

# THE SWEDISH ELECTRICITY AND NATURAL GAS MARKET 2018



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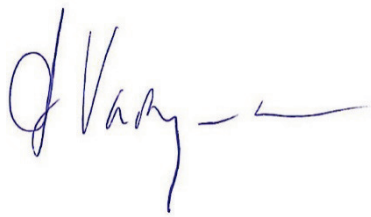
# Preface

The Swedish Energy Markets Inspectorate (Ei) is the regulatory authority for the markets for electricity, natural gas and district heating, and constantly monitors the development of these markets. The purpose of this report is to describe the development of the electricity and natural gas market in 2018.

According to Ei's instruction, the authority must perform tasks pursuant to Directive 2009/72/EC of the European Parliament and of the Council concerning common rules for the internal market in electricity and Directive 2009/73/EC of the European Parliament and of the Council concerning common rules for the internal market in natural gas. This involves annual compilation of a report in accordance with the reporting requirements pursuant to the Directive. This report involves regulation issues, competition issues and issues relating to security of supply.

The structure used for this report is in accordance with agreements made between the European regulatory authorities and the EU Commission. This report, together with the national reports of all member states, will be available in Swedish and English on the website of CEER, the Council of European Energy Regulators: [www.ceer.eu](http://www.ceer.eu).

Eskilstuna, 29 May 2019



Anne Vadasz Nilsson



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# Summary –

## Developments on the electricity and natural gas market

Trade on the Swedish electricity and natural gas markets is subject to competition. Electricity and natural gas network operations are regulated monopolies, as it would be inappropriate, both economically and environmentally, to build parallel networks throughout the entire country.

In its role as supervisory authority, Ei must continuously monitor and analyse developments on the electricity and natural gas markets and submit proposals for amendments to regulatory frameworks, or other actions, in order to promote market functionality.

### The electricity market

#### The Swedish electricity network

The Swedish electricity network can be divided into three areas: transmission network, regional networks and local networks. The transmission network transports electricity over long distances, at high voltages. The regional networks transport electricity from the transmission network to the local networks, and in some cases directly to major electricity consumers. The local networks are connected to the regional networks and transport electricity to households and other end-customers. The electricity network is made up of 569,000 kilometres of cabling, of which approximately 391,000 kilometres is buried and 178,000 kilometres is overhead.

The state enterprise, Svenska kraftnät, is the owner and operator of the transmission network in Sweden. Svenska Kraftnät is responsible for maintaining the power balance and operational reliability in the Swedish electricity network and is certified as transmission system operator (TSO) by the Swedish Energy Markets Inspectorate (Ei). Ei is tasked with reviewing Svenska kraftnät in its capacity as a regulatory authority.

The local and regional utilities are responsible for ensuring that the level of maintenance of their own networks is sufficient to guarantee that the reliability of supply will be upheld.

The Swedish electricity network is operated as a regulated monopoly, where Ei reviews the utilities' revenues and assesses whether they are reasonable. Between 2017 and 2018, network charges increased by 2.5 per cent on average for customers living in apartments, 1.4 per cent for customers living in houses with 16 A fuse protection, and by 1.6 per cent for customers living in houses with 20 A fuse protection.

Ei decides to what extent the electricity utilities are allowed to charge their customers over a four-year period by establishing what are known as revenue

frameworks. On 16 August 2018, the Government decided on new provisions for regulating the revenue frameworks of electricity utilities for the regulatory period 2020–2023. The provisions include how the cost of capital should be established as well as a change in the depreciation periods.

### **Wholesale market for electricity**

A total of 401 TWh of electricity was traded on the Nord Pool physical trading platform in the Nordic region and Baltic states in 2018. This is an increase of 1.8 per cent on 2017, and a new volume record.

Total energy consumption in Sweden, including transmission losses, amounted to just over 141 TWh in 2018. Electricity consumption has increased only marginally compared with 2017, and it remains low in relation to its levels in the 00s. During 2018, the average temperature was higher than normal, primarily due to extreme heat during the summer months.

Electricity production in the country decreased by 0.6 per cent to 158.3 TWh during 2018 despite a marginal increase in electricity consumption during the corresponding period. At the end of the year, net yields were therefore added together to give an export of approximately 17.2 TWh.

Wind power production in Sweden decreased by about 4.6 per cent in 2018 compared with the previous year. However, this type of power still represented just over 10 per cent of total electricity production.

### **End-customer market for electricity**

In 2018, there were 129 electricity trading companies on elpriskollen.se, Ei's price comparison site. At the close of the year, the three largest electricity suppliers had a collective market share of 46 per cent counted in number of customers, which is an increase of approximately 5 percentage points since the previous year.

In 2018, the largest part of the total cost of electricity for consumers – 41.5 per cent – was made up of tax and VAT. The cost for electricity supply amounted to 36.7 per cent, while the cost of transmission and distribution accounted for 21.9 per cent.

The most common electricity supply contract in Sweden is the variable price contract. The long-term trend is that more and more people are abandoning fixed contracts and assigned contracts in favour of variable price contracts. 49 per cent of Swedish household customers had concluded variable price contracts by December 2018, representing an increase of 2 percentage points compared with December 2017. 30 per cent of customers had a fixed price contract with a tie-in period of one, two or three years.

## **The natural gas market**

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

The Swedish natural gas network is small compared with the rest of Europe and comprises 600 kilometres of transmission pipeline and approximately

3000 kilometres of distribution pipeline. The natural gas network is located on the west coast in southern Sweden.

There is also an urban and vehicle gas network in the Stockholm region. The urban and vehicle gas networks comprise around 500 kilometres and 40 kilometres of pipeline respectively.

There are also a number of small local gas networks around Sweden. Many of the small local networks are used primarily for transporting vehicle gas-type biogas from production plants to fuelling stations.

One thing the gas network in Stockholm and the small local gas networks all over the country have in common is the fact that they are not connected to a transmission network.

The western Swedish gas network and the gas network in Stockholm are the networks covered by the provisions of the Natural Gas Act. According to the Natural Gas Act, natural gas also includes biogas insofar as it is technically possible to use this gas in a natural gas system. There are currently nine biogas producers connected to the western Swedish natural gas system, two of which are connected in order to feed gas into the transmission network. Another two biogas producers are connected to the Gasnätet Stockholm AB network.

Utilities' revenues are regulated in advance, in a similar way to the rules on the electricity market. This means that revenues are regulated in a revenue framework extending over a four-year period. This framework defines an upper limit for the total revenues that companies are allowed to collect from their natural gas activities.

For the first regulatory period 2015–2018, the companies applied for revenue frameworks of SEK 7.3 billion. Ei made decisions on revenue frameworks amounting to almost SEK 6 billion. Four out of nine natural gas stakeholders appealed against Ei's decisions to the Administrative Court in Linköping. In 2016, the Administrative Court delivered its verdict. The verdicts conclude that Ei won its cases in respect of important elements regarding the returns of involved companies. However, the court opposed Ei with regard to depreciation periods and elements of the cost of capital. Both Ei and the companies appealed against the verdicts to the Administrative Court of Appeal in Jönköping in 2016. The Administrative Court of Appeal in Jönköping gave its verdict in 2017, establishing longer depreciation periods for the transmission network company and a higher return for the gas utilities that appealed, compared with the decisions made by Ei. Ei appealed against these verdicts to the Supreme Administrative Court, which stated that Ei does not have review dispensation.

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

Natural gas covers some 2 per cent of Sweden's total energy demand and is therefore a relatively small source of energy. However, natural gas represents more than 20 per cent of final energy consumption in municipalities where the natural gas network is developed, which is in line with the average throughout the rest of Europe.



Sweden does not extract natural gas itself; all its natural gas supplies come from Denmark. Sweden saw the consumption of 9.2 TWh of natural gas in 2018, representing an increase of 0.5 TWh on 2017.

In practice, Sweden has no domestic extraction of natural gas. Its gas is obtained from Denmark or Germany and then transported via Danish transmission pipelines and up through the western Swedish natural gas network. A small number of Swedish stakeholders are active on the Danish gas exchange Gaspoint Nordic, which has been affiliated to the pan-European gas exchange PEGAS since 24 November 2016.

#### **End-customer market for natural gas**

The western Swedish natural gas network has around 38,800 natural gas customers, of which approximately 4,800 are major industries and CHP plants, and around 34,000 are household customers. The City of Stockholm's urban and vehicle gas network has around 61,000 customers, of which around 820 are corporate customers and 10 are industries.

There was a total of seven stakeholders on the Swedish end-customer market for natural gas at the end of 2018, six of which are in the western Swedish natural gas network and one is in the City of Stockholm urban and vehicle gas network.

Customers' overall gas costs have changed relatively little since deregulation took place in 2007. This is because the gas trading price has remained relatively constant for most years at approximately SEK 0.35 per kWh. The network charge has also remained stable at approximately SEK 0.20–0.27 per kWh. Tax on natural gas, however, has increased by approximately SEK 0.1 since 2007.

The single biggest expenditure item, 47 per cent of the total cost of gas for household customers, is made up of VAT and energy tax.

#### **Consumer protection and disputes**

Ei ensures that companies on the electricity and natural gas markets operate in compliance with legislation, and in some cases, it facilitates the process of resolving disputes between consumers and electricity network owners.

An inadequate quality supply causes significant inconvenience to customers and results in high societal costs. Disruptions cost society around SEK 1 billion each year. Shortcomings in power quality supply may also give rise to major costs. An effective electricity supply is immensely important to the function and development of society.

Consumers have the opportunity to report any company failing to comply with the provisions of the Electricity Act and the Natural Gas Act. As the authority responsible for supervision, Ei can then examine whether the company has breached its statutory obligation. During 2018, Ei had 1,467 contacts with consumers. Consumers that contact Ei usually have queries or complaints about the electricity network or electricity supply.

Ei offers a price comparison website, [elpriskollen.se](http://elpriskollen.se), to reinforce the position of consumers in the electricity market, allowing consumers to compare prices, terms and conditions for the most common contracts from all electricity trading companies. The option of comparing prices and other factors that may influence the choice of electricity trading company is a prerequisite for active customers.

Ei operates in partnership with the Swedish Consumer Agency to provide the Hallå konsument [Hey consumer] information service. This is an online service where consumers can view information about their rights on a number of markets, including the energy markets. Ei provides intelligence and information on issues relating to the energy markets.

# 1 The electricity market

The Swedish electricity market was reformed in 1996. Trading in the production of electricity has been subject to competition since then, while network operations involve a large number of regulated monopolies. The aim of exposing the production and sale of electricity to competition is to increase consumers' freedom of choice and pave the way for effective use of production resources.

Electricity network operations, on the other hand, are a natural monopoly, which means that having a number of such businesses within the same geographical region is not efficient in cost-benefit terms. This is why the Swedish Energy Markets Inspectorate regulates revenues for electricity utilities.



## 1.1 The electricity network

The Swedish electricity network is made up of 569,000 kilometres of cables, of which approximately 391,000 kilometres is buried and 178,000 kilometres is overhead. The electricity network can be divided into three areas: transmission network, regional networks and local networks. The transmission network transports electricity over long distances, at high voltages. The regional networks transport electricity from the transmission network to the local networks, and in some cases directly to major electricity consumers. The local networks are connected to the regional networks and transport electricity to households and other end-customers.

Figure 1. The Swedish transmission network for electricity and other connections to other countries



Source: Svenska kraftnät

### **1.1.1 Legal, accounting and functional unbundling of electricity companies**

Network operations must not be pursued by the same legal entity as the entity producing or trading in electricity. The aim of this is to prevent cross-subsidisation between companies pursuing different types of electricity business. Financial reporting of network operations must also be kept separate from all other business. This means that electricity network operations must be both legally distinct and separated in the accounts from companies producing or trading in electricity. However, an electricity utility may produce electricity if this is intended for coverage of network losses or to replace loss of electricity in the event of a power outage. Besides this, there is a requirement for certain electricity utilities to be functionally separate from companies that produce or trade in electricity.<sup>1</sup> This functional unbundling is applicable to the companies that run network operations and form part of a group where the overall electricity network has at least 100,000 electricity consumers.

All companies running network operations and that form part of the same group as a company that produces or trades in electricity must compile a monitoring plan<sup>2</sup> in accordance with the Electricity Act. The companies must also publish an annual report describing the measures they have implemented according to the plan. The purpose of the monitoring plan is to ensure that companies operate objectively and do not unduly favour any market stakeholder. The monitoring plan must specify what measures are to be implemented by the company to counteract discriminatory behaviour in respect of other market stakeholders.

During 2017, Ei started a planned inspection for the purpose of identifying whether the rules on unbundling were being followed. Among other things, Ei examined how the costs for the Customer Service, Finance and IT functions have been distributed between the lines of business within a company that also runs operations other than network operations, or between companies if an electricity utility is part of a group. The inspection was begun with a pilot study of four companies during the autumn of 2017. Further reviews were performed during the spring of 2018. The results of the inspection determined that 14 out of 37 electricity utilities were required to take action concerning documentation requirements and a change in distribution costs for company-wide and group-wide functions.

#### **Ei inspects the transmission network operator**

Svenska kraftnät, which operates and administers the Swedish transmission network, is also the authority acting as the system operator<sup>3</sup> for the Swedish electricity network. Svenska kraftnät's job is to administer, run and develop a cost-effective, reliable and eco-friendly power transmission system in a commercial manner, and to provide transmission capacity and otherwise pursue activities linked with the power transmission system. Ei is tasked with reviewing Svenska kraftnät in its capacity as a regulatory authority.<sup>4</sup>

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

<sup>2</sup> 1997:857 Chap. 3 section 17

<sup>3</sup> 'Transmission network operator' and 'transmission network company' are common synonyms for 'system operator'.

<sup>4</sup> There is no independent system operator in Sweden. This is why the provisions specifically addressing

Svenska kraftnät's revenue framework has been established in advance since 1 January 2012. Up to and including 2015, Svenska kraftnät had regulatory periods of one calendar year. From and including 2016, Svenska kraftnät's regulatory period is four years. A revenue framework refers to the maximum overall revenues that may be taken by an electricity utility from its network operations in a supervision period<sup>5</sup>. Ei has established a revenue framework for Svenska kraftnät for the regulatory period 2016–2019.

In accordance with the EU's Internal Market in Electricity Directive,<sup>6</sup> transmission system operators (TSOs) must be certified and rules for this exist in national legislation. In July 2012, Ei decided to certify Svenska kraftnät as system operator for the Swedish transmission network for electricity. This certification will remain valid until further notice, but it may be reviewed by Ei if the system operator fails to meet the requirements for certification.

### **1.1.2 Technical function of the electricity network**

#### **Reliability of supply in the electricity network is assessed by Ei on the basis of outage reports**

An effective electricity supply is essential to the function and development of society. Since 2011, the electricity utilities have provided detailed annual reports containing data on outages at customer level, both for short and long-term outages. A range of key figures and indicators can be calculated from this data. Long-term and extensive power outages must also be reported to Ei when they occur. Based on the aforementioned data, Ei also measures and analyses the reliability of supply in the Swedish electricity networks.

One of the purposes of the reports is also to allow Ei to assess quality of supply in the electricity networks and to intervene if measures taken by the electricity utilities are inadequate. The assessment of the quality of supply is also of significance for the size of the revenue framework. The principle is that shortcomings in quality mean that the size of the revenue framework is reduced.

Table 1 shows power outages in local networks during 2003–2017. These figures indicate average values per customer and are divided into unannounced and announced outages. Announced outages are outages of which customers were notified in plenty of time prior to the outage. These outages may be justified for reasons relating to operation or electrical safety, such as repairs and preventive maintenance with the aim to maintain good operating reliability and reliability of supply. According to the Electricity Act, the announced outage must not continue for longer than required by the activity.

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supervision of independent system operators are not applicable to Ei.

<sup>5</sup> 1997:857 Chap. 1 section 5 a

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

Table 1. Power outages in local networks due to faults in the local network in question, average values per customer<sup>7</sup>

Year	SAIFI, announced outages (outages/year)	SAIFI, unannounced outages (outages/year)	SAIDI, announced outages (minutes/year)	SAIDI, unannounced outages (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
2014	0.15	0.98	16	69
2015	0.14	0.96	16	107
2016	0.15	0.85	18	61
2017	0.14	0.82	16	52

Statistics for 2018 will be completed in summer 2019. Source: Ei

On average, rural electricity networks experience both more and longer outage periods than electricity networks in urban districts. Rural networks are generally more exposed to weather-related disruptions, partly due to the fact that these networks have a higher proportion of uninsulated overhead cables and a lower proportion of buried cables than is the case with urban networks. With the aim of reducing the vulnerability of these electricity networks to extreme weather, the proportion of buried cables in local networks has increased. However, buried cables may be affected by disruptions that are unrelated to the weather, such as outages caused by cable rupture due to excavation work or ageing components. As concerns overhead cables, insulated cables are more robust than uninsulated cables. Approximately 99 per cent of local networks' total cable length in the low-voltage network is insulated. At medium and high-voltage level in the local networks, around 77 per cent of cables are insulated.<sup>8</sup>

#### Rules for reliability of supply and compensation for outages

The electricity utilities are obliged to perform risk and vulnerability analyses and devise action plans showing how they will improve reliability of supply in their own networks. The purpose of the provisions is to ensure that electricity utilities take preventive steps to reduce vulnerability in the electricity network and assist in complying with the Electricity Act's functional requirements which states that power outages must not exceed 24 hours. Ei has issued regulations on the annual reporting of risk and vulnerability analyses in electricity networks, which requires

<sup>7</sup> SAIFI = System Average Interruption Frequency Index (average number of outages per customer throughout the year (number of outages/year))

SAIDI = System Average Interruption Duration Index (average outage time per customer throughout the year (outage minutes/year)).

<sup>8</sup> These figures relate to 2017. Statistics for 2018 will be completed in autumn 2019.

the submission of reports to Ei that concern risk and vulnerability analysis and the action plan.

Besides the functional requirements of the Electricity Act, Ei has also prescribed which other requirements must be met for electricity transmission to be deemed to be of good quality. Elements of the regulations relating to technical requirements for tree proofing of regional network cables and functional requirements for higher load levels were issued in 2010, while regulations relating to power quality requirements were issued in mid-2011. In 2013, these regulations were supplemented with guidelines concerning the number of outages at customer level.

According to the Electricity Act, electricity consumers affected by outages in their electricity supply for at least 12 hours are entitled to compensation from the electricity utility to which they are connected – known as outage compensation. This requirement is applicable to outages that fall within the extensive liability of the network owner.<sup>9</sup> This compensation is defined by a template and must be paid automatically. Ei has issued regulations on how a network owner must inform its customers about the rules for outage compensation. The Electricity Act also regulates the entitlement to damages from electricity utilities in the event of loss or damage to property, economic loss, or personal injury.

### **1.1.3 Electricity network charges for connection and transmission**

The Swedish local network is run by a large number of electricity utilities in regulated monopolies. Ei regulates the revenues of these electricity utilities in order to ensure that companies holding sole rights to operate an electricity network in a certain region – known as a concession – do not exploit their monopoly position. According to the Electricity Act, electricity network charges must be reasonable, objective and non-discriminatory. Reasonableness relates to a utility's total revenues, while objectiveness means that the company's overall charges for a customer category must reflect the costs incurred by the utility for precisely this category. Therefore, companies are allowed to have different charges for different customer categories, such as customers living in houses and customers living in apartments. The companies must not benefit one customer category at the expense of another.

In accordance with the Electricity Act,<sup>10</sup> the electricity utilities are entitled to reimbursement from their customers – known as electricity network charges – for running costs in order to cover e.g. operation and maintenance, as well as to provide the electricity utility with a reasonable return on its operational capital. In order to simulate competition, Ei sets requirements for streamlining running costs as well as for good quality of supply.

The electricity network charge frequently comprises a fixed element (subscription charge) and a variable element (electricity transmission charge). The fixed element varies according to the extent of the fuse protection or the power for which the customer has subscribed. The variable element is altered depending on the

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<sup>9</sup> Incidents within the extensive liability are incidents that the company can reasonably predict and for which the utility companies can be expected to dimension the design and operation of the network.

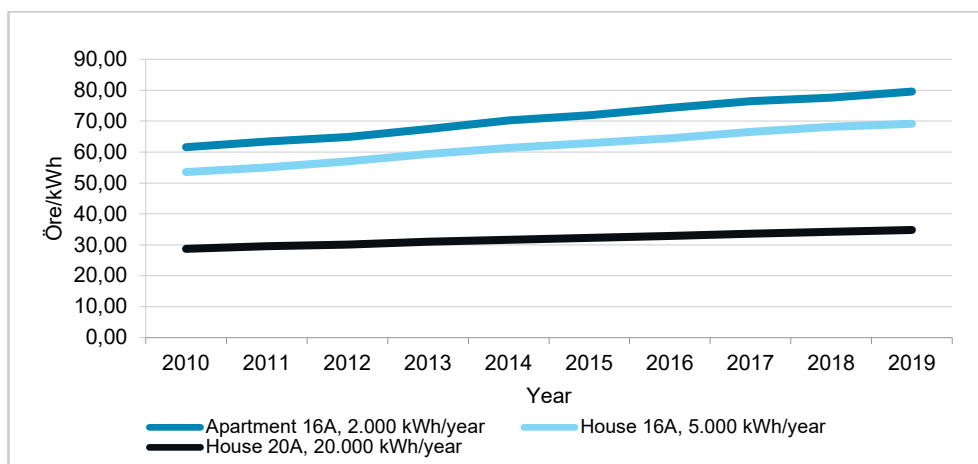
<sup>10</sup> 1997:857 Chap. 5 sections 8 and 9



customer's consumption. For a house with heating that runs on electricity, the fixed and variable elements of the charge are approximately the same. Ei collects data from electricity utilities for 15 different typical customer groups to allow it to compare different network owners.

Figure 2 shows how the network charges for different household customer types have developed over the past few years. Between 2018 and 2019, charges increased by 2.5 per cent on average for customers living in apartments, 1.4 per cent for customers living in houses with 16 A fuse protection, and by 1.6 per cent for customers living in houses with 20 A fuse protection. In monetary terms, the increase is equivalent to SEK 39, SEK 47 and SEK 110 per year respectively.

**Figure 2. Actual development of network charges for household customers<sup>11</sup>**



Source: Ei

Customers with low electricity consumption generally have fewer alternatives available to them than customers with high electricity consumption. Most electricity utilities offer only one type of charge, known as a single tariff, to customers with low consumption. Single tariff means that customers pay the same amount no matter when the electricity is used during the day. The alternative to the single tariff is the time-of-use tariff, where customers pay different amounts depending on the time of day when they use the electricity.

A number of electricity utilities have introduced output-based tariffs for household customers. These involve a smaller fixed charge linked to the size of the fuse protection, which determines the maximum power takeoff. Besides the fixed charge, households are charged according to how they use electricity over time. For example, different charges may be levied for different times of the day or different times of the year.

#### **Ei's preliminary decision on electricity network charges**

Since 2012, electricity utilities' revenues have been regulated in that Ei establishes a framework in advance for every utility's revenues for a period of four years. This is known as a revenue framework. The present regulatory period runs from 2016 to 2019. In 2017, Ei has decided whether the companies' revenue frameworks for the

<sup>11</sup> Average value calculated at 2019 price level, not weighted.

present period are to increase or decrease, according to whether their revenues were lower or higher than the revenue framework in the previous period.

Rules on ex ante regulation of electricity network charges were introduced in the Electricity Act as a result of requirements in the EU's Internal Market in Electricity Directive. Revenues from electricity network operations used to be regulated by means of subsequent Ei review of the reasonableness of the electricity utilities' charges.<sup>12</sup>

The purpose of regulation is to ensure that electricity utilities' operations are run efficiently, at low cost. It aims to ensure that customers pay reasonable prices for the transmission of electricity. This regulation should help to provide customers with good long-term reliability of supply, safeguarding the Swedish electricity supply. Electricity utilities should also be given stable, long-term conditions for running network operations.

The revenue frameworks should, as previously reported, cover reasonable costs for running network operations during the regulatory period and provide a reasonable return on the capital required to run the operations, the capital base. Costs for appropriate and efficient operation of network operations with similar objective criteria should be regarded as reasonable costs for running the network operation. The quality of the ways in which the electricity utilities run their network operations must be taken into account when deciding on the revenue framework. The information for calculating the revenue framework is provided in the revenue framework regulation.<sup>13</sup>

This states – among other things – that the age of the systems must be taken under consideration when assessing the company's capital costs. Furthermore, the revenue framework regulation specifies the economic lifespan, the depreciation period. As a direct consequence of the Energy Efficiency Directive,<sup>14</sup> a provision has also been introduced in the Electricity Act stating that in the assessment of the revenue framework, Ei shall also take into consideration the extent to which the network operations are run in a way that is in conformity with or contributes to an efficient utilisation of the electricity network. Ei has also issued regulations providing more detailed rules on assessment of quality, efficiency and costs, including how the age of systems is to be determined.<sup>15</sup>

If an electricity utility's revenues deviate from the revenue framework, this will impact on the revenue framework for the subsequent regulatory period. If the company's revenues have been lower than permitted by the framework, this means that the revenue framework for the forthcoming period will be increased by an

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<sup>12</sup> Govt. bill 2008/09:141.

<sup>13</sup> Regulation (2014:1064) on revenue frameworks for electricity utilities

<sup>14</sup> Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC

<sup>15</sup> Swedish Energy Markets Inspectorate regulations (EIFS 2015:5) on what is meant by quality in the way in which the network concession holder runs network operations when establishing a revenue framework, Swedish Energy Markets Inspectorate regulations (EIFS 2015:6) on what is meant by efficient utilisation of the electricity network when establishing a revenue framework, and Swedish Energy Markets Inspectorate regulations (EIFS 2015:2) on reasonable costs and a reasonable return when calculating revenue frameworks for electricity utilities.

equivalent amount. If the utility has exceeded the framework instead, the revenue framework for the forthcoming period is reduced. An overcharging supplement will also be added if the framework has been exceeded by more than 5 per cent, further reducing the revenue framework.

The Electricity Act also includes rules on reassessment of the revenue frameworks before and after the regulatory period, application and decision times and allocation of revenues to specific periods.

In December 2016, the government gave Ei the task of developing current electricity network regulation. In October 2017, Ei submitted its report *New rules for electricity utilities for the 2020–2023 period (Ei R2017:07)* to the Government. The report contains proposals for how the regulation for the calculation of the revenue framework should be amended for the regulatory period 2020–2023. Among other things, Ei proposes that the method for calculating the returns of the electricity utilities should be stated in the regulations, as well as changed depreciation periods, and further amendments to the Electricity Act in order to create clearer legislation. On 16 August 2018, the Government then decided on new provisions for calculating the revenue frameworks of electricity utilities for the regulatory period 2020–2023. Among other things, the new provisions include how the cost of capital should be established as well as amended depreciation periods.

#### **The various elements of the revenue framework**

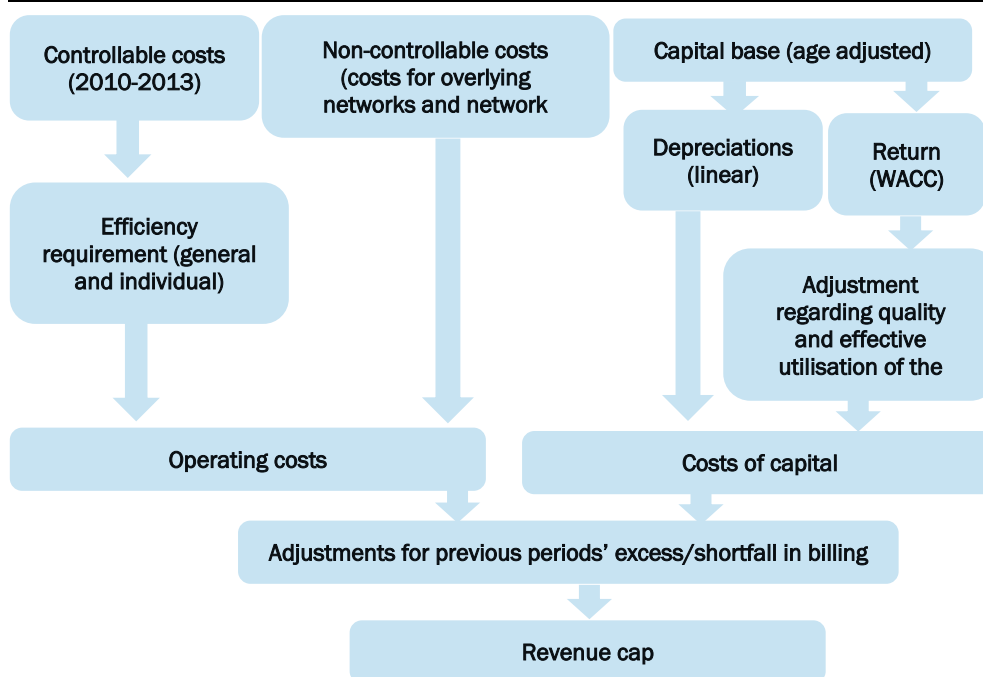
The reasonable costs that are to be covered for the companies through the revenue frameworks are divided into capital costs and running costs that can and cannot be influenced. Figure 3 indicates how the various elements of the revenue framework are interlinked.

Capital cost is the cost of using capital, and the capital base forms a foundation for calculating the capital costs. The capital base includes fixed assets such as electricity cables and network stations that electricity utilities use to run their network operations. The cost is made up of two elements: the cost of capital consumption (depreciation), and the cost of capital tied up (return). The capital base is valued on the basis of the present purchase price, and the return is calculated using the actual cost of capital before tax<sup>16</sup>. When calculating capital costs, EA takes into account investments made during the regulatory period in question.

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<sup>16</sup> Established at 5.85 per cent for 2016–2019 by the Administrative Court of Appeal

Figure 3. Elements in the revenue framework for electricity



The size of the return is also affected by the quality of the network operations and how efficiently the network is utilised. Quality is assessed on the basis of disruptions to transmission. Network losses, costs for overhead and adjacent networks and strain on the network are crucial in the assessment of efficiency. However, this element can only influence the size of the revenue framework by 5 per cent in either direction.

Costs that cannot be influenced include costs for network losses, subscriptions to overhead and adjacent networks, connection to overhead and adjacent networks and costs for public levies. Companies receive full coverage for costs that cannot be influenced.

Examples of costs that can be influenced include costs for operation and maintenance, as well as customer-specific costs for metering, calculation and reporting, for instance. Ei uses the companies' historical costs between 2010 and 2013 as its basis in order to establish the costs that can be influenced for the 2016–2019 regulatory period. The regulation includes a streamlining requirement so that customers will benefit from anticipated productivity increases. Ei has calculated individual streamlining requirements for every company for the 2016–2019 regulatory period. The minimum requirement is 1 per cent per year, while the maximum is 1.82 per cent per year.

#### Appeals against many Ei decisions

Ei established 177 revenue frameworks for the 2012–2015 regulatory period, and 96 appeals were subsequently submitted to the Administrative Court. As grounds for their appeal, the electricity utilities stated that the revenue framework was too low. The objections primarily concerned the parts of Ei's method that became known as the transition method as well as the size of the return, i.e. cost of capital. The transition method meant that the revenue framework was limited based on the company's historical charges. This part of the method was rejected by the

Administrative Court and the Administrative Court of Appeal. Ei had set the cost of capital to 5.2 per cent. The court changed this to 6.5 per cent.

Ei was of the opinion that the level of the cost of capital for 2012–2015 was unjustifiably high for an operation with an unusually low risk, and so it appealed against the verdicts to the Supreme Administrative Court. However, Ei did not receive review dispensation. As described above, through the revenue framework regulation, the transition method has now become obsolete.

The electricity utilities that did not appeal against Ei's decisions also had the opportunity to request amendment of their revenue frameworks on the basis of the principles in the Administrative Court of Appeal's verdicts. 120 electricity utilities submitted such requests. During spring 2016, Ei reached a decision in these cases in accordance with the principles of the Administrative Court of Appeal's verdicts, which resulted in higher revenue frameworks.

Ei made 185 decisions on revenue frameworks for the 2016–2019 regulatory period. 81 appeals were submitted to the Administrative Court as a result of these decisions. The most important issue in these cases subject to appeal was the level of the cost of capital that was established in the decisions as 4.53 per cent<sup>17</sup>. The Administrative Court set the cost of capital to 5.85 per cent on 14 December 2016, which means that the revenue frameworks decided upon for the 2016–2019 regulatory period will increase by approximately SEK 8 billion. Ei appealed against the Administrative Court's verdicts to the Administrative Court of Appeal, which in November 2017 indicated that Ei would not have review dispensation.

#### The revenue framework level

Table 2 shows which revenue frameworks the electricity utilities applied for, revenue frameworks decided by Ei, and frameworks following examination in court of the revenue frameworks appealed by the utilities for the 2012–2015 and 2016–2019 regulatory periods.<sup>18</sup> When comparing the amounts between the different regulatory periods, it must be noted that the amounts for the different regulatory periods are specified in price levels for different years.

Table 2. Revenue frameworks

Revenue frameworks, SEK billions	Requested amounts	Frameworks decided upon	Frameworks following examination in court
2012–2015 (price level for 2010)	183	150	196 <sup>19</sup>
2016–2019 (price level for 2014)	176	163	172

Source: Ei

#### 1.1.4 Cross-border issues

The ability to transmit electricity between electricity regions and countries is an important prerequisite for a joint market. Work is currently ongoing on

<sup>17</sup> 4.56 per cent after consent from Ei during the court proceedings.

<sup>18</sup> Svenska kraftnät's revenue framework is not included in the table.

<sup>19</sup> After reconciled information and at the 2014 price level, the SEK 196 billion is equivalent to approx. 201 billion.

implementing EU rules, so-called network codes, with a view to facilitating and guaranteeing cross-border transmission of electricity. Ei has a key part to play in this work and is working in partnership with other relevant regulatory authorities in the EU, and in special forums on a regional level. Ei's work on the implementation of a network code is described in the report: New EU regulations for electricity and natural gas – content and implementation.<sup>20</sup>

### **Projects of common interest**

One important issue for the EU member states is to increase reliability of supply and security for electricity and gas within the EU. To achieve this, a number of projects are being highlighted as what are known as Projects of Common Interest, or PCIs. These projects have a specific regulatory framework that aims to facilitate and coordinate permit processes between countries, but also rules that provide project owners with the opportunity to apply for special EU funding in order to facilitate financing. For the 2014–2020 period, there is an amount of EUR 5.85 billion in what is known as the CEF fund,<sup>21</sup> and project owners can apply for this. These projects must help to integrate the market and increased competition, lead to greater supply security and reduce carbon dioxide emissions.

Ei has a number of tasks to perform according to the regulatory framework, including participation in evaluation of the projects applying to become PCI projects.

Sweden currently has one PCI project for electricity involving the 400 kV cable between Ekhyddan, Nybro and Hemsjö, which will be commissioned in 2023 if all goes according to plan. This project is aiming to increase the reliability of the transmission network and regional networks and safeguard the electricity supply to the NordBalt DC link between Sweden and Lithuania.

The project is helping to increase the transmission capacity between the Swedish bidding zones SE3 and SE4 and to reduce transmission losses in the Swedish electricity network by approx. 275 GWh/year, which in turn will result in reduction of environmental impact in the integrated European electrical energy system.

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

Ei's work as a network authority includes supervising authorities to ensure that they are meeting their obligations in accordance with electricity legislation. The Electricity Act<sup>22</sup> states that Ei is also a regulatory authority in accordance with the Regulation on conditions for access to the network for cross-border exchanges in electricity<sup>23</sup>. According to Ei's instruction, unless otherwise specifically stated, the authority must also fulfil the tasks pursuant to the EU's Internal Market in Electricity Directive.<sup>24</sup>

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<sup>20</sup> Ei R2018:10

<sup>21</sup> Connecting Europe Facility

<sup>22</sup> 1997:857 Chap. 12 section 1, fourth paragraph.

<sup>23</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>24</sup> Regulation (2016/742) with instructions for the Swedish Energy Markets Inspectorate

According to the Internal Market in Electricity Directive<sup>25</sup>, the national regulatory authorities must comply with and implement the legally binding and relevant decisions made by the Agency for the Cooperation of Energy Regulators<sup>26</sup> (ACER) and the European Commission. To make it possible for Ei to comply with the Commission's decisions, provisions have been introduced in the Electricity Act<sup>27</sup> and the Act on certification of transmission utilities for electricity<sup>28</sup>.

According to the Electricity Act,<sup>29</sup> Ei has the right to receive the information and view the documents needed for supervision upon request. Ei may provide notification of the orders needed in order to ensure compliance with the regulations and conditions subject to supervision<sup>30</sup>. Penalties may be applied in respect of such orders.

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<sup>25</sup> Directive 2009/72/EC of the European Parliament and of the Council concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC

<sup>26</sup> ACER is a collective authority for the EU's regulatory authorities for energy, and Ei is one of its members.

<sup>27</sup> 1997:857 Chap. 12 section 1 b.

<sup>28</sup> 2011:710 Chap. 3 section 4 and Chap. 4 section 3.

<sup>29</sup> 1997:857 Chap. 12 section 2

<sup>30</sup> 1997:857 Chap. 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 links. The Nordic-Baltic network in turn is interconnected with the European electricity network. Operational management of the electricity network takes place in the relevant country, where the system operator is responsible for ensuring the constant equilibrium of the national electricity network.

Swedish electricity production is mainly based on nuclear power and hydropower. Electricity consumption is influenced by relatively large levels of power-intensive industry, along with the fact that many households are heated using electricity. Trading on the wholesale market mainly takes place on the Nord Pool electricity exchange.

Figure 4. The Nordic-Baltic electricity regions



Source: Ei



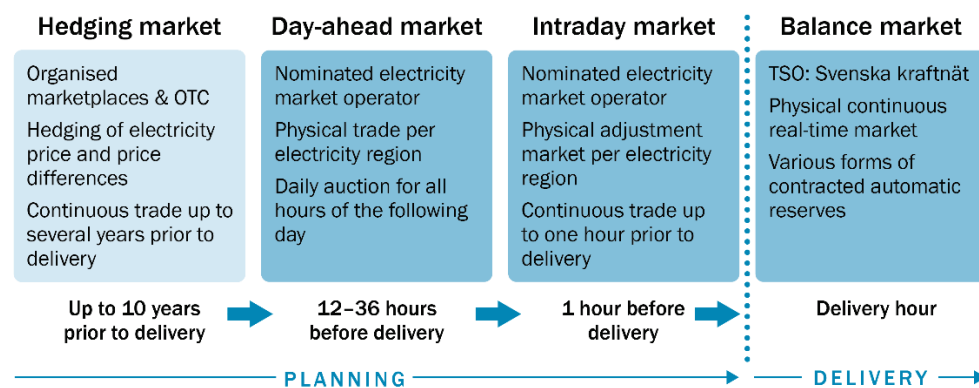
### 1.2.1 Monitoring of price development, transparency and competition

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

The Swedish electricity trading system is shown in Figure 5 below. The electricity trading system took on its current form at the time of deregulation in 1996 and is primarily an *energy-only market*. In an *energy-only market*, producers receive payment on a per-hour basis for the electricity that they sell, not for installed capacity.

The electricity trading system can be divided into four submarkets: a hedging market, a day-ahead market, an intraday market, and finally a balanced market.

Figure 5. The electricity trading system



Source: Ei

There are organised marketplaces for trading on the various submarkets. Besides trading in these marketplaces, it is possible for stakeholders to trade bilaterally. The prices in the organised marketplaces act as reference prices for the bilateral trade.

#### The hedging market

When trading electricity, market stakeholders need to manage the financial risks inherent in the variation of prices both over time and between different geographical regions. Producers need to do this to safeguard their revenues at a certain level, but it is also necessary for consumers as they wish to achieve a certain level of predictability for their future electricity costs.

There are a number of ways in which to manage and hedge the price of electricity supplies. Most markets use various forms of financial forward agreement to handle the underlying risk in respect of future price levels. "Financial", in this regard, means that the contracts are not linked with any physical supply of energy; they are solely settled economically against a settlement price. Contracts may include different periods (weeks, months or years, for example) and have varying profiles as well (for example, peak and base load contracts). The large volume of financial contracts on the Nordic market are linked with the system price<sup>31</sup> as a settlement price.

<sup>31</sup> Nord Pool Spot calculates the reference price used in the financial trade. This is known as the system price. Norway, Denmark, Sweden and Finland constitute one bid region in the calculation, while the

Different types of instruments are used within different parts of the EU for hedging the specific price risk for an individual bidding zone. The most common instruments in continental Europe for managing the risk are transmission rights, while in the Nordic region, the risk is mainly managed using so-called *Electricity Price Area Differentials* (EPAD). The buyer of an EPAD contract hedges the difference between the system price and the price in a specific bidding zone. For example, it may be a bidding zone in which the buyer has its physical obligations, such as supply of electricity. In the same way, a producer can sell EPAD contracts in order to hedge its production in a bidding zone.

Essentially, hedging in Sweden and the rest of the Nordic region takes place when stakeholders trade forward agreements, sometimes in combination with EPADs. The contract can be traded bilaterally, via brokers or on trading platforms. For the Nordic region, both Nasdaq Commodities and EEX arrange trading in and settlement of financial contracts. Contracts that have been traded bilaterally are generally settled at a clearing house. Settlement means that the parties have the clearing house as a counterparty, and hence the clearing house takes over the counterparty risk. As things stand at present, it is possible to hedge production or consumption by trading in financial electricity contracts up to 10 years ahead with Nasdaq Commodities, while EEX offers financial contracts up to 6 years ahead. Trading takes place constantly and is priced according to *pay-as-bid*<sup>32</sup>. Participation in the financial market is voluntary, and hence stakeholders themselves choose which contracts are appropriate to use in order to manage their risk.

#### **The day-ahead market**

The day-ahead market, frequently known as the spot market, is the primary market for planning the electricity supplies of tomorrow. Seven electricity exchanges in north-western Europe currently work in partnership in order to calculate market prices and volumes of trade for day-ahead trade. The calculation method – price linking algorithm – used by the electricity exchanges is known as Euphemia<sup>33</sup>. The fact that the electricity exchanges calculate stock prices jointly means that they calculate flows over wider areas so that available production and transmission capacity is utilised as effectively as possible. The exchanges take it in turns to calculate the prices, so only one electricity exchange at a time calculates the prices for the collective area.

According to EU rules,<sup>34</sup> electricity exchanges require a permit to operate as an electricity exchange in an electricity region. Nord Pool and EPEX Spot, as well as Nasdaq from 20 December 2018 inclusive, are allowed to operate as electricity exchanges in Sweden at present, but only Nord Pool has an established operation.<sup>35</sup>

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Baltic states and Poland constitute individual regions in the same way as in the calculation of electricity region prices. The system price is calculated as if there were no restrictions in transmission capacity between the four Nordic countries.

<sup>32</sup> *Pay-as-bid* means that the buy and sell bids accepted are settled at the price submitted by the stakeholder in the market.

<sup>33</sup> Pan-European Hybrid Electricity Market Integration Algorithm.

<sup>34</sup> Commission guideline CACM (Capacity Allocation and Congestion Management), articles 2.23 and 4-6.

<sup>35</sup> Commission guideline CACM facilitates competition between exchanges. There are three nominated electricity market operators allowed to trade in electricity on the day-ahead market. Epex Spot, Nasdaq and Nord Pool, and two nominated electricity market operators allowed to trade in electricity on the intraday market: EPEX SPOT and Nord Pool.

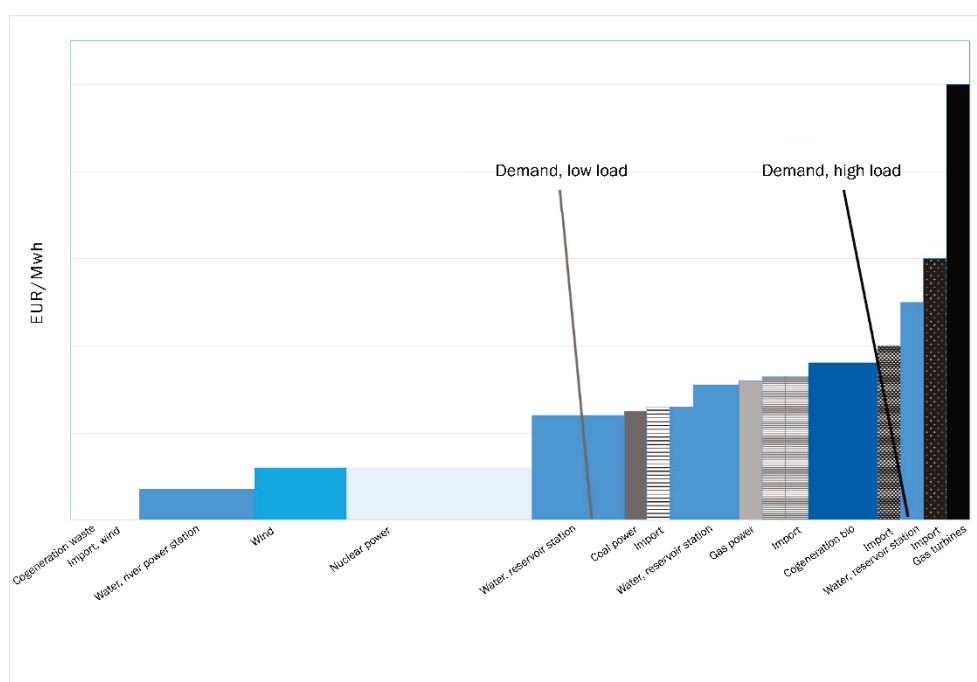
Nord Pool's day-ahead market, which is also known as Elspot, is a marketplace for most of the physical electricity trade in the Nordic region and Baltic states. Approximately 90 per cent of all electricity consumed in the Nordic region is traded on Nord Pool (and integrated in the EU-wide market link), while the remaining 10 per cent is traded by means of bilateral agreements.

When trading on the day-ahead market, stakeholders submit their buy and sell bids to the electricity exchange by 12:00. These bids are applicable for the following day and are submitted for each whole hour. The bids specify how much the stakeholder wishes to buy or sell, at what prices and in which electricity regions. In the next step, when all the bids have been received, the electricity exchange adds together all the bids hour by hour in a buy stage and a sell stage. When buy and sell bids are agreed upon, the market price and the volume to be bought and sold are established. All sell bids that are lower than the established price must produce and sell their electricity on the market in that hour, and all buy bids above the established price have to buy electricity in the hour in question. This is usually termed acceptance of the buy and sell bids, and it means that plants that are prepared to sell at a low price or irrespective of price are used first and that more expensive bids are accepted as required. The electricity exchange must publish the prices for the following day by 13:00.

Marginal pricing is applied on the day-ahead market, which means that all accepted stakeholders are able to trade at the established market price, regardless of their initial bids. There is no distinction between various production technologies. Hence the bids compete on equal terms regardless of the type of production offered on the market.

Figure 6 is a basic diagram showing price formation on the spot market and the order in which various power types are accepted. It is worth noting that hydropower producers normally submit bids at several different price levels. This is because a hydropower producer that has access to reservoir capacity has the opportunity to choose between production today and production at a later date, depending on the price paid for its capacity. If the producer expects a higher price in future, it will probably refrain from producing electricity and store the water in the reservoir instead. Another significant element in the supply curve is the import option, which varies in terms of both scope and price from hour to hour.

Figure 6. Pricing in Sweden



Source: Ei

The electricity market is divided into electricity regions in order to manage transmission restrictions. When trading capacity is sufficient between electricity regions, the price is the same in these regions and they will form a collective price region. When trading capacity is insufficient, separate price regions with different prices occur. A price region may therefore comprise one or more electricity regions.

Trading on the day-ahead market accounts for much of the physical trade and pricing. This market is therefore deemed to be key to stakeholders' earning capacity.

### The intraday market

Trading on the intraday market opens at 14:00 the day before and closes one hour before the hour of supply. The bids are matched continuously when a counterparty is found, which means that trade takes place between two parties and with no price impact on other transactions.

The intraday market is an adjustment market which gives stakeholders the opportunity to trade in balance up to one hour before the operating hour if conditions have changed after the closing of the day-ahead market. For example, the temperature may have deviated from what was forecast, affecting the need for heating and hence consumption. The intraday market is used primarily by balance providers, i.e. the companies that have undertaken to accept the economic risk for imbalances on the market, even though being a balance provider is not obligatory to be allowed to participate in the intraday market.

The volumes on the intraday market in the Nordic region are relatively small compared with the day-ahead market. The intraday market has a greater part to

play on other European markets than in the Nordic region as many stakeholders pursue more of their trade there.

Nord Pool's intraday market Elbas was the marketplace up until June 2018. In June 2018, XBID was introduced, which is an EU-wide system for intraday trading. According to the regulatory framework intraday trading must be continuous, with implicit allocation of transmission capacity.<sup>36</sup>

### **The balance market**

Svenska kraftnät has worked together with the other Nordic system operators to establish the balance market so as to guarantee their need for real-time regulation resources in a cost-effective way. The balance market comprises marketplaces for automatic and manual reserves. A change is currently underway in the Swedish balance markets due to adaptation to EU rules.<sup>37</sup> In general, the balance market works as follows:

Svenska kraftnät procures the automatic reserves. The pricing for automatic reserves includes two components: a capacity-related component and an energy-related component. The capacity element is settled according to the *pay-as-bid* principle.

The Nordic regulating power market is the market for manual reserves. Voluntary bids for upward and downward regulation are submitted to the regulating power market, commencing 14 days before the start of the supply day and ending 45 minutes before the supply hour. Only balance providers submit bids.

Marginal pricing is applied on the regulating power market when bids are called off for reasons relating to balance. This means that all activated upward regulation bids have the same price as the most expensive activated bid. Hence stakeholders have an incentive to offer their production at a flexible cost/alternative cost, in the same way as on the spot market. This paves the way for cost-effective allocation of balance resources. Downward regulation for balance reasons is settled at the lowest called-off downward regulation bid.

Bids on the regulating power market are submitted for each individual regulating object and must include information on volume (MW), price (EUR/MWh), information on geographical location and how quickly a called-off bid can be fully activated. Regulating objects may be in the form of production resources or consumption. Bids are ranked in order of price, and the cheapest bids are called off first. The present scheme means that the smallest bids that may be placed amount to 5 MW (in electricity region SE4) or 10 MW (in electricity regions SE1, SE2 and SE3). Regulating objects can be aggregated to a single regulating object within a bidding zone where each one falls below the minimum permitted bid size. By way of comparison, it can be stated that the minimum bid size on the day-ahead and

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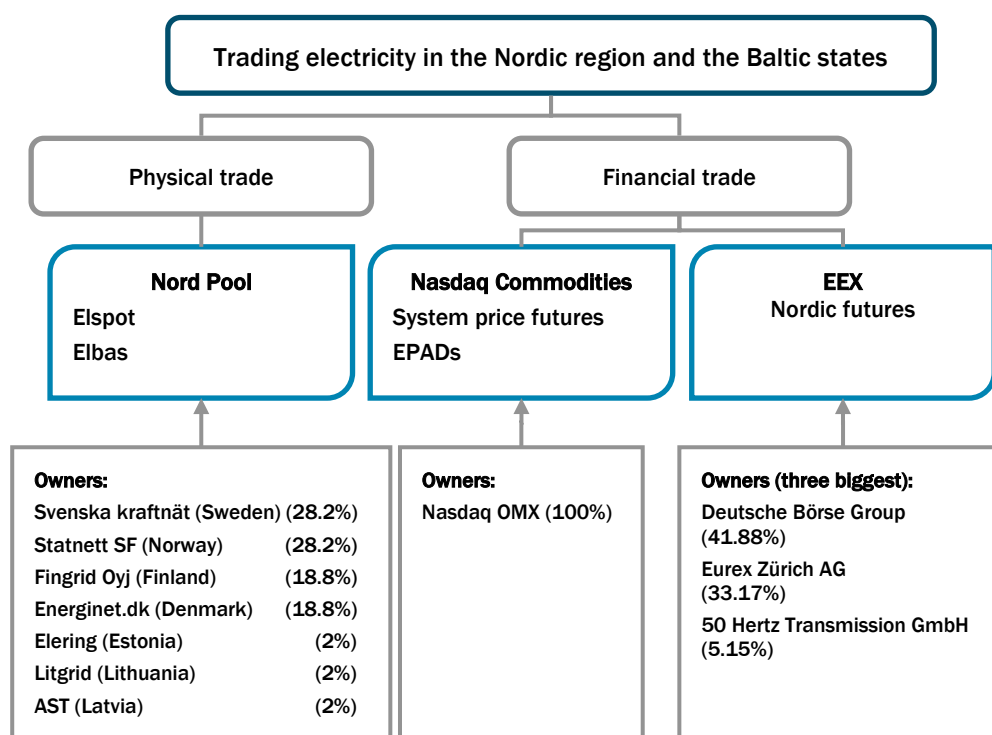
<sup>36</sup> Information on XBID can be found on the Nord Pool website.

<sup>37</sup> Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline for electricity balancing (Balance Code).

intraday markets is 0.1 MW. The maximum permitted price for upward regulation bids is EUR 5,000 per MW.<sup>38</sup>

Sometimes there are transmission restrictions, or it may take time before a regulating object is fully activated. In which case, deviations from the “lowest bid first” principle will be necessary, and this procedure is known as special regulation. Bids called off for the special regulation do not indicate pricing on the regulating power market and are settled according to *pay-as-bid* principle. The prices for upward and downward regulation are used in the subsequent balance settlement.

Figure 7. Trading platforms for electricity on the Nordic-Baltic market



Source: Nord Pool, Nasdaq and EEX

401.12 TWh<sup>39</sup> of the electricity in the Nordic region and the Baltic states was traded on the Nord Pool physical trading platform in 2018, which is a new volume record and represents an increase of 0.4 per cent compared with 2017. This trade was divided between Elspot and Elbas (395.56 TWh and 5.57 TWh respectively). There were 380 active Nord Pool stakeholders in 2018 (the same number as in 2017).

#### Market sharing and countertrading to deal with bottlenecks

The need to transmit electricity within Sweden and the Nordic region is largely affected by variations in the availability of hydropower, as well as seasonal variations in consumption. Normally transmission restrictions in the Swedish transmission network are dependent on extensive hydropower production in the north, which leads to a major need to transmit this electricity southwards; while at

<sup>38</sup> Full terms and conditions for participation in the regulating power market can be found at [www.svk.se](http://www.svk.se).

<sup>39</sup> <https://www.nordpoolgroup.com/message-center-container/newsroom/exchange-message-list/2019/q1/nord-pool-sees-new-record-volumes-in-2018/>

the same time the transmission capacity between electricity regions is restricted. Transmission restrictions also occur in situations where there is a great deal of transmission towards the north, from Denmark and the continent to the west coast of Sweden and on to southern Norway.

Two methods are used in Sweden and the Nordic region to deal with transmission restrictions: market sharing and countertrading.

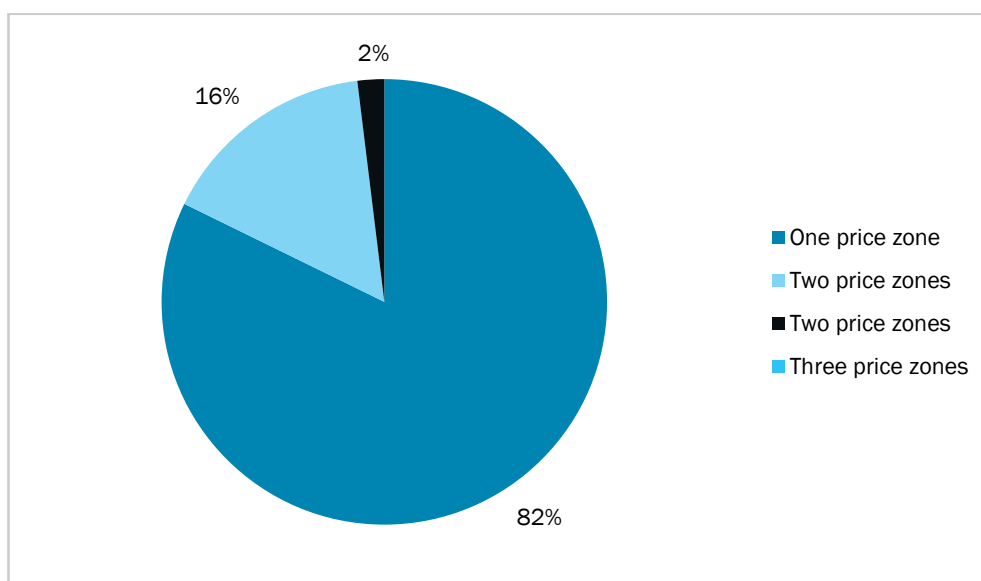
Market sharing means that the electricity market is divided into submarkets, known as bidding zones (these are also known as spot price zones or bid zones), see Figure 4. The prices in the individual zones are determined by production and consumption within each zone as well as by power transmission to and from adjacent zones. When two adjacent bidding zones have the same price, they form one price zone. It is not uncommon for all of Sweden's four electricity regions to form a joint price region, particularly during low-demand hours. Price regions that extend over Danish, Swedish and Norwegian electricity regions are also common. Sweden has been divided into four electricity regions since 2011. The revenues received by Svenska kraftnät from the sale of electricity from high-price zones to low-price zones – known as bottleneck revenues – are earmarked for reinforcement of the transmission network.

Svenska kraftnät is also able to handle transmission restrictions by means of countertrading. This means that Svenska kraftnät pays for increased electricity production in the region that has a deficit and/or reduced electricity production in the surplus region. Countertrading costs are charged to Svenska kraftnät, thereby signaling that the network needs to be reinforced.

#### **Sweden constituted one price zone throughout most of 2018**

Figure 8 below shows how Sweden was a uniform price zone for 82 per cent of the time during 2018. Most price differences can be found between southern (bidding zones SE3 and SE4) and northern (bidding zones SE1 and SE2) Sweden. All in all, there were price differences between northern and southern Sweden 16 per cent of time. These price differences occur primarily during periods of transmission restrictions or production losses, particularly in bidding zone SE4. The price differences between bidding zones SE3 and SE4 are therefore expected to fall considerably when the new Sydvästlänken [South-West Link] transmission network cable is commissioned in 2019.

Figure 8. Proportion of the time in 2018 when Sweden was divided into 1–4 price regions

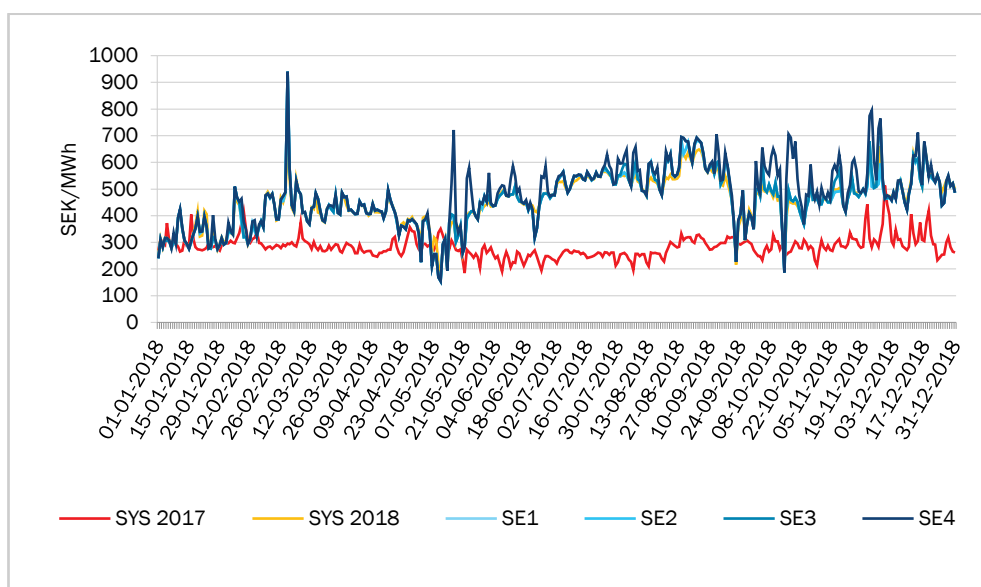


Source: Nord Pool: EI's own calculation on the basis of data

#### Price development throughout the year

As shown in Figure 9, both the spot prices for bidding zones SE1–SE4 and the system price for 2018 were above the 2017 level for most of the year. The highest average day price was recorded in all bidding zones on 1 March (SEK 939.84 per MWh). The lowest average day price for the year was recorded on 10 May, when all Swedish bidding zones recorded SEK 154.70 per MWh.

Figure 9. Hour prices on Elspot during 2018, SEK/MWh<sup>40</sup>



Source: Nord Pool

<sup>40</sup> The figure shows the development in electricity prices throughout the year for all four Swedish electricity regions (SE1–SE4), the system price (SYS 2018) and the previous year's system price (SYS 2017).



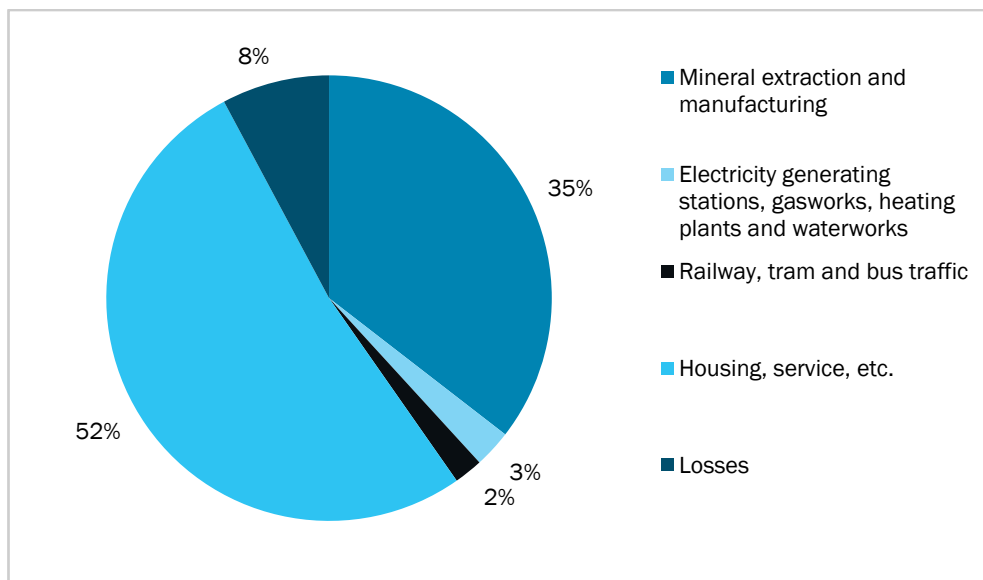
**Low electricity consumption, large electricity export and increased wind power production.**

Total consumption of electricity, including transmission losses, was just in excess of 141 TWh<sup>41</sup> in 2018, representing a marginal increase on 2017. Electricity consumption was still relatively low compared to levels in the first decade of the 2000s.

More than half of the electricity, above 73 TWh, was used within the housing and service sector, which was approximately the same proportion during 2017. In 2018, industrial electricity consumption amounted to just over 50 TWh throughout the year, thus accounting for approximately 35 per cent of total electricity consumption.

A contributing factor to the relatively low consumption was the higher than normal average temperature during 2018 due to the hot summer months<sup>42</sup>. Figure 10 below shows electricity consumption divided according to zone.

**Figure 10. Electricity consumption for 2018, by consumption area**



Source: Statistics Sweden

Electricity production in the country fell by approximately 0.6 per cent during 2018 compared to the previous year; while it was an increase of 5.8 TWh compared to 2016. When the figures for the year were added together, net yields indicate an export of 17.2 TWh. Wind power production decreased by 4.6 per cent and amounted to 16.7 TWh during 2018. However, this type of power still represented more than 10 per cent of total electricity production. Table 3 below gives a summary of Sweden's energy balance during 2008–2018.

<sup>41</sup> Preliminary data from SCB's monthly statistical year data for 2018 from the Swedish Energy Agency and SCB is available on 29 November 2019.

<sup>42</sup> <https://www.smhi.se/klimat/klimatet-da-och-nu/arets-vader/aret-2018-varmt-soligt-och-torrt-ar-1.142756>

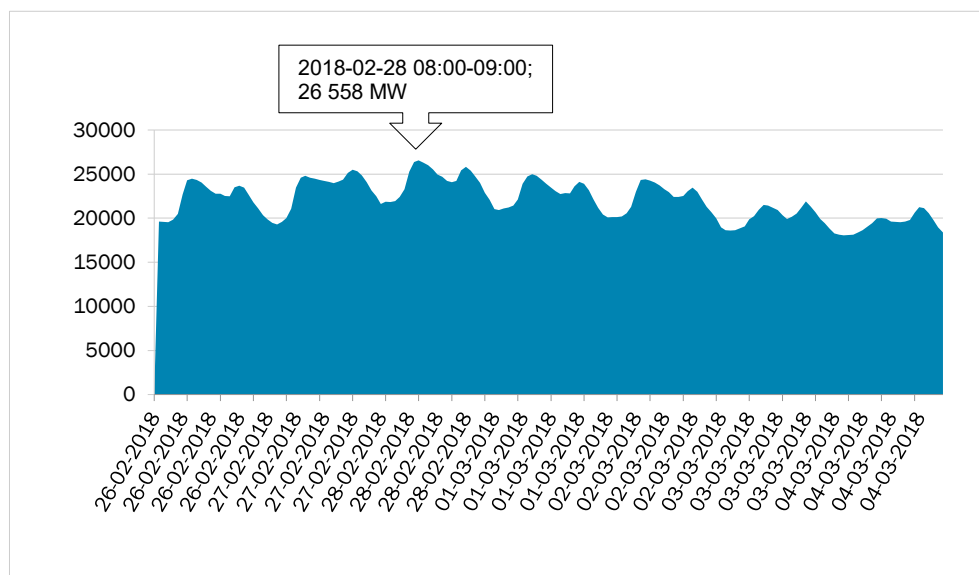
Table 3. Sweden's electricity balance in TWh, 2008–2018. Negative values indicate export

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>43</sup>
Production in Sweden	133.7	145.0	147.5	162.0	149.5	151.2	158.3	152.5	159.3	158.3
Hydropower	65.3	66.8	66.7	78.0	60.8	64.2	73.9	61.8	63.9	60.9
Nuclear power	50.0	55.6	58.0	61.4	63.6	62.2	54.3	60.5	63.0	65.8
Other cogeneration	15.9	19.1	16.8	15.5	15.2	13.3	13.5	14.6	14.9	14.9
Wind power	2.5	3.5	6.1	7.2	9.9	11.5	16.6	15.5	17.5	16.7
Electricity consumption in Sweden	138.4	147.0	140.3	142.4	139.5	135.2	135.7	139.8	140.4	141.1
Network losses	10.2	10.7	9.7	11.0	11.0	10.2	10.4	10.7	11.1	11.0
Import	16.4	17.6	14.8	13.1	15.1	13.9	9.3	14.3	11.9	12.2
Export	-11.7	-15.6	-22.0	-32.7	-25.1	-29.5	-31.9	-26.0	-30.9	29.4
Net yields	4.7	2.1	-7.2	-19.6	-10.0	-15.6	-22.6	-11.7	-19.0	-17.2

Source: Swedish Energy Agency and Statistics Sweden

The highest electricity consumption in 2018 occurred between 08:00 and 09:00 on 28 February, when consumption amounted to 26,558 MW (see Figure 11). This is just 400 MW less than Sweden's highest electricity consumption to date, which was noted on 5 February 2001 when consumption amounted to 27,000 MW.

Figure 11. Power takeoff in week 9 of 2018, MW



Source: Nord Pool

### Satisfactory competition on wholesale market

Ei's report on the division of electricity regions indicates that conditions for competition on the wholesale market are satisfactory.<sup>44</sup> In essence, Ei's assessment

<sup>43</sup> Preliminary data from SCB's monthly statistics (annual data for 2018 from the Swedish Energy Agency and SCB is available on 29 November 2019).

<sup>44</sup> Evaluation of the effects of division into electricity regions, Ei R2014:08

of described conditions also applies to 2018. However, during periods with transmission restrictions, individual stakeholders in the northernmost bidding zone SE1 and individual stakeholders in the southernmost bidding zone SE4 may have the opportunity to exercise market power in a submarket. In bidding zone SE1, there is one producer whose production dominates the zone. However, to a very large extent, bidding zones SE1 and SE2 form one joint price zone, which limits the opportunity for an individual stakeholder to exercise market power. In bidding zone SE4, with only one large producer, the situation is similar.

However, Ei is of the opinion that the competitive situation is acceptable as bidding zone SE4 frequently forms a joint price zone with adjacent Swedish and Danish bidding zones, which in effect reduces individual stakeholders' market power. The new Sydvästlänken transmission network cable, which is planned to be fully operational in 2019, will also improve the situation. With the entire link fully operational, electricity transmission capacity between central and southern Sweden will increase by up to 25 per cent.<sup>45</sup>

Swedish electricity production is dominated by a small number of major stakeholders. Vattenfall alone is responsible for more than 40 per cent of production, and together with Fortum and Uniper the three biggest stakeholders are responsible for more than 70 per cent.<sup>46</sup> The three biggest stakeholders also own a large majority of Swedish nuclear power, in various configurations.

Whenever competition on the electricity market is assessed, it is necessary to take into account the fact that Swedish electricity regions rarely form isolated price regions. As a rule, a single price region extends over several national borders, which means that an isolated study of competition in the Swedish electricity regions risks missing how the electricity market operates in practice.

#### **Changes in competition between physical electricity trading platforms**

A new set of EU regulations has entered into force over the past few years. Through the EU regulation establishing guideline on capacity allocation and congestion management (the CACM guideline), a regulatory framework was introduced for competition between electricity exchanges in the day-ahead and intraday markets within the same bidding zone. In March 2017, Ei approved Svenska kraftnät's proposal for an arrangement that will allow a number of nominated electricity market operators to be active simultaneously in the Swedish bid zones. This opportunity is of particular interest with regard to competition on the electricity market. These arrangements are expected to be completed during the end of 2019.

As things stand at present, all day-ahead and intraday trade in the Nordic-Baltic bidding zones is handled by Nord Pool with no competition from other exchanges. Sweden has already decided that EPEX Spot may conduct exchange trading for physical wholesale energy products in the Swedish bidding zones on the day-ahead and intraday markets respectively. Nasdaq Commodities has also applied to become nominated electricity market operator on the day-ahead market, and in December 2018 Ei granted this application as well. As soon as the arrangements are

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<sup>45</sup> Source: Svenska kraftnät

<sup>46</sup> Source: Data from 2016, Swedenergy, Elåret 2016

completed, which makes it possible for more nominated market stakeholders to enter the day-ahead and intraday markets respectively, EPEX Spot and Nasdaq Commodities are also expected to begin their exchange trading activities, which means that for the first time Sweden will have a market subject to competition for electricity market operators in both the day-ahead and intraday markets.

#### **Opportunity for hedging against risks**

The EU Commission Regulation establishing a guideline on forward capacity allocation (FCA Regulation) entered into force in 2016. During 2017, together with other Nordic and Baltic regulatory authorities, Ei discussed how the FCA guideline could be implemented. The regulatory authorities evaluated the hedging options in accordance with Article 30 of the FCA.

In bidding zone SE4 there is, as a rule, a deficit of electricity and higher than average prices than the rest of Sweden. Among other things, this means that the liquidity of hedging instruments, known as EPAD contracts, is relatively low as there are few producers that issue these. Ei's investigation during 2017 resulted overall in the hedging options nevertheless being considered satisfactory and that no further measures should be taken.<sup>47</sup> Against the background of the FCA guideline requiring evaluation of the hedging options every four years, the hedging options will be investigated on a regular basis.

In spring 2017, Ei and other relevant supervisory authorities made coordinated decisions not to allow Svenska kraftnät to issue long-term transmission rights on Swedish transmission links, stating that the hedging options were already considered to be sufficient.

#### **Transparency Regulation increases transparency on the electricity market**

The purpose of the Transparency Regulation<sup>48</sup> is to increase transparency on the energy market by ensuring that information from market stakeholders reaches everyone concerned in an effective way. Information to be reported according to the regulation includes physical restrictions on networks, production and consumption. This information is collected in a transparency platform administered by the European Network of Transmission System Operators for Electricity, ENTSO-E<sup>49</sup>, and can be accessed by the public. The regulation was adopted in 2013, and reporting began in January 2015. Ei's role is to ensure that there is compliance with the Transparency Regulation in Sweden.

As an integral part of monitoring in accordance with REMIT<sup>50</sup>, Ei performs a regular review of information published by stakeholders on inaccessibility in production, consumption and transmission. As part of its monitoring, Ei has been

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<sup>47</sup> Evaluation of hedging options for the Swedish electricity market – for consultation in accordance with the FCA regulation, Swedish Energy Markets Inspectorate.

<sup>48</sup> Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets

<sup>49</sup> European Network of Transmission System Operators - Electricity

<sup>50</sup> REMIT is an abbreviation of Regulation (EU) No 1227/2011 on Wholesale Energy Market Integrity and Transparency (Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency).

in contact with several companies even though the supervision did not result in any notifications to companies of further action during 2018.

#### **Supervision report regarding compliance with the Transparency Regulation**

In February 2018, Ei published a final report<sup>51</sup> on the supervision of the Transparency Regulation during the period 2015–2018. The report summarises the supervision visits made by Ei during the period. The purpose of the supervision visits was to check the regulatory compliance of the companies but also to increase understanding of the new regulation and provide the companies the opportunity to ask questions. During the period from June 2015 to January 2018, Ei visited all companies, or their representatives, covered by the regulatory framework. In total, 14 visits were made in order to cover all companies (17) affected by the regulation. In several cases, the supervision led to the companies changing their existing procedures.

#### **Development of the wholesale market in the Nordic region**

The development in the wholesale market and the transmission operations in Sweden and the Nordic region, as well as the integration of the Nordic region in the rest of the EU, are issues that Ei has worked on together with other regulatory authorities in the EU by means of actively participating in the working groups within ACER and CEER. Furthermore, Ei has worked on wholesale market issues together with other Nordic regulatory authorities in the cooperation organisation NordREG. During 2018, Ei had the role as Presidency country in NordREG. The work regarding the wholesale market for electricity has primarily concerned the follow-up of allocation of transmission network capacity as well as cooperation and exchange of information on the implementation of a network code and commission guidelines. In 2018, among other things, work continued on implementing the EU regulations CACM, FCA, EB and SO.

#### **Development of the wholesale market in the capacity regions of Hansa and Baltic states**

In 2018, Ei cooperated with other relevant energy regulatory authorities within the capacity regions of Hansa and the Baltic states for the purpose of implementing commission guidelines.

#### **Collective Nordic balance regulation**

In the Nordic region, balance regulation<sup>52</sup> has been handled jointly by Nordic system operators for a decade or so. This means that balance regulation is handled as if the Nordic synchronous region<sup>53</sup> was a single control region. Furthermore, there is a common settlement function for Sweden, Finland and Norway. However, each national system operator retains responsibility. There is also a collective market for regulating power where the most effective resources in the Nordic region are used for upward regulation or downward regulation.

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<sup>51</sup> Ei R2018:02

<sup>52</sup> Balance regulation is performed in order to correct frequency deviations – to restore the instantaneous balance in the power system, that is.

<sup>53</sup> Electricity systems where subsystems are connected together with an alternating current link, thereby providing a joint frequency.

**Continued efforts to increase European harmonisation**

According to the EU's Internal Market in Electricity Directive, the regulatory authorities have an obligation to monitor how entry to cross-border infrastructure is managed by system operators. The common Nordic market is well established, which means that it is primarily a question of changes that require the attention of the regulatory authorities. Ei works actively with other Nordic regulatory authorities to ensure that internal rules and practice in the Nordic countries develop towards greater increased harmonisation.

## 1.3 The end-customer market

The Swedish end-customer market for electricity has been subject to competition since 1996. There is no price adjustment. There are some 5.4 million electricity customers in Sweden, approximately 4.7 million of whom are household customers.

### 1.3.1 Monitoring of price development, transparency and competition on the market

#### Many electricity trading companies – but some only operate locally

Electricity trading companies that offer electricity contracts to electricity consumers are obliged<sup>54</sup> to report the most common contract types to the price comparison website: elpriskollen.se Elpriskollen is run by Ei and allows comparisons to be made between different electricity trading companies and their current offers. According to Elpriskollen, there were 129 electricity trading companies in the Swedish electricity market<sup>55</sup> during summer 2018. However, the total number of electricity trading companies does not provide the whole picture when it comes to indicating how many companies are actually available for individual customers to choose from, as several small local and municipal electricity trading companies choose only to operate in certain (local) areas.

In the middle of the year, the three largest electricity suppliers had a collective market share of 46 per cent<sup>56</sup> counted in number of customers, which is an increase of 5 percentage points compared to 2017. This increase can largely be explained by one of the three large companies having acquired another electricity trading company in its operations.

#### Relatively stable customer activity

In total, 11.3 per cent<sup>57</sup> of customers switched electricity trading company during 2018, which is an increase of almost 2 percentage points compared to 2017. Measured in terms of volume, these customers accounted for 11.1 per cent of the total electricity consumption in Sweden in 2018. The number of renegotiated contracts has been relatively unchanged over the last decade. A total of 24.7 per cent<sup>58</sup> of all household customers resubscribed to their electricity supply contracts in 2018. Most of these contracts were renegotiated during the autumn and winter months.

However, switches and renegotiated electricity contracts do not provide a complete overview of the extent of customer activity on a market. Customers can be active but choose not to switch their electricity contracts if the customers perceive that their contracts are satisfactory. A customer can also actively choose to do nothing, e.g. due to the cost of electricity constituting such a small proportion of his/her total household costs that he/she chooses not to take any action at all.

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<sup>54</sup> EIFS 2013:7

<sup>55</sup> The number of electricity trading companies is defined as the number of electricity trading companies that had actively reported contracts on elpriskollen.se during the period June to August 2018.

<sup>56</sup> Source: Energimarknaden 2018 newsletter

<sup>57</sup> Part of the calculation based on data for 2017

<sup>58</sup> Source: Statistics Sweden

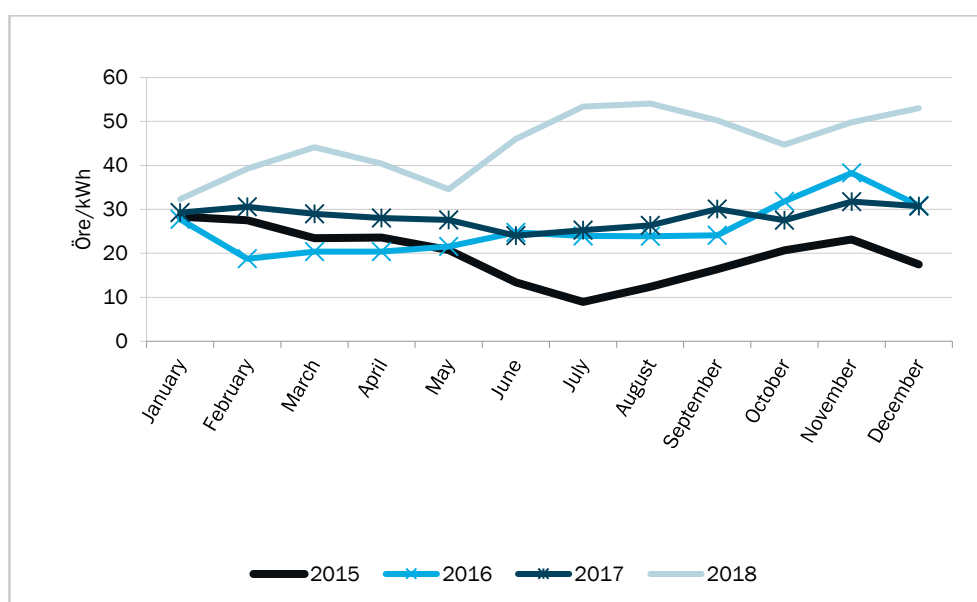
### The price of electricity to customers is affected most by the price on the wholesale market

The single biggest element of the price of electricity, accounting for 85–90 per cent<sup>59</sup>, is made up of the cost incurred by electricity trading companies to buy the electricity required to cover the consumption by customers. Electricity is purchased on Nord Pool or via bilateral agreements with producers. An electricity contract can be fixed or variable. The variable price contracts are calculated based on the spot price adjusted for customer power takeoff profiles, while fixed-price contracts are based on the cost incurred by electricity trading companies to buy electricity on futures adjusted for customer power takeoff profiles. In the case of fixed-price contracts, there is also normally the cost to electricity trading companies for regional hedging with EPAD contracts<sup>60</sup>. In addition to the purchase price to the electricity trading companies for electricity, the contracts also include costs for electricity certificates, origin marking, administration, electricity tax, VAT and other costs.

### Higher spot prices meant higher prices to end-customers

2018 spot prices at Nord Pool were higher than the spot prices of the last few years. Reasons for the higher spot prices during this period included extreme weather with higher temperatures and lower amount of precipitation. The average system price<sup>61</sup> in 2018 was SEK 0.4518 per kWh, which can be compared with the 2017 average of SEK 0.2836 per kWh and SEK 0.2554 per kWh in 2016: see Figure 12.

Figure 12. System price, Nord Pool



Source: Nord Pool

<sup>59</sup> Source: Ei report "Utvärdering av effekterna av elområdesreformen" [Evaluation of the effects of the electricity region reform], Ei R2014:08

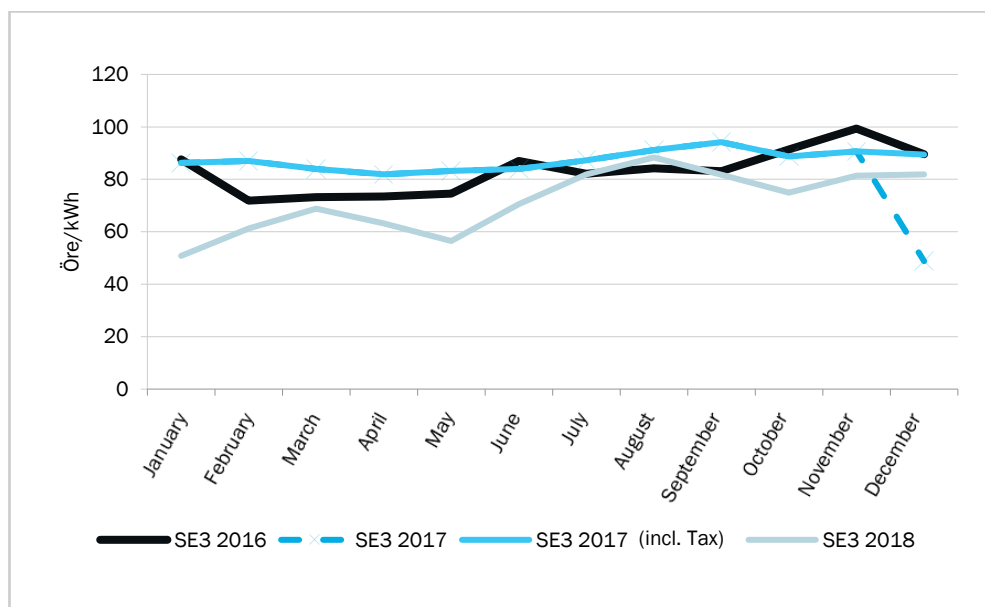
<sup>60</sup> The system price (that is, the price that would be charged if there were no transmission restrictions in the region) is used as a reference price for futures contracts that electricity suppliers use for hedging when they sell fixed-price contracts to their customers. However, the physical in feed from the production source of the actual consumption of electricity are priced in the local electricity regions. As the prices in the electricity regions may vary from the system price, there is a need for stakeholders to hedge against this regional price risk. They do this by trading EPAD contracts.

<sup>61</sup> The system price is the price that would be charged if there were no transmission restrictions within the Nordic region.



Figure 13 clearly indicates that the variable price contracts offered to customers follow the upturn in the spot price on Nord Pool; which is natural, as most of the price charged to end-customers is made up of the purchase price on Nord Pool.

Figure 13. Electricity trading price for variable price contracts for a typical customer (20,000 kWh per year), electricity region 3, 2016-2018<sup>62</sup>



Source: Elpriskollen, EI

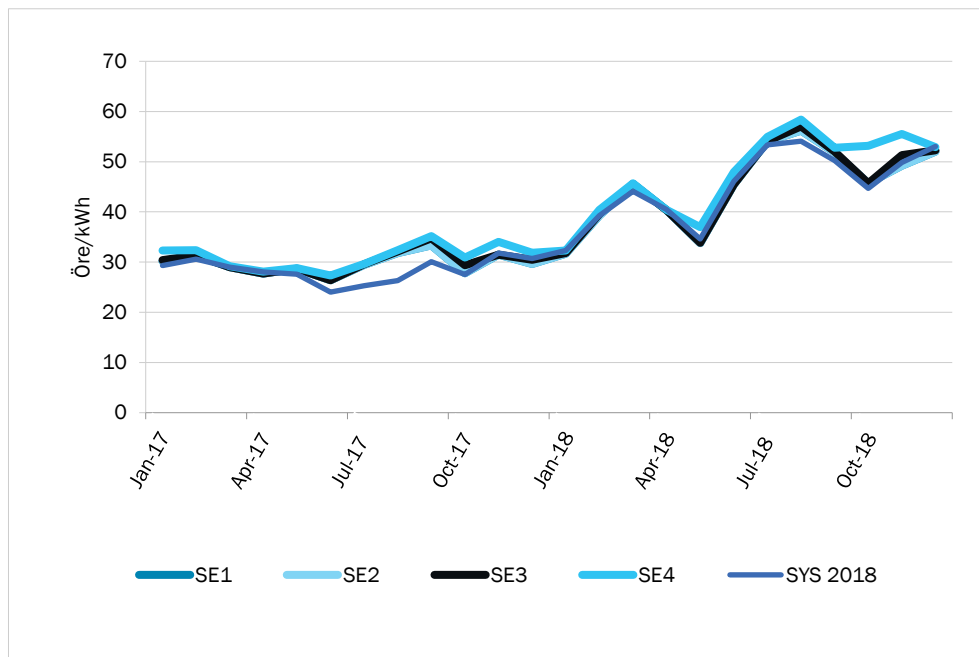
#### Price differences between bidding zones

The price differences between different bidding zones were fairly small for the first few months of 2018, although they were slightly larger than during 2017. On average, and compared to bidding zone SE1, bidding zone SE4 had a difference of SEK 0.0219 per kWh in 2018, which can be compared with 2017 when the difference on average was SEK 0.0129 per kWh. The difference between bidding zones SE3 and SE4 was, on average, SEK 0.0187 per kWh in 2018, which can be compared to SEK 0.0091 per kWh on average during 2017.

The greatest difference in price between the bidding zones was in October when, for example, bidding zone SE4 had a spot price that was, on average, SEK 0.0748 higher than the spot price in bidding zone SE1, see Figure 14. The smallest difference was during April, when there was only an SEK 0.0005 difference in price between bidding zones SE1 and SE4.

<sup>62</sup> Electricity tax was transferred to electricity utilities as of 1 January 2018

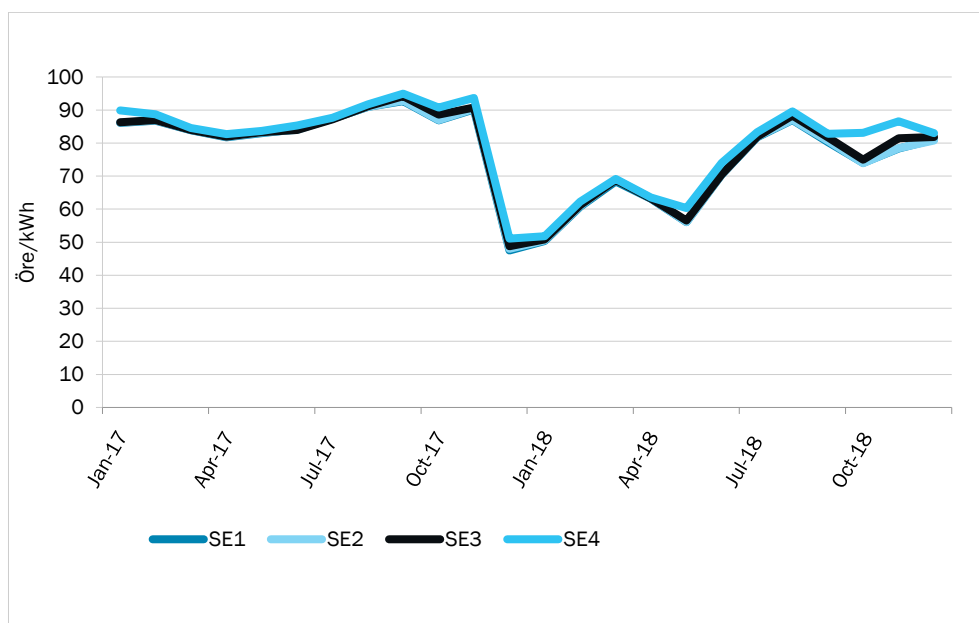
Figure 14. Spot price per bidding zone plus system price, 2018



Source: Nord Pool

Figure 15 indicates that prices to end-customers in the various bidding zones follow the spot prices in each bidding zone. Price differences between prices to end-customers for variable price contracts between the four bidding zones were small in 2018.

Figure 15. Electricity trading price for variable price contracts for a typical customer (20,000 kWh per year).



Source: Elpriskollen, Ei

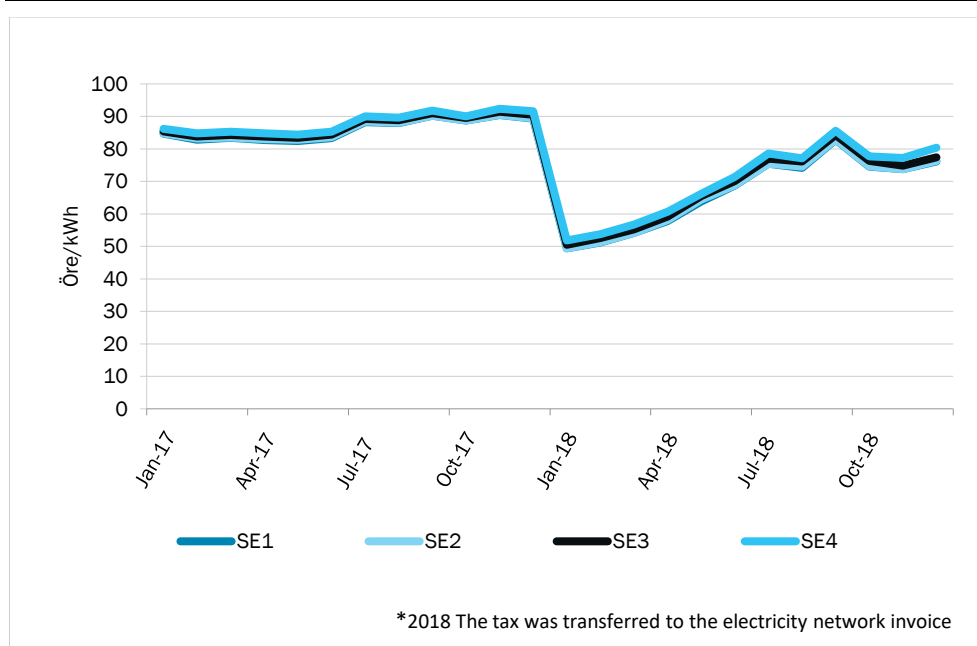
There is not much difference between bidding zones regarding fixed contracts with a tie-in period of one year. On average, prices for contract type "fixed price 1 year" were around SEK 0.02 higher in bidding zone SE4 than in bidding zones SE1 and

SE2 in both 2017 and 2018. The difference between bidding zone SE3 and bidding zone SE1 stood at around SEK 0.01 in 2018; see Figure 16.

Reasons for the differences in price between the bidding zones include capacity deficit in the transmission between the bidding zones.

Since price differences can occur, there is a need for price hedging on the part of the electricity suppliers. There is a greater need for hedging in bidding zones where prices change a lot, resulting in increased costs for electricity suppliers, and an increase in price for the electricity that they offer to end-customers. The lowest electricity prices are in bidding zones SE1 and SE2, and the highest in bidding zone SE4, although the price differences are not normally particularly large.

**Figure 16. Electricity trading price for fixed price 1 year for a typical customer (20,000 kWh per year)**

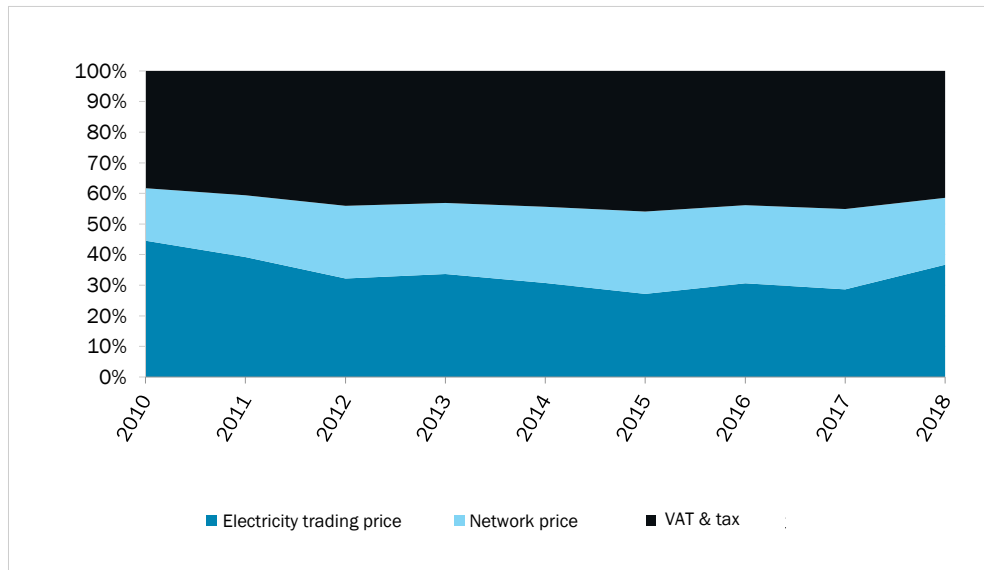


Source: Elpriskollen, Ei

### Tax and VAT make up most of the total cost of electricity

In addition to the price for the electricity, the end customer pays electricity network charges, and also tax and VAT. Energy tax was increased in 2018 by SEK 0.006, which affects the consumer's electricity costs. The distribution between the various elements of the total cost of consuming electricity that is paid by a house heated by electricity has varied over the past few years. The explanation for this is that the network charges and electricity trading price levels have changed over time, while energy tax has been raised, see Figure 17.

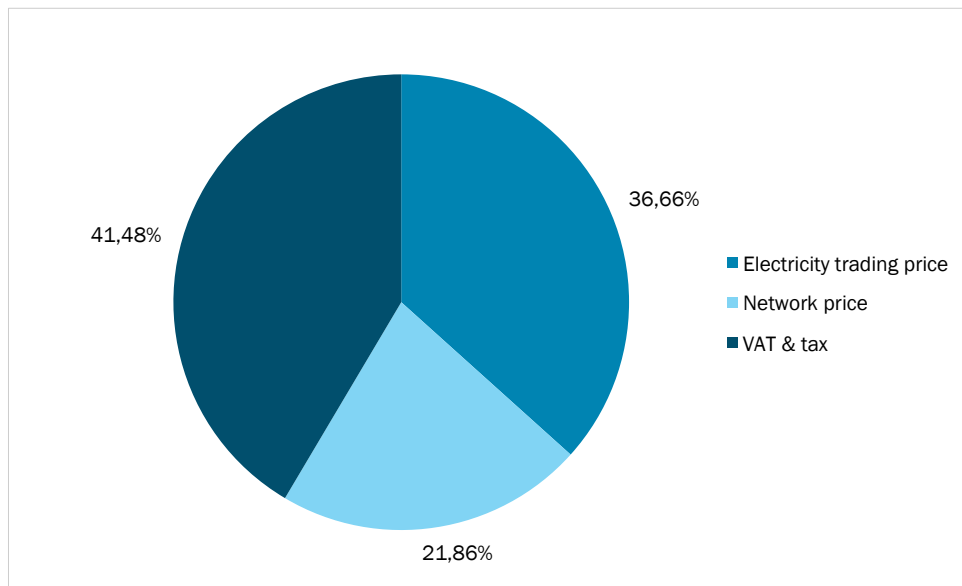
Figure 17. Distribution of the cost of electricity for an electricity consumer using 20,000 kWh per year. Actual cost.



Source: Ei, Statistics Sweden

In 2018, most of the cost – 41.48 per cent – was made up of tax and VAT. The cost of electricity trading accounted for a large part of the total cost for the electricity consumer, compared to the cost for transmission in the network, 36.66 per cent and 21.88 per cent respectively, see Figure 18. The fact that the electricity trading price increased during the year meant that it accounted for a large part of the electricity cost.

Figure 18. Components of the electricity cost in 2018 for an electricity consumer using 20,000 kWh per year. Actual prices.



Source: Ei, Statistics Sweden

#### Total electricity cost for a consumer

The total electricity cost for 2018 for an apartment customer with an annual consumption of 2,000 kWh per year and with a variable price contract totaled approximately SEK 4,500. For a house customer using 20,000 kWh per year and

with a variable price contract, the cost of electricity in 2018 amounted to approx. SEK 31,000: see Tables 4 and 5.

Table 4. Total annual cost 2018, variable price, apartment customer in bidding zone SE3

<b>2018 annual cost at variable price, apartment customer 2,000 kWh</b>	<b>SEK</b>
Electricity trading	1 396
VAT	349
Electricity trading, inc. VAT	1 746
Electricity network	1 526
Tax	662
VAT	547
<b>Total</b>	<b>4 481</b>

Source: Ei

Table 5. Total annual cost 2018, variable price, house customer in bidding zone SE3

<b>2018 annual cost at variable price, house customer 20,000 kWh</b>	<b>SEK</b>
Electricity trading	11 301
VAT	2 825
Electricity trading, inc. VAT	14 126
Electricity network	6 740
Tax	6 620
VAT	3 340
<b>Total</b>	<b>30 826</b>

Source: Ei

The total annual cost for a customer that has a fixed-price, 1-year contract varies depending on when the customer took out the contract. For an apartment customer using 2,000 kWh per year, the total annual cost in 2018 averaged between SEK 4,034 and SEK 4,720, depending on the month of the year in which the customer took out the contract: see Table 6. For a house customer using 20,000 kWh per year, the total annual cost amounted to between SEK 26,798 and SEK 33,554 kronor in 2018 instead: see Table 7.

Table 6. Total annual cost 2018, fixed price 1 year, apartment customer in bidding zone SE3

<b>Total electricity cost at fixed price 1 year, apartment customer 2,000 kWh</b>	<b>SEK</b>
Electricity trading	1 039–1 588
VAT	260–397
Electricity trading, inc. VAT	1 299–1 985
Electricity network	1 526
Tax	662
VAT, electricity network	547
<b>Total</b>	<b>4 034–4 720</b>

Source: Ei

Table 7. Total annual cost 2018, fixed price 1 year, house customer in bidding zone SE3

Total electricity cost at fixed price 1 year, house customer 20,000 kWh	SEK
Electricity trading	8 078–13 483
VAT	2 020–3 371
Electricity trading, inc. VAT	10 098–16 854
Electricity network	6 740
Tax	6 620
VAT	3 340
Total	26 798–33 554

Source: Ei

### Price difference between electricity trading companies

The price difference between highest and lowest price on fixed price contracts with a tie-in period of 1 year aimed at apartment customers was, on average, SEK 0.42 during the period 2010–2018, see Figure 19. Calculated as a percentage, the difference between the dearest and cheapest contracts of the “fixed price 1 year” contract type was 57 per cent for the period.

For the variable price contract type, the price difference was, on average, SEK 0.56 during the period, see Figure 20. As a percentage, the difference amounted to 76.6 per cent.

Figure 19. Highest and lowest price for the contract type fixed price 1 year, apartment customer, 2,000 kWh per year

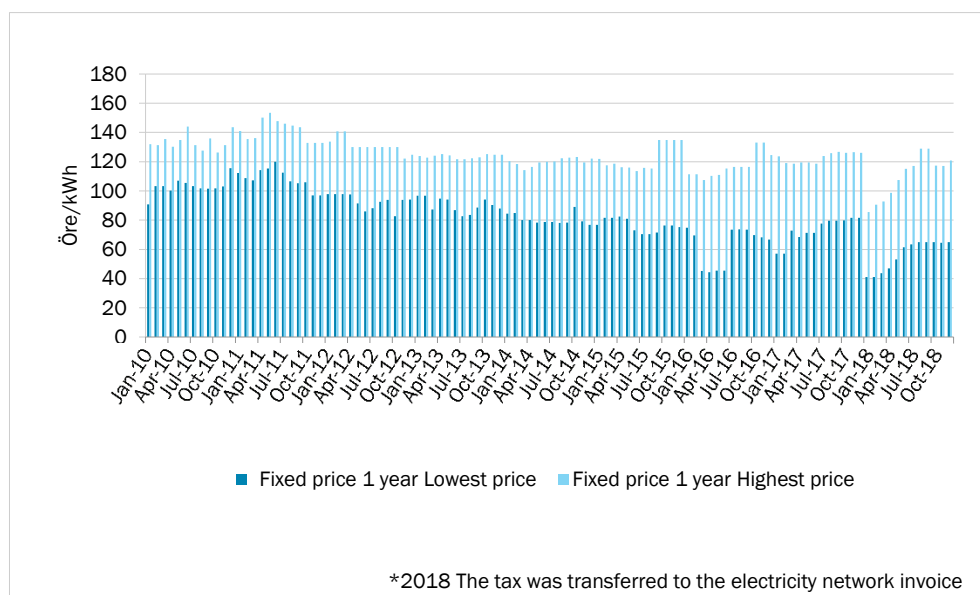
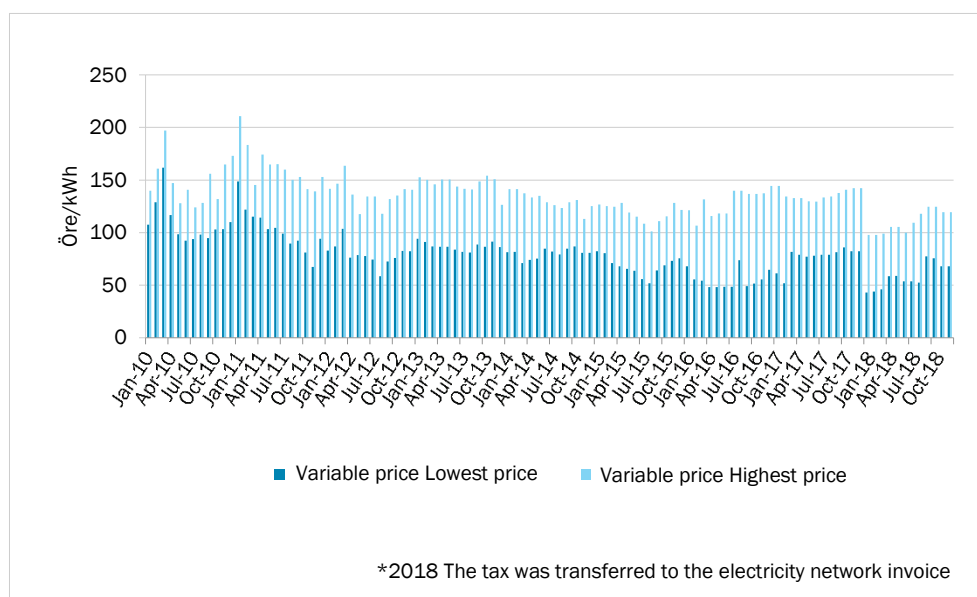


Figure 20. Highest and lowest price for the contract type variable price, apartment customer, 2,000 kWh per year



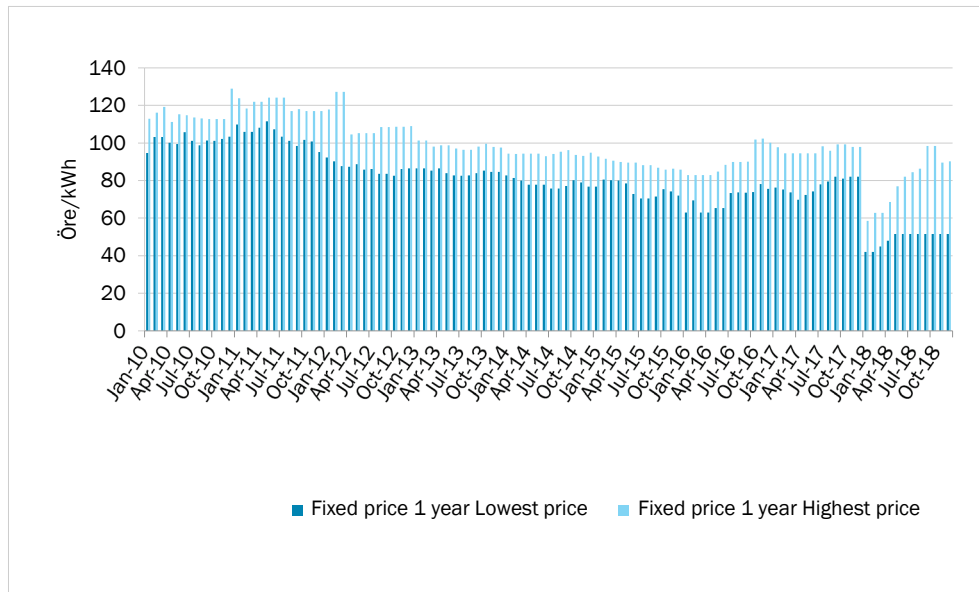
Source: Ei

The price differences on contracts offered to house customers using 20,000 kWh per year are not as big as in the contracts offered to apartment customers. This wider price spread among contracts aimed at customers who consume less electricity is due to the fact that some electricity trading companies have the same fixed annual charge for all customer types, which means that the fixed cost has a major impact on the comparable price for apartment customers who use little electricity, and so the prices charged by these electricity trading companies are high<sup>63</sup>. Another contributing factor may be that customers living in houses who consume a lot of electricity are more price sensitive and price conscious than apartment customers and are therefore more active.

The dearest fixed price contracts with a tie-in period of 1 year have been, on average, SEK 0.19 higher than the cheapest ones for the period from 2010 up to and including 2018, see Figure 21. In terms of percentage, the most expensive contracts were, on average, 25 per cent higher than the cheapest ones.

<sup>63</sup> In most cases, the fixed cost is made up of a fixed annual charge in SEK. When calculating the comparable price, the fixed annual charge is spread over the number of kWh per year.

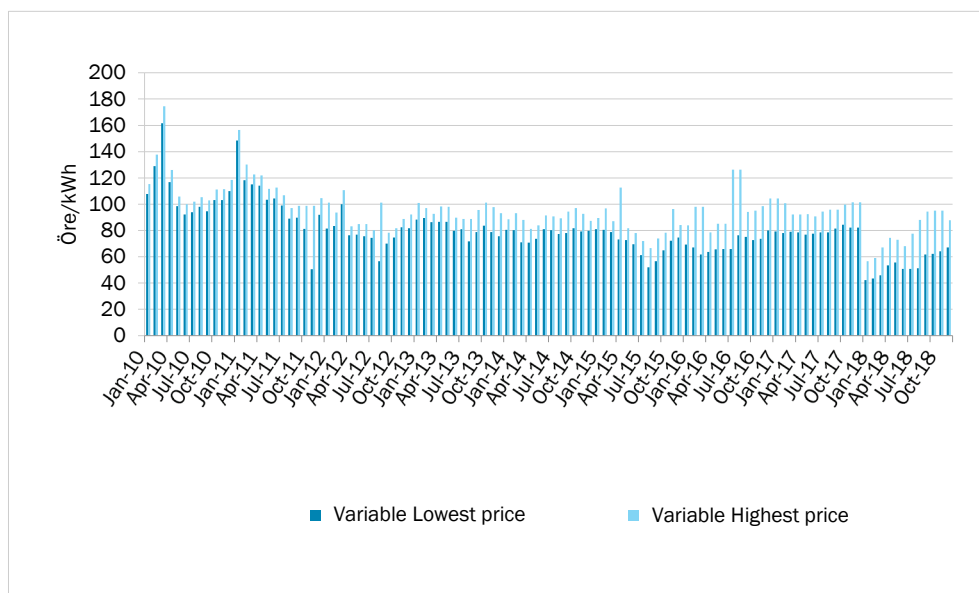
Figure 21. Highest and lowest price for the contract type fixed price 1 year, house customer, 20,000 kWh per year



Source: Ei

The price difference between the most expensive and the cheapest variable price contracts varied slightly less than the price difference for the contract form "fixed price 1 year". However, the differences were greater during 2018 than in previous years because there were local contracts that did not change their prices during and after the unusually dry and hot summer period of 2018. On average, this difference was SEK 0.16 throughout the time period. On average, the most expensive contracts were 23 per cent more expensive than the cheapest ones over this period: see Figure 22.

Figure 22. Highest and lowest price for the contract type variable price, house customer, 20,000 kWh per year



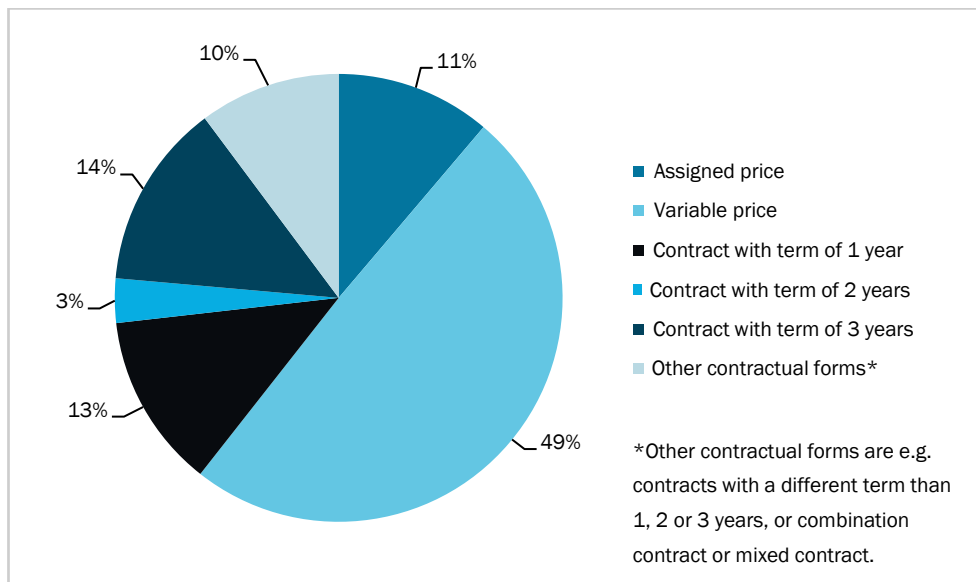
Source: Ei



### More customers choose variable price contracts

A trend that has continued for several years is that more customers are choosing variable contract types. 49 per cent of Swedish household customers had concluded variable price contracts by December 2018, representing an increase of 2 percentage points compared with December 2017. 30 per cent of customers had a fixed price contract with a tie-in period of one, two or three years, see Figure 23.

Figure 23. Distribution of household customers by contract type, December 2018



Source: Statistics Sweden

### Fewer, but still many assigned contracts

Customers in the Swedish electricity market have the option of choosing the electricity trading company they prefer. This means that stakeholders are operating on a free market in competition against other companies, with free pricing. If the customer does not make an active choice, then the electricity utility is obliged to assign an electricity trading company to the customer. On average, the price of these assigned contracts is 20–30 per cent higher than for other contract types. There may be various explanations as to why customers do not avoid or later on make an active choice to switch from assigned contracts, despite high prices. Customers are perhaps unaware that they have a contract type that is more expensive than other contract types. They may also be unaware that they can easily switch to another cheaper contract. In various supervisory initiatives, Ei has noted that the information for the assigned customers is inadequate and has requested that the companies improve their information. Customers may also consider the cost of electricity to be such a small element of their overall household costs that they are unmotivated to switch contract.

The proportion of customers with assigned contracts has decreased by 2 percentage points since December 2017, and this is also equivalent to the increase in the proportion of variable contracts in 2018. A few electricity trading companies also use variable contracts instead of assigned contracts for customers who do not make active choices. In these cases, inactive customers at least get contracts that are more advantageous than the assigned contracts.

**Energy tax is paid to the electricity utilities and is included in the electricity network invoice.**

Energy tax on electricity was transferred from the electricity trading companies to the electricity utilities as of 1 January 2018. This change means that energy tax on electricity is invoiced by the electricity utility and is shown on the network invoice instead of by the electricity trading company and its electricity trading invoice. However, the customer's total cost for electricity is not affected.

**Efforts towards a harmonised Nordic end-customer market**

Ei has played an active part in operations throughout the year, among other things chairing meetings of the NordREG end-customer market group.<sup>64</sup> In 2018, the group focused on the provisions in the European Commission's legislative proposal *Clean Energy for All Europeans* that affect the end customers and the end-customer market.

The group also conducted a large customer survey with 6,000 Nordic participants. Among other things, the focus for the investigation was how the options for electricity contracts are perceived, as well as what knowledge there is about the electricity market and the customer's own electricity contract. The replies referred to all Nordic countries and are documented in the Nordic Customer Survey 2018 with associated appendix.<sup>65</sup> A summary in English, entitled *Nordic Customer Survey 2018 – Tables Report Sweden, is available at Ei.se*. In addition, an internal workshop was arranged for the second year running on the supervision of market stakeholders in the end-customer market. The purpose of the workshop was to share knowledge and experience on supervision with the aim of strengthening the monitoring by the Nordic regulatory authorities of regulatory compliance in the end-customer market.

**Ei aspires to achieve well-functioning end-customer markets within Europe**

On the end-customer side of things, Ei has been involved in four main areas: effective end-customer markets, barriers to entry for new market stakeholders, data management and reinforcing the position of consumers on the market.

Over the year, Ei has played an active part in the work of the Council of European Energy Regulators (CEER) regarding development of the end-customer market for electricity and gas in Europe. Among other things, Ei has chaired the working group for end-customer market issues, CEER Customers and Retail Markets Working Group (CRM WG). Ei has also been active in several subgroups for CRM WG, including in the project *2025 Roadmap to well-functioning retail markets*. The CEER end-customer market group has also been working on the Commission's new legislative proposal, *Clean Energy for All Europeans, throughout the year*.

**Development of the Swedish price comparison website, elpriskollen.se**

Ei is responsible for Sweden's only independent price comparison website for electricity contracts, elpriskollen.se. During the year, Ei has focused its supervision on checking that price data and contractual terms reported to Elpriskollen are

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<sup>64</sup> Retail Market Working Group

<sup>65</sup> <http://www.nordicenergyregulators.org/wp-content/uploads/2018/11/Nordic-Customer-Survey-2018.pdf>

correct. In addition, Ei has also investigated improvement measures in order to enhance Elpriskollen's functionality and user-friendliness.

**Assignments relating to a service hub and a model centring on electricity suppliers**

Ei and the state enterprise, Svenska kraftnät (the transmission system operator in Sweden), were tasked by the Government in 2015 to investigate a central information processing model for the Swedish electricity market, a so-called electricity market hub. The state enterprise, Svenska kraftnät, has been commissioned by the government to develop and run the electricity market hub. Ei's assignment also included continued work on introducing an electricity trading centric model of the Swedish electricity market.

In June 2017, Ei reported on the assignment to the government in the form of its report *Ny modell för elmarknaden [New model for the electricity market]* (Ei R2017:05). This report presents proposals for legislative amendments in order to introduce a new market model where an electricity market hub constitutes a hub for information exchange between electricity market stakeholders. During 2018, Ei continued with preparatory work in anticipation of its proposals being prepared in the Government Offices. During 2018, Ei has also followed Svenska kraftnät's ongoing work to establish the electricity market hub.

## 1.4 Investigations and measures to promote competition

A number of authorities and organisations are cooperating in the monitoring of the Swedish and Nordic electricity market with the aim of using various measures to create an effective electricity market and prevent the exercising of market power.

### 1.4.1 Responsibilities relating to the monitoring of the electricity market

Ei is the national energy regulatory authority in Sweden. Besides its role as supervisory authority, Ei continually monitors and analyses development on the electricity and gas markets and submits proposals for amendments to regulatory frameworks or other actions in order to promote the function of the markets.

The Financial Supervisory Authority supervises the Swedish stakeholders operating on the financial electricity market with the permission of the authority. Monitoring of trade and companies' actions takes place on the Nord Pool, EEX and Nasdaq Commodities marketplaces. Nord Pool, which is based in Norway, is monitored by the Norwegian Water Resources and Energy Directorate (NVE) and the Financial Supervisory Authority of Norway.

The Swedish Competition Authority monitors companies on the Swedish electricity market to ensure that they do not violate the prohibition of anti-competitive cooperation and misuse of dominant position in accordance with the Treaty on the Functioning of the European Union (the EUF Treaty) and the Competition Act<sup>66</sup>. The Competition Act also prohibits anti-competitive public sales activities. The Swedish Competition Authority can actively intervene to prevent the above restrictions of competition on its own initiative or after receiving reports from companies and the general public. The Competition Act also includes regulation concerning control of corporate concentrations. The Swedish Competition Authority also provides proposals for regulation amendments and other measures to eliminate existing obstacles to competition.

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

The Regulation on Wholesale Energy Market Integrity and Transparency (REMIT<sup>67</sup>) entered into force in 2011 and enabled the facilitation of coherent monitoring of the increasingly integrated European electricity and gas markets. As a consequence, Ei's responsibility and ongoing efforts to monitor the Swedish markets have increased. Ei has procedures that are applied to its daily market monitoring operations.

All trading in wholesale energy products, both via the electricity exchange and bilaterally, must be reported by the market stakeholders to ACER. Ei has entered into agreement with ACER to have access to information on this trading data. Monitoring is funded by means of a charge imposed by Ei on registered market

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<sup>66</sup> Competition Act (2008:579)

<sup>67</sup> This abbreviation has been devised from the name of the regulation. In Swedish, the regulation is called "Europaparlamentets och Rådets förordning (EU) nr 1227/2011 av den 25 oktober 2011 om integritet och öppenhet på grossistmarknaderna för energi".

stakeholders. Exactly how the trading should be reported and by what means is regulated in the implementing acts<sup>68</sup>.

#### **Marketplace regulatory frameworks and market monitoring**

All stakeholders on Nord Pool and Nasdaq Commodities must comply with special regulatory frameworks for trading on their respective trading platforms. The rules apply in particular to the processing of information with an influence on price. Both Nord Pool and Nasdaq Commodities have internal functions for market monitoring where trading is monitored continuously.<sup>69</sup> The functions for market monitoring at Nord Pool and Nasdaq Commodities also contribute to Ei's work since they must report any breaches of the regulations to Ei.

#### **Measures to reduce risks of joint ownership in nuclear power**

In various contexts, the Swedish Competition Authority has drawn attention to the general risks for unauthorised cooperation through common ownership of electricity production resources. In 2011, and with the support of Ei, the owners of nuclear power plants adopted a common industry code of ethical conduct for the exchange of information between the companies. Independent observers consists of members of the boards at the nuclear power companies, specifically for the purpose of monitoring the industry code of ethical conduct. Ei's task is to nominate one observer per board of directors. Every year, Ei publishes a monitoring report from each board of directors, including any comments from the observer involved.<sup>70</sup>

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<sup>68</sup> Commission Implementing Regulation (EU) No 1348/2014 of 17 December 2014 on data reporting implementing Article 8(2) and Article 8(6) of Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency

<sup>69</sup> This must be done in accordance with article 15 of Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency

<sup>70</sup><https://www.ei.se/sv/Publikationer/arsrapporter-karnkraftforetag/>

## 1.5 Security of supply, electricity

Security of supply in the Swedish electricity system is generally good. Manual disconnection of certain electricity consumers, which is the method to be used by Svenska kraftnät according to the Electricity Act when there is no other way of achieving balance between input and takeoff in the electricity system, has never needed to be applied.

### 1.5.1 Monitoring of electricity production capacity

#### Greatest contribution of renewable power

In Sweden, investments in new electricity production capacity are taking place on essentially market-based grounds. Permits from Ei are not required for the construction of new electricity production plants in Sweden. That said, permits are required in accordance with both the Environmental Code<sup>71</sup> and the Planning and Building Act<sup>72</sup>.

Renewable power such as hydropower and wind power constitutes more than 67 per cent of the total installed output power. These types of power also made the greatest contribution to the installed output power from previous years. Table 8 shows the installed output power, by production type.

Table 8. Installed output power at Sweden's power stations on 31 December 2018, MW

	2012	2013	2014	2015	2016	2017	2018 <sup>73</sup>
<b>Nuclear power</b>	<b>9 363</b>	<b>9 531</b>	<b>9 528</b>	<b>9 714</b>	<b>9 076</b>	<b>8 625</b>	<b>8 626</b>
<b>Fossil power</b>	<b>4 636</b>	<b>4 635</b>	<b>4 866</b>	<b>4 501</b>	<b>4 443</b>	<b>4 443</b>	<b>4 443</b>
<b>Renewable power</b>	<b>23 354</b>	<b>24 107</b>	<b>25 155</b>	<b>25 758</b>	<b>26 485</b>	<b>26 675</b>	<b>27 311</b>
- Hydropower	16 203	16 150	16 155	16 184	16 181	16 181	16 181
- Biofuels	3 036	3 080	3 082	2 978	3 146	3 146	3 146
- Wind power	3 745	4 470	5 420	6 029	6 520	6 710	7 300
- Waste	346	364	419	441	453	453	453
- Solar power	24	43	79	126	185	185	231
<b>Total</b>	<b>37 353</b>	<b>38 273</b>	<b>39 549</b>	<b>39 973</b>	<b>40 004</b>	<b>39 743</b>	<b>40 380</b>

Source of comparative figures (2012–2017): Swedenergy

<sup>71</sup> Environmental Code (1998:808)

<sup>72</sup> Planning and Building Act (2010:900)

<sup>73</sup> Data for nuclear power has been taken from Montel Power News (data from December 2018). Data for wind power has come from the Swedish Energy Agency. Fossil power, Hydropower, Biofuels, Waste and Solar power have been assumed.

### **1.5.2 Monitoring of investments in electricity production capacity with regard to security of supply**

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

The Swedish transmission network is undergoing a period of extensive expansion. The network is being reinforced in order to facilitate new electricity production, extend market integration with the world and assist in the creation of a joint European electricity market. At the same time, there is a significant need for reinvestment.

One of the larger projects ongoing with the aim to increase capacity and reliability in the Nordic power system is Sydvästlänken. The purpose of this cable is to reduce the transmission restrictions from the Mälardalen region to southern Sweden. Sydvästlänken is being constructed in two parts, with a hub at Jönköping. From the hub, there will be a link heading south to Skåne, while the other will head north to Hallsberg. The entire Sydvästlänken is expected to be fully operational by mid-2019, and at that time it is estimated to increase the electricity transmission capacity between central and southern Sweden by up to 25 per cent.

Besides Sydvästlänken, several projects are in progress to reinforce the electricity networks in the metropolitan regions and transmission capacity between the Swedish bidding zones. One such project is Svenska kraftnät's designed cable between Skogssäter (Trollhättan) and Stenkullen (Lerum), which will help to secure the electricity supply in Västra Götaland. Another is the Stockholm Ström [Stockholm Power] project, which aims to reinforce and renew the electricity network in the Stockholm region in order to meet future needs for secure electricity supplies. Svenska kraftnät has been working together with regional and local network owners Vattenfall and Ellevio to propose an entirely new structure for the region's electricity networks, and this is now being implemented in around fifty projects.

### **1.5.3 Measures for handling demand peaks or supply deficits**

Svenska kraftnät is responsible for ensuring that a strategic power reserve is available throughout the winter, between 15 November and 15 March.<sup>74</sup> Svenska kraftnät procures the reserve by entering into agreements with electricity producers and electricity consumers so that they set production capacity or consumption reduction according to Svenska kraftnät's requirements. Both procurement procedures require the resource/plant to be available in bidding zone SE3 or bidding zone SE4. The power reserve price is set to the ceiling price on Nord Pool, EUR 3,000 per MWh, when the power reserve production element is activated on Nord Pool.

By law, the power reserve is applicable until 15 March 2025. The law has been extended, latest in 2016<sup>75</sup>. Currently, only Fingrid in Finland and Svenska kraftnät in Sweden procure power reserves prior to cold winters in the Nordic region. The handling of power reserves is based on the guidelines devised jointly by the Nordic transmission network companies that act as system operators.<sup>76</sup>

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<sup>74</sup> According to the Act (2003:436) on power reserve

<sup>75</sup> SFS (2016:422)

<sup>76</sup> "[Guidelines for implementation of transitional peak load arrangements](#)"

## 2 The natural gas market

Natural gas was introduced to Sweden in 1985 by expansion of the Danish natural gas system to southern Sweden via a pipeline from Dragør, near Copenhagen, to Klagshamn, just outside Malmö.

On 1 July 2007, trade in natural gas was opened up to competition in the Swedish system. The network operation is a regulated monopoly.





## 2.1 The gas network

Natural gas was not introduced in Sweden until 1985. The western Swedish natural gas system comprises around 600 kilometres of transmission pipeline and around 3000 kilometres of distribution pipeline. The natural gas network is divided into four different operations: transmission, distribution, gasification and storage. The gas is transported long distances under high pressure in transmission pipelines. Pressure reduction is then carried out in metering and regulating stations before the local distribution network transports the gas to consumers.

The western Swedish natural gas system is small compared with most other natural gas networks in Europe. The network extends from Trelleborg in the south to Stenungssund in the north, and a short distance eastward towards Jönköping. Just over 30 of the 290 municipalities in Sweden have access to natural gas. Gas is transported into Sweden via a pipeline from Dragør in Denmark.

The western Swedish natural gas network comprises a number of different network types. In line with the terminology used for the major continental natural gas networks, the biggest pipelines that transport the gas under high pressure are known as transmission pipelines. These pipelines have enough capacity to transmit very large quantities of gas. In Sweden, the transmission network is owned and operated by Swedegas, which is also responsible for system balance. A small number of very large consumers are connected directly to the transmission network.

There is also an urban and vehicle gas network in the Stockholm region which is owned by Gasnätet Stockholm AB, and this is responsible for development, operation and maintenance of the network. The urban and vehicle gas networks comprise around 500 kilometres and 40 kilometres of pipeline respectively. The urban gas network covers large parts of the city of Stockholm, along with Solna and Sundbyberg. The production and infeed of gas to the urban gas network primarily takes place from a gasification facility in Stockholm to which both biogas and LNG, liquefied natural gas, are supplied. At this facility, LNG is vaporised to make natural gas, which is then mixed with air to turn it into the urban gas suitable for the customer appliances used in the urban gas network. This gas is distributed via pipelines that are pressurised at special regulating stations all over the city. The vehicle gas network, 40 kilometres long, links biogas suppliers' production plants for gas in Stockholm with bus depots for fuelling buses and fuelling stations for vehicle gas.

There are also a number of small local gas networks around Sweden. Many of the small local networks are used primarily for transporting vehicle gas-type biogas from production plants to fuelling stations.

One thing the gas network in Stockholm and the small local gas networks all over Sweden have in common is the fact that they are not connected to a transmission network. The western Swedish gas network and the gas network in Stockholm are the networks covered by the provisions of the Natural Gas Act<sup>77</sup>. According to the

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<sup>77</sup> Natural Gas Act (2005:403)

Natural Gas Act, natural gas also includes biogas insofar as it is technically possible to use this gas in a natural gas system.

**Figure 24. Transmission pipelines in the western Swedish natural gas network**



Source: Ei

### **Biogas in the natural gas network**

The natural gas and biogas markets in Sweden are integrated to an extent as the natural gas network can also be used to distribute biogas. Biogas that is upgraded to natural gas quality can be introduced to the natural gas network in most cases, with no technical impact on natural gas users. If problems occur, these are generally due to the fact that the chemical composition is not the same as that of traditional natural gas. There are currently nine biogas producers connected to the western Swedish natural gas system, two of which are connected in order to feed gas into the transmission network. Another two biogas producers are connected to the Gasnätet Stockholm AB network.

New tax rules for joint distribution were introduced in 2011 in order to facilitate joint distribution of natural gas and biogas in a single network. Essentially, these new rules meant that the contractual supply was separated from the physical supply. According to a previous regulatory framework, all customers on one and the same network received the same amount of biogas regardless of the contract that formed a basis for the supply. The altered regulations mean that a biogas producer can conclude a supply contract with a consumer for 100 per cent biogas, even if the consumer receives a mixture of biogas and natural gas in practice. This concept resembles the electricity market's system of origin marking, where electricity consumers can purchase electricity produced by wind power no matter what their location on the network.

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

What is known as functional unbundling between companies is required with the purpose of preventing cross-subsidisation between companies running different types of natural gas operation. This means that companies that perform natural gas transmission, gasification or storage operations must not trade it. The rules on unbundling mean that companies that previously traded natural gas and also transmitted it, for instance, had to be divided into two separate elements. The board members, CEO or company signatories of any company that is in possession of pipelines in a Swedish natural gas system must not simultaneously hold any of these roles in a company that trades in natural gas. However, Swedish legislation does not state that gas utility companies are not allowed to form part of a group that produces or trades in natural gas.

All companies running natural gas transmission operations and that form part of the same group as a company that produces or trades in natural gas must compile a monitoring plan<sup>78</sup> in accordance with the Natural Gas Act. The purpose of the monitoring plan is to ensure that companies operate objectively and do not unduly favour any market stakeholder. The monitoring plan must specify what measures are to be implemented by the company to counteract discriminatory behaviour in respect of other market stakeholders. They must also publish an annual report describing the measures they have implemented.

During the period 2017–2018, Ei conducted an inspection of the rules on unbundling. Among other things, Ei examined how the customer service, finance and IT functions were distributed between the lines of business within a utility, or between companies in a group. The inspection did not result in any measures being taken.

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

According to the Internal Market in Gas Directive<sup>79</sup> and national rules, the transmission system operators<sup>80</sup> must be certified. Ei certified Swedegas AB as transmission system operator in July 2012. This certification will remain valid until further notice, but the decision may be reviewed by Ei if the system operator fails to meet the requirements for certification.

Swedegas was owned by venture capital company EQT between 2010 and 2015. A change of ownership was announced in 2015, when Enágas from Spain and Fluxys from Belgium joined the company as its new owners. On 21 November 2018, Swedegas announced that the European Diversified Infrastructure Fund (EDIF II), which is managed by First State Investment, were the new owners.

### **2.1.2 Technical function of the natural gas network**

#### **Balancing natural gas**

In its capacity as a transmission network operator, Swedegas owns the western Swedish natural gas network and is responsible for its operation and maintenance. This role is comparable to the role played by Svenska kraftnät in the electricity

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<sup>78</sup> 2005:403 Chap. 3 section 9

<sup>79</sup> Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas Article 10.

<sup>80</sup> The term 'transmission system operator' is synonymous with 'transmission network operator'.

market, as Swedegas both owns the supply network and is responsible for short-term balancing of the infeed and outfeed of electricity/gas. On 1 June 2013, the government appointed Swedegas as the system balance administrator for the western Swedish natural gas network, a role previously held by Svenska kraftnät.

To guarantee balancing, Swedegas concludes balance contracts with gas market stakeholders known as balance administrators. These balance administrators take on financial responsibility for ensuring that end-users' consumption is matched by the supply. The western Swedish natural gas network offers major opportunities for storage of gas in the pipelines, known as linepack, thereby facilitating balancing. Short-term imbalances may constitute as much as 25 per cent of consumption on a winter's day without jeopardising the technical function of the network.

The system balance administrator must not conclude balance administration contracts with individual balance administrators until the contract terms have been approved by Ei.

At the end of 2018, Swedegas submitted a new balance administration contract for approval by Ei. The contract, which was approved during spring 2019, means that a common balance market for natural gas networks is being created in Western Sweden and Denmark. The decision allows conditions to be created so that Sweden is also able to fully implement the EU Regulation on Gas Balancing of Transmission Networks (Regulation (EU) 2014/312) in time. This regulation must be implemented in all Member States by 16 April 2019.

During 2018, Swedegas applied so-called temporary measures in accordance with the EU Regulation on Gas Balancing of Transmission Networks (Regulation (EU) 2014/312) which entered into force in 2014. The temporary measures have been justified by the fact that the Swedish market for natural gas is small with few stakeholders, and the short-term wholesale market for gas therefore does not have sufficient liquidity. Swedegas has applied the temporary measures during the years that the EU regulation has been in force. When the new balance administration contract that Swedegas applied for during 2018 is decided, the temporary measures shall be discontinued.

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

The gas utilities are responsible for ensuring that operation and maintenance of their plants is safe, reliable and efficient so that they meet reasonable requirements in terms of the transmission, storage and gasification of gas in the long term.

The western Swedish natural gas network is primarily made up of steel pipelines. The function of the system is checked regularly, and defective or end-of-life equipment is replaced. According to stakeholders, these pipelines are deemed to have an anticipated service life of at least 40 years, while some equipment for monitoring, control and regulation is expected to have a service life of 5–20 years.

The pipes in the transmission network are approved for a pressure of 80 bar, and Swedegas has selected a minimum operating pressure of 45 bar. The transmission pipelines transmit the natural gas to the distribution networks. These are connected to the transmission network by a metering and regulating station. The

gas flow is measured at the metering and regulating station, and its pressure is reduced. The distribution networks transport the gas from the transmission network out to smaller industries for the most part, and to regulating stations where the pressure is further reduced before the gas is distributed to end-customers, such as customers using stoves, or gas boilers for heating purposes.

Most of the distribution pipelines are made of polyethylene. Steel pipelines are used in some cases when gas is transmitted to customers who need a gas pressure higher than 4 bar. Guidelines for distribution network implementation, operation, repair, maintenance, etc. for a maximum pressure of 4 bar are coordinated in the energy gas standards devised by the trade organisation Energigas Sverige.

The network owner collects measurements from boundary points, outtake points and infeed points. These measurements are then reported on to the gas supplier, balance administrator and system balance administrator. The measurements form a basis for settlement of infeed and outtake energy quantities.

Gas charges are based on energy supplied. To calculate the energy quantity, the volume of the gas in m<sup>3</sup> is multiplied by the energy content of the gas per volume unit in kWh/m<sup>3</sup>. The energy content per volume unit is generally known as the calorific value, and in the Swedish system a calorific value is used for the entire system. The calorific value can be designated as either an upper or lower calorific value, depending on whether or not the products of combustion – the flue gases in the case of natural gas – have been cooled to the same temperature as the gas before combustion began. In other words, the energy content of the gas per volume unit is higher for a plant that has equipment that can make use of the energy in the flue gases.

#### **Connection to a natural gas pipeline**

Anyone who owns a natural gas pipeline is obliged to connect other people's natural gas pipelines, storage facilities and gasification facilities on reasonable terms. However, this obligation does not apply if the pipeline does not have sufficient capacity. When a request for connection is submitted, the owner of the natural gas pipeline must submit written information on the charge and other terms for the connection within a reasonable time.

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

Anyone who owns a gasification facility or a facility or pipeline for the storage of natural gas in the Swedish natural gas system is obliged, on reasonable terms, to feed in natural gas owned by other parties in order to store or gasify it. This obligation does not apply if the facility does not have sufficient capacity. When a request for infeed is submitted, the owner of the storage facility or gasification facility must submit written information on the charge and other terms for the infeed within a reasonable time.

#### **Examination of terms for connection to a natural gas facility**

The methods to formulate contracts for connection to various types of natural gas facility are approved by Ei before being put into use. The terms specified in the connection contracts must also be approved before being put into use by the owners of natural gas facilities.

### 2.1.3 Network charges for connection and transmission

#### Review of gas network charges

Ei inspects the gas utilities and approves the revenue framework for the utilities. Supervision of the utilities' tariffs includes the companies that are connected to the Swedish natural gas system according to the terms of the Natural Gas Act. The review of gas network charges continued until 2015, however, since January 2015 utilities' revenues have been regulated in a similar way to the rules defined for the electricity market. This means that revenues are regulated in advance in a revenue framework extending over a four-year period. This framework defines an upper limit for the total revenues that companies are allowed to receive from their natural gas activities.

When devising charges for the transmission of natural gas, companies must in particular observe the number of connected customers, customers' geographical locations, the amount of transmitted energy, subscription costs for overhead lines, reliability of supply and pipeline pressure. As a consequence of the Internal Market in Gas Directive<sup>81</sup>, an amendment came into force in 2012 which means that Ei's supervision in accordance with the Natural Gas Act is also applicable to tariffs for access to gasification facilities. Access tariffs must not be applied until Ei has approved the methods used to devise the tariff.

Ei's supervision of the methods that form a basis for the devising of tariffs aims to ensure that they are objective and non-discriminatory in accordance with the requirements of the Natural Gas Act. An appeal against Ei's decision may be submitted within three weeks by the party to which the decision relates. The case is examined by a general administrative court.

Prior to the regulatory period in 2015–2018, these companies submitted applications in June 2014 for revenue frameworks totaling SEK 7.3 billion. Ei made decisions on revenue frameworks amounting to almost SEK 6 billion in October 2014. Four out of nine natural gas stakeholders appealed against Ei's decisions to the Administrative Court in Linköping. The Administrative Court gave its verdicts in February 2016. The verdicts mean that Ei won its cases in respect of important elements with regard to these companies' returns. However, the court opposed Ei regarding depreciation periods and elements of the cost of capital. Ei is of the opinion that the revenue frameworks, with application of the verdicts of the Administrative Court, are at a level that gives companies the opportunity to impose unreasonably high charges on their customers. Both Ei and the companies appealed against the verdicts to the Administrative Court of Appeal in Jönköping in 2016. In December 2016, the Administrative Court of Appeal announced that it was rejecting Ei's request for the Administrative Court to use independent economic experts. In November 2017, the Administrative Court of Appeal in Jönköping gave its verdict in cases where, among other things, they established longer depreciation periods for the transmission network company and a higher return compared with the decisions made by Ei. Ei appealed against the verdicts to

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<sup>81</sup> Article 41.6 a.

the Supreme Administrative Court in December 2017. In April 2018, the Supreme Administrative Court announced that Ei did not have review dispensation.

According to the Swedish Natural Gas Act,<sup>82</sup> gas utilities are required to prepare separate financial accounts for their transmission, distribution, storage and gasification activities in the form of an annual report. These annual reports must be received by Ei no later than seven months after the end of the fiscal year, and they must include a complete income statement and balance sheet for each accounting unit. This report forms a basis for further supervision.

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

Anyone who is in possession of a storage facility or has the option of storing natural gas in a pipeline is obliged to store natural gas on behalf of others on reasonable terms. Likewise, anyone who is in possession of a gasification facility is obliged to feed natural gas into a natural gas pipeline. These obligations do not exist if there is no capacity in the storage or pipeline facility.

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

Ei conducts cross-border cooperation in several international cooperation organisations. Although there is no formalised cooperation with other Nordic regulatory authorities working with gas, discussions are always ongoing with the Danish regulatory authority on how the collective market can be developed and how security of supply can be improved. Ei also works in cooperation with European regulatory authorities in Germany, the Netherlands, Belgium, Luxembourg, France, Spain, the United Kingdom and Ireland.

This cooperation aims to facilitate rapid incorporation of European legislation. Ei has assisted – via the cooperation organisation ACER – in the production of framework guidelines for the devising of European regulatory frameworks for the internal market for natural gas and submitted a statement on EU regulations to ENTSOG<sup>83</sup>.

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

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

The LNG terminal<sup>84</sup> at the Port of Gothenburg entered into service in autumn 2018 and will primarily provide gas for shipping, industries and heavy land transport by means of improved access to natural gas. When fully developed, the total capacity at the terminal will be around 30,000 m<sup>3</sup>. In the long run, the terminal may also be used to feed natural gas into the western Swedish natural gas network.

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<sup>82</sup> 2005:403 Chap. 3 section 3

<sup>83</sup> European Network of Transmission System Operators for Gas. ENTSOG is a cooperation organisation for European companies that are system operators for gas.

<sup>84</sup> An LNG terminal is a facility for the receiving and distribution of natural gas in liquid form, frequently transported by sea, road or rail. LNG terminals can also be connected to natural gas networks.

### 2.1.5 Compliance with the Natural Gas Act

Ei is a regulatory authority according to the Natural Gas Act<sup>85</sup>, and it is therefore tasked with ensuring compliance with the same. Ei also exercises supervision to ensure compliance with the Regulation<sup>86</sup> on conditions for access to the natural gas transmission networks. The instruction for Ei specifies that the authority, in its field, must perform tasks pursuant to the Internal Market in Gas Directive<sup>87</sup>.

According to the Internal Market in Natural Gas Directive and national provisions, the national regulatory authority must comply with and implement the legally binding and relevant decisions made by the ACER and the European Commission.

According to the Natural Gas Act<sup>88</sup>, Ei may provide notification of the orders needed in order to ensure compliance with the regulations and conditions subject to supervision. Penalties may be applied in respect of such orders. The Act<sup>89</sup> also states that the regulatory authority has the right to receive the information and view the documents needed for supervision upon request. The regulatory authority may also provide notification of the submissions that is necessary to ensure compliance with the regulations and conditions within the scope of its supervision.

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<sup>85</sup> Natural Gas Act (2005:403), Chap. 1 section 9.

<sup>86</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 networks and repealing Regulation (EC) No 1775/2005.

<sup>87</sup> Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC.

<sup>88</sup> 2005:403 10 Chap. section 3.

<sup>89</sup> 2005:403 10 Chap. section 2.



## 2.2 Wholesale market for natural gas

Natural gas covers some 2 per cent of Sweden's total energy need and is therefore a relatively small source of energy. However, natural gas represents more than 20 per cent of final energy consumption in municipalities where the natural gas network is developed, which is in line with the average throughout the rest of Europe. The Swedish natural gas market is closely interlinked with the Danish market.

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

Sweden does not produce any natural gas of its own; instead the supply comes from Denmark via a pipeline beneath Öresund (from Dragør). The natural gas consumed in Sweden mainly originates from the Danish gas fields in the North Sea.

The Swedish natural gas market is closely linked with the Danish market due to the design of the Swedish network. The balance administrators in the Swedish natural gas system are also active on the Danish gas market, particularly on the Gaspoint Nordic gas exchange, which has been part of the pan-European gas exchange PEGAS since 24 November 2016.<sup>90</sup> This is why competition, price development and transparency are largely dependent on development in Denmark.

There is enough capacity to transport approximately 22 TWh of natural gas annually using the existing transmission pipeline between Malmö and Gothenburg. This capacity can be increased to more than 30 TWh if the operating pressure is increased using compressors. Table 9 below shows energy consumption, production and the total import capacity in Sweden during 2008–2018.

Table 9. Transmission of natural gas, 2018<sup>91</sup>

	Total energy consumption (TWh)	Production	Import capacity, total (TWh)
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	10.4	0	22
2015	10.4	0	22
2016	10.6	0	22
2017	8.7	0	22
2018	9.2	0	22

Source: Swedegas

Natural gas in Sweden is mainly used by industry and at CHP plants, while only a few percent is used by households. There is therefore a strong link between the

<sup>90</sup> <http://www.gaspointnordic.com/1-news/successful-launch-of-danish-etf-contracts>

<sup>91</sup> Expressed in upper calorific value.

weather – particularly in winter – and natural gas consumption in Sweden. Natural gas consumption increased by 0.5 TWh compared to 2017.

### **Trading in natural gas**

There is no financial trade on Gaspoint Nordic. Instead, all trade takes place with physical supply and stakeholders must have contracts with the Danish transmission network operator Energinet.dk. On Gaspoint Nordic, stakeholders can trade gas for delivery during the day, the day before, prior to the weekend and prior to the next month. Energinet.dk uses Gaspoint Nordic's intraday trade to balance the Danish natural gas network.

The price on Gaspoint Nordic is set on the basis of access and demand and also forms the basis for what is known as the balance base price used by Energinet.dk to calculate imbalances between stakeholders. Around twenty stakeholders were active on Gaspoint Nordic in 2018.

Gaspoint Nordic's price index changed its name from the Gaspoint Nordic Spot Index to the European Gas Spot Index on 5 September 2017.

Stakeholders need to book capacity in Dragør if they want to transport natural gas to Sweden. The transmission capacity is auctioned off at Energinet.dk's regular capacity auctions. As things stand at present in terms of consumption, there is no risk of transmission bottleneck problems due to low consumption in relation to the transmission capacity of the system. When it has arrived in Sweden, the gas can be sold on to consumers such as industries and gas distributors. During 2018, four Swedish balance administrators have contracts with transport stakeholders in the Danish market and can therefore book capacity with Energinet.dk.

## 2.3 The end-customer market

The final stage in the competitive bidding of the end-customer market for natural gas took place in July 2007. Since then, all natural gas customers in the Swedish natural gas system have been free to choose their natural gas supplier.

The western Swedish natural gas network has around 34,000 household customers and 4,800 corporate customers. The City of Stockholm gas network has around 61,000 customers, of which around 820 are corporate customers and 10 are industries.

### 2.3.1 Monitoring of price development, transparency and competition on the market

#### A small market

The western Swedish natural gas network has around 38,800 natural gas customers, of which approximately 34,000 are household customers<sup>92</sup> and 4,800 are other customers such as major industries and CHP plants<sup>93</sup>. The City of Stockholm urban and vehicle gas network has around 61,000 customers, of which around 820 are corporate customers and 10 are industries<sup>94</sup>.

There was a total of seven stakeholders<sup>95</sup> on the Swedish end-customer market for natural gas at the end of 2018, six of which are in the western Swedish natural gas network and one is in the City of Stockholm urban and vehicle gas network.

#### Low customer activity on the natural gas market

In 2018, consumers switched suppliers in the Swedish natural gas market on 222 occasions, 146 of which were initiated by household customers and 76 by companies. This is equivalent to a total change frequency of 0.16 per cent for household customers and 1.35 per cent for corporate customers. In terms of household customers, this is a reduction on previous years, see Figure 25.

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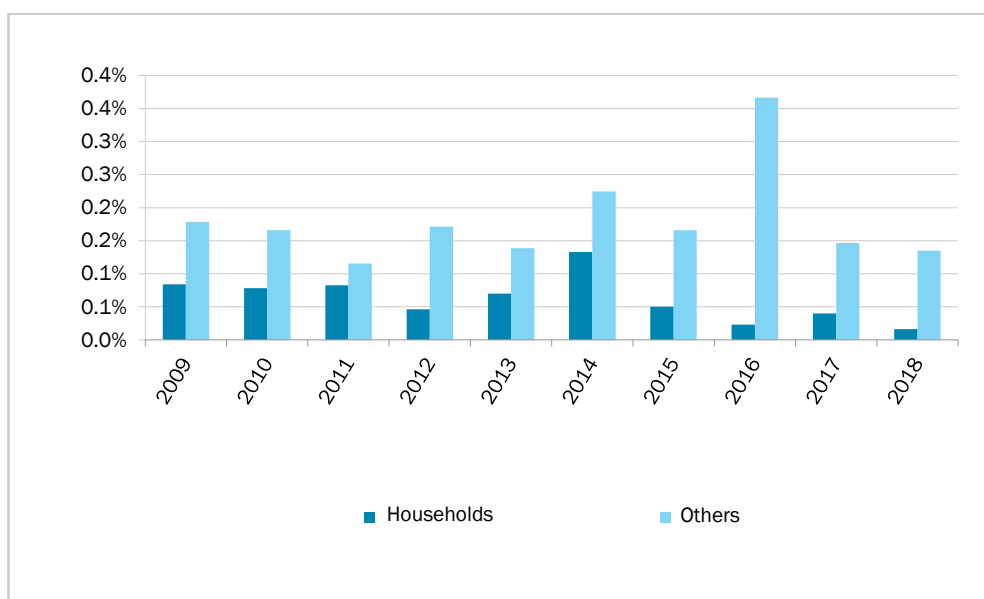
<sup>92</sup> Source: Swedegas. [www.swedegas.se](http://www.swedegas.se)

<sup>93</sup> Energigas, [www.energigas.se](http://www.energigas.se) via Ei 2018:08

<sup>94</sup> Source: Gasnätet Stockholm AB, [www.gasnattetstockholm.se](http://www.gasnattetstockholm.se)

<sup>95</sup> ApportGas, E.ON Försäljning Sweden AB, Göteborg Energi, Kraftringen Energi AB, Varberg Energi, Öresundskraft, Stockholm Gas Handel

Figure 25. Changes of natural gas supplier, %

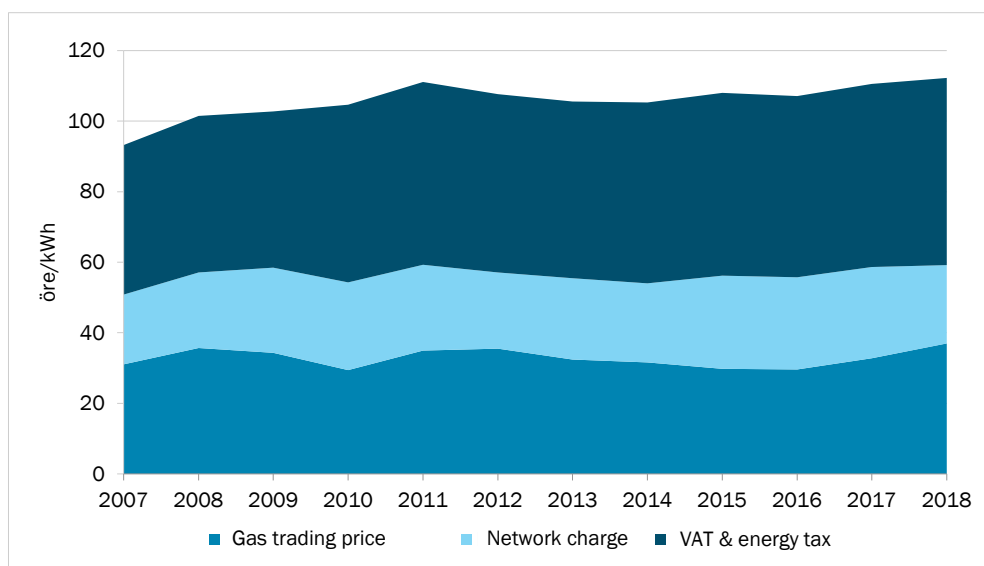


Source: Statistics Sweden

### Most of the cost of natural gas is made up of tax and VAT.

Customers' overall gas costs have changed relatively little since deregulation took place in 2007. This is because the gas trading price has remained relatively constant for most years at approximately SEK 0.35 per kWh. The network charge has also remained stable at approximately SEK 0.20–0.27 per kWh. Tax on natural gas, however, has increased by approximately SEK 0.1 since 2007, see Figure 26.

Figure 26. Actual change in the various expenditure items for households with gas heating<sup>96</sup>

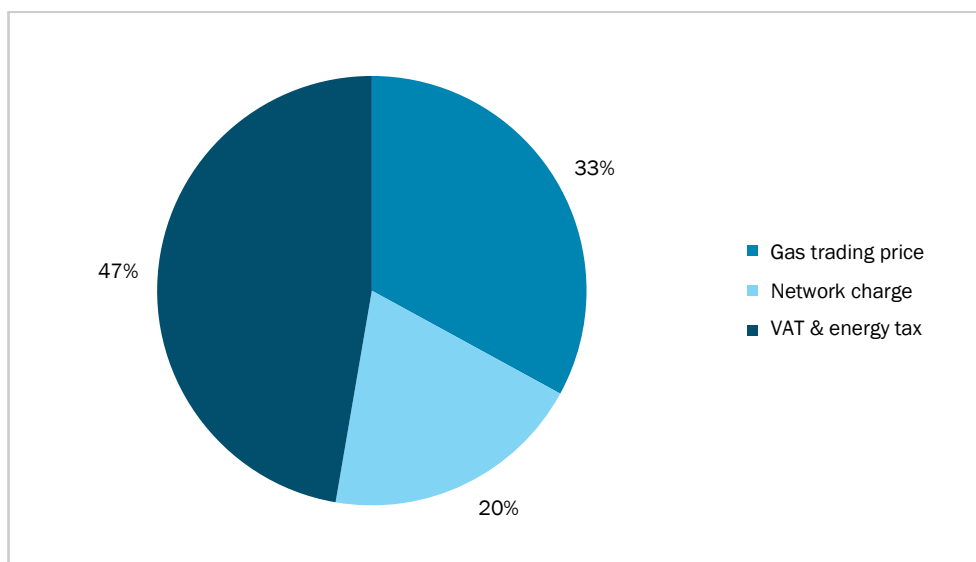


Source: Statistics Sweden

<sup>96</sup> Prices applicable to household customers consuming between 5,500 and 55,000 kWh per year (heating and household gas)

The single biggest expenditure item in the total cost of gas for household customers is made up of VAT and energy tax. This is equivalent to 47 per cent of the total cost, see Figure 27.

Figure 27. Proportion of the total gas cost<sup>97</sup>



Source: Statistics Sweden

#### Easy to compare natural gas prices for households

The Swedish Consumer Energy Markets Bureau has been running the website [gaspriskollen.se](http://gaspriskollen.se) since 2014, where household customers can compare natural gas prices from all natural gas trading companies in Sweden. This website also includes information on how to switch gas trading companies, as well as information about the various expenditure items in the price of gas.

<sup>97</sup> Prices applicable to household customers consuming between 5,500 and 55,000 kWh per year (heating and household gas)

## 2.4 Recommendations for natural gas prices, investigations and measures for promoting competition

Ei works in cooperation with other authorities to supervise the natural gas market and make it efficient.

### 2.4.1 Ei monitors the natural gas market

According to EIA's instruction, the authority is tasked with monitoring and analysing the development on the natural gas market and submitting proposals for amendments to regulatory frameworks or other actions in order to promote the function of the market. The instruction also states that Ei should act to promote effective competition on the natural gas market.

#### Implementation of the balancing regulation

On 1 April 2015, Ei made a decision<sup>98</sup> to approve a Swedegas request to be allowed to apply interim balancing measures. In the same decision, Ei established that Swedegas would send a report update to Ei every year up to and including 2019, during which the balancing regulation<sup>99</sup> should be fully implemented.

#### Common balancing zone between Sweden and Denmark

During 2016–2018, Swedegas and Energinet.dk, the Danish transmission network operator, investigated measures that could increase the harmonisation of the Swedish and Danish gas markets by creating a common balancing zone between Sweden and Denmark. Among other things, this project means that the valve in Dragør will be opened fully, and so flows will travel at the same pressure in both systems. This will increase the average pressure in the western Swedish natural gas network. The implementation of the project means that the transmission tariffs between Denmark and Sweden will be discontinued. This may create a more liquid balancing market with greater security of supply, in particular on the Swedish side where the administration will become more efficient and increased competition will benefit end-customer. The project was completed in 2018 (implementation of the new balancing zone was commenced on 1 April 2019).

### 2.4.2 Potential increase in competition on the natural gas market with the construction of new LNG terminals

Since all the gas is currently from Denmark, there is no alternative for the supply of natural gas. Now that the new LNG terminal has become operational there may be alternatives in the future. However, the terminal will not be connected to the natural gas network initially, and it is unclear when this will occur.

<sup>98</sup><http://www.ei.se/Documents/Publikationer/beslut/Beslut%20Rapport%20om%20interimistiska%20åtgärder%20för%20den%20kortfristiga%20grossitsmarknade%20för%20gas.pdf>

<sup>99</sup> EU regulation 312/2014 establishing a Network Code on Gas Balancing of Transmission Networks.

## 2.5 Security of supply, natural gas

Although security of supply has been historically reliable, the Swedish natural gas market can be viewed as vulnerable in both the short and the long term. The situation in which the country has a single point of supply, along with the fact that Sweden does not produce its own natural gas, makes the Swedish natural gas market vulnerable to external disruptions in the short term, particularly regarding production stoppages in the Danish natural gas fields. In the longer term, gas supplies from Denmark will decline as its natural gas fields are gradually depleted.

### 2.5.1 Monitoring the balance between supply and demand

The Swedish Energy Agency is a regulatory authority according to the Act on a secure natural gas supply<sup>100</sup>. In accordance with the requirements of the natural gas supply regulation<sup>101</sup>, a national preventive action plan and a national crisis plan for safeguarding the supply of natural gas supply was published in 2012. The preventive action plan was updated in 2014 with an up to date risk assessment.

### 2.5.2 Expected future demand and supplies, plus input capacity

In 2016 Swedegas AB submitted an application to Ei for a licence to construct and use an LNG terminal at the Port of Gothenburg along with an application to construct and operate a natural gas pipeline for the transmission of natural gas from the LNG terminal to the natural gas transmission network. This operation will also involve bunkering of LNG for ships. In the first quarter of 2018, Swedegas AB supplemented its licence application with an extension of the licence area to also include pipelines out to quay berths. The application was prepared by Ei and was submitted with observations in 2018 for government review. A decision has not been made at this point in time for the case. The case has not yet been decided.

### 2.5.3 Harmonised transmission tariff structures for gas

On 16 March 2017, the Commission issued Regulation (EU) 2017/460 of 16 March 2017 which established a network code on harmonised transmission tariff structures for gas. The purpose of this regulation is to use binding EU rules to assist with market integration and improved security of supply, as well as promoting interlinking between the European gas networks. Among other things, this regulation specifies rules for transmission tariffs, application of a reference price methodology, requirements for consultation and publication. In Sweden, Swedegas – which owns and runs the Swedish gas transmission network – is affected by the regulation.

In a well-founded decision on 13 December 2018, Ei decided to approve Swedegas's proposal to use a balanced reference price method as the reference price method for the transmission network in Sweden.

### 2.5.4 Measures for covering demand peaks or supply deficits

Consumption peaks and shortages of supply from the balance administrators are handled by the balancing scope available in the transmission pipelines, known as linepack. If measures beyond this are required, the system balance administrator uses market mechanisms to the furthest extent possible in order to manage the

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<sup>100</sup> Act (2012:273).

<sup>101</sup> (EU) 994/2010.

imbalances. The Swedish Energy Agency is able to order network owners to restrict or shut off natural gas transmission to industrial customers. If this is done, the supply to consumers must be secured.

**Implementation of safety measures**

Owners of natural gas pipelines, storage facilities or gasification facilities must have an installed operational and safety plan of their facilities in the event of and during a crisis.<sup>102</sup> Owners must compile a crisis action plan and ensure that this plan is distributed and available within their own organisation, and also that it is being followed accordingly. Owners must also notify the authorities and other relevant stakeholders about their plans.

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<sup>102</sup> Regulations are formulated in the Swedish Energy Agency's regulations and general recommendations on company planning and the obligation to submit information about natural gas supply, STEMFS 2012:4.



### 3 Consumer protection and dispute resolution

Consumers mainly come into contact with the electricity and natural gas market in connection with invoicing of network and trading charges, when changing suppliers and when moving houses.

It must be possible for consumers to feel secure in the knowledge that there is compliance with defined rules. The Swedish Energy Markets Inspectorate (Ei) is helping to reinforce consumers' position on the market by means of supervision and information about the energy market, and also by developing the regulatory framework.

## 3.1 Consumer protection

Several consumer provisions were implemented in the Electricity Act and the Natural Gas Act in 2011 as a consequence of the EU's third internal market directive for electricity and gas. In its capacity as a regulatory authority, Ei must work with other relevant authorities and help to ensure that consumer protection measures are effective and implemented.

Ei must also inform consumers of how to switch to a different electricity or natural gas trading company, the cost of connecting to a network, and how consumers can report their supplier or network company.

### **Ei's supervision of supply quality in electricity networks**

Ei has had access since 2010 to detailed statistics on power outages for all electricity network customers in Sweden. This has increased opportunities to focus supervision on parts of the electricity networks that are most in need of improvement. A lack of supply quality causes enormous inconvenience to customers and results in high costs for society. Disruptions cost society around SEK 1 billion each year. Shortcomings in power supply quality may also give rise to major costs. An effective electricity supply is extremely important to the function and development of society.

The electricity utilities are ordered to report on the measures to be undertaken to address the shortcomings in areas where Ei identifies deficiencies in their quality of supply.

### **Elpriskollen**

Ei runs a price comparison website, [elpriskollen.se](http://elpriskollen.se), to strengthen the position of consumers in the electricity market and their access to objective information, allowing consumers to compare prices and terms of the most common contracts from all electricity trading companies.

The option of comparing prices and other factors that may influence the choice of electricity trading company is a prerequisite for active customers. This is why Ei is continuously working on developing and improving its price comparison website to make things easier for consumers and allow them to perform extended searches. Price comparisons can currently be performed in 13 languages. During 2018, the number of visitors to [elpriskollen.se](http://elpriskollen.se) increased from 116,000 (2017) to 187,000.

Ei also carries out regular checks of the reported prices and associated terms to ensure that electricity suppliers are reporting correct information. A number of checks of electricity suppliers' prices and contract terms have been carried out over the year. Electricity suppliers have been encouraged to rectify any shortcomings detected, and they have done so in all cases.

### **Consumer Contact and Kundo**

Ei has a consumer contact function in order to provide a single location for customer queries and complaints. All written queries and complaints to Ei that are relevant from a consumer perspective are referred to Consumer Contact. Queries and complaints from entrepreneurs are answered if they can be considered of relevance to consumers. Apart from responding to queries and receiving complaints relating to energy market stakeholders, this also creates a foundation for rule development and supervision for other Ei departments.

Consumer Contact accepts queries and complaints by email, telephone, social media and the web-based query forum Kundo. Kundo allows consumers to directly search the website, ask questions or look for answers to questions asked previously. The objective of this way of working is to maintain a high service level and so that consumers can quickly and easily have their queries answered.

Ei cooperates with the Swedish Consumer Energy Markets Bureau with regard to handling queries and complaints. Consumers that get in touch via phone and e-mail with queries outside of Ei's areas of responsibility are referred to the Swedish Consumer Energy Markets Bureau. For example, this applies to general legal queries over contracts.

During 2018, Ei had 1,467 contacts with consumers. This contact related to electricity networks, electricity supply, elpriskollen.se, district heating, gas networks and gas supply. Most queries or complaints concern electricity networks or electricity supply. The queries and complaints on electricity network charges may, for example, refer to the increasing of these charges, the level they are set at, the difference in charges between different zones or the various elements of the charges such as the variable element, the fixed element or the power output charge. The queries and complaints about electricity supply mainly concern electricity price levels, contractual terms, such as unfair contractual terms or lack of information on contractual terms, as well as dissatisfaction due to companies engaging in unsolicited sales calls.

#### **Reports to Ei**

Besides asking questions about the energy markets, consumers also have the opportunity to report any company failing to comply with the provisions of the Electricity Act and the Natural Gas Act. As the authority responsible for supervision, Ei can then examine whether the company has breached its statutory obligation.

#### **Complaints and queries report**

In 2018, Ei published the report *The consumer in the electricity market – Complaints statistics 2014–2017* (Ei 2018:07) which, among other things, describes and analyses statistics for complaints and queries in the energy market. Consumer objections and queries on electricity utilities often concern the regulation and level of network tariffs, while complaints about electricity trading companies often concern unfair commercial practices. Complaints regarding unfair commercial practices have increased during the last few years. It is important for consumers to read carefully the contractual terms before entering into contracts and to make an informed decision. Statistics show that the most satisfied electricity customers are those that make a well-founded decision.

#### **Strengthening of consumer rights regarding telephone sales**

There have been several changes during the year in the regulatory framework regarding consumer rights in the energy market. Among other things, new rules have been introduced which mean that the electricity trading companies are required to have written confirmation of telephone sales. This strengthens the customer's position since consumers are given time to reflect and thus the opportunity to compare offers from telephone salespersons with other offers in the market. It is too early to say whether this will lead to a reduction in complaints to

Ei and the Energy Markets Bureau concerning telephone sales calls from electricity or gas suppliers.

#### **Assistance to vulnerable customers**

The Swedish definition of vulnerable customers is described in Ei's order, which states "*vulnerable customers are individuals who are permanently incapable of paying for the electricity or natural gas transmitted or supplied to them for purposes that fall outside business activity*". In the Swedish electricity and natural gas market, this consumer category is protected by social legislation, ensuring that consumers have the right to financial assistance in order to pay their electricity and natural gas invoices. Ei previously estimated that approximately 20,000 consumers can be considered as vulnerable customers.

Both the Electricity Act and the Natural Gas Act also include provisions that protect consumers that are at risk of disconnection from the electricity or natural gas network due to failure to pay or any other significant breach of contract. These provisions mean that any company disconnecting such customers must first follow a specific statutory procedure. Among other things, this includes the consumer's right to correct information from the company and giving the consumer the opportunity to remedy the situation without being disconnected; and the company must send a message to social services in the municipality in which the consumer lives before disconnection can take place.

Sweden is described as the country in the EU with the lowest level of energy poverty in low income households.<sup>103</sup>

#### **Swedish Consumer Energy Markets Bureau as a national point of contact**

Ei is one of the principles in the Swedish Consumer Energy Markets Bureau. The Swedish Consumer Energy Markets Bureau is an independent bureau that provides information and guidance to consumers on issues relating to the electricity and natural gas market. Advice to consumers is free of charge. An earlier agreement between Ei and the Swedish Consumer Energy Markets Bureau means that the bureau is the national contact point for the electricity and natural gas market in accordance with the requirements in the EU's Internal Market in Electricity and Gas Directive. The Energy Markets Bureau's website had approximately 135,000 unique consumer visits, which was more than double compared to 2017, when the website had 65,000 unique user visits. Around 1,800 consumers got in touch with the bureau directly by telephone and email. This is a slight increase compared to the previous year. The number of instances of direct contact involving complaints continued to increase in 2018: 62 per cent of the 1,800 instances of contact involved complaints. As in previous years, many of the complaints related to electricity supply contracts. Most of these complaints related to costs for switching electricity trading companies, so-called redemption fees, the right to withdraw, and automatic extension of electricity price contracts.

The Energy Markets Bureau has also continued reporting summaries of consumer problems on the energy markets to authorities and companies throughout the year. These efforts have created opportunities for companies to undertake action to reduce complaints. For Ei, this – together with the authority's own summaries of

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<sup>103</sup> OpenExp, [www.openexp.eu/eepe](http://www.openexp.eu/eepe)

consumer complaints – means that it has been possible to identify and implement supervisory initiatives in areas where they will be of most benefit.

#### **Other consumer advice**

In particular, the Swedish Consumer Agency is responsible for consumers in the electricity and natural gas market. Among other things, the Swedish Consumer Agency reviews whether companies have used misleading or aggressive marketing, applied unreasonable contract terms or provided inadequate price information.

The Swedish Consumer Agency runs a consumer information service by the name of Hallå konsument [Hey consumer].<sup>104</sup> Hallå konsument [Hey consumer] covers all consumer markets. Consumers can also consult energy consumer with questions relating to purchases, contractual terms and complaints.

Other authorities, including Ei, are responsible for cooperating with the Swedish Consumer Agency on development of Hallå konsument. The Energy Markets Bureau is responsible for answering questions referred from Hallå konsument, as well as for some of the information on the Hallå konsument website.

Consumers on the electricity and natural gas market also have the opportunity to consult their local municipality for advice on various issues. Municipal consumer advisors offer advice before consumers sign contracts, as well as advising on disputes. Budget and debt advisors are able to offer advice and support if people have payment problems, while energy and climate advisors are able to offer analysis of energy consumption and advice when choosing a new form of heating.

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<sup>104</sup> [www.hallakonsument.se](http://www.hallakonsument.se)

## 3.2 Dispute resolution

On their websites and invoices to consumers, electricity trading companies, electricity utilities, gas trading companies and gas utilities must provide clear information on consumer rights, how consumers can submit complaints and who to contact when consumers need consultations regarding information or dispute resolution.

Consumers can consult the Swedish Consumer Energy Markets Bureau or their municipal consumer advisor for information and guidance.

### **Ei examines some dispute issues**

Ei ensures that companies on the electricity and natural gas markets operate in compliance with legislation, and in some cases it also assists to resolve disputes between consumers and companies. This concerns disputes on issues relating to the obligation for electricity utilities to connect a facility to the electricity network, the cost of metering and calculating electricity, remuneration on electricity infeed and network tariffs for smaller production facilities.

According to the provisions of the Electricity Act, the connection charge must be reasonable<sup>105</sup>. If a consumer feels that the cost is too high, they can consult Ei, who will then examine the case. If Ei concludes that the connection charge is too high, the electricity utility must pay the difference back to the consumer. It is possible to appeal against Ei's decision on a reasonable connection charge, and the courts have the final say. Requesting Ei examination and appealing against Ei's decision are free of charge.

### **Dispute resolution support at the National Board for Consumer Complaints**

Consumers on the electricity and natural gas market can report disputes with companies to the National Board for Consumer Complaints (ARN). Reports of this kind are quick and easy, but they are nevertheless a legally certain alternative to going to court. ARN is a state authority that examines disputes between customers and companies on the electricity and natural gas market and other markets free of charge. ARN does not perform its own investigation of what has happened; it is up to the parties to submit and present the information on which the board is being asked to make a decision. The board works on the basis of applicable legislation and legal practice when assessing disputes. In its decision, the board provides a proposal on how the dispute should be resolved. For consumers to be able to report a dispute to the National Board for Consumer Complaints (ARN), the company has to have rejected the consumer's claim or not responded at all to the consumer, the report must have been received no later than 6 months from the date on which the company refused the consumer's claim, and the claim must be of a value above the limits of SEK 500, SEK 1,000 or SEK 2,000, depending on what the report relates to.

ARN lowered the limit for reviews regarding electricity and gas contracts during 2018 from SEK 2,000 to SEK 500. This change strengthens consumer rights for reviews since the majority of disputes between customers and companies concern amounts below SEK 2,000.

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<sup>105</sup> 1997:857 Chap. 4 section 9

Consumers usually have to wait for about 6 months for ARN decisions on cases. Consumers can also consult a general court of law in order to resolve a dispute with an electricity or natural gas company.

