission. Within the context of European cooperation, a report summarising all of the national reports will be published in the autumn of 2015. This report, together with the national report of each Member State, will be available from the website of the Council of European Energy Regulators (CEER): [www.energy-regulators.eu](http://www.energy-regulators.eu).

Eskilstuna, June 2015



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# Summary –

## The development of the electricity and natural gas markets

Trade on the Swedish electricity and natural gas markets is exposed to competition. The electricity and natural gas networks are operated as regulated monopolies as it would be unsuitable from an economic and environmental standpoint to build parallel networks throughout the country.

As a regulatory authority, Ei is to continuously monitor and analyse the development of the electricity and natural gas markets and submit proposals for changes to regulations or other measures that may improve how the markets function.

### The Electricity Market

#### The Swedish electricity network

The Swedish electricity network consists of 551,000 kilometres of power cables, of which 351,000 km are underground cables and 200,000 km overhead lines. Svenska kraftnät (SvK) is the State-owned utility that owns the Swedish transmission system, and is responsible for maintaining the balance between production and consumption of power, as well as for the operational reliability of the Swedish electricity grid. SvK is certified as the responsible transmission system operator by Ei. In its role as a regulator, Ei has the task of scrutinising SvK.

Local and regional network companies are responsible for sufficiently maintaining their grids in order to guarantee that the security of supply is maintained. There are 162 electricity network companies in Sweden.

The Swedish electricity network is run as a regulated monopoly, with Ei reviewing the network companies' revenues and assessing whether they are fair. Between 2013 and 2014, the charges rose on average by 4.0 per cent for customers in apartments, 3.1 per cent for customers in detached houses with 16 Amp fuses and 1.6 per cent for customers in detached houses with 20 Amp fuses.

#### Wholesale market for electricity

The production of electricity in Sweden during 2014 amounted to 150.9 TWh, which was a slight increase from 2013. The use of electricity within the country was 135.2 TWh, a decrease compared to the previous year, mainly due to the mild weather. The weather has also contributed to a drop in production from combined heat and power plants, as it is dependent on the supply of district heating to achieve a competitive electricity price. Wind power and nuclear power increased their production compared to the previous year.

In the Nordic countries, trade with the physical supply of electricity is organised through the Nordic electricity exchange Nord Pool Spot. Financial trading in the Nordic electricity market takes place on Nasdaq Commodities. Contracts and

hedging opportunities can be traded there for days, weeks, months, quarters and years.

### **The Retail Market for Electricity**

In 2014 there were 123 electricity suppliers registered in Sweden at Ei's comparison site Elpriskollen.se. The three largest electricity suppliers had a total market share of 41.1 per cent during the year, per amount of energy sold.

The biggest portion, 43 per cent, of the total costs for electricity, paid by the consumer consisted of tax and VAT. The cost of supplied electricity constituted 33 per cent and the remainder of network costs.

The most common form of electricity contract in Sweden is a variable price contract. The long-term trend is that more and more people move from fixed price contracts or default contracts to variable price contracts. In December 2014, 41.4 per cent of Swedish domestic customers had signed variable price contracts and 36.1 per cent had a fixed price contract with a subscription period of 1, 2 or 3 years.

## **The Natural Gas Market**

### **The Swedish natural gas network**

Natural gas was introduced to Sweden in 1985 through an extension of the Danish natural gas system to southern Sweden. The trade in natural gas in the Swedish system has been completely exposed to competition since 2007.

The West Sweden natural gas network consists of 620 km of transmission pipeline and 2720 km of distribution pipes. The natural gas network stretches from Trelleborg in the south to Stenungsund in the north and also branches off into parts of Småland. As of June 2013, Swedegas AB has taken over responsibility from SvK for short term balancing in the West Sweden natural gas network. Swedegas has been certified by Ei as system operator of the transmission system.

The ownership of Swedegas changed in March 2015, from the venture capital company EQT to Spanish Enágas and the Belgian Fluxys. The new owners are already transmission network operators in among others Spain, Belgium, Germany and Switzerland.

### **Wholesale market for natural gas**

In the 30 municipalities that are supplied with natural gas, natural gas accounts for about 20 per cent of the total energy consumption; this number is in line with the average across the rest of the EU, which has a higher penetration of gas in the energy mix. Sweden does not produce any natural gas of its own; instead all supplies are imported from Denmark. In 2014, 10.2 TWh of natural gas was used in Sweden, following the downward trend that has been experienced over a number of years. The trend is primarily due to increased use of forms of energy other than natural gas.

Sweden practically has no natural gas market of its own and purchases gas from Denmark or Germany which is then transported through the Danish transmission pipelines and on up through the West Swedish natural gas network. Several Swedish market participants are active on the Danish gas exchange Gaspoint

Nordic. In 2014, the price on Gaspoint Nordic averaged lower than in 2013, especially during the summer months.

#### **The Retail Market for Natural Gas**

There are seven suppliers on the Swedish retail market for natural gas. Six of these offer gas trade contracts for domestic customers. The customers' total cost for gas has changed little since the deregulation in 2007. The reason for this is that the gas trade price has been relatively stable at just below 40 öre per kWh.

The single biggest share of the price, 48 per cent of the domestic consumers' total gas cost, is tax and VAT.

### **Consumer protection and disputes**

Ei checks that the companies in the electricity and natural gas markets abide by the law and, in certain cases, can also settle disputes between consumers and network owners.

Examples of this in 2014 include inspection of the contract information that electricity suppliers provide for customers, complaint processing and whether the customers are informed of where to turn with complaints. Ei found a number of shortcomings among the inspected companies on both the electricity and natural gas markets.

Consumers on the Swedish electricity market are guaranteed information about their consumption details. In 2014 Ei continued its supervision of these provisions and it turned out that several smaller electricity network companies did not fulfil their obligations. All shortcomings that were noted as the result of inspection measures were addressed by the companies.

If a company does not follow the regulations in the Electricity Act or Natural Gas Act, consumers can report them to Ei. As the regulator, Ei can investigate whether the company is in breach of their legal obligations. In 2014 Ei received a total of 30 complaints, 23 of which concerned the electricity network companies' responsibilities in accordance with the Electricity Act and 7 of which concerned the electricity suppliers' responsibilities in accordance with the same Act.

Ei collaborates with the Swedish Consumer Agency to create the information service 'Hello Consumer' where consumers can obtain information about their rights on numerous markets, including the energy markets.



# 1 The Electricity Market

The Swedish electricity market was reformed in 1996. Since then its trade and production of electricity is exposed to competition while network operations are made up of a large number of regulated monopolies. The purpose of exposing electricity production and trade to competition is to increase the choices available to consumers and to create conditions for an effective use of production resources.

Electricity network operations are a natural monopoly, which means that it is not efficient from an economic standpoint with several such operations in the same geographical region. Therefore, The Swedish Energy Markets Inspectorate regulates the income of the electricity network companies.





## 1.1 The electricity network

The Swedish electricity network consists of 551,000 kilometres of power cables, of which 351,000 km are underground cables and 200,000 km overhead lines. The electricity network can be divided into three levels: national (transmission) network, regional network and local network. The transmission network transports electricity over long distances with high voltage levels. Regional networks transport electricity from the transmission network to local networks and in some cases directly to major electricity consumers. The local networks connect to the regional networks and transport electricity to households and other end users.

Figure 1. The Swedish power grid



Source: Svenska kraftnät

### **1.1.1 Functional unbundling of electricity companies**

In order to prevent cross-subsidisation between companies operating different types of electricity activities, network operations must not be conducted by the same legal entity engaged in the production or trade of electricity. Network activities must also be presented financially separate from all other activities. This means that electricity network operations must both be legally distinct and separate for accounting purposes from companies engaged in the production or trade of electricity. However, electricity may be produced at an electricity network company if intended to cover network losses or to replace lost electricity in the event of power failures. In addition to this, there is a demand that specific network companies are functionally unbundling<sup>1</sup> from companies engaged in the production or trade of electricity. Functional unbundling concerns companies engaged in network operations as part of a group whose collected electricity network has at least 100,000 electricity users.

All companies engaged in network activities must, according to the Swedish Electricity Act, <sup>2</sup>establish a supervision plan. The companies must also publish an annual report, which gives an account of the measures they have implemented according to the plan. The aim of the monitoring plan is to ensure that the companies act objectively and do not improperly favour any particular actors in the market. The monitoring plan must state the measures that will be taken to prevent discriminatory behaviour against other actors in the market.

#### **Ei supervises the transmission system operator**

SvK, which operates and administers the Swedish national grid, is also the authority that is the system operator<sup>3</sup> for the Swedish electricity network. SvK is commissioned to commercially manage, run and develop a cost-effective, operationally safe and environmentally sound electricity transmission system, as well as to sell transmission capacity and conduct other activities connected to the electricity transmission system. According to the EU Electricity Market Directive, Ei has, in its regulatory role, the task of supervising SvK.<sup>4</sup> In 2014, the supervision of SvK has included Ei stipulating a revenue cap for SvK for the 2015 regulatory period. In addition, Ei has approved the methods for contracts for balancing responsibility and formulating the terms of agreements for access to cables or a cable network.<sup>5</sup>

As of 1 January 2012, SvK's revenue cap will be set out in advance, as will those of other electricity network companies. The supervisory period for SvK is one calendar year, while for other electricity network companies it is four calendar years. Income cap refers to the total income that the network companies may at

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<sup>1</sup> In accordance with Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC..

<sup>2</sup> Electricity Act (1997: 857)

<sup>3</sup> Common synonyms for system operator are transmissions network operator and transmission network company.

<sup>4</sup> In Sweden there is no independent transmission system operator. Therefore, the provisions specifically covering supervision of independent system operators does not apply for Ei.

<sup>5</sup> 1997:857 Chapter 4 , Section 1

most withdraw from network operations during a supervisory period, pursuant to Chapter 1. Section 5 a of the Swedish Electricity Act.

According to the EU's electricity market directive<sup>6</sup>, transmission system operators must be certified. Ei received notification of certification from SvK in the autumn of 2011 and in July 2012 made the final decision to certify SvK as the system operator for the Swedish national electricity grid. Certification is valid until further notice, but can be reassessed by Ei if the system operator does not live up to the certification requirements.

### **1.1.2 The technical function of the electricity network**

#### **Security of supply in the electricity network is assessed by Ei based on reports of power cuts**

Security of supply is affected, among other things, by the type of cable (overhead lines or underground cables) used. In order to reduce the vulnerability of the electricity network to extreme weather, the percentage of underground cable in the local networks has increased. However, underground cables are exposed to non-weather related disturbances, such as cable breaks due to digging or ageing components. In the overhead lines category, insulated power lines are more robust than uninsulated power lines. In 2013, about 98 per cent of the local networks' total length in the low-voltage network was insulated. At the medium and high voltage levels, approx. 69 per cent of the power lines in local networks are insulated.

The electricity network companies are, according to the requirements of the Electricity Act, obliged to report power cuts to Ei. Since 2011, annual detailed reporting of power cuts is carried out at the customer level, for both short and long power cuts. Long-term and extensive power cuts must be reported continually to Ei.

Reporting enables Ei to assess the quality of supply in the electricity network, as well as allowing it to intervene in a timely manner if the measures that have been implemented are not sufficient to ensure the security of supply for a specific electricity network company. The assessment of quality of supply also forms the basis of assessments of the fairness of the network charges. Table 1 shows power cuts in local networks between 2003 and 2013. The numbers indicate the average number of cuts per customer and are divided into unannounced and announced cuts. Announced cuts are planned interruptions carried out for operational reasons such as repairs and preventative maintenance in order to maintain good operational and supply security. According to the Electricity Act, power cuts may not last longer than is necessary in order to implement a solution.

#### **Regulations concerning continuity of supply and compensation for power cuts**

The electricity network companies are obliged to undertake risk and vulnerability analyses, and to produce action plans which show they will improve the security of supply in their own networks. The aim of the regulations is to ensure that the electricity network companies will, through preventative work, decrease the vulnerability of the electricity network and contribute to fulfilling the functional requirement of the Electricity Act which states that power cuts may not last longer

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<sup>6</sup> 2009/72/EC Article 10

than 24 hours. A report of the risk and vulnerability analyses, as well as the action plan, must be submitted to Ei. Ei has issued regulations on the annual reporting of electricity network risk and vulnerability analyses.

Aside from the functional requirements of the Electricity Act, Ei has also prescribed which other requirements must be met in order for the transmission of electricity to be considered of a satisfactory quality. Parts of the directives regarding technical requirements for securing regional network power lines from trees and functional requirements for higher load levels were issued in 2010, while directives concerning voltage quality requirements were issued in the middle of 2011. In 2013 the directives were supplemented with guidelines for the number of power cuts at the individual customer level.

According to the Electricity Act, electricity consumers who are affected by disruption to the transmission of electricity for at least 12 hours have the right to compensation from the electricity network company that the consumer is connected to. The requirement applies to power cuts that are within the scope of the network owner's responsibility.<sup>7</sup> Compensation is calculated according to a standardised formula and is paid automatically. The Electricity Act also regulates the right to damages from electricity network companies in the case of personal injury, damage to property or economic loss. Ei has drawn up directives on how a network owner will inform their customers about the rules regarding power cut compensation.

Table 1. Power cuts in local networks resulting from a fault in the network, average value per customer<sup>8</sup>

Year	SAIFI, announced cuts (cuts/year)	SAIFI, unannounced cuts (cuts/year)	SAIDI, announced cuts (minutes/year)	SAIDI, unannounced cuts (minutes/year)
2003	0.19	0.90	27	118
2004	0.19	0.89	25	72
2005	0.21	1.26	32	890
2006	0.19	1.05	22	88
2007	0.31	1.49	22	307
2008	0.50	1.04	26	104
2009	0.22	0.88	20	63
2010	0.14	1.03	20	71
2011	0.19	1.31	16	174
2012	0.14	1.03	17	75
2013	0.14	1.02	18	139

Statistics for 2014 will be compiled during the summer 2015. Source: Ei

<sup>7</sup> Incidents within the companies' responsibility are incidents which the company could reasonably have foreseen and for which the network companies can be expected to dimension the construction and operation of the network.

<sup>8</sup> SAIFI=System Average Interruption Frequency Index (average number of cuts per customer throughout the year (number of cuts/year))

SAIDI=System Average Interruption Duration Index (average time spent without power per customer throughout the year (powerless minutes/year)).

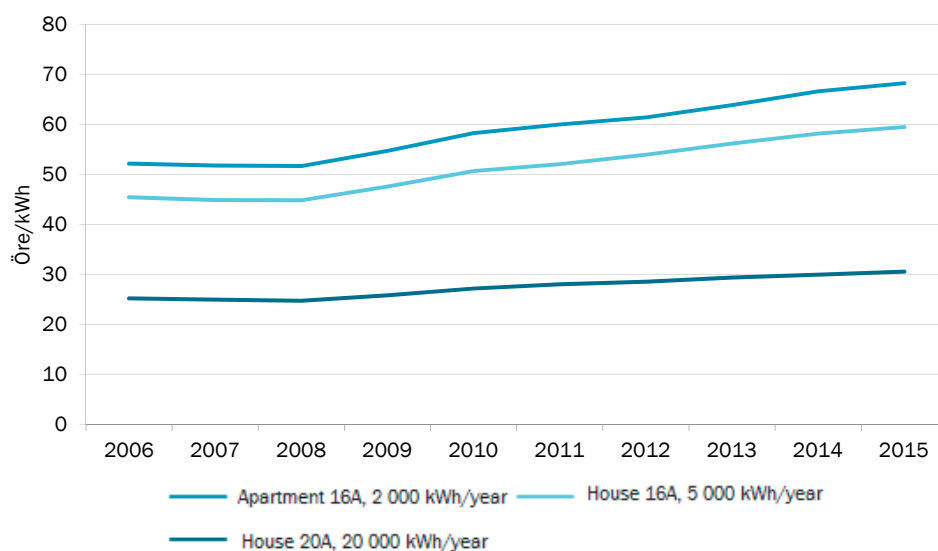
### 1.1.3 Electricity network charges for connection and transmission

The Swedish electricity network is operated by a large number of companies in regulated monopolies. In order to ensure that companies who hold the sole right to operate the electricity network in a specific area, known as a concession, do not exploit their monopoly position, Ei regulates the revenues of the companies. According to the Electricity Act, electricity network companies have the right to be compensated for the costs arising from operations and maintenance, as well as achieving a reasonable return on the enterprise's capital. Ei has introduced an efficiency requirement and a requirement for good delivery quality so as to mimic competitive conditions. Ei compiles data for 15 different customer groups in order to compare different network operators.

Electricity network charges often consist of a fixed portion (subscription charge) and a variable portion (electricity transmission charge). The fixed portion varies with the size of the fuse or the volume of power subscribed to. The variable part changes based on the customer's usage. For a detached house with electric heating, the fixed and variable portions of the charge are about the same.

Figure 2 shows how network charges have developed in recent years for various types of household customers. Between 2006 and 2008, charges fell slightly before rising faster than inflation. Between 2014 and 2015, the charge rose 2.5 per cent for customers in apartments, 2.3 per cent for customers in detached houses with 16 Amp fuses and 1.9 per cent for customers in detached houses with 20 Amp fuses. This increase corresponded to SEK 33, 66 and 116 per year respectively.

Figure 2. Real-terms development of network charges for domestic customers<sup>9</sup>



Source: Ei

Customers with low electricity consumption usually have fewer tariff options than customers with high electricity consumption while most electricity network companies only offer one tariff type, known as flat rate tariff, to customers with low consumption. Flat rate tariff means that the customer pays the same amount,

<sup>9</sup> Mean value, adjusted for 2015's price level, not weighted.



regardless of what time of day the electricity is used. An alternative to flat rate tariff is time tariff where the customer pays different amounts depending on the time of day the electricity is used.

A number of electricity network companies have introduced power-based tariffs for domestic customers. These consist of a small fixed rate charge that is linked to the fuse rating, which determines the maximum power output. In addition to the fixed rate charge, the household is charged according to how it uses electricity over time, for example, different tariffs are charged for different times of day or different times of the year.

### **Ei's decision on electricity network charges for 2012–2015**

Ei regulates the revenues of electricity network companies in advance during a four-year period<sup>10</sup>. Revenues should cover the reasonable costs of running a network organisation as well as providing a reasonable return on the capital invested.

Ei adopted a standardised method ahead of the first supervisory period 2012-2015 in order to calculate what the network companies in the long term need to invest to maintain the high quality of the electricity network. In the method, the capital cost, ongoing costs and also the quality of the network activities for the supervisory period are taken into account. The approach results in an income cap that sets an upper income limit from network operations for the network companies. The aim of this regulatory model is partly so that the companies' customers will have predictable charges, partly to make it possible for the companies to invest in and maintain their networks. In order for prevent electricity network charges from varying too much between the supervisory periods, it is possible to spread the charge increases over several periods.

Appeals were made to the Administrative Court in Linköping for roughly half of the decisions made by Ei. The Administrative Court pronounced its judgment in the cases on 11 December 2013, including an assertion that Ei did not have the right to apply the 'transition method' in order to spread out charge increases. Furthermore, the Court found that the calculation for reasonable income should be done with a real cost of capital of 6.5 per cent before taxes. Ei lodged an appeal to the Administrative Court of Appeal in Jönköping. The Administrative Court of Appeal pronounced its judgment in the cases on 10 November 2014 where it took the Administrative Court's position and rejected Ei's appeal. Ei lodged an appeal against the Administrative Court of Appeal's ruling to the Supreme Administrative Court (SAC) in December 2014. On 23 March, 2015 SAC passed judgement that Ei did not have leave to appeal and therefore the processes are now fully completed and the Administrative Court ruling stands.

The court processes for the first supervisory period have been extensive and shown a need of unambiguous rules for the assessment of companies' income caps. Consequently, in September 2014 the Government made the decision, according to Ei's proposal, to introduce new unambiguous rules through a new regulation governing the income cap for electricity network companies. The new regulation introduces clearer rules to ensure that the electricity network companies' charges

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<sup>10</sup> Since 1 January 2012, in accordance with the regulations in Chapter 5 of the Electricity Act (1997:857).

are reasonable where, among others, the age of the system is taken into account. The regulation gives the electricity network companies a greater incentive to invest and modernise its electricity network. The regulations are to be applied for the first time to the supervisory period 2016-2019.

#### **1.1.4 Cross-border issues**

Ei and its Nordic counterparts collaborate within the framework of the organisation NordREG (Nordic Energy Regulators). Ei and the Nordic regulators also collaborate with other regulatory authorities in the NWE region<sup>11</sup> (North-Western Electricity). Increased cooperation also takes place between the NWE region, Spain, Portugal, Italy and Switzerland. Switzerland is negotiating an agreement with the European Commission that governs their participation, which means that they currently do not participate in the physical market coupling. The aim of the cooperation is to reach a single price coupling system for all European trade in electricity. In early February 2014, day ahead trading was launched for a larger part of the area. Work on intra-day trading continues, but has been delayed. Cooperation will be successively expanded until it encompasses the entire EU. An important prerequisite for a common market is that there are common rules for the transmission of and trade in electricity in a safe and efficient way in the various Member States. Not least, it must be certain that the technology for the transmission of electricity between countries' transmission networks works perfectly. Ei has, within the EU's cooperation body for regulation of the energy market (ACER), worked to present opinions on the proposal for 'network codes'. The network code proposals submitted to the European Commission will be processed in the comitology procedure in which national Governments are represented.

#### **Collective Nordic balancing**

For over a decade, balancing<sup>12</sup> has been conducted collectively by the Nordic area by the Nordic transmission system operators. This means that balancing is managed as if the Nordic synchronous area<sup>13</sup> were a single control area. However, national transmission system operators retain their responsibility. Furthermore, there is a common market for regulatory power in which the most efficient resources in the Nordic region are used for up or down regulation.

The common principals for the settlement of balancing services was introduced in 2009. Work is currently underway to facilitate the collective settlement of balancing services in the Nordic region as one route to a common consumer market. System operators are also preparing a common market for automatic reserves in order to maintain the frequency in the system. The Nordic regulatory authorities are following developments and are adopting a common position on whether changes should be implemented, which can subsequently be decided nationally. Ei

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<sup>11</sup> The NWE region consists of Belgium, France, Germany, Luxembourg, the Netherlands, the UK and the Nordic countries.

<sup>12</sup> Balancing takes place in order to correct frequency deviations, i.e. restore the momentary balance, in the power system.

<sup>13</sup> Electricity systems whose constituent parts are interconnected via alternating current connections and which thus have a common frequency.

normally adopts a position by reviewing changes in the general balancing contract between SvK and the companies with responsibility for balancing.

The Nordic system operators have, for some time, jointly managed congestion through implicit auctions <sup>14</sup>via the Nordic power market Nord Pool Spot. The methods used to calculate the capacity that is available on the market through such implicit auctions, as well as the methods used to announce the auctions, shall be public. Changes in these methods must be approved by the regulator. Within the framework of the Nordic cooperation in NordREG, discussions are underway into whether the current methods used to calculate capacity are satisfactory or if these need to be reviewed.

#### **Continued efforts to increased European harmonisation**

According to the EU's electricity market directives, the regulatory agencies have a duty to supervise how the access to cross-border infrastructure is managed by the transmission system operators. The common Nordic market is well established, which means first and foremost it is the changes that require the attention of the regulators. Ei actively works with the other Nordic regulators to ensure that internal rules and practices in the Nordic countries are developed in line with the goal of increased harmonisation.

#### **Projects of common interest**

An important issue for EU member countries to increase continuity of supply and the security of supply of electricity and gas within the EU. In order to accomplish this, a number of projects have been elevated to Projects of Common Interest - PCI. These projects have a specific regulatory framework that aims to simplify and coordinate approval processes between the countries, but also through rules that provide project owners with the opportunity to apply for specific EU funds to facilitate financing. For the period 2014-2020 there is € 5.85 billion in the CEF fund <sup>15</sup>that project owners can apply for. Projects must contribute towards the integration of markets and increase competition, lead to better security of supplies and reduce carbon dioxide emissions.

Ei has several duties pursuant to the regulations, including participation in the evaluation of the projects that seek to become PCI projects.

Sweden has a PCI project for electricity in the form of the 400-kV line Ekhyddan-Nybro-Hemsjö that is planned to be put into service in 2023. The project aims to increase the operating reliability of the grid and regional networks and safeguard electricity supplies to the direct current cable SwedLit (NordBalt) between Sweden and Lithuania. The existing 400 kV lines in the area are aging and in the near future will be subject to reinvestments. Reinvestments are so extensive that the lines need to be disconnected for a number of years. This work cannot be conducted without significant costs to end customers in bidding area 4, if an alternative supply route is not established between bidding areas 3 and 4.

The project contributes towards increasing the transmission capacity between electricity areas 3 and 4 and that transmission losses in the Swedish electricity

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<sup>14</sup> Implicit auctions mean that the transmission capacity is included in the ordinary auction, which is the basis for the price of electricity. The opposite is explicit auctions where transmission capacity is sold separately from the electricity.

<sup>15</sup> Connecting Europe Facility

network are reduced by approximately 275 GWh/year, which in turn leads to reduced environmental impact in the integrated European electricity system.

#### **1.1.5 Compliance with the electricity legislation**

In accordance with the Electricity Act, Ei's duties as the network authority include exercising supervision to ensure that companies comply with the electricity legislation. The Act states<sup>16</sup> that Ei is also the regulator in accordance with the regulation governing the terms for access to the network for international trade in electricity<sup>17</sup>. According to Ei's instructions, the authority shall also carry out the tasks defined by the EU electricity market directive.

According to the electricity market directive<sup>18</sup>, the national regulators will follow and implement the legally binding and relevant decisions taken by ACER and the European Commission. No specific legislation is required in order for this to apply in Sweden because the provision has an advisory character. In order for Ei to adhere to the Commission's decisions, provisions have been introduced in the Electricity Act<sup>19</sup> and in the Act<sup>20</sup> on the Certification of Transmission System Operators for Electricity. These provisions mean that, when making decisions which are affected by the electricity market directive<sup>21</sup>, Ei must specify that the decision may be altered or annulled at the request of the European Commission.

According to the Electricity Act, Ei has the right to obtain information and access documents, upon request, as required in its role as regulator<sup>22</sup>. Ei may issue such enforcement orders as are required in order to ensure compliance with the regulations and provisions that are covered by its role as regulator<sup>23</sup>. Such an order may be associated with a fine and there is nothing to prevent such fines from amounting to up to 10 per cent of a company's turnover.

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<sup>16</sup> 1997:857 Chapter 12, Section 1, fourth paragraph.

<sup>17</sup> Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003.

<sup>18</sup> Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC

<sup>19</sup> 1997:857 Chapter 12, Section 1 b.

<sup>20</sup> 2011:710 Chapter 3, Section 4 § and Chapter 4, Section 3.

<sup>21</sup> 2009/72/EC Article 39.

<sup>22</sup> 1997:857 Chapter 12, Section 2.

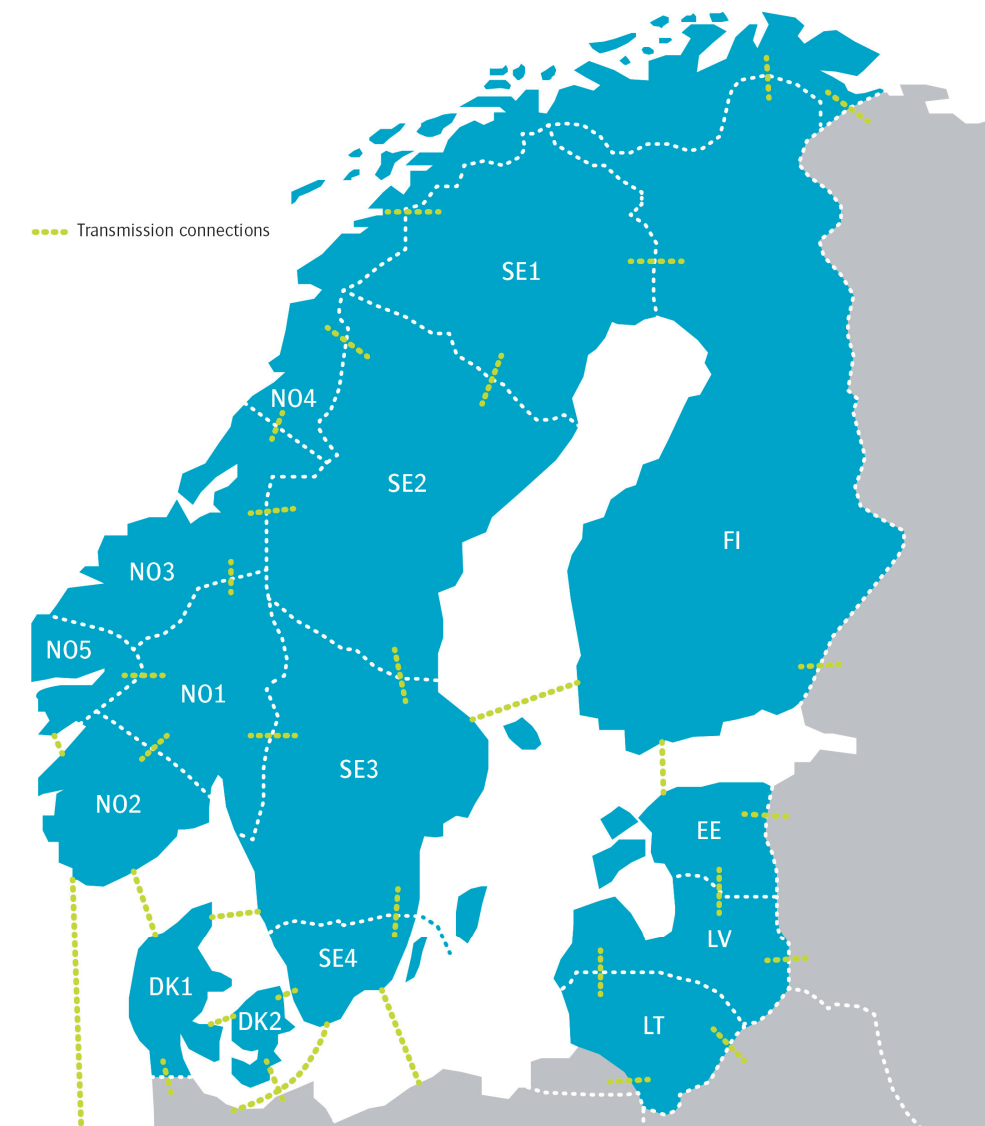
<sup>23</sup> 1997:857 Chapter 12, Section 3.

## 1.2 Wholesale market for electricity

The Swedish wholesale market for electricity is part of an integrated Nordic-Baltic market through transmission connections to Norway, Denmark and Finland. The Nordic-Baltic network is in turn connected to the European network. The operative management of the electricity network is done within each respective country, where the transmission system operator is responsible for ensuring that the national network is constantly balanced.

The Swedish electricity production is primarily based on nuclear and hydroelectric power. Electricity usage is affected by a relatively high portion of power-intensive industry and by many households being electrically heated. Trading on the wholesale market mainly occurs on the power exchange Nord Pool Spot.

Figure 3. The Nordic-Baltic bidding areas



Source: Ei



### 1.2.1 Monitoring of price trends, transparency and competition

#### Trade in electricity on the Nordic-Baltic market

Trade on the Nordic-Baltic electricity market with the physical supply of electricity is organised through Nord Pool Spot. A market participant can buy electricity for delivery on Nord Pool Spot using the day ahead market, also called Elspot. This trade takes place through an auction procedure where producers and buyers notify the quantities they wish to buy at what prices. All producers who submit a price below the resulting auction price may sell electricity in accordance with the quantity they bid for. The reverse applies for buyers. This ensures that no one needs to buy or sell electricity at a price that does not correspond to the market participant's economic conditions. The auction results in a price for the each bidding area, see figure 3, and a system price. The system price is a reference price equal to the price that would have been if there were no congestion between the bidding areas.

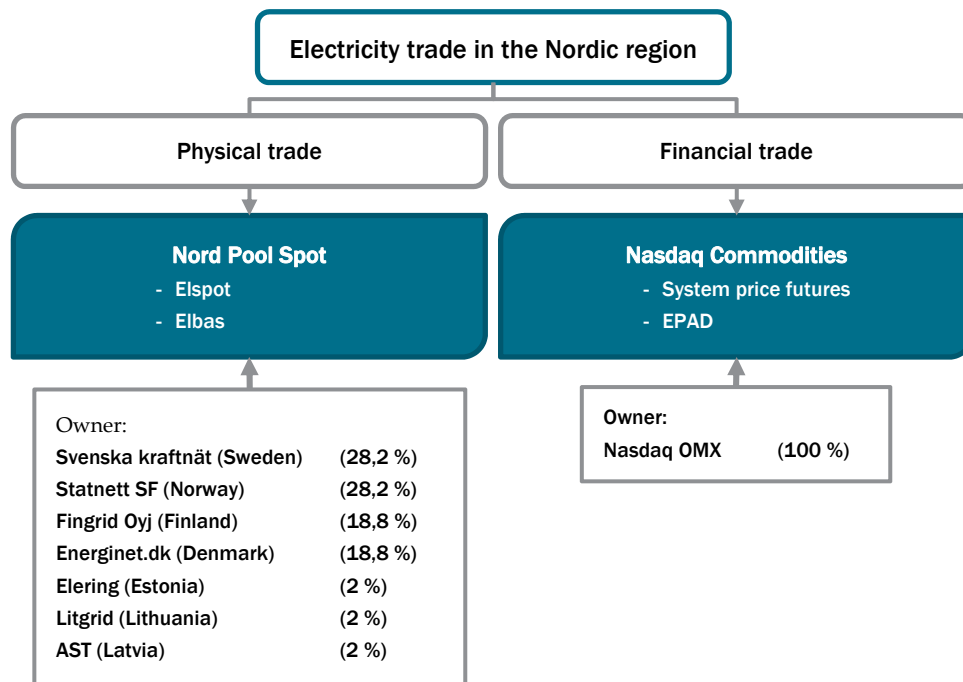
If a market participant has traded on the day ahead market, but for some reason cannot deliver or receive the quantity of electricity purchased, for example, due to a production facility failure, the participant can trade on the intra-day market, also known as Elba. On Elba, a participant can buy and sell electricity continuously until one hour before delivery. An participant may not withhold capacity from Elspot to then trade this on Elba. Trade on Elba has increased as power sources that are difficult to predict, such as wind power, have grown in significance.

If a participant wants to trade electricity in a longer term than one day, this must be traded financially. Primarily, financial trading on the Nordic-Baltic electricity market takes place on the Nasdaq Commodities exchange. A participant can buy futures on Nasdaq ranging from a few days up to ten years in advance. Futures are settled against the system price that is calculated each day by Nord Pool Spot. If the future is sold for a price higher than the system price the purchaser reimburses the seller with the difference, and vice versa when the future is sold for a lower price than the system price. The participant trades the physical electricity on the Nord Pool Spot as usual. As the prices in each bidding area are set individually, there is a need for participants to hedge against the difference between system price and bidding area prices. In order to do this, operators trade EPAD contracts<sup>24</sup>. These work similarly to futures, but are settled against the price difference between a specific bidding area and the system price.

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<sup>24</sup> Electricity Price Area Differential

Figure 4. Trading venues in electricity on the Nordic-Baltic market



Source: Ei

A total of 365.9 TWh was traded on Nord Pool Spot in 2014, which represents an increase of 3.7 per cent from 2013. The trade was distributed between 361 TWh on Elspot and 4.9 TWh on Elbas. The number of participants on Elspot amounted in 2014 to 345 (349 in 2013) and on Elbas to 150 (139 in 2013).

The financial trade fell by 8.5 per cent compared to 2013, which meant that a total of 1497 TWh was traded in 2014.

#### Market splitting and counter-trading for congestion management.

The need to transmit electricity within Sweden and the Nordic region is primarily affected by variation in the availability of hydro-electricity, as well as seasonal variations in consumption. Congestion in the Swedish transmission network is normally due to a high level of hydro-electric production in the north, leading to a large need for transmission in a southerly direction, at the same time as transmission capacity between bidding areas is limited. Congestion also occurs in situations where there is a large amount of transmission in a northerly direction from Denmark and the continent to the Swedish west coast and onward to southern Norway.

In Sweden and the Nordic countries, two methods are used to manage congestion in the form of bottlenecks – market splitting and counter-trading.

Market splitting means that the electricity market is divided into sub-markets, known as bidding areas (also known as spot price areas), see figure 3. Prices are determined by production and consumption within each area, as well as the capacity to transmit power to and from the adjacent areas. When two or more adjacent bidding areas have the same price, this is called a price area. It is not uncommon for all of Sweden's four bidding areas to form a single price area,

especially during hours of low demand. Price areas that extend over the Danish, Swedish and Norwegian bidding areas area also common. Sweden has been divided into four bidding areas since November 2011. The revenue that SvK earns from the sale of electricity from areas with a high price to areas with a low price is earmarked to strengthen the grid.

SvK can also manage congestion via counter-trading. This involves SvK paying for an increase in the production of electricity in the area which has a deficit and/or reduced production in the area with a surplus. Counter-trading costs are charged to SvK and thereby act as signals that the network needs reinforcing.

#### **Sweden consists essentially of one price area**

In March 2014 Ei published its final report on the effects of the bidding area reform of 2011<sup>25</sup>.

In the report Ei states that prices in the different bidding areas are essentially the same. Bidding areas 1 and 2 have the same price 99 per cent of the time. Bidding areas 1, 2 and 3 have a common price 95 per cent of the time and the whole of Sweden a common price 86 per cent of the time. Price differences are primarily found between bidding areas 3 and 4, however these have the same price 90 per cent of the time. Price differences arise mainly during periods of transmission congestion or a loss of production, particularly in bidding area 4.

Price differences between area 3 and 4 are expected to decrease significantly when the new power transmission line South West link is put into service in 2016.

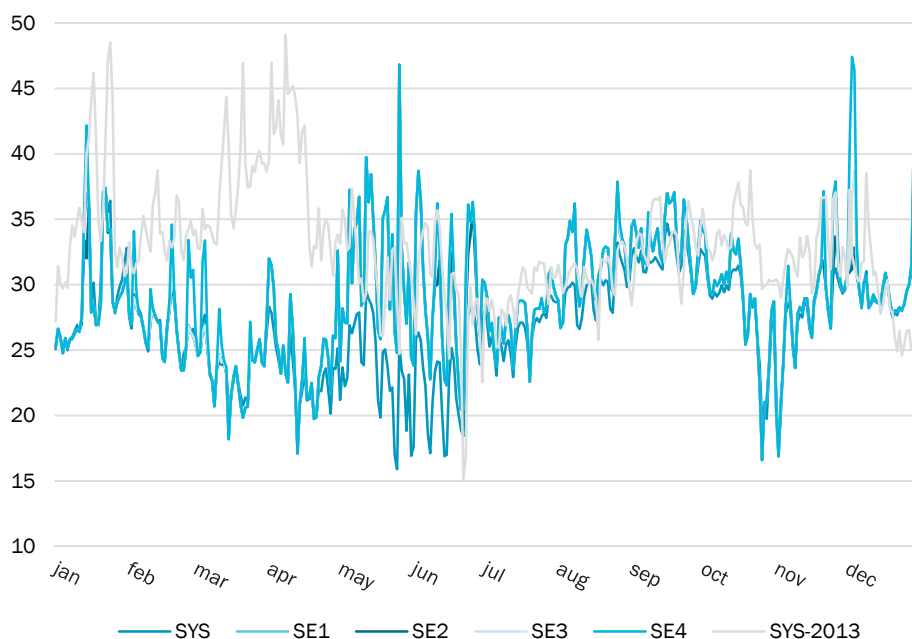
#### **Price trend over the year**

As shown in figure 5 2014 began with slightly lower spot prices than in 2013. The highest price was noted in bidding area 4 on the December 4<sup>th</sup> when the average day price was 46.4 öre/kWh. The lowest prices for the whole of Sweden were noted in October and November. For the northern bidding areas the early summer period was the period with the lowest prices when the price on certain days was less than 16 öre/kWh.

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<sup>25</sup> EiR R2014:08 'Utvärdering av effekterna av elområdesindelningen' (Assessment of the effects of bidding area division).

Figure 5. Daily average rates on Elspot during 2014, öre/kWh



The figure shows the electricity price developments during the year for all four Swedish bidding areas (SE1-SE4), the system price (SYS) and last year's system price (SYS-2013). Source: Nord Pool Spot

#### Low electricity consumption, large electricity export and wind power record

Electricity consumption is still falling and in 2014 was at the lowest level since 1986. Both industry and households have reduced their electricity consumption during the year by 4 and 3 per cent respectively. The warm weather in particular contributed to the decrease in consumption by households, since heating represents a large part of their usage. The weather may also partly explain combined heat and power generation because this is dependent on district heating production in order to achieve a competitive electricity price.

Table 2. Sweden's electricity balance 2007-2014, TWh

	2007	2008	2009	2010	2011	2012	2013	2014
<b>Domestic production</b>	145	146	133.7	144.9	146.9	162.0	149.5	150.9
<b>Hydro-electric</b>	65.5	68.4	65.3	66.8	66.0	78.0	60.8	63.9
<b>Nuclear</b>	64.3	61.3	50	55.6	58.0	61.4	63.6	62.2
<b>Other thermal</b>	13.8	14.3	15.9	19.1	16.8	15.5	15.2	13.3
<b>Wind</b>	1.4	2	2.5	3.5	6.1	7.2	9.9	11.5
<b>Domestic consumption</b>	146.3	144.1	138.3	147.1	139.7	142.4	139.5	135.2
<b>Network losses</b>	11.9	11	10.2	11	10.2	11.0	11.0	10.2
<b>Imports</b>	18.5	15.6	16.4	17.6	14.8	13.1	15.1	13.9
<b>Exports</b>	-17.2	-17.6	-11.7	-15.6	-22	-32.7	-25.1	-29.5
<b>Net Imports</b>	1.3	-2	4.7	2	-7.2	-19.6	-10.0	-15.6

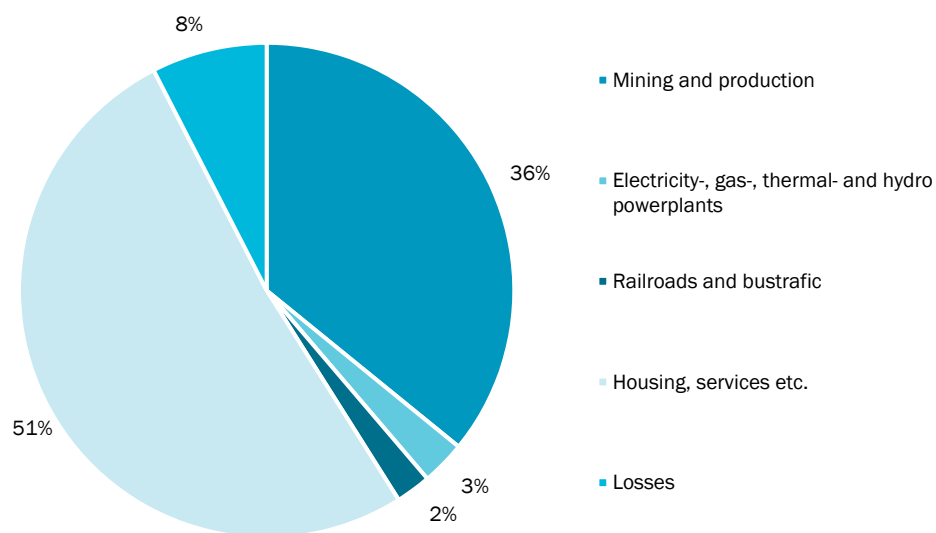
Negative values indicate exports. Source: Swedish Energy Agency and Statistics Sweden

Wind power has once again registered a production record with an increase of 16 per cent compared to 2013, this means that this power type accounted for 8 per cent of total electricity production. December and October noted the highest wind production during the year.

In spite of the decrease in the consumption of electricity, electricity production increased in during 2014. This contributed to the export of 15.6 TWh, which is the second largest export ever after 2012, when exports amounted to the record of 19.6 TWh.

Of Sweden's electricity consumers, households and service were the largest consumers with 69.5 TWh in 2014. The second largest category was mining and industry at 48.5 TWh.

**Figure 6. Electricity consumption by area of use, 2014**

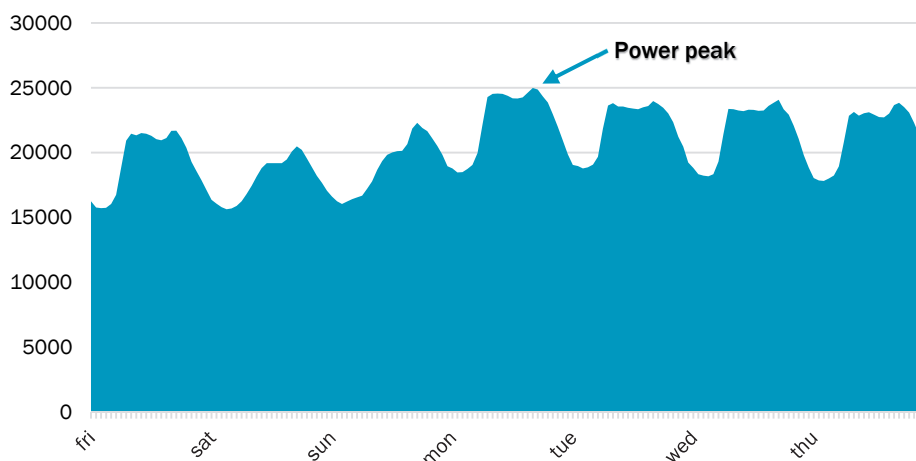


Source: Swedish Energy Agency and Statistics Sweden

Maximum power consumption in 2014 occurred between 4 and 5 pm on Monday, 13th January, when usage was 24,983 MW, see figure7. SvK had before the year forecasted that the highest consumption would reach 25,600 MW for a normal winter and 27,100 MW for a ten-year winter. Sweden's highest electricity consumption to date was reached on 5 February 2001, when consumption amounted to 27,000 MW.



Figure7 Peak output 2014, MW



Time series of electricity consumption between 10/01/2014 and 16/01/2014 Source: Nord Pool Spot

### Competition on the wholesale market

In Ei's bidding area division report it was concluded that the conditions for competition on the retail energy market are good. However, during periods of congestion, bidding area 1 in the far north and bidding area 4 in the far south, can end up in a situation where individual producers have great market power. In bidding area 1 there is primarily one large producer who dominates the area and often has a surplus of electricity, however, bidding areas 1 and 2 to a very large extent form a common price area, which limits market power of individual operators.

In bidding area 4, the situation is similar with only one major producer, however, the area normally has electricity deficit and on average higher prices than the rest of Sweden. This means, among others, that the liquidity of the hedging instrument, the so-called EPAD-contract, is low as there are few producers who can offer these. Discussions are currently ongoing about how this can be remedied and a system of transmission rights has been discussed. Nevertheless, Ei believes that the competitive situation is acceptable as bidding area 4 often forms a common price area with the adjacent Swedish and Danish bidding areas, which reduces the market power of individual producers. The new power transmission line South West link, which is expected to be put into service in 2016, will also improve the situation.

The Swedish electricity production is dominated by a few major operators. Vattenfall alone accounts for nearly 50 per cent of the production and, together with Fortum and Eon, the three biggest operators answer for more than 75 per cent of the same. The three largest operators also own, in different constellations, a large majority of the nuclear power in Sweden.

It must be taken into account, at each assessment of competition on the electricity market, that the Swedish bidding areas rarely form isolated price areas. In general a price range extends across several national borders, which means that an isolated study of the competition in the Swedish bidding areas is likely to miss how the electricity market works in practice.

### **Changes in competition between electricity trading exchanges**

A new group of EU regulations, known as network codes, on the European energy markets are being drafted. Of particular interest to competition on the electricity market are the opportunities that open up to competing power exchanges within the same bidding area. Today, all day ahead and intra-day trading in the Nordic-Baltic bidding areas are managed by Nord Pool Spot without competition from other exchanges. If several competing exchanges are active in the same area, the functionality of exchangers can be likened to an interface to the common calculation algorithm available on a European level.

### **The transparency regulation increases transparency on the electricity market**

In 2014, work on the implementation of the transparency regulation has progressed. As the name suggests, the regulation has the task to enhance transparency on energy markets by ensuring that information from the market's operators effectively reaches all stakeholders. Information to be reported according to the regulation includes the physical limitations of the network, production and consumption. The information is collected on a transparent platform operated by the organisation ENTSO-E<sup>26</sup> and is available to the public. The regulation was adopted in 2013 and reporting began in January 2015. The role of Ei is to ensure that the transparency regulation is enforced in Sweden.

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<sup>26</sup> European Network of Transmission System Operators - Electricity

## 1.3 The retail market

The Swedish retail market for electricity has been exposed to competition since 1996. There is no price regulation. There are roughly 5.3 million electricity consumers in Sweden, of which approximately 4.6 million are domestic consumers.

### 1.3.1 Monitoring of price trends, transparency and market competition

#### Actors on the Swedish retail market

Electricity supply companies that offer electricity contracts to electricity consumers are required pursuant to Ei's directive<sup>27</sup> to report these to the price comparison site Elpriskollen.se. Elpriskollen is run by Ei and allows users to compare prices and offers from different electricity supply companies. According to Elpriskollen, at the end of 2014 there were 123 electricity suppliers who offered at least one of the most common contract forms to consumers in one of the Swedish bidding areas<sup>28</sup>. Of these, 11 traders are only active within a limited geographical area, primarily within the company group's own electricity network.

However, the number of electricity suppliers in each bidding area is lower than the total number of electricity suppliers that are active in Sweden. There are also a number of electricity suppliers who, for example, offer contracts in all bidding areas but who are not actively marketing or offering competitive prices in all bidding areas.

In total there were almost 2,000 electricity contracts registered with Elpriskollen at the end of 2014, of which 1,300 were "green contracts". Green contracts refer to contracts where the trader has stated that 100 per cent of the electricity comes from renewable resources. The three largest electricity suppliers at the end of the year had a collective market share of 43 per cent of the number of customers<sup>29</sup>, a figure that has remained approximately at the same level for the last four years.

#### Customer activity

The number of customers that have switched electricity supplier has been fairly constant over the past three years, see figure 8. In 2014 a total of 552,000 switches of electricity supplier were made, 73,000 of which by corporate customers. In total, 10.4 per cent of customers switched electricity suppliers in 2014.

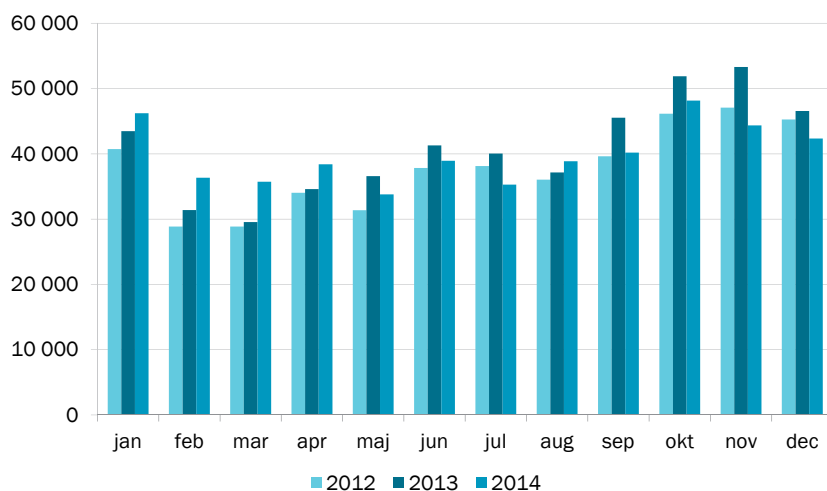
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<sup>27</sup> EIFS 2013:7

<sup>28</sup> The number of electricity suppliers is defined as the number of traders who have at any point during the year reported at least one of the most common electricity contracts to Elpriskollen.se.

<sup>29</sup> Source: Newsletter Energy Market 29/10/2014

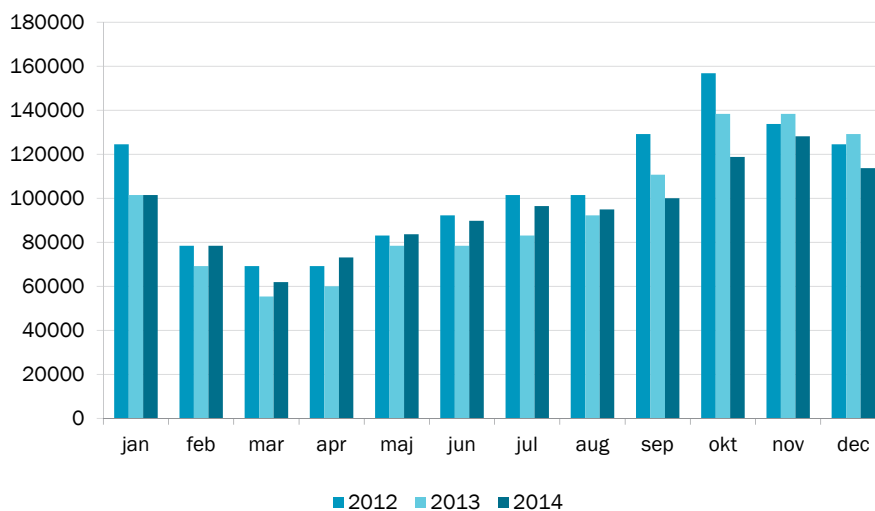
**Figure 8 Number of domestic customers who have changed electricity supplier**



Source: SCB

During the same period, 1,150,739 contracts were renegotiated, 10,951 of which were corporate contracts. The number of renegotiated contracts has also been fairly constant over the past three years, see figure 9. In total, 24.7 per cent of all domestic customers signed a new electricity contract in 2014.

**Figure 9 Number of domestic customers who have renegotiated their electricity contract**

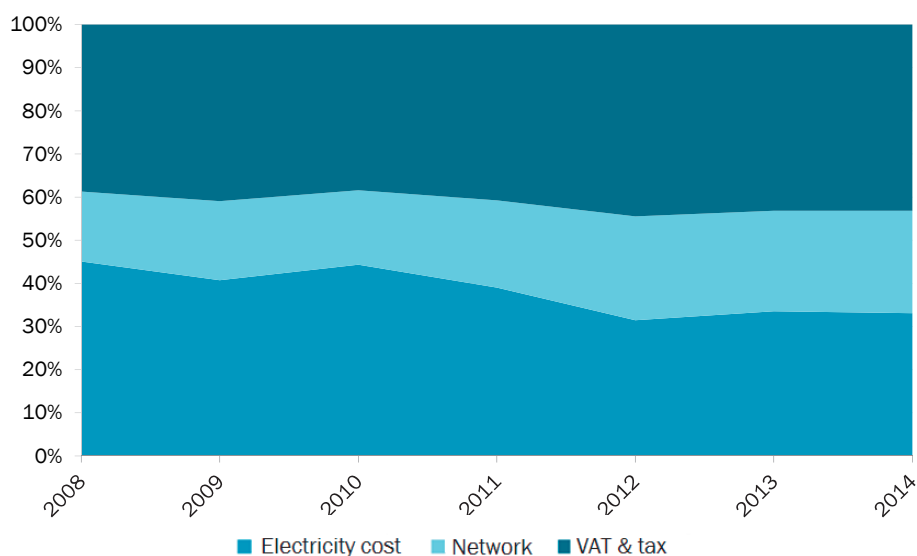


Source: SCB

### Total Cost of Electricity

The breakdown of the total cost of electricity that a house with electric heating pays has varied in recent years. The explanation for this is that the network price has risen, while the electricity trade price has dropped during this time. Tax and VAT have also increased slightly in recent years, see figure 10.

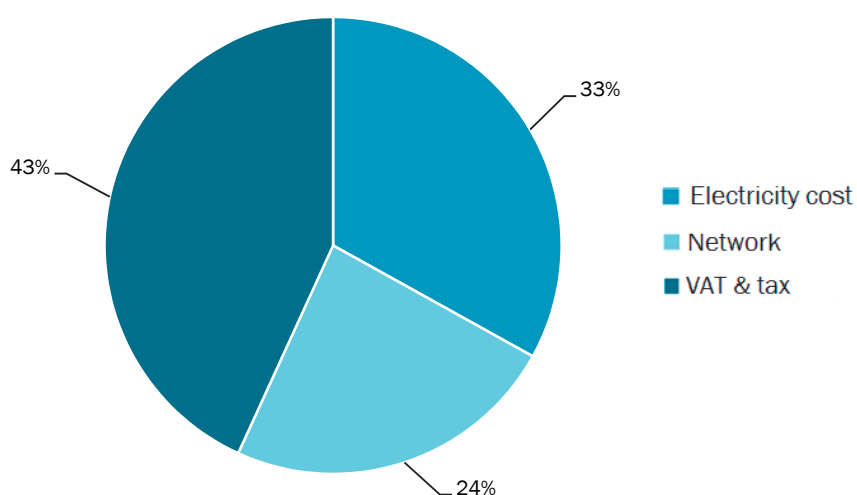
**Figure 10 Actual change in the distribution of electricity cost for a consumer using 20,000 kWh/year, in real terms**



Source: Ei, Statistics Sweden

In 2014 the largest share, 43 per cent, consisted of tax and VAT. The cost of supplied electricity accounted for 33 per cent of the consumers' total cost of electricity while the cost of network transmission accounted for 24 per cent, see figure 11.

**Figure 11 Constituent parts of the cost of electricity in 2014 for the consumer who uses 20,000 kWh/year**



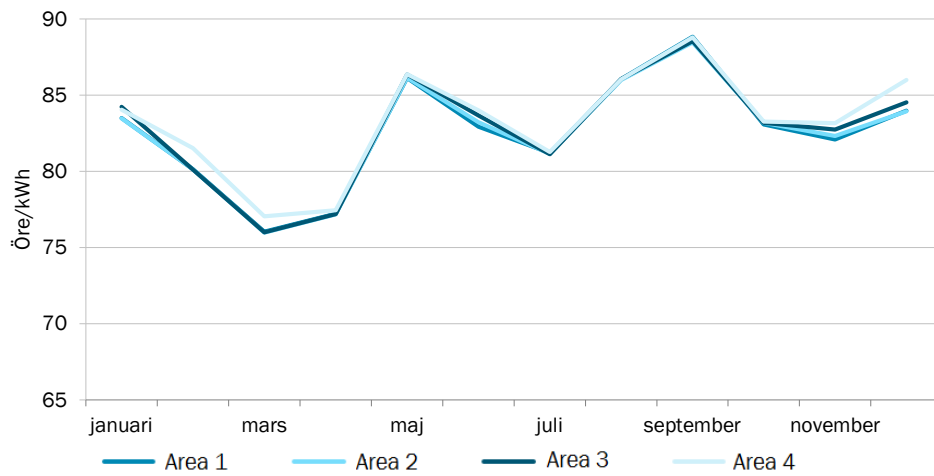
Source: Ei, Statistics Sweden

### Electricity prices

Unit price for variable price contracts presented in figure 12. Throughout the year, consumers in the four Swedish bidding areas have had very similar prices in variable price contracts.



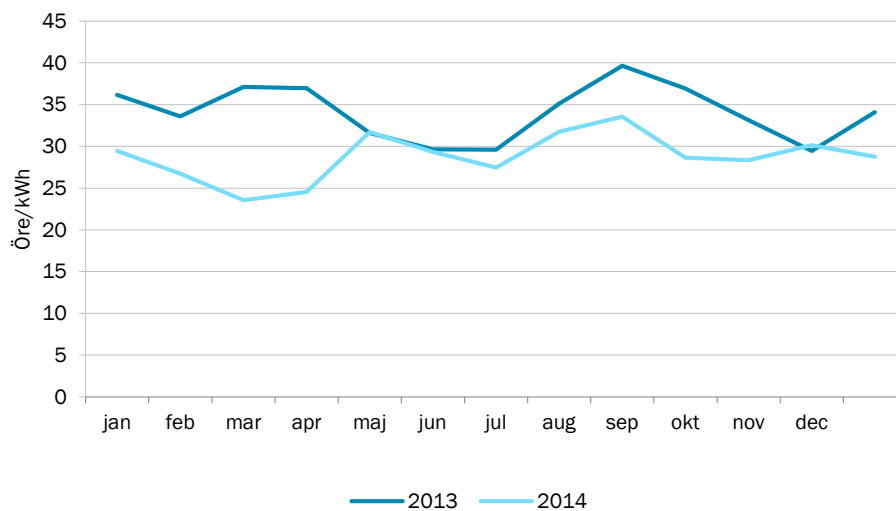
Figure 12 Unit prices 2014 for variable price contracts for average customer 20,000 kWh/year



Source: Ei

The variable contracts are strongly correlated with the spot price, which is shown in Figure 13. Price peaks in May and September are clearly visible in the prices for variable contracts in Figure 12.

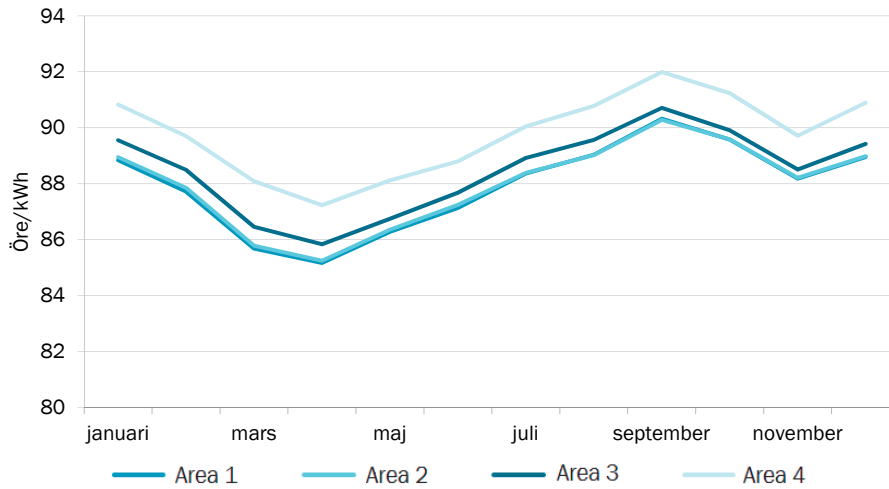
Figure 13 Spot price bidding area 3



Source: Nord Pool Spot

The fixed prices with a set time of one year show a clear price difference between bidding areas. The reason for the price differences can be found, among others, in the need of hedging from the electricity suppliers' side. In a bidding area with prices that vary greatly, there is a greater need of hedging, which results in increased costs for the electricity suppliers and thus a higher electricity price that they can offer to the end customer. The lowest prices can be found in bidding areas 1 and 2 and the highest in bidding area 4, see Figure 14.

Figure 14 Unit prices 2014 for fixed price contracts 1 year for average customer 20,000 kWh/year

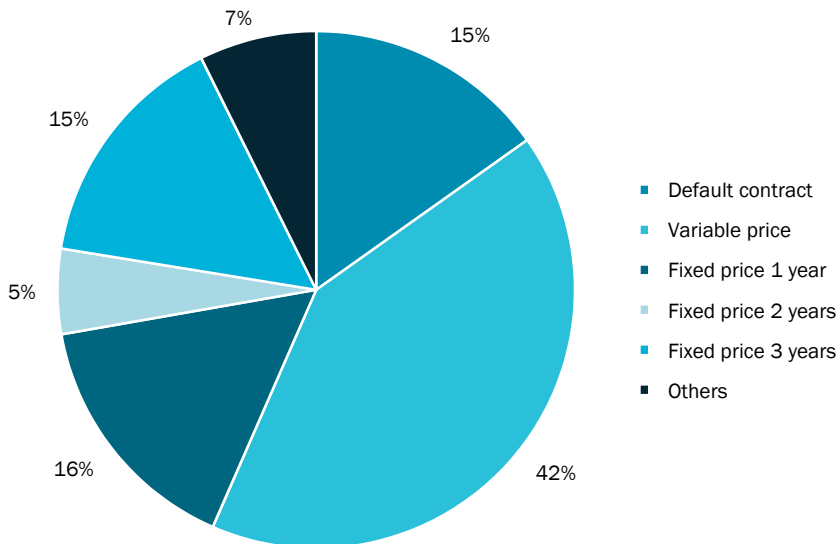


Source: Ei

#### Distribution of domestic customers by type of contract

The most common form of electricity contract in Sweden is a variable price contract. The long-term trend is that more people are moving from fixed price contracts to variable price contracts. In December 2014, 41.4 per cent of Swedish domestic customers had signed variable price contracts and 36.1 per cent had a fixed price contract with a subscription period of 1, 2 or 3 years, see figure 15.

Figure 15 Distribution of domestic customers by type of contract in December 2014



Source: SCB

#### Many consumers still have default contracts

Customers on the Swedish electricity market are free to choose a preferred electricity supplier. This means that companies operate in an open market in competition with other companies and that pricing is discretionary. If the customer

does not make an active choice, the relevant network owner is responsible for assigning a default supplier.

In 2014, Ei was commissioned by the Government to monitor the development of the designated electricity contracts<sup>30</sup>. The report showed that the percentage of electricity customers with designated contracts has fallen over time and in September 2014 was 15.5 per cent. On average, these customers paid 20–30 per cent more than customers with other contract forms. The report also showed that over half of customers have this kind of contract in over a year. Ei sees it as a problem that so many customers have designated contracts because the price difference compared to other contracts is too large. Ei deems that a supplier centric moving process will significantly reduce the share of customers who have default contracts.

### **Ei suggested a service hub**

Ei was assigned by the Government in 2014 to propose a general framework for the information management model that it considers suited to the future Swedish electricity market. A cost-benefit-analysis was made in the study comparing a service hub to the current model where information is sent to all stakeholders simultaneously. The analysis showed that there are economic benefits with a service hub and Ei therefore proposes in the report that a central service hub is more appropriate for the future of Swedish electricity market and thus should be introduced. Furthermore, Ei believes that a service hub facilitates the introduction of a supplier centric market model and also facilitates for a Nordic, and in the future European, retail market.

### **The moving process**

Given that many customers have designated contracts and that a service hub on the electricity market will take time to develop, Ei was instructed to implement a cost-benefit analysis to investigate whether it is economically viable to introduce a supplier centric moving process before a service hub is put into place. The implemented cost-benefit analysis showed that an early introduction of the supplier centric moving process would not be economically viable. Ei therefore recommended the Government not to bring forward the introduction of the supplier centric moving process as it requires a development of today's information management system that cannot be reused in the service hub, and that it would involve two major simultaneous change processes affecting the electricity market. Moreover, it would create an increased work burden and the need of resources for electricity market's operators, who would need to coordinate both projects at the same time with the risk of delays increasing. Bring forward a supplier centric moving process would also affect electricity customers financially as they would have to pay for two changes instead of one. Ei believes it is important that a supplier centric moving process is introduced, but that it is not financially feasible to introduce it until a service hub has been put into place. As the time schedules for work with the both the supplier centric moving process and the service hub are extremely doubtful, in the worst case scenario this would result in investments made in the moving process only be used for six to twelve months before the service hub starts.

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<sup>30</sup> Ei R2014: 19 Contracts and information to designated customers follow-up - A follow-up

### **Work towards a harmonised Nordic retail market**

Ei, together with its counterparts in the Nordic countries, has worked for several years for a harmonised Nordic electricity market. There is also a strong political will and support to create a common Nordic electricity market. A Nordic retail market is based on a supplier centric market model that makes it easier to be a customer on electricity market through the electricity supplier becoming the central point of contact for the customer. The model also aims to make it easier for electricity suppliers to be active in several countries, and thus promote competition.

In the creation of a common market, the formulation of market regulations is a central issue. In order to achieve a common retail market, it is important that the design of the market is sufficiently harmonised to minimise the barriers that electricity suppliers and energy service companies face in the form of adaptation costs and increased transaction costs, when being involved in several Nordic countries at the same time. Work is currently in progress on a common Nordic balance settlement as part of the creation of a Nordic retail market.

In 2014, the Nordic supervisory authorities in the cooperation organisation NordREG (Nordic Energy Regulators) produced a number of reports and recommendations, which are mentioned below.

NordREG issued recommendations in 2014 about rules for measurements<sup>31</sup> in order to promote a Nordic harmonised model for the functional requirements for electricity meters. NordREG has also produced harmonised regulation for the moving process<sup>32</sup> and published a report with proposals for harmonised underlying business processes<sup>33</sup>. During the year, a consultant, VaasaETT, was engaged to closely investigate the conditions stipulated in the different Nordic countries regarding market entry for market participants subject to competition and the conditions required to be able to run operations continuously<sup>34</sup>. The report describes many processes, which to some extent already are, or perceived to be Nordic to a relatively high extent. In addition the market participants expressed a strong support to implement a supplier centric market model and national data hubs to facilitate the entry and continuous operations on the Nordic markets.

In addition to the annual status report,<sup>35</sup> a detail report was also published over the work during the last four years<sup>36</sup> and a strategy document concerning the work over the next four years<sup>37</sup>. The status report shows that the decision regarding the supplier centric market model, seems to be linked to the national decision about the creation of a data hub.

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<sup>31</sup> Recommendations on Common Nordic Metering Methods Report 2/2014

<sup>32</sup> Framework for a harmonized model for moving Report 3/2014

<sup>33</sup> Business Requirement Specification for a Harmonised Nordic Retail Market Business processes, message format, content and interface

<sup>34</sup> Market Entrant Processes, Hurdles and Ideas for Change in the Nordic Energy Market - the View of the Market, VaasaEtt

<sup>35</sup> NordREG status report to EMG on the Nordic End-User project September 2014

<sup>36</sup> NordREG's work towards a harmonised Nordic retail market - Roadmap update and national implementation monitoring, Report 5/2014

<sup>37</sup> Strategy for a harmonised Nordic retail market 2015-2018, NordREG report 6

Table 3 shows how far the different Nordic countries have progressed in the work with a supplier centric market model.

**Table 3 The trend towards a supplier centric market model in the Nordic countries<sup>38</sup>**

	Information exchange	Co-billing	Moving process	Supplier switching
<b>Denmark</b>	Data hub introduced in 2013. New version to be launched in Oct. 2015.	Co-billing planned to be introduced during Oct. 2015.	Supplier centric process since 1 March 2013.	Supplier centric process today. Implementation of wholesale market model during 2015.
<b>Finland</b>	Project to evaluate future information exchange - model completed in 2014.	No legislation introduced nor planned.	Will be initiated after a decision on future information exchange model.	Will be initiated after a decision on future information exchange model.
<b>Norway</b>	A data hub in the process of being created and will launch in Oct. 2016.	Being investigated, proposal in 2015.	Will be changed when the data hub is running.	Will be changed when the data hub is running.
<b>Sweden</b>	Ei has proposed a centralised information exchange model to the Government.	Ei has proposed co-billing model to the Government.	Ei has proposed a supplier centric market model to the Government.	A supplier centric switching process has been implemented.

Source: NordREG

#### **Elpriskollen – an independent price comparison website**

As part of its regulatory duties for the retail market, Ei runs the price comparison website Elpriskollen.se where electricity suppliers are required to report prices and contract terms. Since April 2013 this information forms the basis of Sweden's official electricity price statistics, which are compiled by the Swedish Energy Agency and Statistics Sweden. Elpriskollen was launched in 2008 and is the only independent price comparison website for electricity in Sweden.

In 2014, a project was started to improve Elpriskollen.se as well as the reporting system which electricity suppliers use to report their prices and contract terms. The project is planned to be completed in the autumn of 2015.

#### **Research report about consumption flexibility**

In 2014 Ei engaged a research team at Umeå University to study customers' consumption flexibility. The purpose of the study was to contribute with increased knowledge concerning the behaviour of consumers and the opportunities and incentives available to change prevailing consumption patterns. More specifically, the study involved studying the flexibility of electricity consumers and what is required for individual consumers to change their consumption patterns. Three broad conclusions could be drawn from the study: Firstly, the economic incentives for individual households to switch their electricity consumption during the day are extremely small. Secondly, the compensation that an average household would need to systematically control their electricity consumption is significantly higher than the current incentives. Thirdly, the price for the consumer to change their behaviour depends on when, how and which household it concerns.

<sup>38</sup> Report 5/2014



## 1.4 Recommendations on supplier prices, investigations and measures to promote effective competition

Several agencies and public bodies collaborate in the supervision of the Swedish and Nordic electricity market with the aim of using various measures to create a functioning electricity market and prevent the exercise of market power.

### Areas of responsibility within supervision of the electricity market

In addition to its supervisory role, Ei continuously follows and analyses the development of the electricity markets and submits proposals for changes to regulations or other measures that may improve the markets function. Ei is also charged with working to promote effective competition in the electricity market. In 2014 Ei has delivered, among others, the final part in a series of reports about the creation of four bidding areas. See section 1.2.1 for a longer description of these bidding areas and the competition on the electricity market.

Finansinspektionen, the Swedish financial supervisory authority, supervises Swedish actors who with the authority's permission operate on the financial electricity market. Supervision of trade and businesses' actions takes place on the exchanges Nord Pool Spot and Nasdaq Commodities. Nord Pool Spot, which is based in Norway, is supervised by the Norwegian Water Resources and Energy Directorate (Norges vassdrags- og energidirektorat, NVE) and Finanstilsynet, the Norwegian financial supervision authority.

The Swedish Competition Authority is the authority that ensures companies in the Swedish electricity market do not violate the prohibitions on restrictive agreements and abuse of dominant position set out in the Treaty on Functioning of European Union (TFEU) and the Swedish Competition Act. The Swedish Competition Act also contains a prohibition against anti-competitive public sales operations, and the authority may on its own initiative or following complaints from companies and the general public actively intervene in the above restrictions. The Competition Act also includes rules governing mergers and acquisitions. The Swedish Competition Authority also proposes changes to regulations and other measures which aim to eliminate existing barriers to competition.

### Supervision of the Swedish markets in accordance with REMIT

In 2011 the new regulation on wholesale energy market integrity and transparency (REMIT)<sup>39</sup> came into force, which facilitates coherent supervision of the increasingly integrated European electricity and gas markets. The responsibility of Ei and its continuous work to supervise the Swedish markets has thus increased; Ei has also created a new department to accomplish this duty. In 2012, Ei intensified its cooperation with ACER and the regulatory authorities of other countries to work out the details of the regulations for the implementation and application of REMIT. This work continued during 2014.

In December 2014, the European Commission made a decision concerning the implementing regulation that specifies certain details in the REMIT regulation. As

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<sup>39</sup> The full title of the regulation is: The European Parliament and Council Regulation (EU) No 1227/2011 of 25 October 2011 on wholesale energy market integrity and transparency.

the implementing regulation was agreed in December 2014, data reporting for certain contracts starts in October 2015 and for all contracts in April in 2016.

In 2014 the registration of market participants began as required according to REMIT. The participant registers basic information about the company, owners, corporate structure and data reporting channels in the registration. The register forms the basis of monitoring according to REMIT as the supervisory authorities can identify individual participants on the market.

#### **The exchanges regulations and market supervision**

All of the members of Nord Pool Spot and Nasdaq Commodities must follow specific rules concerning the trade on each trading exchange. The rules apply in particular to the handling of price sensitive information, so-called inside information and price manipulation. Both Nord Pool Spot and Nasdaq Commodities have internal departments for market surveillance where trade is monitored continuously. Market participants who do not follow the rules can be warned, have to pay penalties or in extremely serious cases be barred from the exchange. The departments for market surveillance on Nord Pool Spot and Nasdaq Commodities are important partners for Ei's department for market surveillance.

#### **Fines for electricity exchanges**

In March 2014 the European Commission decided to fine the Nord Pool Spot (Norway) and Epex Spot (France) exchanges for breach of the EU competition regulations. The reason for this is that the exchanges for seven months between 2011 and 2012 had agreed not to compete with each other in Europe.

Through a voluntary settlement, Nord Pool Spot and Epex have agreed to pay fines equal to SEK 21 and 34 million respectively. The voluntary settlement means a ten per cent decrease in the fines which would otherwise be issued by the Commission.

Ei believes that the exchanges are vital in creating efficient electricity markets and believes that striving to create competition between exchanges is good as long as the functionality of the market is not jeopardised.

#### **Measures to minimise the risk of joint ownership of nuclear power**

The Swedish Competition Authority has in different contexts drawn attention to the general risks of joint ownership of electric power generation resources, and the Government has taken initiatives to resolve the issue. However, following a proposal from Ei, the owners of the nuclear power stations have also adopted industry-wide ethical rules on the exchange of information between companies. Moreover, independent observers have positions on the nuclear power companies' boards, with the specific duty of supervising the application of the industry's ethical rules. Ei nominates the observers and publishes reports each year from each of the companies, including any comments from the observers.

## 1.5 Security of supply – electricity

The Swedish electrical system's security of supply is generally good. Manual disconnection of consumption, which is the method that SvK is instructed by law to use if there is no other way of achieving balance between input and output in the electrical system, has never been needed.

### 1.5.1 Monitoring balance between supply and demand

#### Additional wind turbines increased electricity production capacity

In Sweden, investments in new electricity production capacity are mainly done on a market basis. In order to build a new electricity production facility in Sweden, permission from Ei is not required. Whereas permits are required under both the Environmental Code and the Swedish Planning and Building Act.

Wind power constituted the majority of the added capacity with close to 1000 MW. By the end of 2014, there were some 3,000 wind turbines in Sweden.

Table 4 shows the installed capacity distributed by production type. Of the total installed capacity, renewables constituted close to two thirds.

Table 4. Generation capacity of Sweden's power stations as of 31 December 2014, MW

	2011	2012	2013	2014
<b>Nuclear</b>	9,363	9,363	9,531	9,528
<b>Fossil</b>	4,793	4,636	4,635	4,866
<b>Renewables</b>	22,307	23,354	24,107	25,155
- Hydro	16,197	16,203	16,150	16,155
- Biofuel	2,870	3,036	3,080	3,082
- Wind	2,899	3,745	4,470	5,420
- Waste	325	346	364	419
- Solar	16	24	43	79
<b>Total</b>	<b>36,463</b>	<b>37,353</b>	<b>38,273</b>	<b>39,549</b>

Source: Swedish Energy, Swedish Wind Energy

### 1.5.2 Monitoring investments in generation capacity in relation to security of supply

#### Plans for extensive reinforcement of the Swedish transmission network

The Swedish transmission network is currently undergoing significant expansion. The network is reinforced to allow for new electricity production, to further integrate the market with the surrounding world and to contribute to the creation of a common European electricity market. At the same time, there is a significant requirement for reinvestment.

Currently, one of the biggest projects underway to increase capacity and security of supply in the Nordic energy system is the South West Link. The aim of this project is to reduce the existing congestion between mid and southern Sweden. The South West Link is being built in two part which join up near Jönköping. From the junction, one link heads south to Skåne, while the other heads north to Hallsberg. The entire South West Link is expected to be in operation in 2016.

Another major project is Svenska kraftnät's construction of NordBalt, a DC connection between Sweden and Lithuania. The new connection is part of the project to connect the three Baltic states' electricity networks with that of the Nordic countries, and is important for ensuring security of supply in the Baltic states. NordBalt is expected to be operational early in 2016. Today, one cable between Estonia and Finland is the only connection between the Baltic states and the Nordic countries.

Aside from the South West Link and NordBalt, several other projects are ongoing in order to reinforce the electricity networks in the regions surrounding Sweden's major cities, as well as the transmission capacity between the Swedish bidding areas. New cables to nuclear power stations and connections to wind farms are also included in the plan. In addition, Svenska kraftnät is planning a transmission network connection between Gotland and the Swedish mainland.

### **1.5.3 Measures to manage peaks in demand or deficits in supply**

Svenska kraftnät is responsible for ensuring that capacity is available in reserve during the winter.<sup>40</sup> The capacity reserve is created by Svenska kraftnät procuring and entering into contracts with electricity producers and consumers to place additional production capacity or the possibility of a reduction in the consumption at its disposal.

The Government has decided that the capacity reserve is to be successively phased out by 15 March 2020. The State's purchases of electricity production and consumption reductions on a competitive market via Svenska kraftnät are deemed to disrupt the functioning of the electricity market. The matter of maintaining capacity balance will as of 2020 instead be solved by the market actors.

To ensure that the phasing out is done in a controlled fashion, the Government has decided that the amount of procured reserves shall be reduced each year up to 2020. In the winter of 2014/2015 the reserve capacity was 1,346 MW, which was a decrease compared to 2013/2014 when it comprised 1,489 MW. Legislation states that the capacity reserve shall consist of both production and consumption reduction. Activation of the product part of the capacity reserve is done by Svenska kraftnät while the owners of consumption reductions are free to trade their resources on Nord Pool Spot.

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<sup>40</sup> According to the Act (2003:436) on capacity reserve.



## 2 The Natural Gas Market

Natural gas was introduced in Sweden in 1985 by extending the Danish natural gas system to southern Sweden through a pipeline from Dragör close to Copenhagen to Klagshamn on the outskirts of Malmö.

On 1 July 2007, trade in natural gas in the Swedish system was opened for competition. Network operations are a regulated monopoly.





## 2.1 The gas network

Natural gas was first introduced in Sweden in 1985. The West Sweden natural gas network consists of approximately 620 km of transmission pipeline and 2720 km of distribution pipes. The natural gas network is divided into four operational areas: transmission, distribution, gasification and storage. The gas is transported long distances under high pressure in transmission pipelines. A pressure reduction is then performed in metering and regulation stations before the local distribution network transports the gas to the consumers. The West Sweden transmission network is owned by the privately owned company Swedegas AB.

The West Sweden natural gas network stretches from Trelleborg in the south to Stenungsund in the north and also branches off into parts of Småland. Of Sweden's 290 municipalities, 30 or so have access to natural gas. The transmission pipelines are owned by Swedegas AB, see figure 16, which is also responsible for the system's short-term balancing of the input and output of natural gas.

Swedegas was owned between the years 2010 to 2015 by the venture capital company EQT. In the spring of 2015 a change of ownership was announced where Spanish Enágas and Belgian Fluxys became the new owners. The new owners are already transmission network operators in among others Spain, Belgium, Germany and Switzerland.

Figure 16. Transmission pipelines in the West Sweden natural gas network



Source: Ei

### Stockholm's gas network

Stockholm Gas AB owns the town and vehicle gas networks in the Stockholm region and is responsible for the development, operation and maintenance of these. The town and vehicle gas networks comprises of approximately 500 and 40 kilometres of pipelines. The town gas network covers large parts of Stockholm city

as well as Solna and Sundbyberg. Work to build the gas network begun in 1853 around the castle, Helgeandsholmen and Kungsträdgården as gas was needed for street lighting and the work continued into the 1950s. The gas is pumped out from gas mixing stations in Högdalen and Hammarby Sea City through high-pressure pipelines to a number of regulation stations, where the pressure is reduced for continued distribution to end customers.

In April 2014, the Swedish Parliament decided to adopt the Government bill<sup>41</sup> concerning clarification of the Swedish Natural Gas Act so that the entire natural gas network in Sweden is covered by the Act. The decision means that Stockholm Gas will be regulated in the same way as other natural gas companies in Sweden. Stockholm Gas will also be responsible to ensure that the short-term balance is maintained in their network and for the settlement between gas suppliers. The regulation demands that Stockholm Gas AB is divided up into a network company and a trading company, in the same way as on natural gas market on the West Coast. Stockholm Gas AB is responsible for gas networks, while Stockholm Gas Handel AB is responsible for the trade in gas.

#### **2.1.1 Functional differentiation of natural gas companies**

A functional unbundling between the companies is required in order to prevent cross-subsidisation between companies operating different types of natural gas activities. This means that companies operating within the transmission, gasification and storage of natural gas must not trade. For companies that previously pursued both trade and for example transmission the separation regulation means that the company must be divided into two separate entities. Board members, Managing Directors or authorised signatories in a company that owns natural gas pipelines in a Swedish natural gas system may not occupy any of these roles in a company that trades in natural gas. However, there is no Swedish legislation that forbids a gas network company from being part of a conglomerate that also conducts production of or trade in natural gas.

All companies engaged in the in the transmission, storage or gasification of natural gas must according to the Swedish Natural Gas Act drawn up a supervision plan and publish an annual report which gives an account of the measures they have implemented. The aim of the monitoring plan is to ensure that the companies act objectively and do not improperly favour any particular participants in the market. The monitoring plan must state the measures that will be taken to prevent discriminatory behaviour against other actors in the market.

#### **Certification of transmission system operators**

According to the gas market directive<sup>42</sup>, transmission system operators<sup>43</sup> must be certified. As part of the work towards certification, the European Commission<sup>44</sup> issued an opinion on Ei's preliminary decision in advance of Ei in July 2012 making its final decision to certify Swedegas AB as a system operator. At the same time as

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<sup>41</sup> Government bill 2013/14:74

<sup>42</sup> The European Parliament and Council Directive 2009/73/EC of July 13, 2009 concerning common rules for the internal market for natural gas. Article 10.

<sup>43</sup> The concept of system operator for transmission systems is synonymous with national grid operator and transmission network operator.

<sup>44</sup> The European Commission checks that Member States only certify competent system operators.



Swedegas gained certification, Svenska kraftnät also received certification as a system operator. Certification is valid indefinitely, but the decision can be overturned by Ei if the system operator does not live up to the certification requirements.

On 1 June 2013, the Government appointed Swedegas responsible for short-term balancing in the West Sweden natural gas network, a role previously held by the Svenska kraftnät.

### **2.1.2 The technical function of the natural gas network**

#### **Balancing of natural gas**

As the transmission network operator, Swedegas owns the West Sweden natural gas transmission network and is responsible for operations and maintenance. The role is comparable to the one held by Svenska kraftnät on the electricity market as they both own pipeline network and are responsible for the short-term balance of the input and output of gas. On 1 June 2013, responsibility for short-term balance of the input and output of gas in the West Sweden natural gas network, so-called system balancing responsibility, was transferred from Svenska kraftnät to Swedegas.

In order to ensure balancing, Swedegas have signed balance contracts with operators on the gas market, so-called balancing operators. The balancing operators undertook financial responsibility for ensuring that the consumption was equivalent to the supply. The West Sweden natural gas network offers great opportunities to store gas in the pipelines, so-called linepack, which facilitates balancing. Short-term imbalances can constitute as much as 25 per cent of a winter day's consumption without the network's technical function being jeopardised.

The system balancing operator may not enter into contracts for balancing responsibility with individual gas balancing operators until the design the contract has been approved by Ei.

#### **Quality control of the natural gas network**

The gas network companies are responsible for ensuring that the operation and maintenance of their facilities is secure, reliable and efficient so that they meet reasonable long-term requirements regarding transmission, storage and gasification of gas.

The West Swedish natural gas network primarily consists of steel pipelines. The system's functions are regularly checked, and defects or worn-out equipment replaced. The lifespan of the pipes is expected to be a minimum of 40 years, while certain pieces of equipment for monitoring, control and regulation are expected to last for 5-20 years.

Distribution pipes are primarily made of polyethylene plastic. Steel pipes are used in certain cases for customers who require a gas pressure greater than 4 bar. Guidelines for the execution, operation, care, maintenance, etc., of distribution networks for a maximum operating pressure of 4 bar are harmonised in the energy gas standards that have been worked out by the trade association that is the Swedish Gas Association.

### **Connecting to a natural gas pipeline**

The owner of a natural gas pipeline is obliged to connect other natural gas pipelines, storage facilities and gasification facilities to it on reasonable terms. When requested to make a connection, the owner of the pipeline shall submit written information regarding the fee and other terms of the connection within a reasonable time from the request. This responsibility does not apply if the pipeline lacks the necessary capacity.

### **Connection to a storage facility or gasification facility**

The owner of a facility or pipeline for storage of natural gas or a gasification facility connected to the Swedish natural gas system must accept, on reasonable terms, natural gas owned by another party for storage or gasification. When requested to accept gas input, the owner of the storage or gasification facility shall provide written information regarding the fee and other terms of the connection within reasonable time of the request. This responsibility does not apply if the facility lacks the necessary capacity.

### **Reviewing terms for connecting to a natural gas facility**

The methods for designing agreements for connections to various types of natural gas facilities are approved by Ei before being put into use. The terms specified in the connection agreements must also be approved before they are implemented by the owners of the natural gas facilities.

### **Supervision of safety measures**

Currently supervision is only implemented on the West Sweden natural gas network. There are proposals that supervision should also include the natural gas network in Stockholm, which can take place at the earliest in 2015.

## **2.1.3 Network charges for connection and transmission**

### **Review of gas network charges**

Ei supervises the gas network companies and must approve the methods these companies use to calculate their network charges. In the formulation of the charges for the transmission of natural gas, specific consideration must be given by the companies to the number of customers that are connected, the geographical position of the customers, the quantity of energy transmitted, the contractual costs of overlying pipes, security of supply and the pressure in the pipes. As a consequence of the gas market directive,<sup>45a</sup> a change came into force in 2012 which meant Ei's supervision according to the Swedish Natural Gas Act also applies to tariffs for access to gasification plants. Access tariffs are not applicable prior to approval of the methods used to calculate the tariffs by Ei.

Ei's regulation of the methods that form the basis of the calculation of tariffs aims to ensure that they are objective and non-discriminatory in accordance with the requirements of the Swedish Natural Gas Act. Ei's regulatory decisions may be appealed within three weeks by the party the decision concerns. Review also takes place in the administrative courts.

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<sup>45</sup> Article 41.6 a.

In order to enable ex ante regulation of the natural gas tariffs, as the regulations on the electricity market, the Swedish Parliament adopted the Government Bill <sup>46</sup> regarding changes to the Swedish Natural Gas Act. The regulations mean that Ei decides on an income cap for each natural gas company. This cap sets an upper limit for the total income companies may have from their natural gas operations in the period 2015–2018. Until 2015, the fairness of network charges are assessed retrospectively.

On 30 June 2014 companies submitted a proposed income cap which in total amounted to SEK 7.3 billion for the period 2015-2018. Ei decided on 27 October, 2014 on a slightly lower income cap, just below SEK 6 billion. Four of the nine natural gas operators have appealed against Ei's decision to the Administrative Court in Linköping, who reportedly plans to announce the judgement in 2015.

The gas network companies are pursuant to the Swedish Natural Gas Act required to produce economically unbundled accounts for transmission, distribution, storage and gasification operations in the form of an annual report. The annual report shall be submitted to Ei no later than seven months after the fiscal year and include, among others, complete financial statements for each reporting unit. The report forms the basis of further supervision.

#### **Retrospect audit of tariffs**

The supervision of network companies' tariffs includes companies who are connected to the Swedish natural gas system in accordance with the provisions of the Swedish Natural Gas Act. The assessment is done, up until 2015, retrospectively and carried out using information from the submitted annual reports, supplemented by information regarding acquisition of the companies' facility assets. To determine whether tariffs and charges used by gas network companies are reasonable, Ei makes an assessment of the companies' revenues in relation to an estimated approved revenue in accordance with the Ei model. From January 2015, the network company income are regulated in common with the regulations governing the electricity market, this means that income are regulated in advance by an income cap that extends over a period of 4 years.

#### **Regulated access to storage and gasification facilities**

Parties who own storage facilities or have the capacity to store natural gas in pipelines is obliged to store natural gas on behalf of another party on reasonable terms. Parties who own gasification facilities are likewise obliged to feed natural gas into a natural gas pipeline. These obligations are void if the facilities or pipelines lack the required storage capacity.

#### **2.1.4 Cross-border issues**

Ei participates in transnational cooperation as part of several international bodies. Despite there being no formal cooperation with the other Nordic regulators with regard to the gas sector, continual discussions are ongoing with the Danish regulator about how the common market can be developed or in what way the security of supply can be improved. Moreover, Ei cooperates with European regulators in Germany, the Netherlands, Belgium, Luxembourg, France, Spain, the United Kingdom and Ireland.

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<sup>46</sup> Government bill 2012/13:85.

The cooperation aims to facilitate swift application of European legislation. Ei has contributed, via the cooperative body ACER among others, to producing guidelines for drawing up European regulations for the internal market for natural gas and has submitted comments on network codes to ENTSOG<sup>47</sup>.

### **Projects of common interest**

See section 1.1.4 for an introduction to projects of common interest.

The LNG terminal <sup>48</sup> in the Port of Gothenburg is currently the only PCI project for gas in Sweden and Swedegas intends to apply for PCI status also in the next application period. The terminal is expected to be completed and in operation in 2017-2018 and will primarily facilitate shipping, industry and heavy transport on land by providing easier access to natural gas. When fully developed, the total capacity will be about 30,000 m<sup>3</sup>. In the long term, the terminal can also be used to feed gas into the West Sweden natural gas network.

### **2.1.5 Compliance with Swedish Natural Gas Act**

Ei is the supervisory authority pursuant to the Swedish Natural Gas Act <sup>49</sup> and therefore has the task to ensure that this is observed. In addition, Ei ensures that the regulation<sup>50</sup> on conditions for access to the natural gas transmission networks is observed. Ei is instructed by the government to fulfil the duties within its area as per the EU's gas market directive<sup>51</sup>.

According to the gas market directive, the regulator will follow and implement the legally binding and relevant decisions made by ACER and the European Commission. No specific legislation is required in order for this to apply in Sweden because the provision has an advisory character. There is a requirement that it is clear in other regulations – such as EU regulations – as to which decisions are binding and relevant. To make it possible for Ei to follow the Commission's decisions, provisions have been introduced into the Natural Gas Act<sup>52</sup> and in the Act on the certification of certain natural gas companies<sup>53</sup>. These provisions mean that, when making decisions, which are affected by the gas market directive, article 43, Ei must specify that the decision may be altered or annulled at the request of the European Commission.

Ei may, according to the Natural Gas Act<sup>54</sup>, issue such enforcement orders as are required in order to ensure compliance with the regulations and provisions that are covered by its role as regulator. Such an order may be associated with a fine.

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<sup>47</sup> European Network of Transmission System Operators for Gas

<sup>48</sup> An LNG terminal is a facility for the reception and distribution of natural gas in liquid form, often transported by ship, truck or train. LNG terminals can also be connected to the natural gas networks.

<sup>49</sup> Swedish Natural Gas Act (2005: 403), Chapter 1, Section 9.

<sup>50</sup> Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission network and on repealing Regulation (EC) No 1775/2005.

<sup>51</sup> The European Parliament and Council Directive 2009/73/EC of July 13, 2009 relating to common rules for the internal natural gas and the revocation of Directive 2003/55/EC.

<sup>52</sup> 2005:403 Chapter 10, Section 1 a.

<sup>53</sup> Law (2011:711) on the certification of specific natural gas companies, Chapter 3, Section 4 § and Chapter 4, Section 3.

<sup>54</sup> 2005:403 Chapter 10, Section 3.

There is nothing to prevent such fines from amounting to up to ten per cent of a company's turnover. The law<sup>55</sup> also stipulates that the regulator is entitled, upon request, to obtain such information and access such documents as are necessary to undertake its regulatory role. The regulator may also issue such enforcement orders as are required in order to ensure compliance with the regulations that are within the scope of its regulatory role.

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<sup>55</sup>2005:403 Chapter 10, Section 2.

## 2.2 Wholesale market for natural gas

Natural gas covers approximately 2 per cent of Sweden's total energy needs and is in other words a minor energy source. In the municipalities that are supplied with natural gas, however, it accounts for about 20 per cent of the total energy consumption; this is in line with the average across the rest of Europe. The Swedish natural gas market is closely linked with the Danish market.

### 2.2.1 Monitoring of price trends, transparency and competition

Sweden does not produce any natural gas of its own and the supply comes from Denmark by pipeline below Öresund. The natural gas consumed in Sweden is mainly from the Danish gas fields in the North Sea.

On account of the design of the Swedish network and the lack of domestic gas production, the Swedish natural gas market is closely linked to the Danish market. The balancing operators in the Swedish natural gas system are also active on the Danish gas market, particularly on the gas exchange Gaspoint Nordic. Consequently, competition, pricing and transparency are totally dependent on developments in Denmark.

There is capacity for annually transporting around 22 TWh of natural gas in the existing transmission pipeline between Malmö and Göteborg. By increasing the working pressure, with the help of compressors, the capacity can be increased to about 30 TWh.

Table 5. Transmission of natural gas 2014<sup>56</sup>

	Total energy use (TWh)	Production	Import capacity (TWh) total
2007	11.8	0	15
2008	10.3	0	15
2009	13.9	0	15
2010	18.7	0	22
2011	15.0	0	22
2012	12.9	0	22
2013	12.3	0	22
2014	10.2	0	22

In Sweden natural gas is primarily used by industry and combined heat and power plants while only a few per cent is used by households. There is therefore a strong connection between the weather, especially during the winter months, and natural gas consumption in Sweden. According to the Swedish Meteorological and Hydrological Institute, 2014 was the warmest year ever recorded, with the warmest winter since in 2008. Given these two factors, it is reasonable to partially deduce that the fall in consumption of natural gas in recent years is due to the mild weather.

<sup>56</sup> Expressed in gross calorific value.

### **Trade in natural gas**

Trade in natural gas from Denmark mainly takes place on Gaspoint Nordic. All trade on Gaspoint Nordic is conducted with the physical delivery and shippers must have an agreement with the Danish transmission network operator Energinet.dk. On Gaspoint Nordic, a shipper can buy gas for delivery during the day, day ahead, before the weekend and for the next month. Energinet.dk uses Gaspoint Nordic's intra-day trading to manage balancing of the Danish natural gas network.

The price on Gaspoint Nordic is set based on supply and demand and also forms the basis for the so-called balancing base price used by Energinet.dk to offset imbalances between shippers. Some twenty shippers were active on Gaspoint Nordic during 2014.

A shipper needs to reserve capacity in the pipeline below Öresund in order to transport natural gas to Sweden. The capacity of the transmission is auctioned at Energinet.dk's ordinary capacity auctions. On account of the low consumption in relation to the system's transmission capacity there is no risk with today's consumption of congestion. Once in Sweden, the gas can be sold to endusers such as industries and gas distributors. In the current situation, there are four balancing operators who are active as shippers on the Danish market and can thus book capacity from Energinet.dk.



## 2.3 The retail market

The final step in exposing the natural gas end-user market to competition was taken in July 2007. Since then all natural gas consumers have been free to choose their natural gas supplier.

In Sweden, there are about 41,000 natural gas consumers, of which around 34,000 are domestic customers and the rest are business customers.

### 2.3.1 Monitoring of price trends, transparency and market competition

#### A small market

In Sweden there are approximately 41,000 natural gas customers, of which the largest are large industries and power plants and approximately 34,000 are domestic customers.

#### Actors on the natural gas market

There are seven operators<sup>57</sup> on the Swedish retail market for natural gas. Krafringen was restructured in 2014 and the former subsidiary Lunds Energi was incorporated into the parent company.

#### Consumer activity on the natural gas market

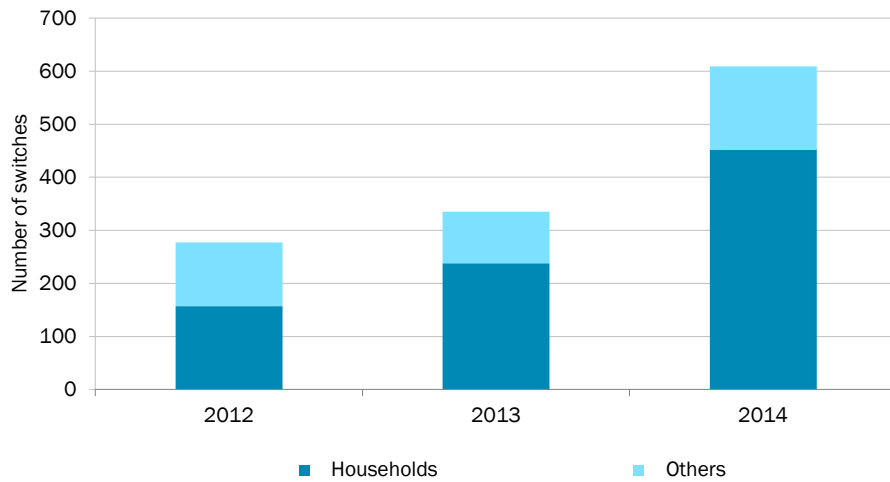
In 2014 there were 609 supplier switches made on the Swedish natural gas market, 157 of which were made by companies. This represents an overall switch rate of 0.15 per cent for companies 1.3 per cent for domestic customers, see figure 17. The reason why supplier switching has increased significantly in 2014 among domestic customers compared to the two previous years is that Lunds Energi in 2014 became part of Krafringen. Customers who chose to become customers in Krafringen are therefore included in the figures for supplier switching in 2014.

The Swedish Consumer Energy Markets Bureau runs the site Gaspriskollen.se where consumers can find the current prices of natural gas.

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<sup>57</sup> ApportGas, E.ON Försäljning Sverige AB, Göteborg Energi, Krafringen Energi AB, Varberg Energi, Öresundskraft, Stockholm Gas Handel

**Figure 17** Number of switches of natural gas supplier

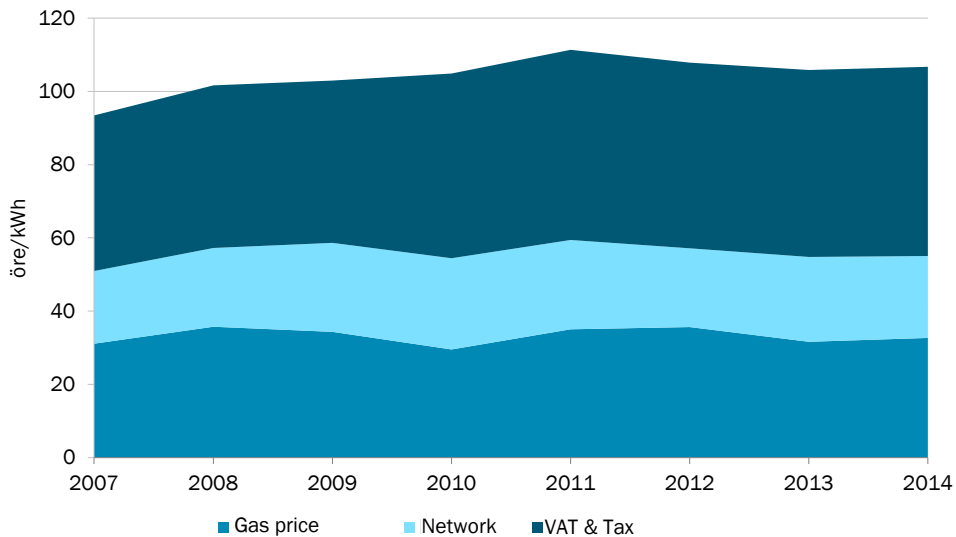


Source: SCB

**The majority of the natural gas cost is taxes and VAT**

The customers' total cost for gas has changed little since the deregulation in 2007. The reason for this is that the gas trade price has been relatively stable at around 30–35 öre per kWh. Network charges have also been stable at around 20–25 öre per kWh. However, tax and VAT on natural gas have increased by about 10 öre since 2007, see figure 18.

**Figure 18.** Change in the various expense items for a household with gas heating, in real terms<sup>58</sup>

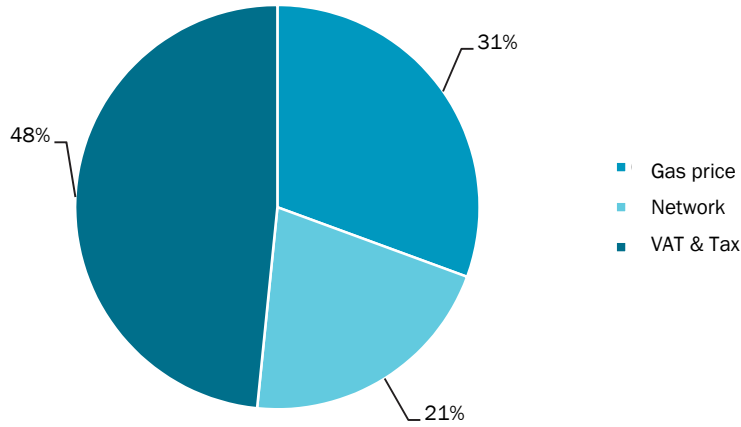


Source: SCB

<sup>58</sup> Prices applies to domestic customers who consume between 5,500 to 55,000 kWh/year (heating and household gas)

The single biggest expenditure item in the domestic consumers' total gas cost, is energy tax and VAT, which corresponds to 48 per cent of the total cost, see figure 19.

Figure 19. Share of total gas cost<sup>59</sup>



Source: SCB

<sup>59</sup> Prices applies to domestic customers who consume between 5,500 to 55,000 kWh/year (heating and household gas)

## 2.4 Recommendations for natural gas prices and investigations and measures to promote competition

Ei cooperates with other government agencies in supervising the natural gas market in order to create a functioning natural gas market.

### 2.4.1 Ei supervises the natural gas market

Ei is also directed by the Government with the duty to monitor and analyse the development of the natural gas market and submit proposals for changes in regulations or other measures to improve the function of the market. Ei is also charged with the role of working to promote effective competition in the natural gas market.

Ei has been mandated by the Government to evaluate the market after the switch of system balancing responsibility from the Svenska kraftnät to Swedegas. The report will be presented to the Government on 30 October 2015.

As the Swedish natural gas market has close ties with the Danish market, Ei collaborates with its Danish counterpart Energitilsynet on issues related to market surveillance and market design.

The Swedish Competition Authority's general supervision and inspection duties on the natural gas market correspond with those it has on the electricity market.

### 2.4.2 Potentially increased competition on the natural gas market as a result of new LNG terminals

One problem faced by the Swedish market has been a lack of alternatives for natural gas supply other than the pipeline below the Sound. With the construction of the new LNG terminal in Gothenburg an opportunity opened up for the Swedish natural gas network to be feed from a second point. However, in an initial phase, the terminal will not be connected to the natural gas network.

## 2.5 Security of supply - natural gas

Even if security of supply has historically been high, the Swedish natural gas market can be vulnerable both in the short and long term. The single point of supply combined with the fact that Sweden does not have natural gas production of its own makes the Swedish natural gas market sensitive to external disruptions in the short term, particularly for a production stop in the Danish natural gas fields. In a longer perspective, gas deliveries from Denmark will decrease as their natural gas fields are gradually drained.

### 2.5.1 Supervision of the balance between supply and demand

The Swedish Energy Agency is the regulator in accordance with the Act<sup>60</sup> on security of natural gas supply. In accordance with the requirements of the regulation on the security of natural gas supply<sup>61</sup>, a national preventative action plan and a national emergency plan for securing the supply of natural gas were published in 2012. The preventative action plan has been updated in 2014 with an up-to-date risk assessment.

### 2.5.2 Expectations regarding future demand and delivery and added capacity

Gas consumption is expected to increase in the coming years, mainly due to increased gas demand for commercial and private transport.

In Gothenburg, a gasification plant for biofuel was recently put into service, which at full production is expected to produce around 800-1,000 GWh / year, with quality equivalent to natural gas. The first phase was inaugurated on 12 March, 2014, and the production capacity is about 160 GWh/year. Investments for continued expansion have yet to be decided.

The LNG terminal in Gothenburg can, if connected to the natural gas network, improve security of supply in that it constitutes a second supply point.

SBI Jordberga is collaboration between SBI, Eon Gas Sverige AB, Skånska Biobränslebolaget and Nordic Sugar. The collaboration, with SBI as the majority owner, has project led, built and operates a production plant for biogas, and is responsible for the process from raw material to the plant up until the upgraded biogas. The biogas is then distributed to customers via Eon's and Swedegas' gas pipelines. The construction project began in March 2013, while initial commissioning took place in April 2014.

### 2.5.3 Measures to cover peaks in demand or deficits in supply

Peaks in consumption and insufficient deliveries are relieved by means of the system balancing party using the balancing space that is provided by pressure variations in the transmission network (line pack). If additional measures are required, the system balancing party uses market mechanisms to manage imbalances for as long as possible. The Swedish Energy Agency may also order network owners to limit or cut off supplies of natural gas to their industrial customers. If this is done, supply to consumers will be safeguarded.

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<sup>60</sup> Act (2012:273).

<sup>61</sup> (EU) No 994/2010.

**Execution of safety measures**

Owners of natural gas pipelines, storage or gasification plant need to plan for a crisis situation to manage the operation and safety of their own facilities.<sup>62</sup> The owners must draw up an emergency management plan, and ensure that the plan is distributed throughout their organisation and followed. The owners must also inform the authorities and other stakeholders of their plans.

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<sup>62</sup> Regulations are formulated in the Swedish Energy Agency's regulations and general advice on company plans and on the obligation to provide information on natural gas supplies, STEMFS 2012:4.



### **3 Consumer protection and dispute settlement**

Consumers come into contact with the electricity and natural gas market mainly when being billed for network and supply charges, when changing suppliers and when moving.

Consumers should feel safe in the knowledge that existing regulations are adhered to. The Swedish Energy Markets Inspectorate (Ei) contributes to strengthening the consumer's position in the market by supervising and disseminating information about the energy market and by developing the regulations.



### 3.1 Consumer protection

As a consequence of the European Union's third energy package for the internal market for electricity and gas, a number of consumer provisions were implemented in the Electricity Act and Natural Gas Act in 2011. As the regulator, Ei is tasked with cooperating with other relevant government agencies to ensure that consumer protection measures are effective and implemented.

Ei shall also inform the consumer in matters regarding switching electricity and natural gas suppliers, what the cost is for connecting to a network and how the consumer can report their supplier or network company.

#### **Ei's supervision of consumer regulations**

In 2014 Ei continued the supervision of companies' obligations pursuant to the consumer provisions in the Swedish Electricity Act and the Natural Gas Act to, among others, address consumers' rights to contract information, consumer information and complaint handling. The choice of supervision has largely been based on the number of customers that suppliers have had. A few shortcomings were highlighted among the inspected companies in both the electricity and natural gas markets. Aside from one supplier, the companies have corrected the noted shortcomings.

#### **The consumer's rights regarding meter values**

Consumers on the Swedish electricity market are guaranteed access to their consumption data as the network companies are obliged to report meter values to the consumer no later than the time of billing. This obligation also covers information about the meter reading at the end of each month (if the billing period is longer than one month), annual consumption and annual consumption expressed in kWh for the last thirteen months. The electricity network operator is obliged to provide the consumer with this information in an easily understandable manner and the consumer usually receives this information via billing or by logging on to "My pages" on electricity network company's website. In 2014, Ei continued supervision of these provisions in a somewhat larger scale than in previous years. A few smaller electricity companies have failed in their obligations according to the regulations. However, after Ei's inspection all companies have addressed the highlighted shortcomings.

The right to metering data also applies to consumers who produce electricity themselves. Electricity network companies are obliged to meter both input and output electricity and must report all data to consumers who produce their own electricity after the end of the delivery month and no later than the time of billing. Ei has also received questions from consumers who produce their own electricity. They wondered why meter values for input and output are not provided by the electricity supplier, as it is to them that the consumers often sell the excess electricity that is fed to the network. However, Swedish legislation states that the electricity network companies are the ones who are obliged to report this information to the consumer. Whether or not the consumers who produce electricity shall receive meter values from their electricity supplier as well is a matter that should be settled in the contract between the supplier and consumer.

### **Reports to Ei**

If an electricity or gas company does not follow the regulations in the Swedish Electricity Act or Natural Gas Act, consumers can report them. As the regulator, Ei can investigate whether the company is in breach of their legal obligations.

In 2014, Ei received a total of 30 reports, the same number as in the previous year, but significantly more than the 17 reports made in 2012. 23 of the reports concerned the electricity network companies' responsibilities in accordance with the Electricity Act while 7 reports concerned the electricity suppliers' responsibilities in accordance with the same Act, compared with 25 and 5 reports in 2013.

### **Changes to the Natural Gas Act benefit the consumer**

On 1 June 2013 the Natural Gas Act was amended, meaning that as of 2015 Ei must regulate in advance the total incomes that natural gas companies gain from their customers. The amendment is intended to ensure that the charges faced by consumers on the natural gas market are reasonable. The regulation also contributes to increasing the security of supply in the gas networks. This amendment means that the gas network companies are regulated in a manner similar to that of the electricity network companies, which is also in line with European directives regarding regulation of monopolies. Ei decided on 27 October, 2014 on an income cap for the four-year period from 2015 to 2018 that was lower than the companies had applied for. Appeals against the decision have been made by a number of companies. It is therefore too early to assess how the income caps will affect the price of natural gas for consumers.

### **Assistance for vulnerable customers**

The definition of vulnerable customers is set out in Ei's charter, which says "vulnerable customers are persons who, in the foreseeable future, lack the ability to pay for the electricity or natural gas which is transmitted or delivered to them for purposes which fall outside of the scope of business activities". This category of consumer is protected in the Swedish electricity and gas markets by social legislation in that the consumer has the right to receive assistance with their electricity and natural gas supplies. Ei has previously noted that around 20,000 consumers are included in the Swedish definition of the term.

There are also provisions in both the Electricity Act and the Natural Gas Act that protect consumers who are at risk of being disconnected from the electricity or natural gas networks as a result of unpaid bills or other significant breaches of contract. The provisions mean that the company that carries out the disconnection must first follow a specific statutory procedure. This includes, for example, the consumer's right to accurate information from the company, the opportunity for the consumer to rectify the situation without being disconnected, and also that the company must notify the social services in the municipality where the consumer lives a certain time in advance of the disconnection taking place.

### **The Swedish Consumer Energy Markets Bureau as the national contact point**

In 2014, Ei has continued its work as one of the agencies responsible for the Swedish Consumer Energy Markets Bureau (Konsumenternas Energimarknadsbyrå, KE). The Swedish Consumer Energy Markets Bureau (Konsumenternas Energimarknadsbyrå, KE) is an independent bureau that

provides information and guidance to consumers on issues relating to the electricity and natural gas markets. Consumers can receive guidance free of charge. There is an existing agreement between Ei and KE, which states that KE is the national contact point for the electricity and natural gas market. This fulfils the requirement of the EU's electricity and gas market directives.

About 41,000 consumers visited the agency's website in 2014, which is a marginal increase from the previous year. The agency had direct contact with around 1,800 consumers over the telephone and e-mail. This is slightly fewer than in 2013, which in turn had significantly fewer direct contacts than the year before. In spite of the decrease, the total number of direct contacts that were complaints increased slightly. The remaining number of direct contacts concerned requests for consumer information regarding contracts or other questions. Many consumers seek price statistics and the agency feels that along with other statistics on the agency's website, Ei's Elpriskollen.se and the agency's service Gaspriskollen, have helped to reduce the number of people who get in touch with questions linked to just price information. Only a few questions regarding own electricity production were tabled during 2014.

A majority of the complaints continue to be connected to the supply of electricity. This applies above all to unclear or unreasonable contract terms, often for direct selling, and charges for contract switching during a contract lock-in period. Last year, the agency noticed that both the number and percentage of complaints related to the brokers of electricity contracts increased. The same trend continued in 2014, and accounted for nearly one fifth of the complaints during the year. This usually applies to disagreements about what the broker and consumer have agreed or that the consumer has not been correctly informed about the contractual terms and the right of withdrawal.

The agency could also see that complaints regarding billing and electricity consumption in 2014 remained at approximately the same level as the previous year while complaints concerning readings continued to fall. However, the number of complaints concerning power failures, requirements and disconnection increased. Some of the complaints concerning power failures were about electricity network companies that reconciled power cut compensation to SEK 0. The agency then gave the advice to try to resolve the dispute with the company in question, or take the matter to the National Board for Consumer Complaints. The complaints concerning requirements and disconnection were in most cases that the consumer experienced the disconnection as unreasonable because the debt had already been paid, or that only collection fees remained.

The few complaints and questions that related to district heating and the natural gas market were about price information, billing, consumption and contract issues.

#### **Other consumer advice**

Among the other agencies that have a responsibility to electricity and gas consumers, the Swedish Consumer Agency (Konsumentverket, KO) is worth highlighting. KO investigates, for example, whether companies have used misleading or aggressive marketing or unfair contractual terms, or provided insufficient price information. In 2014, the Swedish Consumer Agency has also worked to develop a central consumer information services under the name 'Hello

consumer' which was launched on 31 March 2015.<sup>63</sup> 'Hello consumer' not only covers the energy markets, but includes all consumer markets. Consumers can turn to 'Hello consumer' with questions about, for example, purchases, terms of contracts and complaints. Other agencies, including Ei, are responsible for collaborating with the Swedish Consumer Agency in the development of 'Hello consumer'. The aim of 'Hello consumer' is to make it easier for consumers to make informed choices.

For advice on various issues, electricity and natural gas consumers also have the opportunity to turn to the municipality in which they live. There are consumer advisers who offer advice, among other services, before signing a contract and guidance on disputes. Budget and debt advisers can offer advice and support in the event of payment problems, while energy and climate advisers can offer analysis of energy consumption and advice when choosing a new source of heating.

## 3.2 Dispute resolution

Electricity suppliers, electricity network companies, gas suppliers and gas network companies must provide clear information on consumer rights, on how to submit a complaint and where to turn for information and dispute settlement on their websites and on their invoices.

For information and guidance, the consumers can contact the Swedish Consumer Energy Markets Bureau or a municipal consumer advisor.

### Disputes that are managed by Ei

Ei checks that the companies in the electricity and natural gas markets abide by the law and, in certain cases, can also settle disputes between consumers and companies. This concerns, for example, complaints relating to the cost of metering of the consumer's electricity consumption, as well as the charges and terms affecting the consumer in conjunction with their connection to the electricity network.

As stipulated in the Electricity Act, the connection charge must be fair, but if the consumer considers the cost to be too high, they may refer this to Ei for investigation. If Ei concludes that the connection charge is too high, the electricity network company must refund the difference to the consumer. Ei's decision on the fairness of the connection charge may be appealed, and it is the courts that ultimately determine what applies. Requests for Ei to investigate and appeals of Ei decisions are free of charge.

### Assistance with settling disputes from the National Board for Consumer Disputes

Electricity and natural gas consumers may report disputes with companies to the National Board for Consumer Disputes (Allmänna reklamationsnämnden, ARN). This is a fast and simple, yet still legally secure, alternative to using the courts. ARN is a public authority, which adjudicates in disputes between customers and companies in the electricity and natural gas market, for example. ARN will not perform its own investigation, relying instead on the parties involved to submit

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<sup>63</sup> [www.hallakonsument.se](http://www.hallakonsument.se)

and present background information for it to consider. When passing judgment in a dispute, ARN will base its decision on the applicable law and legal precedent. ARN's decision includes a proposal for how the dispute should be settled. In order for a consumer to report a dispute to ARN, the company must have rejected the consumer's claim or not answered the consumer. In addition, the complaint must be made within 6 months of the day the company rejected the consumer's claim, and the consumer's claim must have a value exceeding SEK 2,000.

The consumer must usually wait about 6 months for a decision by ARN on the matter. The consumer may also turn to the public courts in order to resolve a dispute with an electricity or natural gas company.



