

# National Report 2016 to the Agency for the Cooperation of Energy Regulators and to the European Commission

Finland

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## 1 Foreword

This national report is prepared by the Energy Authority to the Agency for the Cooperation of Energy Regulators and to the European Commission on the state of the Finnish electricity and natural gas markets in 2014 as required by Article 37(1)(e) of the Directive for the Internal Market in Electricity (2009/72/EC) and Article 41(1)(e) of the Directive for the Internal Market in Natural Gas (2009/73/EC). Although this is the fifth national report after the entry into force of the above-mentioned directives, the report continues the series of annual national reports published since 2004. The document covers the main steps the Energy Authority has taken and the results obtained as regards each of the tasks listed in Article 37 of the Electricity Market Directive and Article 41 of Natural Gas Market Directive. It contains a description of the powers and tasks of the regulatory authority, an overview of the regulation and performance of electricity and natural gas sectors and an update of security of supply with regard to both gas and electricity.

In 2015, there were no changes in duties and authority of the Energy Authority. Instead of being just a supervisor of the electricity and gas markets as well as the national emissions trading authority, the Energy Authority also promotes renewable energy and energy-efficiency.

In electricity markets, the improved hydro situation and increased amount of other RES generation in the other Nordic countries enabled the wholesale electricity prices to fall down in 2015, but because of bottlenecks in the interconnectors between Finland and Sweden there was no significant change in imports. In fact, the net import slightly decreased because of increased export to Estonia. The share of electricity produced in Finland slightly increased.

Total installed generation capacity in Finland was about 16,100 MW in the end of 2015. However, all installed capacity is not available during the peak load situation. The total available generation capacity in the peak load situation has been decreased and during the winter 2015 - 2016 it was estimated to be about 11,600 MW. In 2015, wind generation capacity increased by 400 MW. At the same time, due to low electricity prices some coal fired condensed power plant units with capacity of 500 MW were mothballed out of the market.

The interconnector capacity between Finland and neighbouring countries was at the end of the year 2015 about 5,100 MW, which was enough to cover the deficit in own generation capacity during the peak load situations. Kraftnät Åland (TSO operating in Åland) built an interconnection between Åland and continental Finland in 2015 with capacity of 100 MW. The new interconnection has increased the transmission capacity between Finland and Sweden at the maximum by 80 MW.

The Capacity Reserve Act has assigned the Energy Authority with the obligation to take care of the procurement of the capacity reserves needed to ensure the balance between supply and demand (strategic reserve). In 2015, the Energy Authority made a procurement of capacity reserves for the period of July 2015 to June 2017. The total purchased capacity is 299 MW of which 10 MW consists of demand response.

The electricity wholesale prices in the Nordic market decreased, due to the good hydro situation in Sweden and Norway and increased amount of RES generation. The limited transfer capacity restricted the transmission of electricity from Sweden to Finland, which is why the wholesale electricity prices in Finland were different from the prices in Northern and Central Sweden 47 per cent of hours last year. Due to the new interconnector between Finland and Estonia commissioned in late 2013 prices in these countries has been converged. In 2015, Finland and Estonia had same price 88 per cent of hours.

Finland has been active in roll-out out of smart meters and in using hourly data in balance settlement. By the end of 2013 at least 80 per cent of electricity customers per each DSO network area should have had a remotely readable smart meter. However, most of Finnish DSOs have been trying to install smart meters to all their customers. Therefore, the balance settlement is based on metered hourly consumption data in over 90 per cent of consumption places.

The rate of supplier switching among electricity consumers increased in 2015. More than 11 per cent of the electricity consumers switched the supplier last year.

Unlike the electricity market, the Finnish natural gas market is not opened for competition. All the natural gas is imported from Russia and there are no transmission connections to other EU countries. However, a working group set by the Ministry of Employment and the Economy published in January 2016 proposals for the reformation of the Natural Gas Market Act and for opening Finnish natural gas markets in a situation when Finland decides to give up derogations in accordance with the article 49 of the Natural Gas Market Directive.

Finnish gas TSO and the only wholesale company, Gasum announced in autumn 2015 to discontinue with the projects to build up a large-scale regional LNG terminal on the coast of the Gulf of Finland and a pipeline connection, Balticconnector between Finland and Estonia. However, the State of Finland established in October 2015 a new company, Baltic Connector Oy to continue the Balticconnector pipeline project with the Estonian gas TSO Elering As. The Balticconnector pipeline project has been included in the PCI list decided by the European Commission. There are still four projects to build up small-scale LNG terminals, of which three will be off-grid terminals.

In 2015, the consumption of natural gas in Finland continued to decrease. The consumption of natural gas has decreased because of the low price levels in emissions trading and the electricity market. The low prices for emission allowances has made natural gas less competitive when compared to coal in particular.

The Energy Authority carried out the regulatory and supervisory tasks of electricity and gas market, renewable energy operating subsidies, emissions trading and energy efficiency - the specificity of the Finnish energy regulatory authority - with a staff of 72 employees at the end of 2015.

Simo Nurmi

Director General  
Energy Authority

## **2 Main developments in the gas and electricity markets**

### **2.1 Legal framework**

The necessary changes due to the Energy Efficiency Directive in the Finnish legislation were implemented on January 1, 2015. A new Energy Efficiency Act was introduced and, in addition to this, some amendments to the electricity and natural gas market legislation were made.

The Ministry of Employment and the Economy set up in June 2014 a working group to prepare proposals for the reformation of the Natural Gas Market Act and for opening Finnish natural gas markets in a situation when Finland decides to give up derogations in accordance with the article 49 of the natural gas market Directive. The working group published its proposals in January 2016.

### **2.2 Electricity market**

#### **2.2.1 Unbundling**

##### **Development in TSO unbundling and certification of TSO**

The 3rd internal energy market directive package requires that electricity transmission system operators shall be unbundled from production and supply activities. Finland has chosen to apply ownership unbundling model. Therefore, two generating companies, Fortum Power and Heat Oy and Pohjolan Voima Oy sold their Fingrid shares to the State of Finland and Ilmarinen Mutual Pension Insurance Company in April 2011.

In July 2016, 70.87 per cent of Fingrid was owned by the State of Finland and the National Emergency Supply Agency, 17.15 per cent by Ilmarinen Mutual Pension Insurance Company and 11.98 per cent by other shareholders, which are mainly Finnish insurance companies.

The Energy Authority made the decision on the certification of Fingrid on March 14, 2014.

##### **Development in DSO unbundling**

According to the Electricity Market Act, electricity network operations must be legally unbundled from electricity trade operations and electricity generation if the annual quantity of electricity transmitted to the customers through the network operator's 0.4 kV distribution network has been 200 GWh or more during three consecutive calendar years.

Totally, 35 distribution system operators were at the end of 2015 over the threshold value. Also some distribution system operators under this threshold value have legally unbundled network activities. At the end of 2015 a total of 46 distribution system operators of 80 operators were legally unbundled in Finland.

The requirement for separate management for the electricity network company is limited to legally unbundled system operators with 50,000 customers or more and at the end of 2015 it covered 20 distribution system operators in Finland.

The requirements for professional interests and compliance programmes are limited to legally unbundled electricity system operators with 50,000 customers or more and at the end of 2015 it covered 20 distribution system operators in Finland. The threshold of 100,000 customers was set into 50,000 customers by the Electricity Market Act updated in September 2013.

## **2.2.2 Wholesale market**

### **Development in market integration**

The Finnish electricity wholesale market is part of the North European power market. Finland forms an integrated wholesale electricity market with Denmark, Norway, Sweden, Estonia, Lithuania and Latvia. The Nordic market has been price coupled with the North Western European electricity market since February 4, 2014.

At the end of 2015, the electricity transmission capacity from the other Nordic countries, Russia and Estonia to Finland amounted to around 5,250 MW.

Changes in the Russian market model introduced in autumn 2011 has caused a collapse in the import of electricity from Russia. Since 2011 imports from Russia has decreased by almost 60 per cent. Changes in the Russian market model in combination with the simultaneous fairly good water situation in Norway and Sweden has led to Sweden becoming the most important importer of electricity into Finland. Finland was a net exporter of electricity to Estonia last year.

The export of electricity from Finland to Russia was enabled in December 2014. In export trade, 350 MW capacity can be used for the transmission of electricity to Russia from Finland. Of this capacity 320 MW is given for commercial use and the rest is used for reserve trade. For the first time commercial export of electricity from Finland to Russia was made in June 2015.

### **Development in market concentration**

In 2015, the most significant change in the structure of the Finnish electricity wholesale market and in the development of market concentration has been the closure of many condensing power plants of big producers. At the same quite many wind power plants has been built. Some new companies have come into the market while the share of the biggest companies has decreased a bit. The new companies and power plants are mainly related to wind power.

The Finnish electricity generation sector is characterized by a large number of actors. The total number of companies producing electricity has raised a bit to some 150 and the number of production plants was circa 400. The share of the three biggest generating companies of the total installed capacity is about 50 per cent.

### **Development in electricity generation and consumption**

The improved water situation and increased amount of RES generation in the other Nordic countries enabled the price to fall down, but due to congestions in interconnectors between Finland and Sweden, there was no significant difference in imports. In fact, the net import slightly decreased because of increased export to Estonia. The share of electricity produced in Finland slightly increased. Net imports of electricity accounted for 19.8 per cent of the total electricity consumption in 2015.

Finnish electricity production amounted to a total of 66.2 TWh in 2015, up 1.1 per cent year-on-year. In 2015, Finnish hydropower production accounted for 20.1 per cent of the total electricity consumption, while the rate for nuclear power production was 27.1 per cent. CHP accounted for 25.0 per cent of Finland's total electricity consumption. The share of wind power increased to 2.8 per cent.

Electricity consumption in Finland decreased slightly in 2015 due to the mild weather and general economic situation. The total electricity consumption was 82.5 TWh. The combined share of housing, agriculture, services and construction from the total electricity consumption was 50 per cent last year, while industry accounted 47 per cent of the total Finnish consumption.

## **Capacity allocation**

In 2015, there were no changes in the capacity allocation model. Congestions across the borders are managed by implicit auctions in the day-ahead market. Remaining transmission capacity after day-ahead allocation is provided for intraday market and balancing.

Finland is considered as a single bidding zone and congestions within Finland and after the day-ahead market closure are managed by countertrade.

## **Development of trading in power exchanges**

In December 2015, the Energy Authority designated pursuant to Article 4 of the CACM regulation (2015/1222) Nord Pool AS to act as a nominated electricity market operator in Finland. In January 2016, also EPEX SPOT SE announced to the Energy Authority its interest to start offering day-ahead and intraday trading services in Finland.

In 2015, the volume of electricity traded in Nordic and Baltic day ahead markets was 374 TWh, and in the intraday market 5 TWh (includes also Nord Pool intraday trading in Germany). The spot volumes in Nordic area in 2014 amounted to 361 TWh. The increase in physical volume is mainly a result increase of the trading in Baltic market.

The market share of Nord Pool AS from the consumption in Nordic and Baltic countries reached 87 per cent in 2014.

The share of power bought through Nord Pool AS was 67 per cent of the Finnish electricity consumption in 2015 showing a slight increase.

## **Development of wholesale prices**

The electricity wholesale prices in the Nordic wholesale electricity market remained low, due to the fairly good water situation in Sweden and Norway and increased amount of RES generation in Nordic area. The fact that the price of emission allowances remained low and the price of coal remained stable also assisted in keeping the wholesale price of electricity reasonable.

The daily system market price was 29 per cent lower than in 2014. The average system price in 2015 was 20.98 EUR/MWh. In 2015, the average price in the bidding zone Finland was 29.66 EUR/MWh, showing a decrease of 18 per cent year-on-year.

### **2.2.3 Retail market**

#### **Development in market concentration**

In 2015, there were no major changes in the number of retail suppliers. To serve Finland's circa 3.3 million electricity customers, there are 72 retail suppliers of which 51 offered in 2015 their products nation-wide.

The Energy Authority has estimated that four electricity retailers have larger than five per cent share of retail market. However, the exact market shares of individual retailers are not available. The market share of the three largest companies in the retail market for small and medium-sized customers has been estimated to be 35-40 per cent.

During 2015, there were 8 electricity retailers in the Finnish electricity retail market without obligation to supply. These retailers are also fully independent from the Finnish network companies. Rest of electricity retailers, 64 have the obligation to supply within at least one distribution network area of responsibility. Only a few electricity retailers are ownership unbundled from electricity network activities. Most of the legally unbundled electricity retailers still belong to same group of companies as a distribution system operator.



### **Development in supplier switching**

The rate of supplier switching among electricity users slightly increased in 2015. A total of 11.4 per cent of electricity users switched suppliers during the year (in 2014 the rate was 9.8 per cent).

### **Development of retail electricity prices**

In January 2016, household consumers paid on average 3.0 percent less for their electricity than in January 2015, whereas for electrically heated households the decrease was 3.1 percent. There was a slight increase in the distribution costs but the prices of energy kept falling for the fourth year in a row.

Low wholesale electricity prices in 2015 were also reflected in the retail prices of electrical energy. The obligation to supply price of electrical energy decreased by 7.1 per cent on average over the course of the year 2015. The prices of new fixed term contracts decreased by 15.0–16.0 per cent over the course of the year.

The electricity distribution price including taxes was 0.5 per cent more expensive for household consumers and 1.2 per cent more expensive for electrically heated households at the beginning of 2016 than at the beginning of 2015.

### **Promotion of retail competition**

To promote competition in the electricity retail market the Energy Authority has maintained since 2006 a web-based system designated to facilitate price comparisons and supplier switching. The system is also developed to inform private consumers better about the origin of the electricity. All retail suppliers are obligated to maintain up-to-date information on their public electricity price offers on this website. On average about 150.000-200.000 price comparisons with this tool has been made per month.

Since January 1, 2014 electricity suppliers that sells or uses renewable energy in its marketing must have certified the origin of the electricity. The guarantee of origin of electricity is the only way to certify that the electricity has been produced using renewable energy sources. Fingrid is responsible for the electronic GO register service in Finland.

According to the Electricity Market Act, electricity transmission system operator Fingrid has a task to develop the exchange of information required for electricity trade and imbalance settlement. In 2014 Fingrid carried out an investigative project to broadly assess the exchange of information and related needs for development on the electricity retail markets. As a result of its investigative work, Fingrid proposed in December 2014 a centralised information exchange system for the electricity retail market, a datahub as the electricity market information exchange solution for the future. The Ministry of Employment and the Economy assigned in April 2015 Fingrid to develop and implement a datahub to Finland. The datahub has been planned to be in operation in 2019.

### **Retail market integration**

Since 2005, Nordic energy regulators have been working to promote and facilitate a common end-user market for electricity in Finland, Denmark, Sweden and Norway. In October 2009, Nordic ministers for energy expressed their political support to the initiative to establish a common Nordic end user market. The Energy Authority has actively continued working towards that target during 2014.

NordREG, the cooperative organisation for Nordic regulatory authorities, has prepared several recommendations for the Nordic ministries to facilitate the establishment of a single Nordic electricity retail market. However, implementation of the recommendations in the various Nordic countries and the establishment of a common Nordic retail market are ultimately dependent on national political decision-making.

## **2.2.4 Infrastructure**

### **Development in transmission network investments**

Kraftnät Åland (TSO operating in Åland) built an interconnection between Åland and continental Finland in 2015 with capacity of 100 MW. Previously, the grid of Åland was only connected to Sweden. Thus, the new interconnection has increased the transmission capacity between Finland and Sweden at the maximum by 80 MW. The capacity was built to ensure security of supply in Åland.

Finland has a DC link for import from Russia to Finland. Its capacity is 1,400 MW. Technical modifications to enable also export of electricity from Finland to Russia with capacity of 350 MW were carried out in 2014 and the first commercial export of power from Finland to Russia took place in summer 2015.

Finnish TSO Fingrid has developed transmission system in Finland to improve security of supply in Finland. The investments were 147.5 MEUR in 2015.

### **Roll-out of smart meters**

In March 2009 came into force a Degree of the Council of State, which requires that by the end of 2013 at least 80 per cent of the consumption places per each DSO should have been equipped with a smart meter capable for registering hourly metering and remote reading. However, most of Finnish DSOs have been trying to install smart meters to all their customers. Metered hourly consumption data is used for the balance settlement in over 90 per cent of consumption places, including also households, in Finland.

## **2.2.5 Security of Supply**

### **Development in competences of NRA for security of supply**

In 2015, there were no changes in competences of the Energy Authority for security of supply.

The Capacity Reserve Act (strategic reserve) came into effect in March 2011. According to the Capacity Reserve Act the peak load reserve capacity will be used as a strategic reserve to ensure that the balance between supply and demand is achieved only if the balance will not be achieved in commercial market. According to Capacity Reserve Act the Energy Authority evaluates and decides the required size of peak load reserve capacity and arranges the tendering process in order to choose which power plants and consumption units capable for demand response would be accepted to the capacity reserve arrangement.

The Energy Authority organised in spring 2015 tendering processes to purchase power plant and demand response capacity for the peak load reserves. Based on a competitive bidding arranged in the spring of 2015, the Energy Authority decided to include the two power plants and one consumption unit (DSF capable) with total capacity of 299 MW in the capacity reserves until the end in June 2015.

In 2016, the Energy Authority has started preparations to purchase peak load reserve capacity for the period starting in July 2017.

### **Development in generation investments**

The most significant generation investment project in Finland is the construction of nuclear power plant unit Olkiluoto 3. The completion of the building of this 1,600 MW unit has been delayed for several years. Originally, the new unit should have been commissioned by the end of 2009. According to the latest estimates, it will be in operation in 2018.

Fennovoima Oy's applications for constructing a new nuclear power plant unit was approved by the Government and also by the Parliament. The project promoter of this project submitted their

application for the construction licence to the Ministry of Employment and the economy in Summer 2015. The application was approved and now the construction work has started. The unit will be 1,200 MW and it is planned to be in operation in 2024.

In 2017 Metsä Group's new pulp mill will start its operation. The power production capacity will be 260 MW and the total net capacity will be around 160 MW.

In 2015 a total of 400 MW capacity of wind power was commissioned. At the same time, due to low electricity prices some coal fired condensed power plant units with capacity of 500 MW were mothballed out of the market. At the moment, there are 1,200 MW of mothballed coal fired condensing power plants in Finland.

### **Development in supply/demand balance**

According to the Energy Market Authority's estimates, Finnish electricity production capacity will not be able to cover the need for demand during peak load situations. The resulting capacity deficit must be covered by importing electricity from other countries.

The Energy Authority has estimated that the capacity requirement covered by electricity imports was around 3,400 MW at its highest peaks during the winter of 2015–2016.

In order to secure sufficient security of supply, it is important to ensure that access to domestic electricity and electricity transmission connections from neighbouring countries are as reliable as possible and available in full during the winter months.

Based on reports submitted by power plant operators to the Energy Authority, the Finnish electricity production capacity (excluding system reserves and the wind power capacity) has decreased and was around 12,900 MW at the end of 2015. The entire capacity is not available during the peak load periods, however. According to an estimate made by the Energy Authority in autumn 2015, a total of 11,600 MW of Finnish electricity production capacity was available for the consumption peaks in winter 2015–2016. Peak load was 13,494 MWh/h in 2015.

## **2.2.6 Regulation**

### **Network regulation**

In the field of electricity, the Energy Authority is responsible for regulating 80 distribution network operators, 12 regional high-voltage distribution network operators and one transmission system operator.

Since the end of 2004, Finland has applied the ex-ante regulation of network pricing as required by the current Electricity Directive. In November 2011, the Energy Market Authority confirmed with its decisions the methods concerning the rate of return in electricity network operation to be followed during the third regulatory period in 2012 – 2015. In November 2015, the Energy Authority confirmed with its decisions the methods concerning the rate of return in electricity network operation to be followed during the fourth and fifth regulatory periods in 2016 – 2019 and 2020 - 2023.

Due to heavy storms and long interruptions in Finland in December 2011 the Ministry of Employment and the Economy prepared new regulation which includes more stringent rules related to network development and compensations for customers in case of long interruptions. The new legislation came into force in September 2013 and it includes obligations for DSOs to plan and develop their network in order to avoid interruptions more than 36 hours in rural areas and 6 hours in urban areas by 2032. The new legislation also increases standard compensations paid by DSOs to customers if they have faced long interruptions. The maximum compensation for the customer is now 200 per cent of annual network charges or 1,000 EUR.

## **2.3 Gas market**

### **2.3.1 Unbundling**

In 2015, there were no changes in the unbundling regime of natural gas operations. Finland has availed itself of the possibility of an exemption allowed by the Natural Gas Market Directives and thus there is neither legal nor operational unbundling of natural gas transmission network operation. Furthermore, Finland has not applied legal and functional unbundling in distribution network operations because Member States are free to decide that the unbundling provisions are not applied to network operators with fewer than 100,000 customers. All Finnish gas distribution system operators fall below the limit set by the Directive. Thus, there are no requirements for legal or ownership unbundling of natural gas transmission and distribution system operators.

However, the accounting unbundling applies to all natural gas system operators. Fortum Heat and Gas Oy and E.ON Ruhrgas sold their shares in the transmission system operator, Gasum Oy to the State of Finland in November 2014. Furthermore, OAO Gazprom sold its shares (25%) to the State of Finland in December 2015 and thus Gasum is now a fully state-owned company.

Gasum Oy is vertically integrated and is also the only importer and wholesale supplier of gas in Finland. Furthermore, it is downward vertically integrated into retail supply.

Approximately 80 per cent of the Finnish DSOs are wholly or mainly owned by municipalities. The rest 20 per cent of the DSOs are owned by industrial users of natural gas.

### **2.3.2 Wholesale market**

#### **Development in market integration**

The natural gas market in Finland is relatively isolated and small. Finland has natural gas pipeline connection only to the Russian Federation. There is only one importer and wholesale supplier – Gasum Oy – which also owns and operates the natural gas transmission network.

Balticconnector gas pipeline between Finland and Estonia is included in the list of Projects of common interest (PCI). The pipeline would allow development of a regional gas market in Finland and Baltic states and further market integration towards Europe.

#### **Development in gas markets**

In 2015, the consumption of natural gas in Finland continued to decrease. The reduction in demand was about 12 per cent year-on-year. A total of 26.1 TWh of natural gas was consumed in 2015. The consumption of natural gas decreased because of the mild weather, low price levels in the electricity market and low coal prices. The low prices for emission allowances has made natural gas less competitive when compared to coal in particular.

At present, natural gas is imported into Finland only from Russia. In addition to the natural gas imported from Russia, biogas produced in Finland is supplied to the natural gas transmission network. Large users account for the bulk of natural gas consumption in Finland. Energy and power companies, which use the bulk of natural gas to co-generate heat and power, used ca. 55 per cent with industry consuming 45 per cent. The key industrial sectors were pulp and paper and chemical industries whose consumption corresponded to 40 per cent of Finland's total gas consumption. Natural gas accounts for less than 10 per cent of Finland's total energy consumption.

In 2015, there were no significant changes in the number of market actors.

#### **Development in natural gas prices**

The wholesale supply of natural gas to the large Finnish end-users and retailers is based on cost based contracts between Gasum Oy and the customers. A majority of the customers buy natural gas from Gasum Oy based on a public tariff, which Gasum Oy renews at the intervals of 4 years.

The total wholesale price of natural gas, including transmission and natural gas energy, decreased by an average of 25 per cent during the course of 2015. The price of natural gas decreased because of the decreased prices in coal and heavy fuel oil. The price for natural gas energy excluding taxes decreased by 33 per cent between December 2014 and December 2015. The price of natural gas energy is index-linked to the price of heavy fuel oil and the price of imported coal, as well as to the domestic energy index. Of these price factors, the price of heavy fuel oil fell by 47 per cent and the price of coal decreased by 6.3 per cent and the energy price index decreased by 2.1 per cent on average in 2015.

The natural gas transmission price did not change in 2015. Gasum Oy has not increased the natural gas transmission prices without taxes since the beginning of 2012.

On the Finnish natural gas market, only natural gas users with a consumption of more than 5 million cubic meters and with remote metering can trade in the secondary market with the gas that they have acquired for their own use or retail. Additionally, Gasum Oy offers short term products that are sold on the secondary market operated by Kaasupörssi Oy, which is a subsidiary of Gasum Oy. Total trading amounted to 992 GWh or 48 per cent less than during the previous year. Secondary market trading of these were 598 GWh or 15 per cent of the total Finnish consumption of natural gas in 2015.

### **2.3.3 Retail market**

#### **Development in market concentration**

In 2015, there were no major changes in the retail market structure.

The retail supply of natural gas covers only about 5 per cent of the total consumption. In Finland, there are only about 29,300 customers in the natural gas market. The largest customer segment, (21,200 customers) consists of households who buy natural gas for cooking. However, the total natural gas consumption of this segment amounts to only 1 mcm (0.02 per cent of total consumption).

At the end of 2015 there were 22 natural gas DSOs. All of them are active also in retail supply. Many of the natural gas retailers in Finland are relatively small having only dozens of customers. The share of the top three retail suppliers is about 50 per cent of the total natural gas consumption in the retail level.

#### **Development in supplier switching**

As supplier switching in the Finnish natural gas retail market is not possible, all suppliers are in a monopoly situation within their network area.

### **2.3.4 Infrastructure**

Balticconnector pipeline between Finland and Estonia is included in the PCI list. The project is planned to be commissioned in 2019.

There are plans to construct small-scale off-grid LNG terminals on the coast of Finland. These terminals would serve industrial users, maritime of use LNG and LNG trucks. In 2014 State of Finland granted investment support for four small-scale LNG terminals.

### **2.3.5 Security of Supply**

All natural gas used in Finland is imported from Russia. There is no natural gas production in Finland.

Small-scale biogas is produced and pumped to the gas transportation network in two different locations. Production capacity of biogas was approximately 80 GWh/a in the end of 2015.

In addition propane can be produced indigenously as it is the only gas to be stocked in small amounts by Gasum Oy for immediate substitute for the possible lack of natural gas.

The importing capacity of Gasum Oy is estimated to be about 9,500 MW. Peak load was 6,126 MWh/h in 2015.

In natural gas shortage situation market based mechanisms are used to reduce gas consumption at the first stage. The price of gas that exceeds gas users intended capacity is increased to reduce consumption. During winter 2014-2015 there was no need to increase the price of natural gas to reduce consumption.

There were no new transmission lines built during the 2015. A state-owned company, Baltic Connector Oy is planning to build Balticconnector together with Estonian TSO Elering Gas between Finland and Estonia. The capacity would be about 3,000 MWh/h.

### **2.3.6 Regulation**

#### **Network regulation**

In the natural gas sector, there are 24 local distribution network operators and one transmission system operator. The transmission system operator is also the sole importer and wholesale supplier of natural gas. The Energy Authority is responsible for regulating natural gas distribution network operators and natural gas transmission network operator. Additionally, the Energy Authority is supervising the wholesale and retail supply activities of the operators as there are gas markets are not opened.

In November 2015, the Energy Authority confirmed with its decisions the methods concerning the rate of return in natural gas network operation to be followed during the third and fourth regulatory periods in 2016 – 2019 and 2020 - 2023.

#### **Supervision of natural gas prices**

As there is no gas-to-gas competition in the Finnish gas markets, all natural gas suppliers have an obligation to supply and according to the legislation their tariffs should be reasonable.

### **2.4 Consumer protection and dispute settlement in electricity and gas**

In 2015, the Energy Authority received 59 new requests for investigation or other inquiries related electricity system operators and retailers and made 50 decisions (some of the requests of investigation were received in previous years). As regards to the natural gas markets the Energy Authority received two requests of investigation and made decisions on both of them during 2015.

The statistics do not include the phone calls or other written inquiries, which were not registered to the Energy Authority's document management.

The requests of investigation and other inquiries submitted fell into the following categories: connection charges, the network access charges, quality of supply, metering, inconsistencies in invoicing and general complaints regarding practices of the supplier.



## 3 The electricity market

### 3.1 Network regulation

#### 3.1.1 Unbundling

##### **TSO unbundling and certification**

Before an undertaking which owns the transmission system is approved and designated as transmission system operator, it shall be certified to have complied with the ownership unbundling requirements set in the Article 9 of the Electricity Directive. The undertaking must ensure that the same persons are not entitled to exercise control or any other rights directly or indirectly over an undertaking performing generation or supply functions and over a transmission system operator. The implementation of the Directive 2009/72/EC into national Finnish legislation was completed in September 2013 and after that the Finnish transmission system operator Fingrid requested certification.

Transmission system operator, Fingrid Oyj was established in November 1996 by joining two previously existing transmission network operators. It started its operations in September 1997. Fingrid owns the Finnish main grid and all significant cross-border connections. At the setup of the company, Fingrid was 12 per cent owned by the State of Finland, 25 per cent by Fortum Power and Heat Oy, 25 per cent by Pohjolan Voima Oy and 38 per cent by insurance companies. Both Fortum Power and Heat Oy and Pohjolan Voima Oy are major Finnish electricity generators.

The holdings of Fortum and Pohjolan Voima in Fingrid required that changes were made in the ownership structure to comply with the ownership unbundling requirements. Fortum and Pohjolan Voima sold on voluntary bases their Fingrid shares to the State of Finland and Ilmarinen Mutual Pension Insurance Company in April 2011 to comply with the requirements of the Electricity Directive.

In July of 2016, 70.87 per cent of Fingrid was owned by the State of Finland and the National Emergency Supply Agency, 17.15 per cent by Ilmarinen Mutual Pension Insurance Company and 11.98 per cent by other shareholders, which are mainly Finnish insurance companies.

The Energy Authority gave the final decision on the certification of Fingrid in March 2014 after receiving the opinion on the preliminary decision from the European Commission in January 2014. The certification is conditional as the Energy Authority requires that by the end of 2016 one minor owner of Fingrid has to give up his rights in Fingrid's decision making.

In January 2015, the Energy Authority granted a new network license to Fingrid and nominated it as a system responsible transmission network operator in Finland in line with the Electricity Market Act.

##### **Development in DSO unbundling**

According to the Electricity Market Act, electricity network operations must be legally unbundled from electricity trade operations and electricity generation if the annual quantity of electricity transmitted to the customers through the network operator's 0.4 kV distribution network has been 200 GWh or more during three consecutive calendar years.

Totally, 35 distribution system operators of 80 were at the end of 2015 over the threshold value. There were no changes in the amount of distribution system operators over the threshold value during 2015. Some distribution system operators under this threshold value have voluntarily legally unbundled network activities from electricity supply and generation activities. At the end of December 2015, 46 distribution system operators were legally unbundled.

The legally unbundled distribution system operators are not required to be structured in any special legal form. The only limitation is that the separated companies cannot both be public utilities because then these companies would be part of the same legal entity.

Many of the distribution system operators have been either municipal utilities or companies in which the majority of the shares are owned by municipalities. Nowadays there are about 15-20 DSOs who are private owned. In Finland there are no requirements for ownership unbundling of the DSOs. Most of the legally unbundled distribution system operators still belong to same group of companies as electricity retailers and/or generators. In many cases the parent company of a legally unbundled distribution system operator is a generating or retailing company. On the other hand, some electricity retailers are owned by a group of distribution system operators. In most cases the legally unbundled distribution system operators belonging to a group of companies have shared services with the company group. These most often include brick and mortar offices, managerial, and financial responsibilities. There are also available independent service providers for the construction and maintenance of the network. Some electricity system operators have outsourced part of their operational tasks to these service providers.

The majority of the electricity system operators have the economic ownership of the assets. However, there are some electricity system operators who are operating with leased out network assets and thus they don't have the economic ownership of their network assets. At the end of 2014 there were 8 distribution system operators who were operating with a distribution network leased out from their parent company. In addition to these there are some other DSOs whose network assets are partially leased, like some substations. Regardless of whether the electricity system operator has or doesn't have the economic ownership of the assets, it needs to fulfil the technical, economic and organisational preconditions for the electricity system license:

- The organisation of the applicant corresponds to the scope and nature of its system operations;
- The applicant has a sufficient staff in its service;
- The applicant has in its service an operating manager and, if the applicant carries out electrical works, a manager of electrical works, that meets the eligibility requirements laid down in or by virtue of the Electrical Safety Act (410/1996);
- The applicant has the economic conditions for profitable electricity system operations;
- The applicant has the right to decide on the resources needed for the operation, up-keep and development of an electricity system; and
- The grid operator to be placed under the systems responsibility has delegated the functions related to the national balance responsibility to its separate operational entity or a subsidiary wholly owned by it.
- The applicant has unbundled electricity distribution network operations from other operations or electricity transmission operations.

The fifth point is comparable to the Article 26(2)(c) in the Directive 2009/72/EC. The corresponding principle has been de facto applied in Finland established practise of granting an electricity system license since year 1995. Besides these requirements, any additional rules that would provide the electricity system operators with more financial independence are not required. There isn't for example any formal restriction preventing that cash flow (e.g. in the form of dividends or transactions) of electricity distribution system operator can be used by the holdings. The functional unbundling requirements are applied to legally unbundled distribution system operators with some limitations, with the exception of the requirement in the article 26(2)(c), which is applied to all distribution system operators (see above).

The functional unbundling requirements are restricted only to legally unbundled distribution system operators because the requirements are related to the legal organs of the company (the board of directors and the managing director) and are not therefore applicable to vertically integrated company. In practice the distribution system operators need to be first legally unbundled before the functional unbundling requirements are applicable.



The requirement for separate management for the electricity network company is limited to legally unbundled system operators with 50,000 customers or more and at the end of 2015 it covered 20 distribution system operators in Finland. According to Electricity Market Act, a person managing a network operator engaged in a legally unbundled electricity network operation with 50,000 customers or more may not act as the managing director of a utility in charge of electricity generation or electricity supply or as a member of its board of directors or a corresponding organ, if the network operator and the utility are under the control of the same party. The threshold of 50,000 customers is lower than the directive requires.

The requirements for professional interests and compliance programs are limited to legally unbundled electricity system operators with 50,000 customers or more and it covers 20 distribution system operators in Finland. The ministerial degree, which sets the detailed content of the requirements, was updated in fall 2013. The updated ministerial degree entered into force at the September 1<sup>st</sup>, 2013. The threshold of 100,000 customers was set into 50,000 customers by the Electricity Market Act updated in September 2013. The Energy Authority has prepared and published a recommendation for compliance program. The electricity system operators with 50,000 customers, but under 100,000 customers, had to prepare their first compliance programs and send it to the Energy Authority in 2013.

The accounting unbundling applies to the rest of electricity system operators, which are not required to be legally unbundled. The accounting unbundling is also required in the legally unbundled companies, which have other activities besides network business if these activities are not relatively small. As a relatively small activity has been considered such business activities, whose annual revenue is less than EUR 500,000 and the share is less than 10 per cent of the company's total revenue. Accounting unbundling requirements are specified with the ministerial degree and the Energy Authority has issued updated version of the guidelines on the compilation of unbundled financial statements in June 2011. These guidelines are not legally binding but they show the procedure the Energy Authority considers fulfilling the requirements of the legislation. Both the distribution system operators and the transmission system operator are under the obligation to publish unbundled accounts with certain formula. They shall publish the unbundled financial statements as a part of the statutory financial statement, annual report or corresponding other public document available to the stakeholders.

The unbundled income statements, balance sheets and any supplementary information of unbundled operations are audited as part of the statutory auditing. The Energy Authority has issued the guidelines in co-operation with chartered accountant on the auditing of unbundled financial statements. These non-binding guidelines aim to help the audit of unbundled financial statements in different electricity system operators and inform the auditors about the unbundling requirements. The Energy Authority supervises that the network companies are fulfilling the unbundling requirements.

Even if there are legally unbundled distribution system operators, many of them still have the same corporate presentation with the electricity supply and generation activities. The 3<sup>rd</sup> Internal energy market directive package sets obligations regarding communication and branding of the DSOs. These requirements were implemented in the Finnish regulation in fall 2013. The Electricity Market Act sets obligations to legally unbundled electricity system operators to ensure that its brand separates from those in the same group of companies as electricity retailers and/or generators and that it appears in communication with its own identity.

### **3.1.2 Technical functioning**

#### **Balancing services**

According to Article 37(6)(b), the provision of balancing services which shall be performed in the most economic manner possible and according to the Article 37(8), the regulatory authorities shall ensure that transmission and distribution system operators are granted appropriate incentive, over both the short and long term, to increase efficiencies, foster market integration and security of supply and support the related research activities. When monitoring compliance with

and reviewing the past performance of network security and reliability rules and setting or approving standards and requirements for quality of service and supply or contributing thereto, Article 37(1)(h).

The balancing services and other services related to the system responsibility are regulated by the Electricity Market Act, which in turn reflects the requirements of the Directive 2009/72/EC. According to the Electricity Market Act, the Energy Authority approves the pricing methodology for balancing services provided by the TSO. Furthermore, the Energy Authority approves terms and conditions of TSO's balancing services (i.e. standard balance agreement) when they are to be renewed. In September 2013 the Energy Authority approved terms and conditions for TSO balancing services from October 1, 2013 and these terms and conditions are valid until further notice.

Balancing is managed by market based methods in the synchronously connected Nordic countries (Finland, Sweden, Norway and Denmark). The Nordic countries have established common regulation power market in the year 2002 to handle balancing. Imbalances are handled and settled according to common rules defined in System Operation Agreement between the Nordic TSOs. Balancing is managed within the Nordic control areas as one system consisting of all four Nordic TSOs. The balance management is based on frequency requirements agreed on the System Operation Agreement. However, imbalances within a country are settled according to principles that vary from one country to another.

Figure 1 presents the balance management in the context of the Nordic electricity market model. Besides the regulation power market for actions during the specific operating hour, Elbas-market can be used for the intra-day trading and revisions of nominations after the day-ahead spot market (Elsport) has closed.

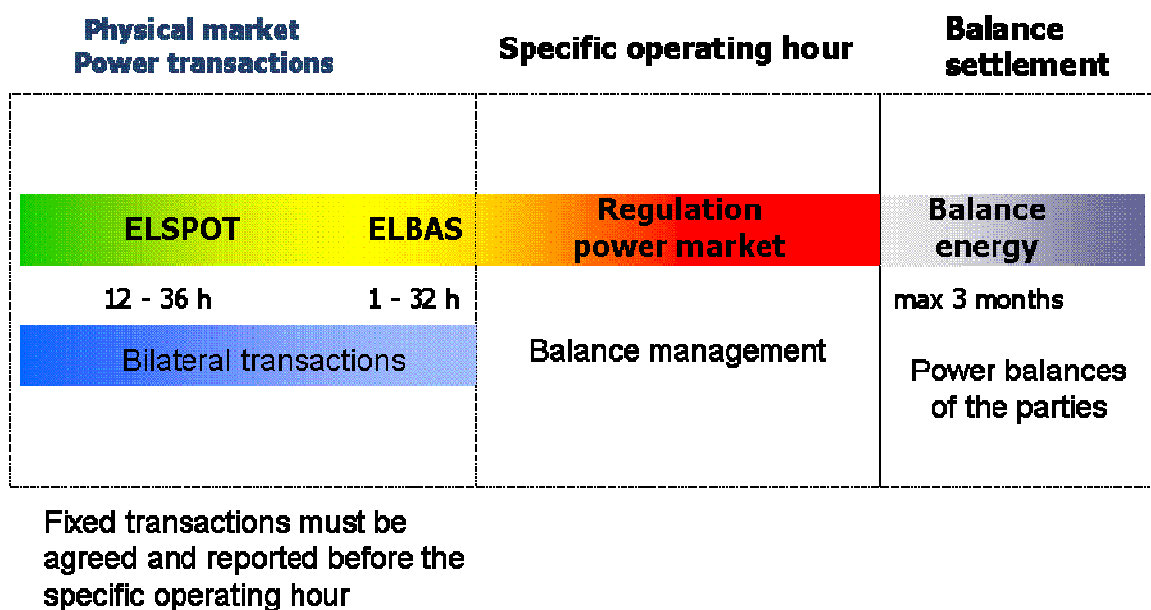


Figure 1. Balance management in the Nordic electricity market model (Source: Fingrid Oyj).

In the Nordic regulation power market all bids are collected in the joint Nordic merit order list and according to this list the production increases and decreases are carried out where they are most advantageous in the price order, however, taking into account congestions between control areas. This leads to the effective utilisation of the Nordic balancing resources.

The balance between production and consumption within a specific operating hour is created through the regulation market by the upward and downward regulation of production and consumption to handle physical imbalances taking into account the effects on congestions.

The price of the regulation power during the specified operating hour (the balance settlement period in Finland is 60 minutes) is determined on the basis of ordered up- or down-regulations. This implies that the price of the regulating power is known only after the end of the specific operating hour. It has been agreed, that the price of up-regulation is the most expensive up-regulation bid ordered by the TSO during the specific operating hour. All those who have participated in the up-regulation during the specific operating hour receive the same compensation per MWh. Respectively the price of down-regulation is the cheapest down-regulation bid ordered by the TSO during the specific operating hour. All those who have participated in the down-regulation during the specific operating hour receive the same compensation per MWh.

The average regulating power price for up-regulation in the year 2015 was 35.6 €/MWh and for down regulation 24.5 €/MWh. In 2014, the corresponding prices were 40 EUR/MWh for up-regulation and down-regulation was 32 EUR/MWh. The volumes traded in regulation market were for up-regulation 125 GWh and for down-regulation 199 GWh in Finland during the year 2015.

Requirements for Finnish bidders to act in the Nordic regulation power market are as follows:

- The minimum capacity of a single bid is 10 MW
- Full power should be delivered by the bidder in 10 minutes after the bid,
- The bid must include power (up/down regulated MW), price (EUR/MWh) and location (north/south of Finland)
- The bids are to be submitted electronically to TSO no later than 30 minutes before the beginning of the operation hour, bids can be given within "rolling window" where gate is closed 30 minutes before the specific operating hour and bids can be given from beginning of operating day until 30 minutes before the specific operating hour
- The bid applies to a whole hour and it can be activated immediately from the beginning of the hour or later during the hour
- There may exist several power plants behind one regulation bid

The balance service costs related to the national energy consumption were in Finland 33.9 EUR/GWh in year 2015 when costs of regulating and balancing power and costs of reserves are excluded. The total annual income for TSO from the balance fees in year 2015 was 38 million Euros. Fees are charged from every balance responsible party. The total number of balance responsible parties in April 2016 was 45.

The TSO provides information on forecasts and values for the reserves before, during and after the operating hour; also regulation prices after operating hour. Most of this information is given only to the market participants and to Nord Pool. Publicly available information can be found on Fingrid's website [www.fingrid.fi](http://www.fingrid.fi) and Nord Pool's website [www.nordpoolspot.com](http://www.nordpoolspot.com).

The new balance agreement was implemented in Finland from the beginning of 2009. The purpose of balance settlement is in all Nordic countries to settle the imbalances that are the result of electricity deliveries between the parties in the electricity market. The system operators perform two types of balance settlement: one for production and one for consumption. In Finland production up to 1 MW is settled as consumption.

Balance power between two countries is priced and settled according to the Nordel System Operation Agreement. Bids from market participants with available regulating capacity are entered into a common price list in the common Nordic Operational Information System (NOIS). There is now a common regulation market and the system operation agreement results in a balance control and balance regulation of the interconnected power system that is much harmonised.

The balance settlement inside the countries is a settlement between the system operators and the balance responsible parties. This settlement is governed by national balance agreements. The balance agreements also describe how the balance responsible parties can participate in the regulation power market.

The Finnish, Norwegian and Swedish TSOs have decided in 2012 to implement a harmonized Nordic balance settlement model at TSO level. The implementation includes harmonizing and

integration of national grid and bidding area level balance settlement. Ultimately, one common operational unit responsible for making the balance settlement has already been established and is owned by the Finnish, Norwegian and Swedish TSOs. The project's goals are firstly to provide similar operating conditions to all balance responsible parties despite the area and country, secondly to offer balance settlement in similar principles to all market participants through one unit and thirdly to create common rules and standards for data exchange in cooperation with other actors in the electricity market. The go-live for a common Nordic balance settlement has been planned to be in Q1/2017.

### **Quality of service and supply**

According to the Finnish legislation, the electricity system operators have various obligations:

- obligation to develop the electricity network;
- obligation to connect; and
- obligation to transmit electricity

Since September 2013, the legislation has also included new obligations for DSOs to plan and develop their network in order to restrict storm related interruptions to 36 hours in rural areas and 6 to hours in urban areas gradually by the end of 2028. According to the Electricity Market Act, each DSO has to prepare a network development plan to meet these requirements and send an updated plan to the Energy Authority for a review bi-annually.

In addition to this, also the regulation model provides incentives system operators to improve the quality of electricity in two ways: by taking into account network investments in the capital base and by treating the losses caused to customers by interruptions as items comparable with costs.

The Energy Authority has not set specific targets for electricity quality improvement. The outturns required from system operators must be equal to the average outturns of previous years. However, the regulation model encourages system operators to improve the quality of electricity supply, because by having fewer and shorter interruptions compared to average level of previous years the system operator is allowed to have higher rate of return. Similarly, electricity quality impairment lowers the permitted rate of return for the system operator.

[Table 1](#) shows interruptions in transmission and distribution networks during the years 2004-2014. The numbers include both planned and unplanned interruptions. In Finland, storms and other circumstances caused by weather or animals have a remarkable influence on interruptions because about 85 per cent of MV distribution network are overhead lines. Thus, annual variations in interruption times may be significant.

**Table 1. Interruptions in transmission and distribution networks in 2003-2014.**

	Interruptions minutes lost per customer per year										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Transmission	2.10	2.02	2.10	1.50	1.55	2.7	5.0	6.9	1.3	2.3	8.3
Distribution	103	180	145	103	129	96	279	366	175	343	130

According to the Electricity Market Act the electricity network operators have to pay standard compensations to the customers if the interruption time is 12 hours or more. If the interruption time is at least 12 hours the standard compensation is 10 per cent of the customer's annual network access charges. The compensation increases stepwise with the interruption time. The maximum compensation is 200 per cent of the annual network charges when the interruption time has exceeded 12 days. However, the maximum compensation is limited to 1,000 euros per

customer per year. Maximum compensation limit will rise to 1,500 euros on January 1, 2016 and finally to 2,000 euros on January 1, 2018.

### **Monitoring time to connect**

The Energy Authority has not collected statistics on actual time to connect consumers and producers. Actual connection date and time is agreed between network system operator and customer when they are making the connection agreement.

According to the Electricity Market Act, if the connection of consumer to the network is delayed from the agreed connection date and time, customer has right abstain from paying connection charge until the connection has been done. Furthermore, if the connection has been delayed from the agreed the customer his right to receive a standard compensation which is 5 per cent of the connection charge during the first two weeks and after that 10 per cent per week. Maximum amount of standard compensation is 30 per cent of the connection charge and 3,000 EUR. The Energy Authority has not collected information in how many cases and how much network system operators have paid standard compensation due to delays in connecting customers in 2015.

### **Monitoring safeguard measures**

In 2015 there has not been any incidents in Finland, which would have required to implement safeguard measures as defined in Article 42.

### **RES regulatory framework**

In Finland there are no priority for RES connections. However, according to the Electricity Market Act connection charges for small-scale electricity generation (production capacity up to 2 MVA) may not include costs related to network reinforcements. This requirement is not restricted to RES power generation.

RES does not have priority access according to the Finnish electricity market legislation. RES producers like any other electricity market actors are also responsible for their power balance.

### **3.1.3 Network tariffs for connection and access**

#### **Regulation of network tariffs for connection and access**

According to the Electricity Market Act, the network operators are able to set the actual network tariffs and charges by themselves. There is no ex-ante approval of tariffs or prices of network services by authorities. The network operators have to notice their customers about the changes in charges at least one month prior to entering into force.

The Energy Authority confirms ex-ante the methodology to be used in setting both transmission and distribution network tariffs and connection charges. The Energy Authority has to approve ex-ante also the terms and conditions of transmission and connection services before the network operators are able to apply them.

The methodology of setting transmission and distribution network tariffs is confirmed by the Energy Authority prior to each regulatory period. The length of regulatory periods is four years. The Energy Authority confirmed by its decisions the methods concerning the rate of return in electricity network operation to be followed during the third regulatory period (year 2012 – 2015) for each network system operator in November 2011. In November 2015, the Energy Authority confirmed with its decisions the methods concerning the rate of return in electricity network operation to be followed during the fourth and fifth regulatory periods in 2016 – 2019 and 2020 – 2023.

After the regulatory period has come to an end, the Energy Authority confirms the earnings of each network operator in its supervision decisions for the regulatory period, and will confirm the

amount of any accrued earnings that exceed or fall short of reasonable earnings for the regulatory period. Where necessary, the supervision decisions include obligations to return to the customers any surplus profit for the completed regulatory period through lower network charges for the new regulatory period. The supervision decisions correspondingly confirm that the network operator may allow raise network charges for the new regulatory period, with the amount by which the earnings accruing to the network operator from the previous regulatory period fell below the reasonable earnings level. The process is in line with the Article 37(10).

According to the Act on Supervision of Electricity and Gas Markets the methodology confirmed by the regulator may include the following items:

- method for the valuation of regulated asset base
- method for determining approved rate of return on capital
- method for determining realised profit of network operations
- method for setting efficiency targets for network operations

The network will be included into the regulated asset base in the net present value instead of book value. Ever since the first regulatory period, the Energy Authority has encouraged system operators to make investments in the electricity network. In the regulation model, all investments in the network will annually be taken into account in the regulated asset base, which is used to determine the reasonable rate of return. Thus the methodology provides incentives to transmission and distribution system operators to develop and to make necessary investments into their network in order to ensure viability of the networks as required by the Article 37(6)(a). The net present value of the network will be updated annually by taking into account depreciation and investments. Approved rate of return on capital is determined using a WACC-model (Weighted Average Cost of Capital) and will be updated annually.

The network operators have been encouraged to increase the efficiency of their operations and to maintain a high security of electricity supply. For the third regulatory period in 2012 - 2015 the Energy Market Authority set both the general efficiency target and the company-specific efficiency target for the DSOs. The company-specific efficiency targets are estimated on the benchmarking of DSOs by using semi - nonparametric StoNED-method (*Stochastic Nonsmooth Envelopment of Data*).

The network operators may appeal against the methodology confirmed by the Energy Authority to the Market Court and, furthermore, both the Energy Authority and the network operators are able to appeal against the decisions of the Market Court to the Supreme Administrative Court.

A total of 76 electricity network operators filed appeals with the Market Court in December 2011 against the methodology decisions for the third regulatory period (2012 – 2015) confirmed by the Energy Market Authority. The Market Court heard the case in autumn 2012. The Market Court turned down all but one of the claims in December 2012. The Energy Market Authority was obliged to impose a cap on maximum effect of outage costs in the efficiency incentive of regulatory methods. The Energy Market Authority gave new methodology decisions in summer of 2013. One network operator made an appeal to the Supreme Administrative Court concerning three of the claims that Market Court turned down. The Supreme Administrative Court gave its decision in June 2015 and turned all the claims down.

The Energy Authority has developed details of the methodology with a view to achieving a regulatory model that is incentivizing more innovations and investments in the networks in order to ensure viability of the networks as required by the Article 37(6)(a). In line with this a project - Roadmap 2020 - went ahead during the years 2009-2011. During this project a vision for network regulation in 2020 was prepared and the needed strategies and actions to develop network regulation of both distribution and transmission system operators were defined. The project Roadmap 2020 was concluded in November 2011.

The Electricity Market Act has detailed provisions related to network charges collected from electricity generation. Since February 2008 the connection fees for small-scale electricity generation



(maximum 2 MVA) may not include the costs caused by strengthening the existing electricity network but only include the direct costs of connection.

The regulation also sets the maximum level of the network charges for the electricity generation connected to the distribution network. The annual network charges collected from an electricity generator may not exceed 0.07 cent/kWh.

According to the Electricity Market Act, at the request of the customer (either generator or load), the transmission and distribution system operators shall give him/her a comprehensive and sufficiently detailed estimate on the costs of connection. The Energy Authority has fixed in January 2011 by its decisions the methodology for pricing of grid connections in distribution networks. Distribution system operators should have followed this methodology in pricing of connection fees from May 2011.

### **3.1.4 Cross-border issues**

#### **Capacity allocation and congestion management**

Congestions across the borders between Finland and Sweden, Finland and Norway and Finland and Estonia are managed by implicit auctions (market splitting) in the day-ahead market (Elspot market) in power exchange Nord Pool. Implicit auctions imply that market-based methods are applied in capacity allocation, and thus congestion management is wholly integrated to the functioning of the Nordic wholesale market. In the implicit auction the energy and transmission capacity between various bidding areas is allocated in a single process to the parties of electricity trading. Capacity which may not have been used on the Elspot market is offered to the Elbas intraday market, where trading finishes no later than one hour before the hour of operation. The Elspot capacities for the next day are announced before noon and the Elbas capacities in the afternoon. Finland is considered as a single bidding area within Nordic market and congestions within Finland and after spot market closure are managed by counter-trade.

There exist no priority transmission rights for cross-border trade from Finland to Sweden and from Finland to Norway and from Finland to Estonia or vice versa. For hedging against prices differences between area prices and the system price market actors may use EPADs (Electricity Price Area Differentials).

Fingrid makes 1,300 MW of transmission capacity from Russia available to the electricity market on its 400 kV connections from Russia. Fingrid has reserved a volume of 100 MW to be used as a power system reserve. Electricity can be imported from Russia by customers, who have made an agreement on a fixed transmission right with Fingrid and an agreement on energy purchases with a Russian organisation responsible for electricity sales.

In August 2011 a new trading scheme, so-called direct exchange trade, was adopted in electricity trade from Russia to Finland. Direct exchange trade is a first step towards more market-focused procedures in electricity trade between Russia and Finland and at the same time between Russia and the EU. In this model an electricity market player engaged in direct exchange trade buys electricity in the electricity exchange in Russia and sells it directly to the day-ahead market in Nord Pool. The player can also trade in the secondary market the offered electricity not sold in the day-ahead market, in other words in Nord Pool's or the Russian intra-day market. So far, the volume of direct trading is limited to 140 MW, while in conventional bilateral trade is 1,160 MW. The maximum trade capacity from Finland to Russia is 320 MW. .

In 2015, about 47 per cent (2014: 51%) of the time Finland and Sweden belonged to the same price area. Finland had the same price with Estonia 88 per cent (2014: 91 %) of time in 2015.



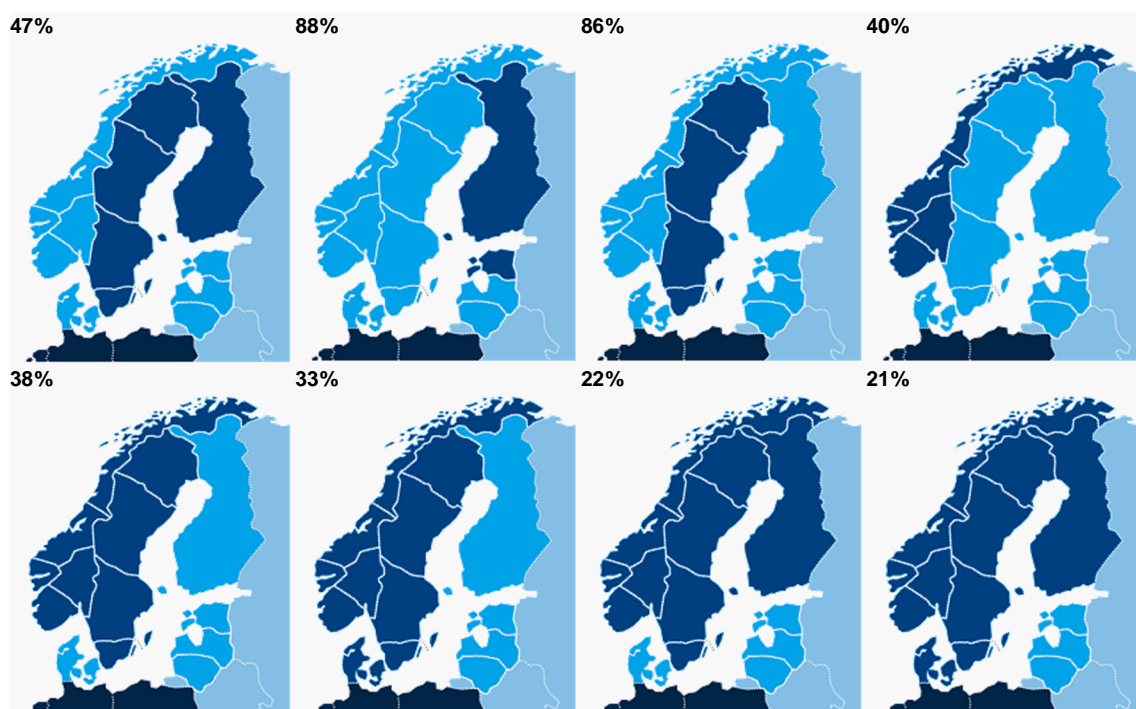


Figure 3. Percentage of hours during which different price areas groups have had equal prices in 2015

Counter trade is used to relieve both national and inter-regional congestions during the daily network operation. Costs of counter trade are paid by the TSO. Table 2 shows the costs of the counter trade paid by the Finnish TSO during the years 2006 - 2014. Counter trade costs in 2015 were 3,8 Million €

Table 2. Net costs of counter trade in Finland during the years 2007 - 2015 in million Euros.

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Costs, MEUR	0,244	0,127	0,085	0,2	1,6	4,7	0,88	10,1	3,8

Source: Fingrid Oyj.

The Energy Authority acts as the regulatory authority to supervise the compliance with the Regulation 714/2009 in Finland. The supervisory powers of the Energy Authority are ex-post by their nature.

Congestion management method applied to allocate all interconnector capacity in Nordic market, i.e. implicit auction, fulfils the requirements set in the congestion management guidelines. Remaining transmission capacity after day-ahead allocation is set for intra-day market and cross-border balancing. Nordic TSOs publish information either on their own website (e.g. [www.fingrid.fi](http://www.fingrid.fi)) or Nord Pool's website ([www.nordpoolspot.com](http://www.nordpoolspot.com)).

During the year 2015 congestion management income for the Finnish TSO totalled 91.2 Million EUR (48.9 Million EUR in 2014). Fingrid uses congestion income to investments that aim to relieve the congestions. In 2015, Fingrid invested 138.4 Million EUR in grid development.

### **TSO investment plans**

Fingrid published the latest national ten-year investment plan in summer 2015. The Energy Authority made an assessment that the plan is in line with the community-wide TYNDP from 2014 and the regional investment plan made for Baltic Sea Region.

### **3.1.5 Compliance**

According to the Finnish legislation, the Energy Authority shall supervise that the provisions of the Electricity Market Act and any rules and regulations issued under it, as well as Regulation 714/2009 are complied with. However, the construction of cross-border interconnectors and the import and export of electricity are supervised by the Ministry of Employment and the Economy.

In 2015 there were no such cases where the Energy Authority should follow the binding decisions of the Agency or the Commission according to the Article 37(1)(d) or guidelines according to the Article 39.

As the Finnish transmission system operator, Fingrid is ownership unbundled from other operations provisions in Article 37(3)(a)(b)(e) and Article 37(5) are not relevant for Finland.

The Energy Authority ensures compliance of electricity transmission and distribution system operators with their obligations under the Directive and other relevant Community legislation as required in Article 37(1)(b) by using mainly ex-post supervision. Investigation may start based on a request from any market actor or on the Energy Authority's own initiative. In 2015 any such investigation cases were not started.

Since September 2013 the Energy Authority has also had right to propose to the Market Court to impose administrative fines to network system operators or other electricity market actors for the non-compliance with their obligations pursuant to the Electricity Market Act or the Regulation as required in the Article 37(4)(d).

## **3.2 Promoting Competition**

### **3.2.1 Wholesale markets**

Since September 2013 the Finnish legislation has included explicit provisions regarding monitoring the level of transparency, including of wholesale prices, and ensuring compliance of electricity undertakings with transparency obligations and monitoring the level and effectiveness of market opening and competition in line with Articles 37(i)-(k). Finnish NRA has also started to do the market surveillance due to the REMIT regulation (1227/2011) and the Transparency Regulation (543/2013)

The development of shares of different generation forms, imports and exports can be seen in the following table.

Table 3. Electricity production by source and import from neighbouring countries in 2006 - 2015.

TWh		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>GROSS PRODUCTION</b>		81,9	81,2	77,1	71,6	80,4	73,5	70,3	71,2	68,1	68,6
	Cons. in power plants	3,3	3,4	2,9	2,9	3,4	3	2,6	2,9	2,6	2,5
<b>PRODUCTION</b>		78,6	77,8	74,2	68,7	77	70,6	67,7	68,3	65,5	66,1
	Hydro power	11,3	14	16,9	12,6	12,8	12,3	16,6	12,6	13,2	16,6
	Wind power	0,1	0,2	0,2	0,2	0,3	0,5	0,5	0,8	1,1	2,3
	Nuclear power	22	22,5	22	22,5	21,9	22,2	22,1	22,7	22,6	22,3
	Conv. therm power	45,1	41,1	34,9	33,3	42	35,4	28,6	32,2	28,5	24,9
	Co-gen. CHP	27,6	26,8	26,7	24,2	28,5	25,9	22,8	23,4	22,1	20,8
	distr. heat	14,5	14,4	15,5	14,8	17,4	14,9	13,5	13,7	12,9	12,1
	industry	13,1	12,3	11,2	9,4	11,1	10,9	9,3	9,7	9,3	8,7
	Condensing etc.	17,5	14,4	8,2	9,1	13,5	9,6	5,7	8,8	6,3	4,0
	conv.	17,5	14,4	8,2	9,1	13,5	9,6	5,7	8,8	6,3	4,0
	GT etc.	0	0	0	0	0	0	0	0	0	0
<b>IMPORTS</b>	from	15,4	15,4	16,1	15,5	15,7	17,7	19,1	17,6	21,6	21,5
	Sweden	3,7	3,1	2,8	1,9	2	5,1	14,2	12,4	18,1	17,4
	Norway	0,2	0,2	0,2	0,1	0,1	0,1	0,08	0,05	0,06	0,03
	Russia	11,6	10,2	10,9	11,7	11,6	10,8	4,4	4,7	3,4	3,9
	Estonia		1,9	2,3	1,8	2	1,7	0,4	0,5	0,03	0,1
<b>TOTAL SUPPLY</b>		94	93,2	90,2	84,2	92,7	88,8	86,8	85,9	87,1	87,6
<b>EXPORTS</b>	to	3,8	2,9	3,3	3,4	5,2	3,8	1,6	1,9	3,7	5,1
	Sweden	3,7	2,7	3,3	3,2	4,8	3,2	0,03	0,2	0	0
	Norway	0,1	0,1	0	0,1	0,2	0,1	0,09	0,1	0,1	0,06
	Russia	0	0	0	0	0	0	0	0,03	0	0,02
	Estonia		0	0	0	0,2	0,5	1,5	1,5	3,5	5,0
<b>GROSS CONSUMPTION</b>		90,1	90,4	86,9	80,8	87,5	84,4	85,1	84,0	83,4	82,5
	Incl. Electric boilers	0,1	-	0,1	0,1	0,1	0				

Source: Adato Energia Oy, Energiateollisuus ry, Statistics Nordel

### 3.2.1.1 Monitoring the level of prices, the level of transparency, the level and effectiveness of market opening and competition

#### Market opening

In the Nordic and Baltic electricity market electricity trading takes the form of bilateral trade – i.e. direct trading among the market actors – and trading via the power exchange. There is the Nordic electricity exchange Nord Pool AS for the physical electricity trade and Nasdaq OMX for the financial electricity trade.

Since February 2014, the calculation of zonal electricity prices, generation, offtake volume and transfers between bidding zones has been performed on a European basis. The responsibility of performing the technical calculation is allocated for different European power exchanges on a rotating basis. Complementing the calculations, the power exchanges participating in this arrangement have agreed upon a back-up system, where the primary rotating responsibility to perform the calculation is backed up by secondary, likewise rotating responsibilities by a number of power exchanges to perform a secondary calculation, that could replace the primary calculation in case that could not be performed.

In 2015, the volume of electricity traded in Nord Pool AS in day-ahead action Elspot amounted to 374 TWh (361 TWh, in 2015). The increase in physical volume is a result increase of the trading in Baltic market. The market share of Nord Pool AS from the consumption in Nordic and Baltic countries was 87 per cent. The market share of Nord Pool AS in Finland was 67 per cent.

Figure 4 presents the share of electricity bought from Nord Pool AS in relation to the electricity consumption in Nordic and Baltic countries (Finland, Sweden, Norway, Denmark, Estonia, Latvia and Lithuania) during the years 1997-2014

The share of electricity bought from the power exchange in relation to the Finnish electricity consumption has increased considerably since Finland joined the Nordic power market area in June 1998. From the early 5 per cent the share of electricity procured from the Nordic power exchange has increased to cover 67 per cent of the Finnish physical consumption in 2015.

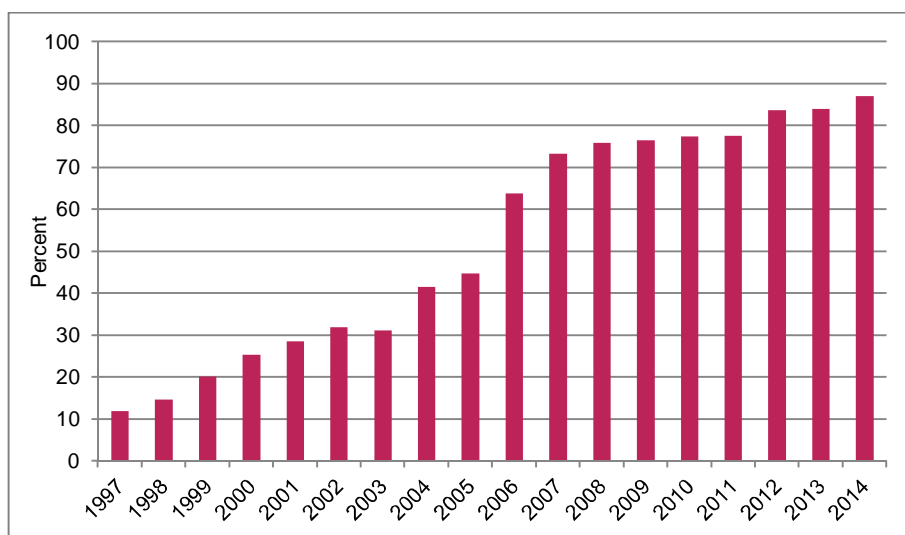


Figure 4. The percentage share of electricity procured from power exchange in relation to the physical electricity consumption in Nordic countries (Finland, Sweden, Norway and Denmark). (Source: Nord Pool Finland Oy)

#### Prices

The basis of the price formation in the Nordic power market is the spot market. Trade is organised as an implicit auction. The prices are determined by summarising all purchases into a purchase curve and all sales into a sales curve. Bids in the electricity spot market are given in the

same way regardless of the player, and accordingly, a bid for the following day has to be given before noon every day indicating the amounts one wishes to purchase or sell at the relevant hour at different price levels. When the price has been determined for each operating hour, the sales and purchases of individual players are determined. In case there are no grid restrictions between the Nordic countries or internally in one of countries, the spot price is the common price for the entire Nordic market area.

In 2014, the daily system market price at the Nord Pool Spot was 29 per cent lower than in 2014. The average system price in 2015 was EUR 20.98/MWh. The average Finnish area price in 2015 was EUR 29.66/MWh, showing a decrease of 18 per cent year-on-year. In 2015, about 47 per cent of the time Finland and Sweden belonged to the same price area. Finland had the same price with Estonia 88 per cent of time in 2015.

### **Transparency**

In 2013 came into force transparency regulation (543/2013) which is also followed in Finland. In addition to this, also REMIT regulation (1227/2011) includes obligations for market participants to publish inside information, which if it were made public, would likely to significantly affect the prices of wholesale energy products.

In Finland, transparency arrangements are based on legislation and authority surveillance. Additionally, there are also voluntary contract-based arrangements between Nord Pool and the market participants trading in Nord Pool.

According to the regulations, producers, consumers and transmission system operators have an obligation to disclosure information on events, which might have a relevant effect to price formation. They have to report on any plans or changes of plans for maintenances or limitations of their production units or interconnectors as well as unplanned outages and failures.

Furthermore, in Finland there are some national rules on disclosure of information. In the Electricity Market Act it is stated that: "A power plant operator shall notify the electricity market authority of a plan for constructing a power plant, of commissioning of a power plant and of long-term or permanent decommissioning of a power plant." Further provisions on the contents of the notification obligation and notification procedure are given by Government decree.

On the basis of the Electricity Market Act, the power plant operator is obliged to notify the Energy Authority of a planned maintenance outage of its power plant practising separate electricity generation, with an output of 100 MVA, which would take place between the 1<sup>st</sup> of December and the 28<sup>th</sup> of February. The notification shall be made at least six months before the planned starting date of the maintenance outage. The Energy Authority may order that the date of a maintenance outage of a power plant be rescheduled outside the period of the 1<sup>st</sup> of December and the 28<sup>th</sup> of February.

### **3.2.2 Retail market**

Number of retail supplier has been stable. In 2015, there were 72 retail suppliers, of which 53 offered their products nationwide. Only a few electricity retailers are ownership unbundled from electricity network activities. Most of the legally unbundled electricity retailers still belong to same group of companies as a distribution system operator.

In Finland electricity retail supply does not require any license or registration from the Energy Authority. There are no regulated tariffs for retail supply that have to be approved by the Energy Authority or any other authorities.

However, according to the Electricity Market Act an electricity retailer in a dominant position within the area of responsibility of a distribution system operator shall deliver electricity at reasonable prices to consumers and other users of electricity whose place of use is equipped with main fuses of 3x63 amperes at maximum or whose site of electricity use receives annually no more than 100,000 kWh of electricity (obligation to deliver). If an electricity retailer referred to

above does not exist, the obligations of an electricity retailer in a dominant position shall be applied to an electricity retailer whose market share is the highest in the area of responsibility concerned (distribution network area). An electricity retailer in a dominant position shall have terms of retail sale and prices, and the criteria underlying these that are publicly available to the customers encompassed by the retailer's obligation to deliver. They shall not include any unreasonable conditions or limitations that would restrict competition within electricity trade. The Energy Authority may order the retailer referred to here to deliver electricity to the customers within the obligation to deliver.

The prices of electricity within the obligation to supply system do not have to be approved by the regulator before the supplier takes them into use. By virtue of the Electricity Market Act the Energy Authority may investigate either on the basis of a complaint or at its own initiative the pricing of electricity. In 2015 the Energy Authority did not make such investigations.

There are 66 electricity retailers having the obligation to supply within at least one distribution network area of responsibility.

The Energy Authority has estimated that four electricity retailers have larger than five per cent share of retail market. However, the exact market shares of individual retailers are not available. The market share of the three largest companies in the retail market for small and medium-sized customers has been estimated to be 35-40 per cent.

In 2015, there were 8 electricity retailers in the Finnish electricity retail market without obligation to supply.

**Table 4. The largest companies in the electricity retail market (market shares according to energy sold to end users connected to the distribution network).**

	No. of companies with >5% retail market	Number of fully <sup>1</sup> independent suppliers	Market share of three largest retail companies (%)		
			large and very large industrial	small-medium industrial and business	very small business and household
2005	5	< 5	N/A	35-40	
2006	4	< 5	N/A	35-40	
2007	4	< 5	N/A	35-40	
2008	4	< 5	N/A	35-40	
2009	4	< 5	N/A	35-40	
2010	4	< 5	N/A	35-40	
2011	4	5	N/A	35-40	
2012	4	6	N/A	35-40	
2013	4	6	N/A	35-40	
2014	4	6	N/A	35-40	
2015	4	8	N/A	35-40	

<sup>1</sup> Fully independent supplier does not have an obligation to supply (not incumbent supplier).

### 3.2.2.1 Monitoring the level of prices, the level of transparency, the level and effectiveness of market opening and competition

#### Prices

The retail prices are not regulated in Finland. The electricity supplier must provide the Energy Authority information on prices, which are applied when selling electricity to the customers, whose main fuse is max 3x63 amperes or whose annual consumption is below 100,000 kWh. In line with the Articles 37(1)(i) and 37(1)(j) the price information is regularly analysed in order to aid market development and made publicly available in easily comparable form in the Energy Authority's price comparison web service ([www.sahkonhinta.fi](http://www.sahkonhinta.fi)).

In 2015, the retail prices kept falling as in 2014. The average price of electricity in open-ended contract followed the normal seasonal variation with a small downward trend. The prices of fixed-term contracts for one year decreased throughout the year.

The margins of spot bound contracts remained unchanged, but the decreased wholesale prices made it the best alternative to consumers.

In 2015 the average price of electrical energy under obligation of supply excluding taxes for a residential customer with 5,000 kWh/a consumption decreased by 7.1 per cent. For small houses with electric heating (consumption 18,000 kWh/a) the decrease was 7.3 per cent.

The electricity distribution price including tax was 0.5 per cent more expensive for household consumers – for electrically heated households 1.2 per cent – at the beginning of 2016 than at the beginning of 2015.

In 2015, the electricity bill for apartment house households and households with electrical heating decreased in total by 3.0 and 3.1 per cent respectively.

The estimated national average electricity prices during the second half of 2015 for three reference customer bands defined by Eurostat are shown in [Table 5](#). Energy costs and supply margin for household customer at the table are based on public energy tariffs. Negotiated and actual energy prices might differ marginally from the ones presented here.

Table 5. Electricity prices (cnt/kWh) for reference customer bands during period 1.7-31.12.2015. <sup>2</sup>

Euro/MWh	Band Dc	Band Ib	Band Ie
Network charges (excl. levies)	4.82	3.00	0.59
Levies included in network charges	-	-	-
Energy costs and supply margin	5.27	4.65	3.98
Non-recoverable taxes*	5.21	0.70	0.70
Total	15.3	8.35	5.28

\*For households electricity tax and VAT, for industry electricity tax only

#### Monitoring market opening and competition

The Energy Authority monitors that all necessary information is available to all retail market participants and overlooks that retail market sellers follow the transparency requirements set by the Electricity Market Act. Monitored parameters include price level and spread and, switching

<sup>2</sup> Prices are based on the new methodology by Eurostat for collecting electricity prices from 2007 onwards. Prices are average of the 6 months. Definitions for reference customer bands are:

- Band Dc: household customers with annual consumption of 2 500-5 000 kWh/year,
- Band Ib: commercial customers with annual consumption of 20-500 MWh/year and
- Band Ie: commercial customers with annual consumption of 20-70 GWh/year.



rates. The Energy Authority publishes statistics on electricity prices monthly and switching rates three times per year.

In collaboration with other NordREG members the Energy Authority also prepares annually a report on Nordic electricity markets, which compares the above mentioned parameters across the Nordic markets.

In line with the Articles 37(1)(k) and 37(1)(l) contractual issues are dealt with case-specifically in co-operation with the Finnish Competition and Consumer Authority and contractual freedom, compatible with Community law, is respected.

Since 2007 the Energy Authority has collected information on supplier switching from the distribution system operators. In 2015, the estimated number of customers that switched their supplier was about 350,000. The overall switching rate in 2015 was 11.4 per cent. [Table 6](#) shows the supplier switching rates in 2006 - 2015.

**Table 6. The share of customers who have changed the supplier.**

	Households and other permanent dwellings		Other customers		Total
	< 10000 kWh/a	>10000 kWh/a	Max 3x63 A	>3x63 A	
2006	3.1 %	7.7 %	3.8 %	7.7 %	4.2 %
2007	3.0 %	6.8 %	3.3 %	8.0 %	4.0 %
2008	3.4 %	5.6 %	2.8 %	6.2 %	4.4 %
2009	7.2 %	10.9 %	5.1 %	11.6 %	8.1 %
2010	8.0 %	10.5 %	4.8 %	12.6 %	7.6 %
2011	7.0 %	11.7 %	4.7 %	14.1 %	7.6 %
2012	6.6 %	9.6 %	4.1 %	13.0 %	7.6%
2013	10.2 %	12.7 %	3.1%	18.0 %	10.1%
2014	11.8 %	11.2 %	2.4 %	12.9 %	9.8%
2015	12.5%	13.1%	5.8%	16.1%	11.4%

The Energy Authority does not collect data on the shares of different types of customer contracts. However, the most typical contract for household customers is a contract made for an indefinite period that may be terminated with two weeks' notice. There are also fixed-term contracts with the most common duration being one or two years. If a fixed-term supply contract has been concluded outside the obligation to supply with a consumer for a period longer than two years, the consumer may terminate the contract after the period of two years in the same way as he may terminate a contract that is valid indefinitely. Since the roll-out of smart meters and using hourly measured consumption in balance settlement instead of load curves in most consumption points many retailers have also started to offer even for residential customers contracts where electricity price varies every hour and is bound to day-ahead spot prices added with the supplier's fixed margin. Furthermore, many suppliers offer also contracts where price of electricity is updated regularly (either monthly or every third month).

Nationally, the legal provisions on information exchange between the parties are set forth in the Decree, issued by the Ministry of Employment and the Economy in December 2008. It is supplemented by the branch organisation's recommendations. These rules set the framework for the information exchange during the supplier switching: what kind of information and in which timetable the new supplier and the DSO have to send to the other market actors and also what are the conditions for the present supplier to reject the supplier switching process. According to the



decree, it is also required that the market actors shall ensure before taking into use that their information exchange systems are able to send and receive standard protocol messages.

According to the decree and recommendations, the new supplier shall notify the network operator about the new contract. This notification shall be done at the earliest three months and at the latest 14 days before the contract enters into force. If metering changes are needed in the consumption site, a notification shall be available to a network operator at the latest 21 days before. However, the Energy Authority has not collected statistical information on actual time delays for switching.

### **3.2.2.2 Recommendations on supply prices, investigations and measures to promote effective competition**

The Energy Authority has not given any direct recommendations on supply prices in 2015. However, the Energy Authority publishes monthly statistics on retail and network prices in order to promote competition and public market analysis. In addition, according to Article 37(1)(o) all necessary information on supply prices is provided to the Finnish Competition and Consumer Authority if needed.

The Energy Authority is granted the powers to impose necessary and proportionate measures to promote effective competition and to ensure the proper functioning of the electricity market. The objective of the Electricity Market Act is to ensure the prerequisites for the effective function of the electricity market and thereby ensure a sufficient supply of energy at reasonable prices and quality. The primary way to achieve the goal is to safeguard healthy and functioning competition in electricity production and sales as well as to obtain a fair and equal service in all network activities.

The Energy Authority also has the right to cooperate with the Finnish Competition and Consumer Authority, the Financial Supervisory Authority, national regulatory authorities from other EEA countries, the Agency and the European Commission. According to Section 10 of the Administrative Procedure Act of Finland (434/2003) an authority shall provide the requested assistance, within its competence and as required by the nature of the matter, to another authority for taking care of an administrative matter; it should also otherwise promote inter-authority co-operation.

To promote effective competition in the electricity retail market the Energy Authority has maintained since 2006 a web-based system designated to facilitate price comparisons and supplier switching. The system has also been developed to inform customers better about the origin of the electricity. All retail suppliers are obligated to maintain up-to-date information on their public electricity price offers on this website.

Since 2005, Nordic energy regulators have been working to promote and facilitate a common end-user market for electricity in Finland, Denmark, Sweden and Norway. The main objective for the end-user market integration is to minimize the regulatory and technical obstacles for the suppliers willing to operate in the various Nordic countries.

## **3.3 Security of supply**

### **3.3.1 Monitoring balance of supply and demand**

The Energy Authority has a responsibility for monitoring the security of supply situation for electricity. During the year 2015 Finland has not implemented any safeguard measures as mentioned in the Article 42.

The Energy Authority maintains information on generation and interconnector capacity, while the Ministry of Employment and the Economy has the responsibility for preparing the estimates for the demand of electricity. In 2015 there were no changes in these competences.

Production capacity of electricity is decreasing because of low profitability - low electricity price. Especially some coal condensing power plants are under threat of decommissioning prematurely. Because of large combustion plants directive (2001/80/EC) some older plants are exiting the market.

The Ministry of Employment and the Economy is updating Energy and Climate strategy for Finland. The estimation of electricity consumption in Finland in base scenario in 2020 is estimated to be about 88 TWh and 92 TWh in 2030.

Table 7 presents the short term estimation of peak load demand in very cold winter day.

**Table 7. Short term forecast for peak load demand.**

Winter season	2016-2017	2017-2018	2018-2019
Estimated peak load, MW	15,200 MW	15,300 MW	15,400 MW

In the years 2016 - 2018, domestic electricity generation capacity will not be sufficient to cover the electricity consumption during peak consumption periods in a normal year. Dependency to electricity import at winter times will be 2,000 – 4,000 MW. Electricity production capacity in use in Finland will be about 11,500 MW at winter period 2016-2017. Importing capacity is around 5,000 MW.

Dependency on imports will significantly decrease once the new nuclear power plant unit (Olkiluoto 3) has been completed. Originally, the new unit should have been commissioned by the end of 2009. Currently the official estimation of commissioning the plant in the end of 2018. After Olkiluoto 3 has been completed Finland will still be dependent on electricity import.

### **3.3.2 Monitoring investment in generation capacities in relation to SoS**

#### **Monitoring investments in generation capacity**

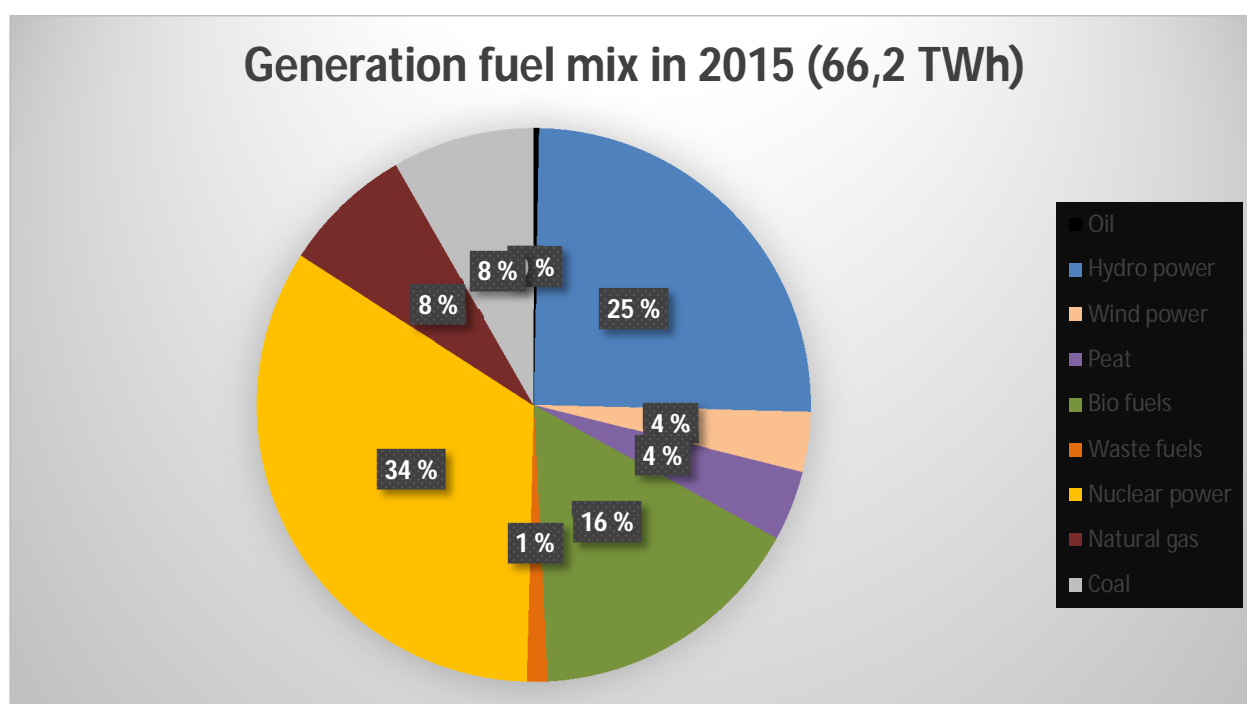
The total available generation capacity during the winter season 2015 - 2016 was about 11,600 MW. The capacity included 289 MW of peak load reserve. Peak load reserve is considered as a strategic reserve and it is not available for the electricity market. The reserve consists of two condensing power plants.

Total installed generation capacity in Finland was about 16,100 MW in the end of 2015. Installed wind generation capacity was about 1000 MW at the same time. However, the available amount of wind generation in peak load period in winter is assumed to be negligible. Estimated available generation capacity in the winter season 2016 - 2017 is about 11,500 MW.

**Table 8. Electricity Generation Capacities in Peak Load Period, MW**

	Separate Electricity Generation			Gas turbines and engines	Combined Heat and Power		Capacity of power stations	Power system reserves
	Hydro power	Nuclear power	Condensing power		Industry	District heat		
2006	2,550	2,680	3,200	10	2,290	2,920	<b>13,650</b>	1,060
2007	2,350	2,720	2,800	10	2,450	2,790	<b>13,120</b>	1,046
2008	2,350	2,700	2,650	-	2,450	3,150	<b>13,300</b>	1,180
2009	2,350	2,700	2,650	-	2,450	3,150	<b>13,300</b>	1,180
2010	2,550	2,700	2,200	-	2,300	3,350	<b>13,100</b>	1,180
2011	2,575	2,730	2,200	-	2,365	3,490	<b>13,360</b>	1,240
2012	2,595	2,750	2,045	-	2,370	3,490	<b>13,155</b>	1,240
2013	2,610	2,765	2,045	-	2,330	3,550	<b>13,300</b>	1,556
2014	2,610	2,765	1,650	-	2,330	3,430	<b>12,800</b>	1,540
2015	2,640	2,765	760	-	2,330	3,430	<b>11,900</b>	1,580
2016	2,600	2780	850 <sup>3</sup>	-	2,000	3,300	<b>11,600</b>	1,230

Generation fuel mix for energy from the year 2015 is presented in [Figure 5](#). During the next year it is not expected to be any significant changes in fuel mix for power generation in Finland. Use of coal might slightly decrease and wind power will increase.



**Figure 5. Generation fuel mix for energy (TWh) in 2015. Source: Finnish Energy Industries.**

Electricity production capacities under planning or construction at the moment are presented in Table 9.

<sup>3</sup> Includes peak load reserve

**Table 9. Forthcoming new generation capacity in 2016-2018**

MW	Hydro	CHP		Nuclear power	Wind Power
		District heating	Industry		
2016	6	24	43	13	500
2017	44	145	260		500
2018	15			1,600	

The driver for increasing wind power capacity is the feed-in tariff system introduced in 2011. Feed-in tariff is available for wind power, bio-gas and wood-driven power capacity. Wind power capacity has been targeted to increase up to 2,500 MVA by year 2020.

### **Monitoring investments in interconnection capacity**

In 2015, Kraftnät Åland finished a project to connect Åland islands to Finnish mainland power system. The capacity of a new DC interconnector is 100 MW. The technical transmission capacity between Central Sweden and Continental Finland was increased by the maximum 80 MW to both directions, as the current interconnection capacity of between Sweden and Åland is 80 MW. So far the cable is only for use on security of supply for Åland.

The export of electricity from Finland to Russia was enabled in December 2014. In export trade, one of the four 350 megawatt DC units at Vyborg can be used for the transmission of electricity to Russia from Finland. For the export capacity 320 megawatts is given for commercial use and the rest is used for reserve trade. In transmission the other way from Russia to Finland, a total of 1,400 megawatts of electricity can be transmitted, 1,300 megawatts of which is available for commercial use.

### **3.3.3 Measures to cover peak demand or shortfalls of suppliers**

#### **The Peak Load Reserve Act**

There's a strategic power reserve capacity mechanism in place in Finland. The Act on Peak Load Reserves to Ensure Balance between Supply and Demand (so-called Capacity Reserve Act) came in to effect on March 1, 2011 and replaced the previous act. The peak load reserve is used to ensure that the balance between supply and demand is achieved if the balance has not been achieved in commercial market i.e. in the day-ahead market of Nord Pool. However, the peak load reserve capacity is not allowed to participate and bid on the commercial market. The Capacity Reserve Act has increased the role of the Energy Authority. According to the act, the Energy Authority evaluates and decides the required size of the peak load reserves arranges the tendering process and makes the procurement decisions. The Energy Authority also supervises the profit of the peak load power plants.

During the peak load season, from December to end of February, peak load reserve power plants are in 12 hour readiness. Otherwise, power plants are in one month readiness. The use of peak load reserve capacity is very rare, the last time reserve was activated during the winter 2009-2010.

The owners of the selected reserve capacity will receive fixed compensation for acting as a reserve. When the reserve capacity is activated to balance supply and demand, only actual costs caused by the activation are remunerated.

The Finnish TSO, Fingrid is responsible for making agreements with the selected power plants and Fingrid pays the compensations to the power plants. The peak load reserve system is funded by the fees collected from the Finnish electricity end-users. In 2015, the Energy Authority approved terms and conditions for the use of peak load reserves and the methodology for collecting payments from the electricity users to cover costs of this system for the period July 2015 to June 2017.

In 2014, the Energy Authority started preparations for the procurement of peak load reserve capacity for the period of July 2015 to June 2017. After a tendering process in spring 2015 two power plant units and one demand side flexibility facility were selected to the peak load reserve. These three units comprise reserve capacity of total 299 MW.

In 2016, the Energy Authority has started preparations for the next period starting in July 2017. The tendering process is planned to be in the end of 2016.

### **Responsibilities of TSO regarding security of supply and operational security**

The transmission system operator Fingrid secures the system operation in Finland by delivering the following services:

- Maintenance of operational security
- Maintenance of frequency (by power reserves)
- Maintenance of voltage
- Data exchange to maintain operational security

Maintenance of operational security implies that power system is planned and operated in a way that the impacts of disturbances are minimised. Here the grid planning, transmission limits, disturbance management and reserves (frequency controlled and fast disturbance reserves, black start reserves) are considered.

The power system in Finland is planned in accordance with principles agreed jointly between Nordic TSOs in Nordic Grid Code<sup>4</sup>. The main planning principle is that the power system has to withstand any single fault (n-1 criteria). A dimensioning fault (worst possible fault) varies on the basis of the operational situation of the Finnish grid, but is often the tripping of the largest production unit or an extensive busbar fault.

Electricity transmission in the main grid are kept during real time operation within the predefined limits given by operational reliability calculations, which take into account potential faults and planned outages in the power system. The transmission limits are defined for each probable fault and network situation. Short-term congestion problems in the main grid are managed commercially through counter trade, and long-term congestions are managed by applying price areas or by investments in the grid.

The Nordic electricity grid is synchronously interconnected and the frequency is allowed to vary in normal state between 49.9 and 50.1 Hz. The frequency containment reserve for normal operation, frequency containment reserve for disturbances and automatic frequency restoration reserve are power reserves which are activated automatically by frequency changes. Within the Nordic power system, it has been agreed that countries maintain continuously a frequency containment reserve for normal operation (FCR-N) of 600 MW. Of this volume, Finland's share is presently 140 MW.

For disturbance management purposes, both power and transmission reserves are maintained in the Finnish power system. TSO is responsible for the maintenance of reserves that are needed in the Finnish power system. For this, TSO uses its own resources and also purchases reserve maintenance from other resource owners. Restoration of the power system from severe disturbance incidents is headed by TSO's Power System Control Centre.

The frequency containment reserve for disturbances (FCR-D) begins to activate when frequency goes below 49.9 Hz, and the full reserve has been activated at a frequency of 49.5 Hz. The reserve used includes both active power reserves of power plants and load shedding. During a normal operational situation, the interconnected Nordic system is required to have approximately 1,200 MW of frequency controlled disturbance reserves, of which Finland's obligation is approximately 260 MW.

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<sup>4</sup> Available on website [www.entsoe.eu](http://www.entsoe.eu)

It has been agreed that up to 300 MW of automatic frequency restoration reserve (FRR-A) is maintained in predefined morning and evening hours in the Nordic countries in 2014. Country-specific obligations have been divided between the Nordic TSOs in relation to the annual consumption.

The manual frequency restoration reserve (FRR-M) consists of active and reactive power reserves that can be activated manually within 15 minutes. After activating this reserve, the power system has been restored to such a state that it can withstand another potential disturbance. In the Nordic grid, each country must have a volume of fast disturbance reserve that equals the country's dimensioning fault. In Finland, this volume is normally 880 MW. [Table 10](#) presents summary of reserves for securing system operation in Finland.

**Table 10. Summary of reserves for securing system operation 2015 in Finland (Source: Fingrid Oyj).**

Type of reserve	Contractual capacity	Obligation
Frequency controlled normal operation reserve (FCR-N)	<ul style="list-style-type: none"> <li>- Power plants, 165 MW</li> <li>- Vyborg DC link, 90 MW</li> <li>- Estonia DC links, 35 MW</li> </ul>	140 MW
Frequency Containment Reserve for Disturbances (FCR-D)	<ul style="list-style-type: none"> <li>- Power plants, 604 MW</li> <li>- Load shedding, 40 MW</li> </ul>	260 MW
Automatic Frequency Restoration Reserve (FRR-A)	<ul style="list-style-type: none"> <li>- Only in morning and evening hours</li> </ul>	70 MW
Manual Frequency Restoration Reserve (FRR-M)	<ul style="list-style-type: none"> <li>- Gas turbines, 1,230 MW</li> <li>- Load shedding, 354 MW</li> </ul>	880 MW

The voltages in the power system are maintained at a technically and commercially optimal level during both normal and disturbance situations. The objective of voltage level and reactive power adjustment is to prevent overvoltage and undervoltage, to achieve nominal voltages specified in agreements (110 kV network) and to minimise the grid losses. The voltage level in the Finnish transmission grid is adjusted by using reactors and capacitors. The voltage ratio between different voltage steps is controlled with on-load tap changers of transformers.

Instantaneous reactive power reserve is also needed in order to secure the technical functioning of the Finnish power system during the disturbances. The reactive power reserves of the main transmission grid are located in synchronised generators. Reactors and capacitors also serve as reserves. Reactive power reserves are activated automatically when the voltage in the grid decreases as a result of a disturbance. Compensation is paid to power producers for reactive power reserves reserved in generators.

TSO takes care of data exchange required by the maintenance of operational reliability in the power system. TSO and parties connected to the grid supply each other with planning and measurement data needed in the maintenance of operational reliability. Such data includes production plans, generator power measurements, and status data on generator circuit breakers and connecting stations. If necessary, the amount of data exchanged and the technical details of data exchange are agreed upon between TSO and the other party through a separate data exchange agreement.

## 4 The gas market

The Finnish natural gas market has been under sector-specific regulatory supervision since the assertion of the Natural Gas Market Act in August 2000. The Natural Gas Market Act was amended first at the beginning of the year 2005 to implement the Natural Gas Market Directive (2003/55/EC) and the second time in 2013 to include the requirements of the Gas Directive 2009/73/EC.

The Natural Gas Market Act aims at improving the functioning of the natural gas market and to prepare the natural gas sector for the integrating European natural gas market. The Act provides large-scale consumers, buying at least 5 million cubic meters of natural gas per year, with the possibility of mutual secondary market trading in natural gas they have purchased from an importer operating in Finland.

The Finnish natural gas market is relatively isolated with a pipeline connection only to the importing country Russia. There is only one importer and wholesale supplier – Gasum Oy – which also owns and operates the natural gas transmission network and is the TSO.

A separate market place, operated by Kaasupörssi Oy and owned by the natural gas TSO, has been established for trading gas on the secondary market.

Finland has availed itself of the possibility of a derogation allowed by the Natural Gas Market Directive. Following this, the natural gas market has not been opened in the manner specified in the directives. This exemption is effective as long as Finland does not have a direct connection to the natural gas network of any other EU Member State and as long as Finland has only one main natural gas supplier.

A working group set by the Ministry of Employment and the Economy published in January 2016 proposals for the reformation of the Natural Gas Market Act and for opening Finnish natural gas markets in a situation when Finland decides to give up derogations in accordance with the article 49 of the Natural Gas Market Directive.

No major changes have taken place in the operating environment of the Finnish natural gas market in the recent years. In a European comparison, the Finnish natural gas market is highly exceptional.

There were 22 local natural gas distribution network operators at the end of the year 2015. As can be seen from the [Figure 6](#), all the Finnish natural gas DSO's and the consumption sites of natural gas are situated in the southern part of the country along the main transmission pipeline.





**Figure 6. Map of natural gas network in Finland (source: Finnish Gas Association)**

Balticconnector pipeline between Finland and Estonia is included in the PCI list. The project is planned to be commissioned in 2019.

There are plans to construct small-scale off-grid LNG terminals on the coast of Finland. These terminals would serve industrial users, maritime use of LNG and LNG trucks. In 2014 State of Finland granted investment support for four small-scale LNG terminals.

## 4.1 Network regulation

### 4.1.1 Unbundling

Finland has availed itself of the possibility of an exemption allowed by the Natural Gas Market Directives and thus there is neither legal nor operational unbundling of natural gas transmission network operation. Furthermore, Finland has not applied legal and operative unbundling in distribution network operations because Member States are free to decide that the unbundling provisions are not applied to network operators with fewer than 100,000 customers. All Finnish distribution system operators fall below the limit set by the Directive.

As a result of this, the natural gas market in Finland is characterized by vertical integration. The only wholesale supplier of natural gas – Gasum Oy – is the sole importer and operator of the transmission system. Furthermore, it is downward vertically integrated into retail supply. Fortum Heat and Gas Oy and E.ON Ruhrgas sold their shares in Gasum Oy to the State of Finland in November 2014. Furthermore, OAO Gazprom sold its shares (25%) to the State of Finland in December 2015 and thus Gasum is now a fully state-owned company.

Approximately 80 per cent of the Finnish gas DSOs are wholly or mainly owned by municipalities. The rest 20 per cent of the DSOs are owned by industrial users of natural gas. In Finland the retail supply of natural gas is done in most cases within the same company as gas distribution. There is no natural gas production in Finland.

As Finland has a derogation from the unbundling requirements of the Directive, the certification of the natural gas TSO has not been done in Finland yet.



The accounting unbundling applies to all natural gas system operators. The accounting unbundling is also required in the companies, which have other activities besides natural gas network business if these activities are not relatively small. As a relatively small activity has been considered such business activities, whose annual revenue is less than 10 per cent of total revenue of the company's natural gas supply operations.

Accounting unbundling requirements are specified with the ministerial degree and the Energy Authority has issued the guidelines on the compilation of unbundled financial statements in 2005. These guidelines are not legally binding but they show the procedure the Energy Authority considers fulfilling the requirements of the legislation. Both the distribution system operators and the transmission system operator are under the obligation to publish unbundled accounts with certain formula. They shall publish the unbundled financial statements as a part of the statutory financial statement.

The unbundled income statements, balance sheets and any supplementary information of separated operations are audited as part of the statutory auditing. The accounts are not subject of a separate audit and this audit is not addressed to the requirements of the regulator in any extent. Auditors are required to give their opinion in the auditor's report on whether the income statements and balance sheets and the supplementary information conform to Natural Gas Market Act and any rules and regulations related to it.

The Energy Authority has issued the guidelines in co-operation with chartered accountant on the auditing of unbundled financial statements in 2006. These non-binding guidelines aim to help the audit of unbundled financial statements in different electricity system operators and inform the auditors about the unbundling requirements.

The Energy Authority supervises that the network companies are fulfilling the unbundling requirements. The Authority has also powers to oblige the companies to correct mistakes or omissions. A conditional fine may be imposed to make decisions effective. As a final mean the Energy Authority may also withdraw the network license from the company.

#### **4.1.2 Technical functioning**

In the natural gas sector, there are 22 local distribution network operators and one transmission system operator. The transmission system operator is also the sole importer and wholesale supplier of natural gas.

On the basis of statistics in year 2013 delivered by the natural gas distribution system operators to the Energy Authority it can be concluded that interruptions of supply on the distribution level were minimal with total of 4 interruptions in distribution companies. In the Finnish natural gas transmission network there was 3 unplanned service interruptions during year 2013. Numbers from 2014 are not yet available.

#### **4.1.3 Network and LNG tariffs for connection and access**

According to the Natural Gas Market Act, the network operators are able to set the actual network tariffs and charges by themselves. There is no ex-ante approval of tariffs or prices of network services by authorities.

The Energy Authority confirms ex-ante the methodology to be used in setting both transmission and distribution network tariffs and connection charges. The Energy Authority has to approve ex-ante also the terms and conditions of network and connection services before the network operators are able to implement them.

The methodology of setting gas transmission and distribution network tariffs is confirmed by the Energy Authority prior to each regulatory period. After the regulatory period has ended the Energy Authority will validate the earnings of each network operator in its supervision decisions for the whole regulatory period, and will confirm the amount of any accrued earnings that exceed or fall short of reasonable earnings for the regulatory period. Where necessary, the supervision

decisions will include an obligation to return to the customers any windfall profit for the completed regulatory period through pricing for the new regulatory period. The supervision decisions will correspondingly confirm that the network operator may allow in its pricing for the new regulatory period, for the amount by which the earnings accruing to the network operator from the previous regulatory period fell below the reasonable earnings level.

The length of regulatory periods is four years. In September 2009, the Energy Authority confirmed the methodology for the second regulatory period of 2010 – 2013. In 2013 the regulatory period was extended until end of 2015. In November 2015, the Energy Authority confirmed with its decisions the methodology to be followed in natural gas system operation during the third and fourth regulatory periods in 2016 – 2019 and 2020 - 2023.

According to the Act on Supervision of Electricity and Gas Markets the methodology confirmed by the regulator may include the following items:

- method for the valuation of regulated asset value
- method for determining approved rate of return on capital
- method for determining realised profit of network operations
- method for setting efficiency targets for network operations

The present methodology of setting network tariffs includes all items mentioned above, besides efficiency targets for distribution network operations.

The network will be included into the regulated asset value as the net present value instead of a book value. The net present value of network will be updated annually by taking into account depreciation and investments. The approved rate of return on capital is determined by using a WACC-model (Weighted Average Cost of Capital) and will be updated annually. The methodology provides incentives to the transmission and distribution system operators to develop their network as all network investments are included into regulated asset base. For natural gas TSO the confirmed methodology includes also incentives to maintain and improve its cost efficiency and security of supply level.

The Energy Authority collects annually from the network operators several kinds of data of network operations, like tariffs of network services, financial information and technical key figures. Annually collected technical key figures include i.e. information on quality of supply. The Energy Authority has also powers to ask additional information from the transmission and distribution system operators on network operations for the supervision purposes.

According to the natural gas market legislation, charges of transmission and distribution services shall be public. TSO and DSOs shall have public charges and terms and conditions for network services.

#### **4.1.4 Cross-border issues**

The Finnish natural gas transmission network is only connected to the Russian natural gas pipeline. In Finland there is only one natural gas wholesale company, Gasum Oy. The company imports natural gas and transmits it through its own transmission network to large-scale consumers and distribution companies. Gasum Oy is also the owner of the Finnish side of the natural gas interconnector between Finland and Russia.

Due to the fact that there is only one undertaking acting at the same time as an importer, a wholesale supplier and a transmission system operator, there is no need for specific management of interconnection capacity or congestion.

In 2015, there were no changes in gas transmission capacity between Finland and Russia.

#### 4.1.5 Compliance

According to the Finnish legislation, the Energy Authority shall supervise that the natural gas transmission system operator, distribution system operators and suppliers are compliant with the provisions of the Natural Gas Market Act and any rules and regulations issued under it. As according to the Article 49(1) Finland has a derogation from the Article 9 of the Directive 2009/73/EC there are no legal obligations for the certification of the Finnish natural gas transmission system operator. Therefore, also provisions in Article 41(3) and Article 41(5) are not relevant for Finland. The Energy Authority ensures compliance of natural gas transmission and distribution system operators with their obligations under the Directive and other relevant Community legislation as required in Article 41(1)(b) by using mainly ex-post supervision. Investigation may start based on a request from any market actor or on the Energy Authority's own initiative. In 2014 any such investigation cases were not started.

The Energy Authority has powers to order in the obliging decision how the mistake or omission should be mended. The obliging decision may also include an order to refund customer a fee incorrectly charged from him. The Energy Authority may also impose a conditional fine to make a decision effective. Thus the powers of the Energy Authority are compliant with the Article 41(4)(a)(b)(c)(e). Since September 2013 the Energy Authority has also right to propose to the Market Court to impose administrative fines to network system operators or other natural gas market actors for the non-compliance with their obligations pursuant to the Natural Gas Market Act or the Regulation as required in the Article 41(4)(d).

In 2014 there were no such cases, where the Energy Authority should follow the binding decisions of the Agency or the Commission according to the Article 41(1)(d) or guidelines according to the Article 43.

## 4.2 Promoting Competition

### 4.2.1 Wholesale markets

#### Market

In the year 2015, the size of the Finnish natural gas market was 2.6 Bcm (2.9 Bcm in 2014, at 0 °C), which was all imported from Russia.

Only propane is produced indigenously as it is the only gas to be stocked in small amounts for immediate substitute for the possible lack of natural gas. The importing capacity is estimated to be about 9,500 MW.

#### Prices

Pricing of the energy sales of natural gas is based on the natural gas supply contract between Gasum and Gazprom's subsidiary company Gazprom Export. The supply contract is based on the special structure of Finland's natural gas market, which reflected in the fact that the price of natural gas follows not just changes in oil prices, but also fluctuations in the price of coal and domestic market energy prices.

The total wholesale price of natural gas, including transmission and natural gas energy, decreased by an average of 25 per cent during the course of 2015.

The price for natural gas energy excluding taxes decreased by 33 per cent between December 2014 and December 2015. The price of natural gas energy is index-linked to the price of heavy fuel oil and the price of imported coal, as well as to the domestic energy index published by Statistics Finland. Of these price factors, the price of heavy fuel oil fell by 47 per cent and the price of coal decreased by 6.3 per cent and the energy price index decreased by 2.1 per cent on average in 2015.

The natural gas transmission price did not change in 2015. Gasum Oy has not increased the natural gas transmission prices without taxes since the beginning of 2012. On the Finnish natural gas market, only natural gas users with a consumption of more than 5 million cubic meters and with remote metering can trade in the secondary market with the gas that they have acquired for their own use or retail. Additionally, Gasum Oy offers short term products that are sold on the secondary market operated by Kaasupörssi Oy, which is a subsidiary of Gasum Oy. Total trading amounted to 992 GWh or 48 per cent less than during the previous year. Secondary market trading of these were 598 GWh or 15 per cent of the total Finnish consumption of natural gas in 2015.

Estimated national average natural gas prices in December 2015 for one reference customer are shown in [Table 11](#). In smaller reference customer groups there are only few customers within distribution companies leading into problems when representative prices are to be defined. These prices are defined from end-user prices within obligation to supply.

**Table 11. Natural gas price for the reference customer in December 2014.<sup>5</sup>**

Cent/kWh	I4-1
Network charges (excl. levies)	0.95
Energy costs and supply margin	1.79
Taxes	1.54
Total (excluding VAT)	4.28

## **Competition**

The wholesale supply of natural gas to the large Finnish end-users and retailers is based on cost based contracts between Gasum Oy and the customers. A majority of the customers buy natural gas from Gasum Oy based on a public tariff, which Gasum Oy renews at the intervals of 4 years.

According to the Natural Gas Market Act the supplier in a dominant market position in a natural gas network shall supply natural gas at a reasonable price upon the request of a customer connected to the network, if the customer has no other economically competitive options to purchase natural gas through a natural gas network (obligation to supply).

Because the Finnish gas market has not been fully opened to competition and there is only one importer/wholesaler, the obligation to supply applies to all gas suppliers. Therefore, the customers in every customer category have the same right to purchase natural gas at a reasonable price. As regards the supervision of natural gas wholesale or retail pricing, the powers of the Energy Authority are ex post by their nature.

### **4.2.2 Retail market**

The retail supply of natural gas covers only about 5 per cent of the total consumption. The share of the top three retail suppliers is about 50 per cent of the total volume.

The size of the natural gas retail market in Finland in relation to the total consumption of natural gas is small. The retail supply of natural gas covers only about 5 per cent of the total amount of natural gas used in Finland.

In Finland, there are only about 29,300 customers in the natural gas market. Less than 150 customers - heavy industrial users as well as power and district heating plants - use more than 95 per cent of the total natural gas consumption in Finland. The largest customer segment (21,200 customers) consists of households who buy natural gas for cooking. However, the total

<sup>5</sup> Reference customer: annual consumption 150,000 MWh, 4,000 hours.

natural gas consumption of this segment amounts to less than 1 mcm (0.02 per cent of total consumption).

At the end of 2015, there were 22 natural gas retail suppliers. Many of the natural gas retailers in Finland are relatively small having only dozens of customers. The share of the top three retail suppliers is about 50 per cent of the total volume. In addition to the original domestic retail suppliers, there are also retail suppliers owned by foreign-based companies. The market entrance of the foreign-based companies has occurred through acquisitions.

No new retail suppliers without any affiliate connection to either TSO or DSOs in Finland have entered the market since the introduction of natural gas markets. As regards vertical integration in the natural gas retail market, the only wholesale supplier and TSO Gasum Oy is also a natural gas retail supplier.

#### **4.2.2.1 Monitoring the level of prices, the level of transparency, the level and effectiveness of market opening and competition**

The Natural Gas Directive allows to Finland a derogation from the obligation to liberalise its natural gas market, as long as Finland only has one main supplier of natural gas and is not connected to the European gas network. For that reason, supplier switching is not possible in the present situation.

#### **4.2.2.2 Recommendations on supply prices, investigations and measures to promote effective competition**

In 2015 the Energy Authority has not given any direct recommendations on supply prices. However, the Energy Authority publishes monthly statistics on prices in order to promote competition and public market analysis.

### **4.3 Security of supply**

#### **4.3.1 Monitoring balance of supply and demand**

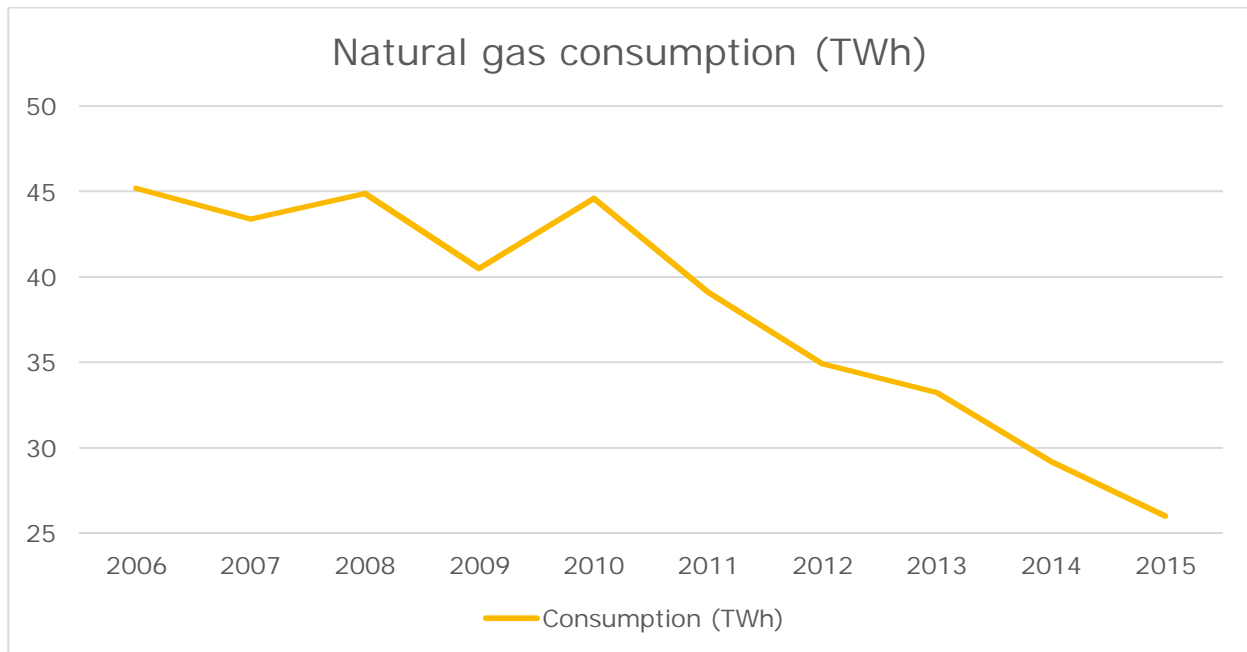
The Energy Authority has a responsibility for monitoring the security of supply of gas. The Energy Authority maintains information on transmission network capacity and availability, while the Ministry of Employment and the Economy has the responsibility for preparing the estimates for the demand. In 2015 there were no changes in these competences.

According to the Natural Gas Market Act, the role of the regulator in security of supply issues is to monitor the balance between supply and demand in natural gas, the quality and maintenance of networks and measures to cover the peak demand and avoid the supply shortages. Energy Authority publishes a report on security of supply of gas every year.

All natural gas used in Finland is imported from Russia. There's no natural gas production in Finland. Small-scale biogas is produced and pumped to the gas transportation network in two different locations. In addition propane can be produced indigenously as it is the only gas to be stocked in small amounts by Gasum Oy for immediate substitute for the possible lack of natural gas. The importing capacity of Gasum Oy is estimated to be about 9,500 MW. During the peak demand hour in 2015 consumption was 6,126 MWh/h. In natural gas shortage situation market based mechanisms are used to reduce gas consumption at the first stage. The price of gas that exceeds gas users intended capacity is increased to reduce consumption. During winter 2014-2015 and 2015-2016 there was no need to increase the price of natural gas to reduce consumption.

#### 4.3.2 Expected future demand and available supplies as well as envisaged additional capacity

The competitiveness of natural gas compared to other fuels has weakened during past few years and thus the usage of gas has decreased. Natural gas consumption in 2006 - 2015 is shown on [Figure 7](#).



**Figure 7. Natural gas consumption (TWh), 2006-2015**

Currently there are no specific plans to expand natural gas transmission pipelines. However, there is a long term plan to expand the gas network to the western part of Finland, mainly to the cities of Turku and Naantali. Length of pipeline extension would be about 200 km.

In addition, there are several small scale off-grid LNG terminal projects in planning/construction phase (Hamina, Rauma, Pori and Tornio). These terminals would mainly serve local industrial users, maritime users of LNG and LNG trucks. Three of these LNG terminals will be off-grid terminals without any connection to the natural gas transmission network.

A state-owned company, Baltic Connector Oy and Estonian gas TSO have also planned to build a gas pipeline to link Finnish and Baltic natural gas transmission networks. This new pipeline, Balticconnector, would enable that the Baltic natural gas storage facilities and LNG terminal could be used to improve reliability in natural gas transmission to Finland. Balticconnector has also been included in the list of Projects of Common Interest (PCI).

#### 4.3.3 Measures to cover peak demand or shortfalls of suppliers

In natural gas shortage situation marked based mechanisms are used to reduce gas consumption at the first stage. The price of gas that exceeds gas users guaranteed capacity is increased to reduce consumption. This kind of market based mechanism is typically used 0-2 times during the winter time. If shortage situation continues TSO is allowed to cut down consumption of non-gas dependent customers. If shortage situation still continues, substitute fuels (HFO, LFO, coal, peat, wood and LPG), a special propane air mixing unit of 350 MW and movable LNG-regasification plant of 75 MW can be used.

Natural gas users, excluding consumer customers, are primarily responsible for their own contingency planning, condition of possible backup fuel systems, backup fuel buffer stock and fuel transportation.

During system malfunction almost all natural gas can be quickly switched to other fuels or natural gas driven generation capacity can be replaced by other generation capacity using other fuel than gas. Light and heavy fuel oil are the primary backup fuels for natural gas. In specific cases air-propane mixture and liquefied petroleum gas can be used as backup fuels too. Biogas can be used as a backup fuel as well.

If the natural gas supply is prevented over an extended period the obligatory storages can be used too. The National Emergency Supply Agency controls for use of obligatory storages in Finland. Total volume of stockpile fuels and obligatory storages must be at least equal to cover normal consumption of imported fuels for five months.

The gas crisis management team coordinates activities, which are related to the severe gas supply disruptions. The group consists of members in Finnish National Emergency Supply Organization's natural gas division as well as coordinator person from the Ministry of Employment and the Economy.



## 5 Consumer protection and dispute settlement in electricity and gas

### 5.1 Consumer protection

#### 5.1.1 Electricity

##### **Compliance with Annex 1**

According to the Article 37(1)(n) of the Directive 2009/72/EC the national regulatory authority shall help to ensure, together with other relevant authorities, that the consumer protection measures, including those set out in annex 1 are effective and enforced. Annex 1 lists a number of consumer protection measures that should be guaranteed in consumer relations. Legislative changes required by the Directive 2009/72/EC were approved by the Finnish parliament in September 2013.

In the Electricity Market Act the rules concerning the contract information are provided in the paragraph 86 and the current legislation fulfils the requirements stated in the annex 1 section 1(a).

In the Electricity Market Act the rules concerning changing contractual terms are provided in the paragraph 93. The paragraph fulfils requirements set in the annex 1 section 1(b).

The Competition and Consumer Authority and the Consumer Disputes Board oversee that the contractual terms are reasonable for the consumers and followed by the industry. Also the surveillance of selling practices belongs to their jurisdiction.

The requirements set in sections 1(c), (d), (e), (g) and (j) are fulfilled in paragraphs 26, 27, 57, 67, 68 and 69 of the Electricity Market Act.

In the Electricity Market Act there are no specific rules concerning requirements provided in Annex 1 section 1(f) because individual consumer disputes in electricity related issues may be solved in the Consumer Disputes Board according to the Act on the Consumer Disputes Board.

In 2015, the requirements of Annex 1 section 1(i) were fulfilled by the paragraph 3 of the Act on the energy efficiency services of companies operating in the energy market. From the beginning of 2016 the corresponding provisions are found in paragraphs 57 and 69 of the Electricity Market Act.

The legislation related to the section 1(h) of annex 1 is dealt with below.

##### **Ensuring access to consumption data**

Article 37(1)(p) states that the national regulatory authority shall ensure access to customer consumption data, the provision for optional use, of an easily understandable harmonized format at national level for consumption data, and prompt access for all customers to such data under point (h) of Annex 1.

The paragraph 8 in chapter 6 of the Government Decree on Determination of Electricity Supply and Metering (66/2009) states that customers have a right to their own consumption data free of charge. Hourly registered metering data must be released to the customer at the same time when it is given or ready to be given to his supplier. There must be a permission from the customer to submit metering data to any other party than the customer himself and the supplier. The metering data must be given in the format that corresponds to general procedures followed by the industry and the network system operator. This fulfils the requirements of section 1(h) of the Annex 1 of the directive.

## 5.1.2 Gas

### **Compliance with annex 1**

Article 41(1)(o) states that the national regulatory authority shall help to ensure, together with other relevant authorities, that the consumer protection measures, including those set out in Annex I, are effective and enforced. Annex 1 lists a number of consumer protection measures that should be guaranteed in consumer relations. The current legislation fulfils the consumer related requirements stipulated by the Directive 2009/73/EC.

In the Natural Gas Market Act the rules concerning the contract information are in paragraph 7 under chapter 4. The current legislation fulfils the requirements set in the annex 1 section 1(a).

In the Natural Gas Market Act the rules concerning the changing the terms of contract are in paragraph 7 under chapter 4. The paragraph fulfils requirements set in the annex 1 section 1(b).

The Competition and Consumer Authority and the Consumer Disputes Board oversee that the contractual terms are reasonable for the consumers and followed by the industry. Also the surveillance of selling practices belongs to their jurisdiction.

The requirements in sections 1(c), (d), (g) and (j) are fulfilled in the current legislation in paragraph 6 of chapter 2 and paragraphs 1, 2 and 3 of chapter 4 of the Natural Gas Market Act. The section 1(e) of the annex 1 does not apply to Finland due to the derogation allowing that natural gas consumers are not able to switch supplier at the present stage of market opening.

In the Natural Gas Market Act there are no specific rules concerning requirements provided in Annex 1 section 1(f) because individual consumer disputes in natural gas related issues may be solved in the Consumer Disputes Board according to the Act on the Consumer Disputes Board.

In 2015, the requirements of Annex 1 section 1(i) were fulfilled by the paragraph 3 of the Act on the energy efficiency services of companies operating in the energy market. From the beginning of 2016 the corresponding provisions are found in paragraph 3 of chapter 4 of the Natural Gas Market Act.

The legislation related to the section 1(h) of annex 1 is dealt with below.

### **Ensuring access to consumption data**

Article 41(1)(q) of the directive 2009/73/EC states that the national regulatory authority shall ensure access to customer consumption data, the provision for optional use, of an easily understandable harmonized format at national level for consumption data and prompt access for all customers to such data under point (h) of Annex I.

The paragraph 2 a in chapter 3 of the Natural Gas Market Act states that customers have a right to their own consumption data free of charge. Likewise, they have a right to give any other party access to that data. The metering data must be given in the format that corresponds to general procedures followed by the industry and the network system operator. This fulfils the requirements of section 1(h) of the Annex 1 of the directive.

## 5.2 Dispute settlement

The Energy Authority monitors the transmission system operators', distribution system operators' and suppliers' overall compliance with the electricity and natural gas market legislation. However, the Energy Authority does not have power for dispute settlements between consumers and energy companies in the individual contractual disputes. The paragraph 29 of the Act on the surveillance of the electricity and natural gas markets states that complaints against the network system operators, natural gas storage system operators or LNG system operators must be handled within two months after receipt of the complaint. According to paragraph 38 the regulatory authority's decisions shall have binding effect unless and until overruled on appeal. Paragraph

30 gives to the Energy Authority the power to get relevant information from the market participants and conduct inspections on their grounds in order to get relevant information for monitoring purposes.

In Finland, the disputes between consumers and entrepreneurs in the individual cases may be solved in the Consumer Disputes Board, which is a neutral and independent expert body whose members represent consumers and business in a balanced way. The Consumer Disputes Board does not charge any fees for handling disputes. The Board's written decision is a recommendation and the parties are not obliged to follow it. A dispute handled by the Board can always be taken to a court of law.

The Consumer Ombudsman may bring the class action, for instance, against a network operator or supplier and act as the representative of the class in a general court of law.