ESTONIAN COMPETITION AUTHORITY

ESTONIAN ELECTRICITY AND GAS MARKET

REPORT

TALLINN 2008

Contents

1. Foreword

One of the 2007 milestones was the merger of governmental agencies within the administrative area of the Ministry of Economic Affairs and Communications. Thus, since 1 January 2008 the Competition Board, the Energy Market Inspectorate and the area specific regulatory services of the Estonian National Communication Board are merged, forming the Estonian Competition Authority[1]. In addition, some of the functions related to market regulation of the railway department of the Ministry of Economic Affairs and Communications were also handed over to the merged Authority. While the Technical Inspectorate, the Railway Inspectorate and frequency management of the National Communication Board were also merged and formed the Estonian Technical Surveillance Authority.

Similarly to years 2005-2006 also in 2007 the words fuel and energy were important key words for both undertakings and customers. The easiest way to realize this is looking at the rapidly changing gasoline and diesel fuel prices. However, consumers are used to it for a long time already. It should be noted yet that both electricity and natural gas, as well as district heating sectors are directly or indirectly dependent on the world market price for oil. This does not have a direct impact on electricity consumers in Estonia, as the major portion of electricity is produced from local oil shale. However, consumers of natural gas and district heat supply services are still influenced.

Another important topic in 2007 was CO_2 emission reduction policy and the future of electricity production in Estonia, which much depends of the emission issues. As it is explained further in the present report the most critical year is likely to be 2016, when most of the boilers of AS Narva Elektrijaamad (Narva Power Plants) energy blocks are not going to comply with the EU environmental requirements any more and have to be closed down or renovated. According to prognoses a power demand in the mentioned year shall be 2000 MW. This means, at least 1300 MW of new capacity should be implemented. Saying it in other words, supply for about two thirds of the demand in a 10-years period is missing.

The theme has been thoroughly discussed and the range of ideas spread from one extreme to the other: beginning with an idea to cover all the demand by windmills erected in the Baltic Sea, and ending with an idea of erecting an Estonian own individual nuclear power plant. At the same time, the European Commission's policy that has an objective of significant CO_2 emission reduction, puts Estonia into a hard situation. If since 2013 all the CO_2 needed for electricity production has to be purchased at the market price, the competitiveness of the oil shale based energy industry is set under question. A major concern related to future security of supply is the circumstance of suspension of new energy blokcs erection plans in Narva, while only a year ago those investment decisions seemed quite certain. Now it looks that Eesti Energia AS is uncertain about taking the risk of investment decisions unless the CO_2 policy is clear. Nevertheless, if Estonia wants to cover the demand by its own electricity production in 2016, the decisions have to be made already today.

Regarding natural gas consumers, the year 2007 was not a pleasant one for them as well. They were surprised by almost one and a half times price increase, which in turn was transferred to a price jump for a large part of heat consumers. Unfortunately, the

Estonian Competition Authority has rather limited possibilities for protection of gas consumers' interests. It can be practiced only through the regulation of prices for network services. In fact, the infrastructure cost for a typical gas burning district heating boiler plant is below 10% of the sale price. For household gas consumers the same indicator is between 10 and 20%, depending on consumer. For comparison, the share of network services in the household electricity consumer price is up to 60 per cent. This shows that the Competition Board shall have an important role in consumer price formation also in open electricity market conditions.

An important circumstance to consider is that electricity and gas, as well as district heat reaches customers by means of respective network infrastructure, while the charges for using of an infrastructure and the network are completely independent from oil price fluctuations in the world market. As an infrastructure is a natural monopoly, its price regulation is under control of the Estonian Competition Authority. The formation of infrastructure service prices first of all depends on local economic situation, such as investment needs, changes in the prices for goods and services according to national rate of inflation, technical efficiency. Thus, infrastructure charges have no relation to the changes in the world market fuel prices, the prices for those services are stable and as a rule, change at a slower rate than the rate of inflation. According to enforced law the supplier has to separate on its electricity and gas customer bills the cost for network service or, what is the same, the cost of using infrastructure and the cost for energy or fuel. Thereby customers can follow what their electricity or a gas bill's total is formed of.

According to the EU Electricity and Gas Directive electricity and gas customers should have a non-discriminatory access to the network and should be able to choose their supplier freely and change the supplier, if wished. It can be compared, for example, with the telecom service market in which customers can change the service provider/operator, while the network owner must give access to his telecom network to all operators. Estonia has a transitional period until 2013 for its electricity market opening. By 2009 35% of the market should be opened. This means that already then larger industrial customers can themselves choose the preferable supplier or producer of electricity. As regards gas market there is no transitional period and since 1 July 2007 all customers can choose their seller of gas.

A substantial development in 2007 was the continuation of indexation of electricity network charges for both the transmission network operator (OÜ Põhivõrk) and the distribution network operator (OÜ Jaotusvõrk). Namely, beginning from 2005 the network charges are approved for a three-year period and adjusted annually according to the rate of inflation and the volume of sales. Based on the knowledge and experience we have today it can be concluded that the indexation has been successful and the same approaches shall be undertaken also in the future. The new regulation period started in 1 March 2008 and lasts until 1 March 2010. In addition, the new price limit of 147,69 EEK/ton was approved for the oil shale mining industry AS Eesti Põlevkivi, as well as the new production price for Narva Power Plants of 44,64 EEKcents/kWh (weighted average production price) was approved. It should be noted that the former price limit of 133 EEK/ton was valid since 1998, thus, during 10 years. The production price for Narva Power Plants was valid since 2002, thus 6 years.

On the basis of paragraph 66 (10) of the Alcohol, Tobacco, Fuel and Electricity Excise Tax Act the following excise taxes were introduced since 1 January 2008: 5 EEKcents/kWh for electricity and 157 EEK/thousand m^3 for natural gas. Similarly, all electricity consumers have to pay a fee for subsidising of renewable energy and heat and power cogeneration. The level of the fee in 2007 was 2,18 EEKcents/kWh, while in 2008 it is 3,03 EEKcents/kWh. For final cunsumers value added tax (VAT) is added to those fees.

The present report intends to provide best possible overview of the energy market functioning and the security of power supply. We sincerely hope that through this report the readers can clarify the organisation of market and its regulation as well.

With best wishes,

Märt Ots
Director General
Estonian Competition Authority

2. Energy market regulatory authority review

Since 1 January 2008 the Competition Board, the Energy Market Inspectorate and the area specific regulatory services of the National Communication Board are merged constituting the Estonian Competition Authority[1], hereinafter the CA. In addition, some of the functions related to market regulation of the railway department of the Ministry of Economic Affairs and Communications were also handed over to the merged Authority. While the Technical Inspectorate, the Railway Inspectorate and frequency management of the National Communication Board were also merged and formed the Estonian Technical Surveillance Authority.

Functions and activities of the CA are stipulated by the Government of the Republic Act, by special laws that regulate communications, postal service, railway and energy sector, as well as by the Statutes of the Authority.

In compliance with above mentioned legal acts the CA carries out its energy sector market regulatory tasks as follows:

- approves prices for electricity and gas network services prior to entry into force (so-called *ex-ante* price regulation)
- approves methodologies for connecting with electricity and gas networks prior to entry into force
- approves weighted average price for electricity sold to non-eligible customers and the price of gas sold to household customers
- approves district heat prices in case the undertaking's annual consolidated sales is over 50 000 MWh (for undertakings with sales volume of below 50 000 MWh the price is approved by local municipal authorities)
- approves the price for heat produced in the process of heat and power co-generation
- settles disputes between local municipal authorities and undertakings supplying district heat on the pricing of heat
- approves standard terms and conditions of contracts for electricity network services, electricity supply for non-eligible customers and gas supply for household customers
- issues and revokes activity licences for undertakings providing network services, for producing and sale of electricity, providing of gas network services and sale of gas, producing and sale of district heat; determines the conditions of the issued activity licences and monitors fulfillment of the conditions
- monitors the adequacy of prices for the balance energy sold by the transmission system operator (National Grid) and the conditions of balance contract
- supervises observing by market participants provisions of law, requirements of regulations, fulfilment of relevant obligations like separation of accounts,

independence of the system operator, disclosure of information, third-party access to the network, etc.

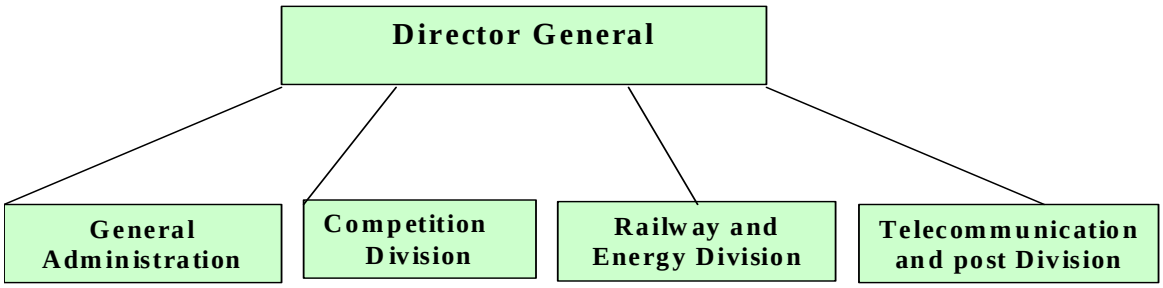
- discloses the approved prices, tariffs and charges on its web site
- monitors the quality testing of liquid fuels sold in the market and supervises the quality of electricity supply
- settles disputes between market participants in the capacity of pre-court settlement authority
- issues precepts and initiates misdemeanour procedures in the cases of violation of the provisions of law
- cooperates with other Estonian supervisory institutions and regulatory authorities of other countries, as well as performs other functions prescribed by the legislation and by its Statute
- prepares reports to the EU Commission on electricity and gas market functioning in Estonia

The CA is an authority independent in its decision making. According to the Administrative Procedure Act and other legal acts applicable within the energy sector (Electricity Market, Natural Gas Market, District Heating and Liquid Fuels Acts) the CA issues administrative acts: decisions and precepts. Some examples of those can be as follows. By decisions, for instance, the ECA either grants approval to prices or refuses to. By decisions market licences to undertakings are issued or refused to, or revoked. Also, by decisions customer complaints against undertakings' performance or disputes between markets participants are settled. Precepts are issued when provisions of law are violated by undertakings. Law stipulates that the decisions have to be motivated and justified. The purpose, indeed, is to give customers a chance to refer to the CA instead of court. This way a decision can be received faster, as a rule, because law stipulates that the CA has to make its decision during 60 days at the latest since receiving of an application.

The CA's decisions are independent both politically and from energy undertakings, guided exclusively by stipulations of law. The CA's decision cannot be changed or invalidated neither by the Minister nor by the Government. Respective regulation is prescribed by the Government of the Republic Act. Its paragraph 93 (6) stipulates that the procedure for governmental supervisory control shall not extend to:
1) acts of state supervision and decisions made in the application of enforcement powers of the state
2) pre-court settlement of a complaint or protest made with respect to a legal instrument or act of an agency of executive power or of an official, in the cases prescribed by law

The CA's decisions and precepts can be challenged with an administrative court in 30 days since receiving of a decision or a precept. Decisions of an administrative court can in return be appealed with a circuit court and the decisions of the circuit court with the Supreme Court. Estonia is the state based on the rule of law and that is why challenging of decisions and precepts shall be deemed a normal process in which for both undertakings and customers their legal protection is guaranteed. In 2007 the CA has made altogether 289 decisions and precepts. Compared with the period since 2003 an average annual number of decisions is 200. Only 5 out of them have been lost by

court decisions. This can be regarded as a good result and as an indicator of the quality of the CA's work.



The CA is managed by Director General. The appointment into office of Director General and all other CA employees is based on the Public Service Act. Director General is appointed by the Minister of Economic Affairs and Communications at the proposal by the Chancellor of the Ministry. A precondition for appointment is his attestation by the Commission at the State Chancellery. Director General is nominated without a specified term.

Dismissing from office of the Director General is similar to the appointment, on the basis of the Public Service Act and Government of the Republic Act. According to them Director General is dismissed from office by the Minister of Economic Affairs and Communications at the proposal by the Chancellor of the Ministry. Director General cannot be dismissed because of political reasons.

The CA comprises three divisions, each managed by a head of division. The heads of divisions are at the same time also deputies to Director General.

Tasks of the Competition Division are determined by the Competition Act. These are identical to the functions of the former Competition Board. In brief these are: control of mergers, revealing of prohibited agreements and proceedings in connection with abuse of market dominant position. The latter particularly relates to the energy sector, in which a large number of unertakings have dominant position on market.

Tasks of the Communications Division are stipulated by the Electronic Commnications and Postal Acts. These are identical to area specific regulatory functions of the former National Communications Board.

The Energy Regulatory Division is, to a large extent, the former Energy Market Inspectorate, which additionally has taken over the function of railway market regualtion.

Each division is managed by respective head of division, which is appointed by Director General. Similarly to Director General, a precondition for appointment a division head is his/her attestation by the Commission at the State Chancellery. Most important decisions of a division have two signatures – by Director General and by

head of division. In other cases decisions can be made by head of division individually.

The CA is financed from state budget. The budget for 2008 is **30,67 million kroons (1 960 000 €)**. 0,236 million (15 100 €) out of it is the fee for membership in international organisations, while 23,75 million kroons (1 517 600 €) is employee salaries and 6,69 million (427 242 €) are administrative costs.

In accordance with the state budget preparation procedures every spring time the CA submits a preliminary draft application together with the statement of grounds to the Ministry of Economic Affairs and Communications. The final budget is firstly approved by the Government and afterwards, on the basis of the State Budget Act, by the Parliament.

Considering the financing of the energy market regulatory authority – the former Energy Market Inspectorate - the biggest portion of the budget was the employment cost - in 2007 it was 3,953 million kroons. 0,98 million out of it was social tax, which, according to the Estonian taxation law, is paid by the employer. So the actual salaries without social tax totalled 2,973 million, which gave a monthly average salary level of 22 500 kroons. Such a level can be deemed competitive in Estonia and this enables employing people with strong professional skills in their specific field. Within the public sector the CA's salary level is higher than an average, hence well competitive.

The merger has improved possibilities for hiring high skill employees, as the joint organisation has higher budget. The merger has facilitated also to savings in administration cost and as a result – more can be utilised for employing stronger specialists.

The energy market regulator's scope of work can be characterised by the number of decisions and precepts made during year, by the number of analyses carried out, as well as by the total number of regulated undertakings.
Some key performance figures for 2007 can be outlined as follows:
57 activity licence issuance decisions
25 decisions and precepts on the settlement of market participants' disputes
37 decisions on connection fee methodologies and standard conditions
170 decisions on granting price approval or disapproval

The biggest scope of work is within price control and approval process. Therefore, the best indication of the Division's performance is the number of undertakings for which price regulation is applied to. As per 2008 the CA carries out price control for undertakings as follows:

Electricity transmission network	1
Electricity distribution networks	40
Gas transmission network	1
Gas distribution networks	27
District heat suppliers	40
Electricity and heat production, and oil shale mining	3

So the number of undertakings to which regular price control is imposed totals 112. In fact, during the last three years the number of regulated enterprises has increased significantly. The reason is the development of gas networks and acquisition of district heat suppliers by larger companies. In such cases the regulation of price is transferred from local municipal authorities to the CA, as provided for by the District Heating Act.

It can be concluded that the requirement for independence of regulatory authorities stipulated by the EU Electricity and Gas Directive is fulfilled in Estonia. The Authority is independent in decision making and in management of the organisation. The level of financing can also be considered sufficient.

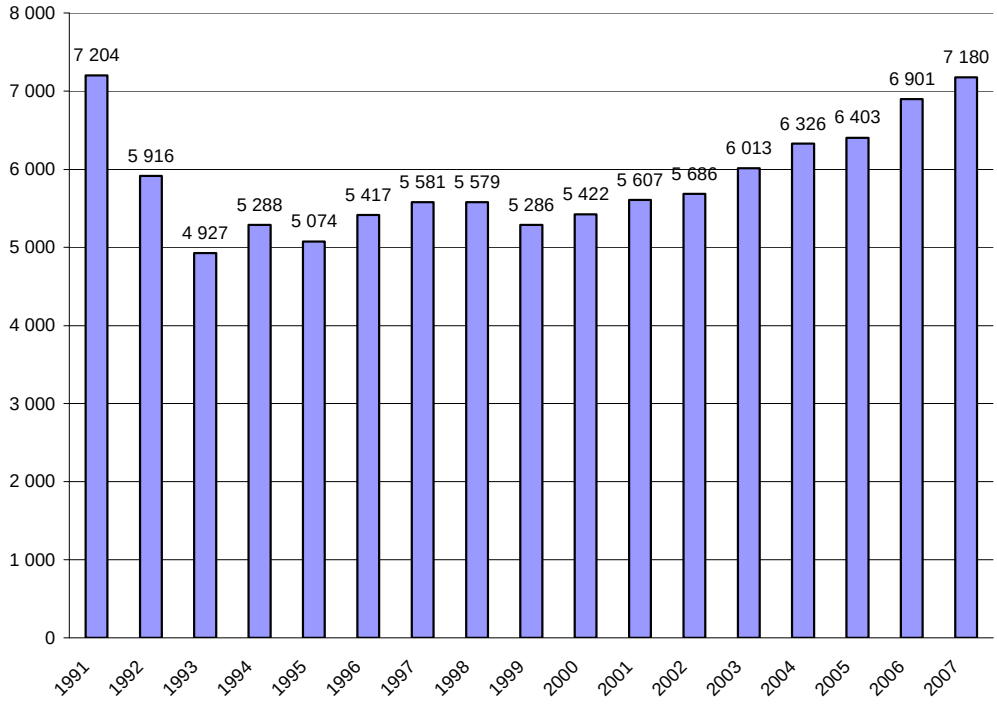
3. Electricity market

3.1. Electricity market review

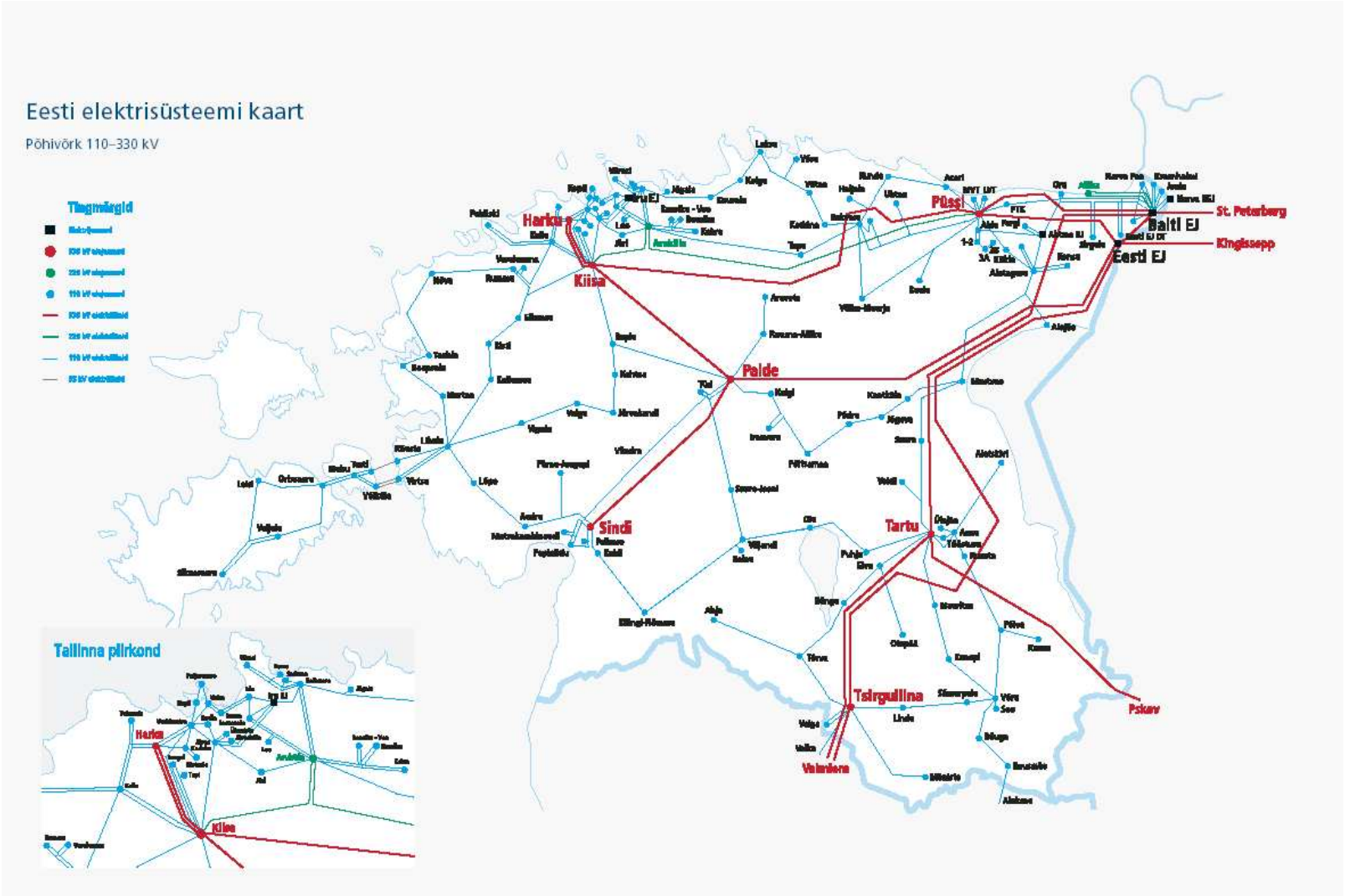
The Estonian electricity system has been built up as part of the north-western common power system of the former Soviet Union. Estonia is part of the common synchronised system together with Russia, Belarus, Latvia and Lithuania. The map of the Estonian power system is presented in drawing 3.1.2 below.

As seen in the drawing, with neighbouring countries Estonia currently has connections with Russia, Latvia and Finland. With Finland the connection goes through the new 350 MW DC cable that was commissioned in the end of 2006. It should be clarified yet that Finland is part of the Nordic power system Nordel, which is not synchronised with the north-western Russian system that Estonia belongs to.

In comparison with other EU countries the Estonian electricity market is very small. According to the statistics of 2007 the load peaked at 1537 MW with an annual production of 10,9 TWh. Out of this 7,2 TWh was domestic consumption, while export totalled 2,42 TWh. However, since 1999 a steady annual growth in electricity consumption has taken place, with an annual average of about 3,5% (see diagram 3.1.1). Such Estonian growth corresponds to generally known statistical assumption that the rise in electricity consumption constitutes at least a half of the rise in GDP.

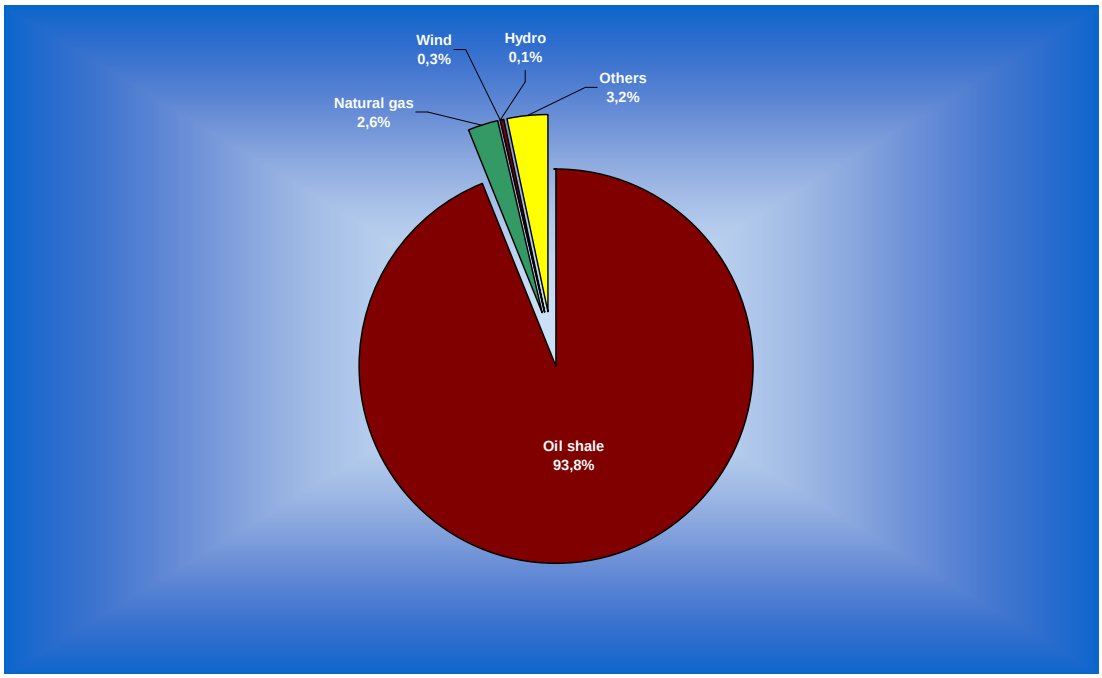


Drawing 3.1.1 Final consumption of electricity in Estonia in GWh (network losses not included)
Source: Statistical Office



Drawing 3.1.2 Map of Estonian power system

Another specific of the Estonian electricity market is an extreme concentration and reliance on a single fuel. Namely, 94% of electricity is produced with oil shale, the share of other fuels is very modest. Thus, the share of natural gas is only 2,6%, while the share of renewable sources and peat is only 0,4% and for other fuels 3,2% (drawing 3.1.3). Essentially, all the production is controlled by the largest energy enterprise Eesti Energia AS that possesses 96% of installed capacity. In 2007 it gave 95,3% of the Estonian electricity production. It should be noted here that practically all electricity production is based on domestic fuels and thereby Estonia is independent from fuel imports.



Drawing 3.1.3 Sources of energy for electricity production. Source: Statistical Office

A positive side of the power system in all three Baltic countries is the very strong power transmission infrastructure. In fact, Baltic countries are the only EU region in which transmission power deficit and the so-called bottle-necks do not exist. At the same time rather poor cross-border connections of Baltic countries with other Member States should be taken into account. In fact, the only one is the 350 MW DC sea cable connections between Estonian and Finland. Since the connection with other EU countries is limited, the area can be regarded as Baltic electricity market in which the non-member Russia, and to some extent also Finland, can be involved.

An extreme concentration features also other Estonian electricity market sectors. Besides the 95% of production market also the transmission network and a distribution networks with its market share of 86%[1] belong to the Eesti Energia AS group. Moreover, the largest oil shale producer, mining industry AS Eesti Põlevkivi also belongs to Eesti Energia AS group.

Formation of the Estonian electricity market dates back to 1998, when the Energy Act was introduced. On the basis of the Act four sectors were regulated: electricity, heat,

[1] The basis for computation of the market share is the sale of distribution service to final customers less sale to other distribution undertakings.

natural gas and liquid fuels. In 2003 the Energy Act was replaced by four separate acts: Electricity Market, Natural Gas, District Heating and Liquid Fuels Acts.

In the 1998 Energy Act the status of an eligible electricity customer was defined as follows: the customer with an annual consumption of over 40 GWh. The Electricity Market Act, which entered into force in 1 July 2003, did not change the determination. In 1 May 2004 Estonia joined the EU. Together with the joining an exemption in connection with market opening became enforced for Estonia. According to the exemption 35% of the market shall be opened by 2009, while by 2013 the market shall be opened for all customers. Table 3.1.1 below presents the dynamics of market opening. According to a preliminary estimation by the CA the annual consumption of an eligible customer in 2009 shall be 2,3 GWh. Eventually this will be determined by a regulation issued by the Minister of Economic Affairs and Communications.

Table 3.1.1 Market opening in Estonia

Year	Definition of eligible customer by annual consumption in GWh	% of market opening
1995	0	0
1997	0	0
1999	40	10
2001	40	10
2003	40	12
2005	40	12
2006	40	13
2007	40	13
2008	40	13
2009	2,3[1]	35
2013	All customers	100

[1] Note: The definition of an eligible customer for 2009 is based on an annual consumption of 2,3 GWh, evaluated by the CA. The final decision on eligibility shall be made by the Minister of Economic Affairs and Communications. An annual consumption of eligible customers was estimated upon statistical figures for 2007.

According to the Electricity Market Act the non-eligible customers shall buy electricity from their distribution network operator, or from seller designated by the operator, while the energy has to be produced by either oil shale using Narva Power Plants (AS Narva Elektrijaamad), in the process of heat and power cogeneration or by a small producer (of less than 10 MW capacity).

3.1.1 Cross-border power connections, availability of power reserve and its distribution

As mentioned above, Estonia has electrical power transmission connections with Russia and Latvia and from the end of 2006 also the direct current (sea cable) connection with Finland. Existing connections are shown in drawing 3.1.2. From Narva two lines lead to Russia at the voltage level of 330 kV and 220 kV with the total capacity of 1050 MW. From southern part of Estonia one 330 kV line with the capacity of 500 MW connects with Russia. In the opposite Russia-Estonia direction the same line has pass-through capacity of 400 MW. In the southern part of Estonia there are also 330 kV lines to Latvia with the capacity of 750 MW.

By statistics of 2007 the peak load from Narva to the direction of Russia was 565 MW, while form south Estonia to Russia it was 204 MW. The peak load towards Latvia was 623 MW. Hence, the technical capacity is much higher than the actually needed one and a lack of capacity has never been experienced. The transmission capacity data are presented in table 3.1.2. According to the prognosis submitted by the transmission network operator any transmission capacity deficit is not foreseen before 2015. Due to the circumstances the regulatory authority has no need for capacity distribution.

Above mentioned circumstances don not apply to the connection with Finland (Estlink). The Estlink is the so-called commercial connection, capacity of which can only be utilized by its owners. When this connection will be opened for third party access (in 2013 at the latest), a deficit of pass-through capacity and in connection with that also a need for capacity distribution is likely to take place.

Table 3.1.2 Cross-border transmission capacity

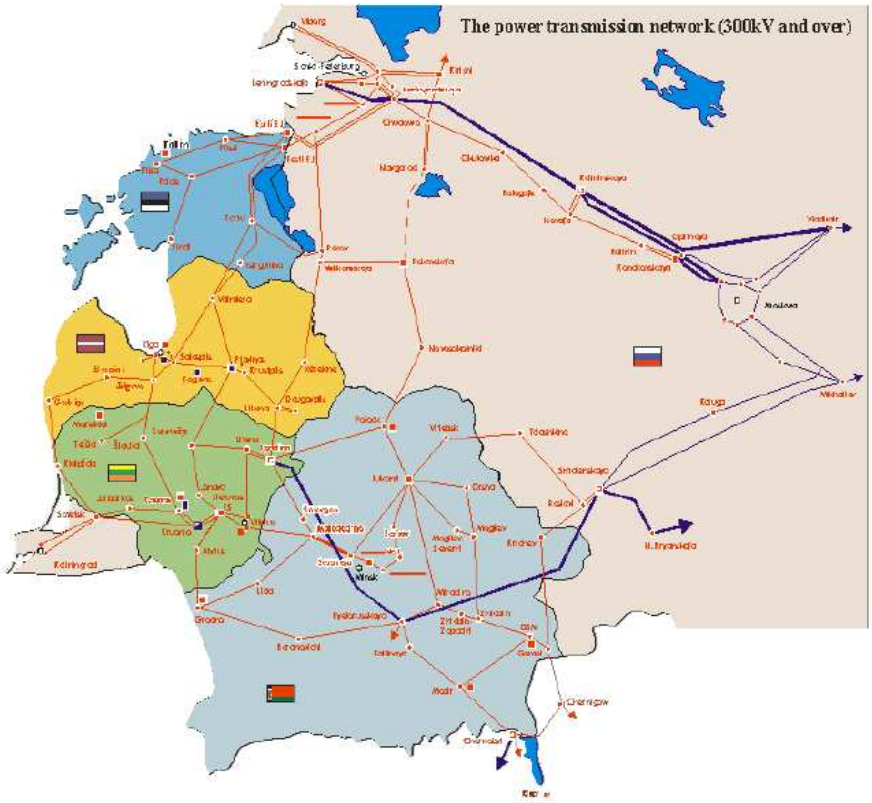
2005	1050/950*	500/400**	750	-	450	236	885	-
2006	1050/950*	500/400**	750	-	483	141	658	-
2007	1050/950*	500/400**	750	365	565	204	623	388
2008	1050/950*	500/400**	750	365	493	214	490	385
2009	1050/950*	500/400**	750	365	-	-	-	-
2010	1050/950*	500/400**	750	365	-	-	-	-
2011	1050/950*	500/400**	750	365	-	-	-	-
2012	1050/950*	500/400**	750	1065	-	-	-	-
2013	-	-	-	1065	-	-	-	-
2014	-	-	-	1065	-	-	-	-
2015				1065				
2016	-	-	-	1065	-	-	-	-

* - in Narva-Petersburg direction the pass-through capacity is 1050 MVA, while in Petersburg-Narva direction 950 MVA

** - in Tartu-Pihkva direction the pass-through capacity is 500 MVA while in Pihkva-Tartu direction 400 MVA

*** - pass-through capacity depends on internal networks of Russia, Latvia, Lithuania and Belarus - exact data about the development of their transmission networks are not currently available

**** - maximum load in normal conditions with 20% reserve



Drawing 3.1.4 Map of power system of Baltic countries and north-western Russia

3.1.2 Estlink

The Finnish-Estonian connection started operation in the end of 2006. The owner of the cable is AS Nordic Energy Link, with its shareholders as follows:

Eesti Energia AS (Estonia)	39,9%,
Lietuvos Energija AB (Lithuania)	25%
VAS Latvenergo (Latvia)	25%
Finestlink (Finland)	10,1%

Both the Finnish energy market regulatory authority and the Estonian Ministry of Economic Affairs and Communications granted an exemption to utilise it as a commercial project, without applying to it the principle of third party free access. All the available capacity is distributed between the owners on contractual basis until 2013. The EU Commission has accepted the exemption as well. If the owners are not utilising their contractual capacity reservations, they are obliged to facilitate third party access to available capacity. The owner of Estlink, AS Nordic Energy Link is obliged to disclose the information about currently available free capacity on its web site. After termination of the exemption, in 2013 at the latest, the acquisition cost will be included in the regulated asset base of the transmission network operator and third party free access shall be validated to Estlink.

3.2. Regulation of electricity networks

In compliance with the currently valid Electricity Market Act for electricity networks the so-called exclusive right principle or, what is the same, the principle of concession is applied. This means that the transmission network operator has an exclusive right to perform power transmission and system services. The same principle is applied to distribution network operators as well, whereas for the operators an individual service area, determined by geographical coordinates, is assigned to. Within the area respective operator has exclusive rights to provide network services. Thereby competition between lines and parallel lines are not allowed. The principle of concession minimises business risk for network operators, since the status of a natural monopoly originates not only from the actual situation but also from the provisions of law. Reasoning from the exclusive right network operators have also an obligation of developing their networks in a manner that secures supply to already connected customers and to new connectees as well.

In Estonia the transmission network operator or, what is the same, the system operator is OÜ Põhivõrk. 100% of its shares belong to Eesti Energia AS. The number of distribution network operators is 40, which due to smallness of Estonia it is a rather big number. Although, the concentration of distribution service market is very high. The largest enterprise is OÜ Jaotusvõrk that belongs to Eesti Energia AS and has a market share of 86,5%. Its annual sale in 2007 was 5 792 GWh (together with the sale to other distribution networks 6 347 GWh) and the number of customers was 621 700. The second largest distribution enterprise is VKG Elektrivõrgud OÜ, which belongs to Estonian private capital (the sole holder of shares is the largest Estonian shale oil producer Viru Keemia Grupp AS). It has 36 000 customers and an annual sales of 253 GWh. The third largest network operator is AS Fortum Elekter with sales volume of 184 GWh annually and supplying 24 000 customers. An annual sale of the rest 37 distribution undertakings is below 500 GWh. The largest among those are OÜ Tallinna Sadama Elektrivõrk (the networks owned by Port of Tallinn), AS Sillamäe SEJ (CHP plant in Silamäe) and AS F-Elekter. An annual sale of smallest networks is below 2 GWh.

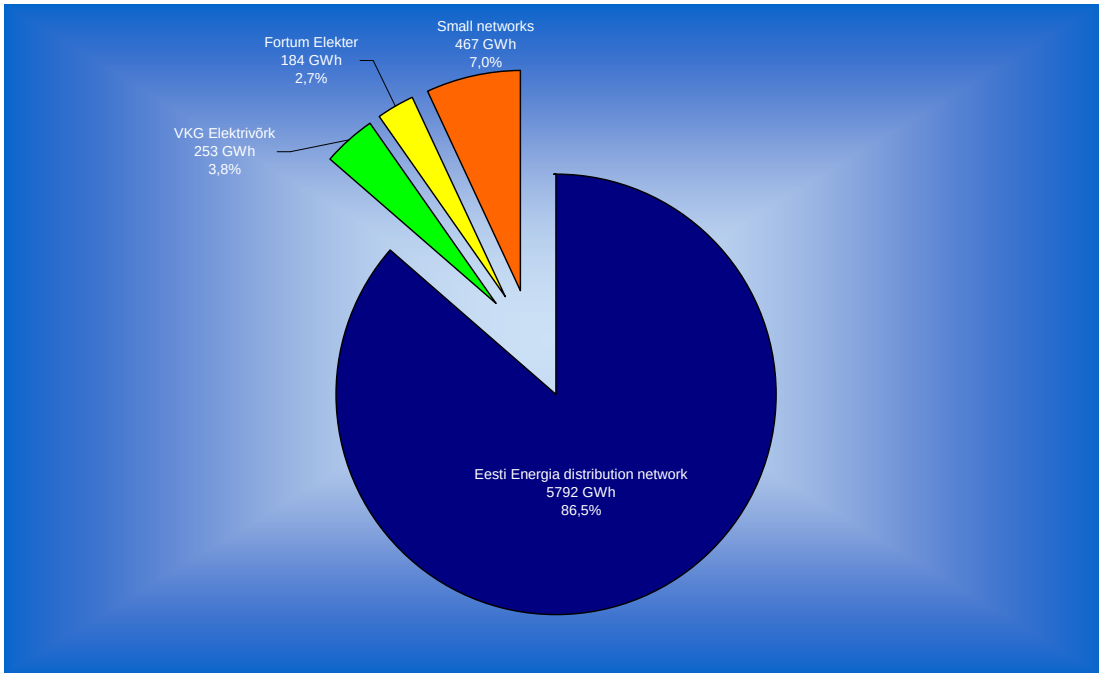
The market share of distribution undertakings is presented in drawing 3.2.1. The share of small networks is relatively marginal. However, their 13,5% total share assumes stronger regulation, which is similar to the regulation of large ones.
A summary of basic indicators for network operators is presented in table 3.2.1.

Table 3.2.1 Basic indicators of network operators (transmission and distribution service prices in 2007)

	Number of operators	Average tariff for transmission or distribution €/MWh (Estonian cent/kWh)			Quality of supply indicator –an average time in minutes of an interruption caused by faults per customer
		Large industrial customer	Commercial customer	Household customer	
Transmission network (Põhivõrk)	1	7,22 (11,29)			7,468
Distribution	40	12,99 (20,33)	28,27 (44,24)	39,21 (61,36)	201

networks					

Notes:
According to Eurostat definitions:
- large industrial customer, one with an annual consumption of 24 GWh, max capacity 4000 kW
- commercial customer, one with an annual consumption of 50 000 kWh, max capacity 50 kW
- household customer, one with an annual consumption of 3 500 kWh.
Distribution indicators are based on OÜ Jaotusvõrk information.
1 €=15,65 EEK



Drawing 3.2.1 Market share of distribution enterprises

Law provides for equal price regulation for all network enterprises regardless of their size. This adds an extra work load for the CA, as the volume of work with price approval primarily depends on the number of undertakings and almost does not depend on the size of an enterprise.

The only exemption in electricity network operator's regulation is the requirement for legal unbundling of network activities in case the number of customers is over 100 000. Due to that the only operator with legal unbundling is the distribution network belonging to Eesti Energia AS, where since 2004 a separate business entity OÜ Jaotusvõrk was established. For others law stipulates only separation of accounts and the obligation of auditing.

According to law the CA approves separately the following charges and methodologies:

- network charges (for electricity transmission and for using a network connection)
- ancillary services provided by network operator (e.g. replacement of main protective fuse or sealing of meters at the customer and some others)
- methodology for calculation of a charge for connecting to the network

The prices for balance energy and the charges for transit of electricity are not approved. However, the CA is obliged to monitor justification of the prices. That means, the so-called *ex-post* regulation is applied to these charges.

3.2.1 Cost of compensation between transmission network operators

Regarding cross-border transit of electricity the EU regulation no. 1228/2003 provides for application of a principle, according to which consumers pay for transmission only to the transmission network operator of their own country and the operators clarify balances and cost with each other. According to the regulation the so-called compensation fund is to be established between EU transmission network operators. All transmission operators contribute to the fund and from the fund costs are compensated for all operators participating in the transit of electricity. Following the requirements of the regulation is obligatory to Estonia. Article 4 (3) of it stipulates that payments to the fund and incomes from the fund shall be taken into account in establishing network charges. For example, a customer in Lithuania, buying electricity from an Estonian producer, has to pay for transmission only to his local transmission network operator. The Lithuanian transmission network operator, in turn, clarifies its balances with both Latvian and Estonian transmission operators through the compensation fund. Depending on the direction of energy flows the transmission network operator of respective country may get paid from the fund or has to pay to the fund, and the regulator has to take this into account in approving tariffs for the transmission operator. Thus, for instance, if the Estonian transmission operator gets income from the fund, the price paid by customers for network service shall decrease. In opposite case, if the operator has to pay to the fund, the price shall increase.

Above descried principles form grounds for the functioning of open EU electricity market. Thereby all producers have equal opportunities, as customer paid transmission charge does not depend on in which country the producer, whose electricity is bought, is located. Similar questions, for instance, were raised in discussions in connection with the feasibility of a new nuclear power plant to be erected in Lithuania. It has been claimed that one of the potential risks is the transmission charge to be added to the electricity transported to Estonia. In reality there is no such risk, as customers located in Estonia are to pay a uniform transmission fee irrespective where the electricity is produced – in Estonia, Latvia, Lithuania or elsewhere. In other words – consumers are not influenced by the location of producers.

According to the EU regulation the EU Commission shall establish methodology for computation of payments into the compensation fund and the amounts receivable from it. The methodology is not available yet, but an application of a compensation fund is necessary for regular functioning of electricity market. For this purpose the EU transmission network operators concluded an agreement in 12 October 2007 (agreement on the compensation mechanism for 2008-2009). Since the Baltic electricity system is not synchronised with the systems of other EU countries, compensation of the Baltic countries is dealt with separately. According to the agreement OÜ Põhivõrk has to contribute to the fund 0,9768 million EUR. In addition, the Estonian operator has concluded similar agreement with Latvian and Lithuanian transmission network operators for compensation of electricity transit

flows. According to it 2 955 thousand kroons shall be paid into this Baltic compensation fund. Both sums have been included in the transmission charges.

The CA accepts the agreements between transmission operators, as these are necessary for compromise and for normal functioning of the market. At the same time the CA is in a position that the amount payable to the Baltic compensation fund is not justified, as Estonia mainly provides the transit service and instead of paying it should receive income from the fund. It is also no justified that, compared to Latvia and Lithuania, Estonia pays significantly more, as all transit flows through Estlink go through Estonia. The above mentioned agreement does not solve the question of charges for the energy flows from Russia – today none of the Baltic countries takes charges for the flows coming from Russia. That is why the CA has an expectation that in the near future the EU Commission will elaborate and validate a methodology that takes into account the real situation.

3.2.2 Approval of network charges

The CA elaborates unified methodologies for computation of network charges. They serve as the basis for formation of charges and their approval as well. The methodologies are disclosed at the CA's web site. The site also includes specially elaborated tables for collection of input data to be filled in for approval process. The tables are relatively comprehensive and include technical data and detailed accounts: profit and loss statement and balance sheet, and data about assets. Enterprises shall also submit a detailed investment plan and separately the expected sale volumes of individual network services. Since the tables are comprehensive, and the price is approved by a formula for a 3-year period, it is required to fill them in for respective regulation period once in three years. In the meantime an updating is not required but the CA is entitled to request additional information about economic performance and technical indicators.

Submission of input data is an obligation stipulated by law. The CA can request any information needed for price approval and performing of supervisory proceedings. The CA employees can also visit the enterprises any time and request data and copies of documents. The practice so far has shown that undertakings do not refuse to submit information.

In the regulation of network prices the CA has a determining role in the selection of methodologies. However, the following principles are stipulated by law:

- The level of network charges must enable enterprises to fulfil their obligations determined by legal acts and market licence conditions, as well as to have justified return on invested capital.
- The CA elaborates and discloses unified methodologies for calculation of network charges, which serve as the basis for approval.

So it is up to the regulatory authority to decide upon the selection of methodologies. In the elaboration of methodologies opinion of enterprises has been considered. In fact, it has been the process of long-lasting disputes and mutual consultations between the CA and the regulated undertakings. In the regulation of network charges the so-

called long-term RPI-x indexation method is applied, by which the charges are approved for a 3-year period and adjusted annually. Beginning from the next regulation period that begins in 2011 it is intended to apply a longer period of 5 years.

The formation of network charges is first of all based on the prognosis of sales revenue for a 3-year period. Below a sample table is presented. It gives an overview of network charge formation and cost components included in charges.

Prognosis of network charges	**2008**	**2009**	**2010**
Sales volume of network service GWh	1 000	1 030	1 061
Losses according to saving obligation	10,0%	9,5%	9,0%
Losses of electrical energy GWh	111	108	105
Electricity tariff s/kWh	40	40	40
Cost of compensation of electricity losses mill kroons	**44,40**	**43,35**	**41,88**
Charge for network services s/kWh	12,00	12,18	12,36
Cost for network charges mill kroons	**133,32**	**138,65**	**144,10**
Fixed cost	**200,00**	**205,00**	**210,13**
RPI change	4,00%	4,00%	4,00%
Fixed cost saving obligation x	1,50%	1,50%	1,50%
Fixed cost factor (RPI-x)	2,50%	2,50%	2,50%
Fixed cost change mill kroons		5,00	5,13
Capital expenditure mill kroons	**31,69**	**32,56**	**33,44**
Justified return (profit) mill kroons	**38,22**	**38,44**	**38,59**
Allowed sales income mill kroons	**447,63**	**458,00**	**468,13**
Correction factor of network charges		**0,9934**	**0,9923**

In the following price/tariff computation principles are described in more detail.

Volume of sales of network services

Evaluation of the volumes of sale is extremely important. Fixed cost is dominant in the cost structure of network services. The higher the sales, the lower the charge for the use of network. Also, in the indexation of network services a formula is used, by which the charge changes along with the change of sale volume. In evaluation of the volume of the sale of network services statistical data are used, i.e. the dynamics of sale during the last 5 years. At the same time a general rule is considered – together with an economic growth overall electricity consumption grows as well. A 3% annual increase of the distribution service was anticipated for the regulation period of 2008–2010. The increase of sale volume is fixed for the whole regulation period and no adjustments are made within the period. This means that undertakings bare the risk of sale volume. If the volume is exceeded compared to prognosis, an extra income is earned. Otherwise income decreases. The CA is in a position that the application of such principle follows customer protection interests, as well as leaves for undertakings enough motivation to make efforts for earning extra income through the increase of sale. Besides, through that undertakings are motivated to connect new customers at a faster rate, as the added customers increase sales volume.

Losses of electrical energy

In Estonia the highest potential for loss reduction lies within distribution networks. For that reason an obligation for reduction of power losses is stipulated for all operators and during the few past years a significant loss reduction has been achieved. Just recently, in 2001 the Eesti Energia's distribution network with the biggest market

share of 86% had losses of about 14%. During the previous regulation period (2005-2007) their losses level was reduced from 10 to 8%. The target for the next 3-year period (2008-2010) has been set out to achieve loss reduction down to 7% by 2010. From that level achieving of further reduction is complicated, as per expert opinions technical loss of 6-7% in distribution networks is an average value. Further loss reduction is achievable only through technical innovations, which require large investments. For the largest distribution network operator, OÜ Jaotusvõrk that belongs to Eesti Energia group, a target of 0,23% annual loss reduction obligation has been set for the regulation period of 2008-2010. If the operator succeeds to achieve the target earlier, it earns extra income. Otherwise, its failure to achieve the target shall be covered at the cost of its profit. In the transmission network (OÜ Põhivõrk) the potential for cutting losses is lower. In 2007 the losses totalled 2,9% and the further potential according to expert opinions is not higher than 0,1% annually.

As outlined above, Estonia has a transitional period for electricity market opening until 2013. This means that a network operator has to purchase electrical energy for re-selling to non-eligible customers and for compensation of network losses either from oil shale fired power plants in Narva (AS Narva Elektrijaamad), from heat and power cogeneration plants or, from small producers (with the capacity of below 10 MW). The CA approves the price limit for electricity sold by the power plants in Narva. This price limit serves also as a component of network charges, as these charges must include electricity for compensation of losses.

The level of losses has quite remarkable impact on final customer price formation. For example, a reduction of losses by 1% at the current price of electrical energy of 44,64 EEKcents per kWh creates savings of about 28 million EEK.

Uncontrollable cost

Cost is considered uncontrollable if undertakings cannot influence it by their economic performance and this naturally means that no saving obligation can be imposed on it. The major uncontrollable cost for undertakings is the cost of network services purchased from other network operators. For instance, OÜ Jaotusvõrk (market dominant distribution operator) buys network services from the transmission operator. In turn, small network operators buy services from OÜ Jaotusvõrk.

In addition to services purchased from other operators some other cost components are uncontrollable to undertakings. For example, the state fee (levy) for issuance of activity licences, the level of which depends on the size of an undertaking. Another example of an uncontrollable cost is the so-called obligation to tolerate (technical structures etc.). That means, a network operator has to pay rent to land owners for the structures located on their land, like: power lines, transformers and substations.

Fixed cost

Fixed cost is subject to a very deep analysis by the CA, as this cost component has biggest impact on price formation. Basic methods for evaluation of fixed cost is comparison with similar undertakings (*benchmarking*), analysis of cost dynamics and the analysis of individual cost components. A precondition for using comparison is an availability of a sufficient number of undertakings. When it comes to smaller

distribution operators it is successfully possible, as the number of them in Estonia is 40. At the same time the comparative analysis (*benchmarking*) is problematic when it comes to Eesti Energia AS group. Their only distribution operator OÜ Jaotusvõrk is many times larger than the other network operators. The same is true for the transmission network operator OÜ Põhivõrk, which can only be compared with transmission networks of other countries. The EU energy regulator's association CEER has initiated relevant project, which will definitely be helpful in the price regulation of transmission network operators.

Other substantial method in the analysis of fixed cost is the dynamics of cost in time and a detailed analysis of individual cost components. In the analysis of dynamics it is assumed that their growth is not steeper than the inflation reflected by consumer price index (RPI). In addition, undertakings shall achieve cost reductions through higher efficiency and productivity. In the analysis of individual cost components justification of them is verified. Basic cost articles of network operators are operation and maintenance, labour expenses, sales cost etc. Among others the CA verifies in the analysis process whether operators buy services at a market price, whether goods, works and services are purchased in compliance with procurement rules, and alike.

For a regulation period the CA imposes an obligation to reduce fixed cost, which means that fixed cost shall not develop more rapidly than RPI-x. In the practice exercised so far the cost saving obligation or, the value of x has been set to 1,5%, as a rule.

Capital expenditure (depreciation of fixed assets)

For depreciation of fixed assets the CA uses a regulatory capital expenditure method, which differs from accounting depreciation. The advantages of the regulatory method are its simplicity of computation and transparency for both customers and undertakings, as well as to the regulatory authority. The regulatory depreciation method uses only two fixed assets' depreciation rates. Therefore, it is very simple and easily understandable way to monitor the value of regulated assets and verify the accounting of capital cost.

Accounting of the regulatory depreciation uses a principle, where capital cost is included in the network charges on the basis of its technical life span. It is known that the life span of networks may last up to 50-60 years. Due to so long life span a number of assets' re-valuations may have taken place, in Estonia also the entire political system has changed. The oldest currently operational equipment was built already before World War II. However, a real network development began in years 1940-50. The biggest part of networks was erected in-between 1960-1990. A large scale reconstruction and extension of power networks restarted again since 2000. Thus, equipment with a very different age is in operation.

In the regulatory capital expenditure accounting a principle is used in which, from a certain moment in time, fixed assets are divided into two parts, the old ones and the new investments. For power networks for that moment 1 January 2003 has been selected. The assets acquired before that date are regarded old ones and for them an accelerated rate of depreciation is applied. The CA has ordered an expert analysis from Tallinn Technical University in which the structure and the technical condition

of both transmission and distribution network's assets was analysed. In the result of the analysis an average evaluated residual life time for old (acquired before 2003) assets is in the transmission networks 16 years and in the distribution networks 11-14 years. The assets acquired since 2003 are considered new investments and for them a single constant weighted average rate of depreciation is applied, with respect to the structure of assets. Particularly, the evaluated life time for new investments of the transmission network is 40 years. The same for distribution networks appeared to be from 30 to 35 years.

Justified rate of return

A component of price/tariff is operating profit. Since investors have the right to earn profit on the invested capital, it is logical that this component is included in tariffs. However, the profitability should have a reasonable level and be justified, in order to secure a gain for investors. The measure of reasonability is a level, which could be achievable if invested into a business with a similar risk level. At the same time a monopolistic super profit shall be avoided.

Similarly to other regulatory authorities a model, in which for calculation of the justified return a weighted average cost of capital (WACC) and regulatory asset base is used. The regulatory asset base is the capital invested into the enterprise. In energy undertakings it is tangible assets and working capital. Thus, the justified return is calculated using the following formula:

justified return = WACC × regulatory assets

Where a weighted average cost of capital WACC is described by the following equation:

$$WACC = C_{equity\ capital} \times \frac{EC}{DC + EC} + C_{debt\ capital} \times \frac{DC}{DC + EC}$$

$c_{equity\ capital}$	cost of equity capital;
$c_{debt\ capital}$	cost of debt capital;
EQ	the share of equity capital;
DC	the share of debt capital

The cost of equity capital is calculated by the following equation:

$$c_{equity\ capital} = k_{risk\ free} + k_{country} + \beta \times r_{risk\ premium,}$$

The cost of debt capital is calculated by the following equation:

$$c_{debt\ capital} = k_{risk\ free} + k_{country} + k_{company}$$

$k_{risk\ free}$	risk free rate of return
$k_{country}$	country risk

ß	beta factor,
$r_{risk\ premium}$	risk premium
k_{debt}	debt risk premium

The basis for calculation of a weighted average cost of capital is the risk free rate of return. In Estonia governmental bonds essentially do not exist. For that reason the CA bases in the determination of risk free return on the German 10-year state bond return in the last 5 years. To this an Estonian state risk is added. The 5-year historic return is used in order to eliminate market fluctuations in the calculation of a justified return.

The ß factor characterizes the sector risk. The lower it is the lower is also the risk for an individual undertaking. According to the CA valuation respective figures for electricity networks lay between the values of 0,7 and 1,0. The risk premium indicates how much investors have historically earned in addition to a risk free rate of return. For evaluation of the risk premium both the USA and European securities market long-term indicators have been used. Considering the values that regulatory authorities in other countries use and supporting on specialised literature the CA has accepted a risk premium of 5 per cent. The debt risk premium also depends on individual enterprise and the area of activity. In the regulation of electricity networks the CA accepts a debt risk premium in the range between 0,6 and 1,5%.

In computation of weighted average cost of capital (*WACC*) it is important to consider the proportion between equity and debt capital, i.e. the financial leverage. The more debt capital is engaged in an enterprise the higher is its financial leverage. Its level in individual undertakings is quite different. Since the cost of equity capital is higher than the cost debt capital, WACC for those undertakings, which use more equity and less debt capital, would be higher. In order to give positive motivation for financial activity of undertakings the CA uses the so-called regulatory financial leverage. This assumes a capital structure of 50/50 as the most suitable one and WACC is calculated on that proportion. Such approach ensures equal treatment of customers, because otherwise customers of undertakings with higher equity capital share should pay more for same services.

WACC for network operators depends on the risks involved in individual undertakings. Transmission network has the lowest risk with its nominal WACC (at the current interest rates) of about 6,3%. WACC for distribution networks is determined in the range between 6,8 and 7,2%. Herewith the CA has evaluated the capital cost for distribution network of Eesti Energia AS group somewhat lower that for distribution operators, because of its dominant position on the market and therefore, having somewhat lower risk level.

For illustration and as an example, the following table presents the formation of a weighted average cost of capital (*WACC*) for OÜ Põhivõrk (transmission operator) and OÜ Jaotusvõrk (market dominant distributor):

	Transmission (Põhivõrk)	Distribution (Jaotusvõrk)
Risk free rate of return	3,90	3,90
Country risk	0,2	0,2

Risk premium	0,6	0,6
Cost of debt capital	**4,82**	**4,82**
Risk free rate of return	3,90	3,90
Country risk	0,2	0,2
Risk premium	5	5
Beta	0,7	0,9
Cost of equity capital	**7,72**	**8,72**
Equity/debt capital	50/50	50/50
WACC	**6,27**	**6,77**

Regulatory assets

The basis for determination of both the cost of capital (capital expenditure) and a justified return is a regulatory asset base, for which the CA applies principles, similar to those used by other regulatory authorities. In accounting of the regulatory assets its continuity is of an extreme importance. The accounting of regulatory assets commences from year 2003, where to the book value of assets investments are added and a regulatory capital expenditure is subtracted. For an initial value of assets the accounting (book) value is taken. In exceptional cases, for smaller undertakings, other values, different from the book one, may be accepted in case the book value is obviously below the actual (market) value. Yet there have been cases where the CA has not accepted re-valuation of assets by undertakings, as the raised value had been clearly higher than the actual (market) one. For the three largest network operators (OÜ Jaotusvõrk, Fortum Elekter AS and VKG Elektrivõrgud OÜ) the CA has ordered an expertise, which show that their assets' value corresponded to the actual one. In determination of assets' value of smaller undertakings the CA has used a comparative method, where the value of assets of various undertakings were compared per kilometre of lines, per number of substations and per sale volume. Such method enables identifying undertakings with an obvious over or under valued assets.

3.2.3 Subsidising of renewable sources and cogeneration

Until 1 May 2007 a regulation was enforced in Estonia, according to which the cost of subsidising of renewable energy sources was included in the tariffs of the transmission network operator. Namely, the operator was obliged to buy electricity produced from renewables at the fixed price of 81 EEKcent/kWh[2], in case the producer had been connected to their network. If the producer had connection with a distribution network, the transmission network operator had to pay compensation to the distributor. From point of view of the CA the scheme was not transparent enough. The reason of opaque – customers had no clear overview of how much should pay for renewables, since the subsidy for renewable electricity was included in the transmission service tariffs.

In 1 May 2007 amendments the Electricity Market Act were enforced. Based on the amendments a new support scheme was introduced for energy produced from renewable sources, as well for support of heat and power cogeneration (CHP).

[2] 81 Estonian kroon (EEK) cents per kWh or 51,76 €/MWh

Besides, the amendments also significantly increase the size of payable subsidies. According to the new scheme producers have two options: either to sell electricity at a fixed tariff in the framework of the purchase obligation or, to receive subsidy and sell electricity at market price. Financing of both the purchase obligation and the subsidy is arranged through the transmission network operator. By the beginning of each calendar year the transmission operator prepares a prognosis of necessary subsidy amount and distributes it between distribution operators proportionally to their sale volume. Every distributor includes this in their distribution service bills. For example, in 2007 consumers pay for supporting of renewables 2,18 EEKcents/kWh, while in 2008 they pay 3,03 EEKcents/kWh and in the future it will definitely be higher. Below table 3.2.2 presents the tariffs and subsidies applicable to various producer categories.

Table 3.2.2 Tariffs and subsidies applicable to producers from renewables and for CHP

Kind of energy production	**Purchase obligation tariff EEKc/kWh**	**Subsidy EEKc/kWh**	**Current market price EEKc/kWh**	**Assumable sale price EEKc/kWh**
Renewable energy sources[1]	115	84	44,56[3]	124,95
Efficient cogeneration[2]	81	50	44,56	90,95

Notes: [1]Subsidy is paid if the net capacity is not higher than 100 MW. Wind energy is subsidised until the total wind energy production does not exceed 400 GWh per annum.
[2]Subsidy is paid if waste, peat or oil shale processing retorting gas is used as the source of energy production. As well it is paid if CHP plant is erected to replace existing district heat supply boiler plant with the capacity not exceeding 10 MW.
[3]The price for AS Narva Elektrijaamad, as for the market dominant producer.
The abbreviation EEKc means cents of Estonian kroon.

Considering the market price, which is the sales price of AS Narva Elektrijaamad (Eesti Energia AS group's dominant producer with 95% market share), the new support scheme creates a very favourable environment for development of renewable sources and cogeneration. However, the new support scheme also generates increase of consumer prices. The CA has prepared a prognosis with an evaluation of the additional price that customers have to pay for supporting of renewables (table 3.2.3 below).

Table 3.2.3 Estimated impact of purchase obligation and subsidies stipulated by Electricity Market Act to consumer prices in 5-year perspective

Electricity end consumer price formation	New support scheme	Old support scheme
Wind energy		
Total quantity GWh	400	400
Payable subsidy EEKc/kWh	84	40
Amount of subsidy EEK	336 000 000	160 000 000
Cogeneration burning wood		
Total quantity GWh	250	250
Payable subsidy EEKc/kWh	84	40
Amount of subsidy EEK	210 000 000	100 000 000
Cogeneration burning peat and gas		
Total quantity GWh	150	0

Payable subsidy EEKc/kWh	50	
Amount of subsidy EEK	75 000 000	0
Total of all subsidies EEK	**621 000 000**	**260 000 000**
Estimated electricity final consumption GWh	7 000	7 000
Increase in consumer price EEK cent/kWh	**8,9**	**3,7**
Average end consumer tariff (electricity + network service) EEK cent/kWh	85,3	85,3
Added purchase obligation and subsidy EEK cent/kWh	8,9	3,7
Price increase	**10,4%**	**4,4%**

Note: The production quantities from respective energy sources are the CA's estimations.

Thus, in a 5-year period perspective the amount payable by electricity consumers shall total 621 million EEK, which results in a price (total for energy and network service) rise of 10,4%. On the basis of former support schemes the sum of subsidy payable by customers would have been 260 million EEK, corresponding to the price increase of 4,4%. It is considered hereby that before the law amendment the purchase obligation was not imposed on electricity produced with peat and natural gas.

In conclusion it should be noted that a good advantage of the new scheme is its transparency, as customers now exactly how much is to be paid for subsidising of renewables and cogeneration. Yet the support rates create a significant increase in prices.

3.2.4 Regulation period 2008 to 2010

Since 1 March 2008 the network charges of Eesti Energia AS group's distribution network OÜ Jaotusvõrk fell by 1% while the inflation rate being 4,2% or, in real values (without considering inflation) by 5,2%. The transmission network charges rose by 1,6%, but in real values even fell by 2,6 %. The decrease of distribution network's charges was caused by an increase of sale volume, reduction of power losses and savings in fixed cost. The transmission network charges were first of all influenced by the increase of subsidy paid to electricity from renewable energy sources.

In the next 3-year period a target is to invest into renovation of networks and thereby reduce network losses, as well as reduce the number of supply interruptions and their duration.

3.2.5 Quality of electricity supply

Quality of supply requirements are based on the Electricity Market Act. According to it the requirements are established by the Minister of Economic Affairs and Communications. Following of the requirements is obligatory and penalty payments can be imposed by misdemeanour proceedings in case of violation of the requirements. Quality of supply requirements contain requirements for customer service, and acceptable duration of supply interruptions, separately for those caused

by faults and those caused by planned activity. Functions of the CA are to monitor undertaking's performance in fulfilment of the quality requirements, adequacy of keeping records on quality indicators and in case of violation, to impose sanctions (initiate misdemeanour proceedings). The CA has elaborated corresponding guidelines and a form for recording of statistics on quality indicators. Disclosure of the indicators on web site is obligatory for all undertakings.

3.2.5.1 Customer service quality requirements

Requirements for the quality of customer service determine maximum acceptable time, during which certain operational procedures have to be accomplished. Below table 3.2.3 presents specific requirements.

Table 3.2.3 Customer service quality requirements for network operators

Operational procedure		Maximum acceptable time for procedure
Within distribution network service area		
Reconnection following lack of payment after bill is paid	If supply interruption in the grid is not needed	5 working days since reception of the payment for reconnection
	If supply interruption in the grid is needed	8 working days since reception of the payment for reconnection
Customer site inspection in connection with metering problems		5 working days since customer complaint
Responding to queries about charges and payments		5 working days since customer inquiry
Deactivation of grid connection at customers request	If supply interruption in the grid is not needed	5 working days since customer request
	If supply interruption in the grid is needed	8 working days since customer request
Meter replacement or change of meter settings at customer request		7 working days since customer request
Customer information about planned supply interruption		At least 2 days prior to planned interruption
Within transmission network service area		
Customer site inspection in connection with metering problems		5 working days since customer complaint
Information of concerned customers about planned works in connection with meter		At least 5 days prior to commencement of works
Coordination of planned supply interruption with customers concerned		Written information by the 15th date of preceding month

Undertakings shall submit to the CA information (in the format of table 3.2.4) about the extent of compliance with the quality requirements. Based on the information it is possible to calculate the percentage of compliance with the service quality requirements. As well it is possible to analyse the trend: whether it is improving or worsening. In case of failure to comply with the requirements customers have the right to file a complaint with the CA. The CA may initiate a misdemeanour proceeding in each specific case and impose a fine (penalty payment) in an amount of up 50 000 kroons (3195 €) for a single violation. So the level possible punishment can be quite remarkable. The money is to be transferred to the state budget.

Table 3.2.4 Information about customer service quality to be submitted by undertakings

				Year	
	Customer service quality acoording to network service quality requirements	**Maximum acceptable time for procedure**	**Criteria**	Total number of procedures	Accomplished in acceptable time
1.	**Within distribution network service area**			times	times
1.1.	Reconnection following lack of payment, after bill is paid and if supply interruption in the grid is not needed	5 days	after reception of payment for reconnecting		
1.2.	Reconnection following lack of payment, after bill is paid and if supply interruption in the grid is needed	8 days	after reception of payment for reconnecting		
1.3.	Customer site inspection in connection with metering problems	5 days	since customer complaint		
1.4.	Responding to queries about charges and payments	5 days	since customer inquiry		
1.5.	Deactivation of grid connection at customers request, if supply interruption in the grid is not needed	5 days	since customer since		
1.6.	Deactivation of grid connection at customers request, if supply interruption in the grid is needed	8 days	since customer requets		
1.7.	Meter replacement or change of meter settings at customer request	7 days	since customer request		
1.8.	Customer information about planned supply interruption	at least 2 days	prior to planned interrruption		
2.	**Within transmission network service area**				
2.1.	Customer site inspection in connection with metering problems	during 5 days	since customer application		
2.2.	Information of concerned customers about planned works in connection with meter	at least 5 days	prior to commencing of works		
2.3.	Coordination of planned supply interruption with customers concerned	Written information by the 15th date of preceding month			

3.2.5.2 Network services quality requirements

Regarding network service quality both supply interruptions caused by faults (not planned) and planned interruptions are regulated. Supply interruptions lasting less than 3 minutes are not considered interruptions. According to quality requirements time limits (maximum acceptable durations) are stipulated, during which customers shall be re-supplied. The time limits are distinguished for summer and winter period (table 3.2.5). Since 1 January 2008 the network service quality requirements have become stricter, i.e. the acceptable durations of interruptions caused by faults have become shorter.

Table 3.2.5 Network service quality requirements

	Summer period from April to September	Winter period from October to March
Transmission network		
Acceptable duration of an interruption caused by faults	10 hours	
Acceptale annual accumulated interruption duration	200 hours	
Distribution network		
Acceptable duration of an interruption caused by faults	16 hours	20 hours
Acceptable duration of a planned interruption	10 hours	8 hours
Acceptale annual accumulated interruption duration by faults	100 hours	
Acceptale annual accumulated planned interruption duration	64 hours	

If undertakings fail to comply with the acceptable time limits they are required to pay compensation to customers. As well the CA may initiate a misdemeanour procedure in each specific case and impose a fine (penalty payment) in an amount of up 50 000 kroons for a single violation.

The CA has elaborated a specific form for reporting. Undertakings are required to fill it in and to disclose. In addition it is required to disclose how many times and in how many grid connection points they failed to comply with the quality requirements. In connection with customer service requirements undertakings shall submit data on how many times they failed to fulfil the service quality requirements. Network operators shall disclose the following network quality (continuity of supply) indicators:

1) average fault caused interruption frequency per consumption point per year (CI; SAIFI)
2) average fault caused interruption time per consumption point per year (SAIDI)
3) average fault caused duration of an interruption (CAIDI)
4) average planned interruption frequency per consumption point per year
5) average planned interruption time per consumption point per year
6) average duration of a planned interruption

All above mentioned data on network quality are disclosed on the CA web site.

Below table 3.2.6 presents the data that enterprises shall submit on quality of electricity supply. Respective tables are also disclosed in the CA web site.

Table 3.2.6 Data submitted by undertakings on quality of electricity supply

1.	Interruptions	Maximum time			Unit	Year		
		Transmission	Distribution			Total	not in compliance	in compliance
			April 1- Sept 30	Oct 1 - March 31				
1.1	No of interruptions caused by force major (e.g. natural disasters)	3 days	3 days		pcs			
1.2	No of fault caused interruptions (excl those named in 1.1)	10 hours	16 hours	20 hours	pcs			
1.3	No of consumption points, where annual accumulated fault caused interruption duration exceeded acceptable	200 hours	100 hours		pcs			
1.4	No of planned interruptions	-	10 hours	8 hours	pcs			
1.5	No of consumption points, where annual accumulated planned interruption duration exceeded acceptable	-	64 hours		pcs			

2.	Security of Supply indicators	Unit	Qty
2.1	Total number of customers	pcs	
2.2	Fault caused annual accumulated interruption duration	minutes	
2.3	Planned annual accumulated interruption duration	minutes	
2.4	**Average fault caused interruption frequency per consumption point per year (CI) (SAIFI)**	**pcs**	**0,000**
2.5	**Average interruption time per consumption point per year (SAIDI)**	**minute**	**0,000**
2.6	**Average duration of an interruption (CAIDI)**	**minutes**	**0,000**
2.7	Average planned interruption frequency per consumption point per year	pcs	0,000
2.8	Average planned interruption duration per consumption point per year	minutes	0,000
2.9	Average planned duration of an interruption	minutes	0,000

3.	Distribution network voltage quality	Unit	Qty
3.1	No of connection points with voltage not complying standard EVS-EN 50160:2000 (incl. acceptable deviation +-10%)	pcs	

3.2.6 Balance responsibility

The Electricity Market Act and Grid Code stipulate regulation of balance responsibility in detail. According to it every market participant is responsible for its balance. The balance period is one full hour and the balance day begins at 00:00. A balance provider shall provide the system operator with a preliminary balance plan for a calendar month, week and day. The final balance plan is provided at 14:00 at the latest in the preceding day.

The market is organised in the principle that the transmission network operator is responsible for the balance of the whole system and there can be many balance providers operating on the market. For providing balance the transmission network operator buys and sells balance energy. The methodology for calculating balance energy price and standard terms and conditions of balance agreements shall be approved by the CA. In formation of balancing energy price the transmission network operator is obliged to buy and sell electrical energy at best possible price.

Balance is determined by the means of remote reading devices (*on-line*) in case the customer's electrical connection capacity exceeds 63A. For determination of other

customer's balance standard load curves are used. This means that for household customers an *on-line* metering is not necessary.

Until amending of the Electricity Market Act (i.e. until 1 May 2007) wind turbines were exempted from balance responsibility. According to the amendments wind turbines shall be responsible for their balance since 1 January 2009, similarly to other producers.

Since the Estonian electricity market is opened only in a 13% extent, a real balancing energy market is missing today and distribution network operators are responsible for non-eligible consumer's balance. The biggest balance provider is Eesti Energia AS and it provides service, in which the sold electricity price includes also balance responsibility service or, it is the so-called open supply. The CA is in a position that effective balancing energy market can appear only when electricity market will be fully opened in 2013.

3.2.7 Unbundling of activities

An overview of the fulfilment of activity unbundling requirement is presented in below table.

	Transmission of electricity	Distribution of electricity
Separate headquarters (yes/no)	Yes	Yes
Undertakings acting as separate business entities (yes/no)	Yes	Yes
Separate accounts together with guidelines of the regulatory authority (yes/no)	Yes	Yes
Auditing of separation of account (yes/no)	Yes	Yes
Disclosure of separated accounts (yes/no)	Yes	Yes
Separate management board in which board members of other group undertaking's do not participate (yes/no)	Yes	Yes

According to law the transmission and distribution networks shall form separate business entities and shall not operate in other area of activity than provision of network service, system service and provision of balancing energy. A distributing network shall form a separate business entity if the number of customers exceeds 100 000. The latter applies in reality only to the distribution network of Eesti Energia AS group, OÜ Jaotusvõrk, as all other networks have less than 100 000 customers. These requirements are equally valid for both vertically integrated undertakings and all other undertakings acting on principles of a group. The Electricity Market Act stipulates also the requirements for management of legally separated transmission and distribution network operators. Thus, a member of the management board of a network operator may not at the same time be a member of the management board of another electricity undertaking belonging to the same group. However, it is allowed to be, at the same time, a member of the management board of a network operator and a

member of the supervisory board of another electricity undertaking belonging to the same group.

A distribution network operator with the number of customers below 100 000 shall separate its accounts as follows:

- provision of network service
- sale of electrical energy
- secondary (ancillary) activity

The accounts of distribution network operators, regardless of their size, shall be kept on the same principles as separate undertakings operating in the same area of activity should have kept. Therefore, a distribution network operator that is not required to form a separate business entity is obliged to keep its accounts similarly to a business entity and shall submit in its accounts balance sheet, profit and loss account, management report and other reports provided for in the Accounting Act separately for network services, electricity sales and secondary (ancillary) activities. Respective information shall be submitted in their annual report and disclosed. The separation of accounts shall be audited and auditor's opinion attached.

The CA has elaborated and disclosed on its web site respective guidelines and a reporting form, which can serve as the basis for separation of activities for undertakings.
In addition to the separation of network services, sale of electricity and secondary activity undertakings shall also separate their accounts by different services (so-called regulatory stipulated activity separation).

The transmission network operator shall separate its accounts as follows:
- sale of network service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- transit of electrical energy (*ex-post* regulation, the CA has the right to verify justification of prices)
- charges paid by customers for connecting to the network (*ex-ante* regulation, the CA approves methodology for calculation of connection charges separately for every undertaking)
- sale of balancing energy (*ex-post* regulation, the CA has the right to verify justification of prices)
- secondary (ancillary) activity

A distribution network operator that is required to form a separate business entity shall also separate its accounts as follows:
- sale of network service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- charges paid by customers for connection to the network (*ex-ante* regulation, the CA approves methodology for calculation of connection fees separately for every undertaking)
- secondary (ancillary) activity

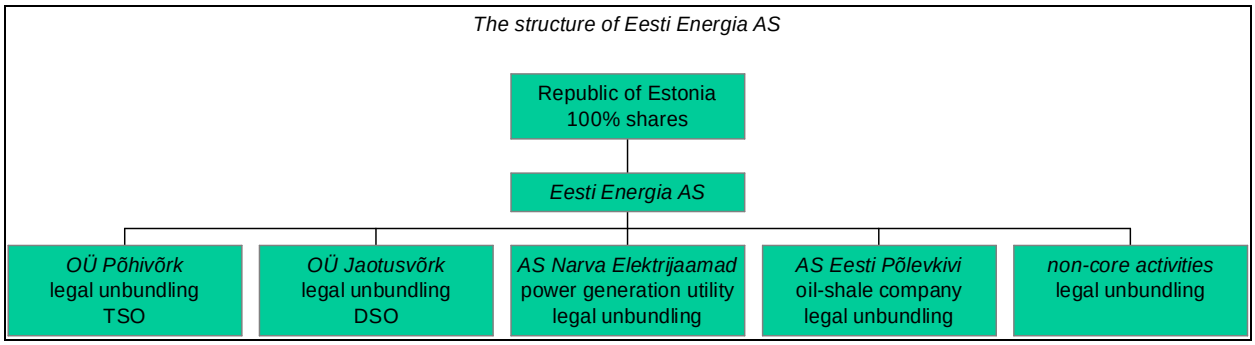
A distribution network operator that is not required to form a separate business entity shall separate its accounts as follows:

- electricity sale to non-eligible customers (the CA approves weighted average price)
- electricity wholesale, including to eligible customers (the CA has the right to verify whether cross-subsidising is avoided in the sale of electricity to eligible and non-eligible customers)
- sale of network service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- customers' paid charges for connecting to the network (*ex-ante* regulation, the CA approves methodology for calculation of connection charges separately for every undertaking)
- secondary (ancillary) activity

3.2.8 Ensuring of equal treatment

All network operators are obliged to elaborate an action plan with the measures for equal treatment of other electricity undertakings and customers, including duties of employees in implementation of these measures. The CA has prepared guidelines for the elaboration of such plan. It is disclosed on the CA's web site. According to the guidelines it is recommended to compile the plan in a 3-year perspective. Annually, a report shall be submitted to the CA on implementation of the plan. Both the plan and the report are public documents and all interested parties can get acquainted with them. If the CA is in an opinion that the plan is not sufficient and does not comply with requirements, a revision of the plan and its changing may be required.

In Estonia one energy undertaking can be considered as the vertically integrated one. This is Eesti Energia AS group. The group possesses oil shale production, electricity generation, transmission network, distribution network, sale undertaking and undertakings dealing with secondary activities. 100% of Eesti Energia's shares belong to the Estonian state. The structure of Eesti Energia is presented below.



Most important issue is securing of independence of the transmission network operator OÜ Põhivõrk, as besides provision of transmission network services it is also responsible for operation of the entire power system and securing of balance.

OÜ Põhivõrk is a separate independent business entity. The management board has three members and according to law the person in charge may not at the same time be a member of the supervisory board of another electricity undertaking belonging to the same group. The supervisory board consists of four members, three of them are from the group's Mother Company. The office together with dispatch centre is located in a

separate building. The transmission network operator has its own logo, which is apparently very similar to the group's logo. The only difference is the text "OÜ PÕHIVÕRK". So it should be noted that it seems to be intended to present the transmission network as part of the group.

A similar situation is with the distribution network operator OÜ Jaotusvõrk that belongs to Eesti Energia group, in which the undertaking's members of the board belong neither to management nor to supervisory boards of other undertakings. It has an office building separately from the group's mother company and its own logo, which is again extremely similar to the group's one.

An extremely important factor from the point of view of network's independence is the management of undertakings. Essentially, the Mother Company's competence should only be limited to investments into productivity of assets, annual budget and approval of the long-term business plan. In the rest the networks should be independent in their decision making. In this respect it should be mentioned that together with the formation of separate business entities in 2004 their independence has significantly risen and the CA has not observed intervention into direct management by the group's Mother Company.

As regards the transmission network an important issue is the action plan for possible crisis situations, in which limitation of consumption may become unavoidable. The operator has a detailed plan for possible crisis situation.

In promotion of networks' independence and their price regulation it is important to supervise the price formation for services purchased from Mother Company and other undertakings belonging to the group. The services bought from Mother Company and other undertakings of Eesti Energia have important share in the cost structure of both the transmission and the distribution network. In the services bought from Mother Company a remarkable share have IT services, rent of office premises (these are owned by Mother Company), as well as security, legal and other services.

The largest part of outsourced services from undertakings of the group is the electricity purchased for compensation of power losses from group's power plants, in which the major portion comes from AS Narva Elektrijaamad (two power plants in Narva). This directly complies with the Electricity Market Act, which stipulates purchase obligation from AS Narva Elektrijaamad. Two other undertakings belonging to Eesti Energia AS group are AS Televõrk that provides telecommunication services and AS Elektriteenused, providing electricity network construction, repair and maintenance services. From these both the transmission and distribution network operators purchase communication, repair and maintenance services. AS Elektriteenused also takes part in construction/erection of electricity networks.

Regarding services purchased from Mother Company the CA has followed principles that the prices may not exceed the market ones and all procurement rules have to be complied with.

3.2.9 Equal treatment action plan

Most thoroughly the action plan for equal treatment prepared by OÜ Põhivõrk (transmission network and system operator) has been analysed, since it belongs to Eesti Energia AS group. Independence of the system operator is especially important in free market conditions, where the operator has information about offers of various electricity producers and sellers and possible leakage of this information is similar to stock exchange *insider* phenomenon, which can give advantages for some market participants before others. The CA has suggested that in the plan more attention should be paid to the following aspects:

- securing independence of the management board
- separating areas of activity and auditing
- purchasing services from inside the group
- securing information confidentiality inside the group
- public relations

Below the CA's evaluation of the transmission and system operator's independence is presented.

3.2.9.1 Unbundling of activities in the transmission network

Eesti Energia AS, as the Mother Company of the transmission network operator, fully fulfils the requirements the EU Internal Electricity Market Directive and the Estonian Electricity Market Act. The activities of the operator are limited to provision of network services and sale of balance energy, and since 1 May 2007 also administering of the fund for supporting of producers using renewable energy sources. In addition, the enterprise has separated its accounts according to the requirements elaborated by the CA as follows:

- sale of network service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- transit of electrical energy (*ex-post* regulation, the CA has the right to verify justification of prices)
- charges paid by customers for connecting to the network (*ex-ante* regulation, the EMI approves methodology for calculation of connection charges separately for every undertaking)
- sale of balancing energy (*ex-post* regulation, the CA has the right to verify justification of prices)
- secondary (ancillary) activity

In conclusion the CA is in a position that the transmission and system operator OÜ Põhivõrk fulfils required by law and the separation of accounts secures transparency of service price formation, as well as avoids cross-subsidising of activities.

3.2.9.2 Management of the transmission network operator

According to the Electricity Market Act a member of board of another enterprise of a group may not be in the board of the transmission operator and may not be in charge of the company. However, it is allowed to be, at the same time, a member of the management board of a group's enterprise and a member of the supervisory board of a network operator. Currently, the management board has three members, while the supervisory board has four members. Therewith, the three members of the supervisory board are also members of Eesti Energia AS, as the Mother Company, management board.

It should be considered a positive development that the management of the enterprise has been enlarged from one to three members. The CA's opinion is that this facilitates to company's independence, since decisions are made collectively. According to their action plan members of the board are paid for fulfilment of duties. The compensation is fixed by contract and it can be changed only upon agreement between the parties. The board members are paid bonus on the basis of a system ("Compass") of balanced scorecards (metrics). In general, such work arrangement should secure independence of board members in their decision making. At the same time the CA sees here a conflict of interests. Namely, Eesti Energia AS group has not formed a legal person for electricity sale and trading. These functions are carried out by Eesti Energia AS, as the sole owner of the transmission network.

Eesti Energia AS sells electricity on domestic market, is active in electricity trade, as well it is the balance operator, i.e. is responsible for the balance between production and consumption. According to the organisation of electricity market the transmission network operator OÜ Põhivõrk is responsible for balance of the entire system. Thus, Eesti Energia AS, as the sale company and the balance operator is responsible before the transmission operator and, if needed, is forced to follow orders of the latter. Hence, there is an obvious possibility for a conflict of interests, as members of Eesti Energia AS (the sale company) management board are at the same time also members of the transmission operator's supervisory board.

The CA is in a position that the solution would be establishing of a sale and trade company as a separate legal person. In such case both the transmission and sales would be on the "same level" in relation to the group. That would eliminate the existing conflicting scheme, in which the balance operator is in a higher level in the group than the transmission operator, which supervises the balance operator. The CA has paid attention to this shortcoming already in its previous report but no developments in the matter have taken place.

The CA is also in a position that Eesti Energia AS group has to deal with the guarantees of the transmission operator's board members and clarify the procedures according to which (at what kind of conditions) an impeachment of board members is possible. This should avoid situations, where management can make decisions, which may be harmful for the group as for one of electricity sellers, but at the same time necessary for the organisation of a fair market. To a certain extent this problem could also be solved by establishing of a separate sale entity. The problem was also addressed by the CA in its previous report but nothing has changes since then.

The action plan clearly defines also the functions to be performed by both the management and supervisory boards. Particularly, the supervisory board's competence is to establish daughter companies, approval of budget and business plan, approval of extra budgetary investment programmes, borrowing and lending beyond daily business framework, and others. Daily operations, including decisions on treatment of market participants, are completely the competence of management board.

Conclusively, the CA's is in a position that a positive development in the management of the transmission network operator has been the enlargement of board. The functions and competence of both management and supervisory boards are well defined. In the implementation of the action plan the supervisory board has no possibilities to intervene in economic activities of the transmission operator, nor can it affect decisions of market participants. At the same time the CA has an opinion that Eesti Energia AS group should establish sales company in the form of a separated legal person, in order to avoid possible conflict of interests between sales and transmission operator. Besides, it is recommendable to elaborate procedures and criteria for impeachment of management board members. Both problems were addressed by the Authority in its previous report but no developments have taken place in these questions.

3.2.9.3 Equal treatment of market participants

From the point of view of equal treatment of market participants it is extremely important to secure confidentiality of information. As the transmission network operator is at the same time also the system operator (responsible for system balance and security of supply in every time moment) it possesses confidential information about market participants acting on the market. Similarly to stock exchange the transmission operator is like a stockbroker having confidential information, using of which can give advantages to certain traders. As the owner, Eesti Energia AS, is one of the market participants to be treated equally with others, it becomes crucial to secure information. The information system of the transmission operator is connected to the system of Eesti Energia AS group. The action plan describes that according to internal regulations other undertakings of Eesti Energia AS group have no access to the confidential information of the transmission operator. The plan provides for changes in the internal work regulations with respect to the action plan and review of the internal documents dealing with equal treatment measures, in order to assure that the requirements of the equal treatment plan are included in the documents. The deadline for both measures is 1 April 2008.

As one of the competences of the transmission operator is securing of supply and balancing of the power system, equal treatment of market participants is extremely important also regarding this aspect. According to the Electricity Market Act the transmission operator can give orders to consumers, producers, network operators and other market participants for adjusting their consumption-production regime, in order to safe-guard security of supply in the entire system. It is extremely important that both market participants belonging and not belonging to Eesti Energia group are treated equally.

In accordance with the action plan safe-guarding of security of supply is based on respective internal documents established by OÜ Põhivõrk, including the Procedures of Operational Control of the Estonian Power System. For improving cooperation with larger clients relevant agreements are concluded or, are under conclusion. The agreements facilitate better technical cooperation on the security of supply. In order to secure cooperation with neighbouring power systems agreements on parallel operation are also concluded.

In emergency situations the guidance is the instructions for liquidation of emergency consequences elaborated by the Ministry of Economic Affairs and Communications, as well as the plan for consumption limitations, which is adjusted annually. The orders issued by the system operator proceed from security of supply needs. In order to follow the requirements OÜ Põhivõrk has validated documents that describe actions of the system operator.

OÜ Põhivõrk constantly develops the network and takes care for the pass-through capacity of transmission lines. In the coming 5-year period no capacity limitations are foreseen, except in Narva-Tallinn direction in connection with the Estonian-Finnish sea cable Estlink. OÜ Põhivõrk has an agreement with its owner according to which in case of a pass-through congestion the electrical energy transmitted to Estlink can be limited as well.

If a pass-through congestion still appears by a coincidence of several circumstances, then OÜ Põhivõrk will limit consumption by distribution networks in accordance with the limitation plan agreed with the network operators in beforehand. Respective plan is adjusted annually. The transmission dispatch centre operator can decide upon actual situation, which consumer to interrupt first, i.e. interruption of who is most efficient in a specific situation.

Compared to other EU regions the Estonian situation is less complicated, because the Baltic power system is the only one in which there is currently enough excess pass-through capacity and the transmission operator has no need for the distribution of “deficiency” service. A shortage is likely to occur in Estlink, but until 2013 it is a commercial connection, in which capacity is shared between the owners on contractual basis.

Connecting of market participants to the transmission network is important from the point of view of equal treatment, first of all in relation to producers, as consuming customers connect to a distribution network, as a rule. That is why equal treatment of producers is especially important, as some of perspective entities, that are planning to connect, belong to Eesti Energia AS group. During last years the transmission operator has issued specifications for connecting of wind turbine (windmill) parks. As regards connecting of producers a situation can appear that the transmission operator has to distribute so-called “shortage source” or saying it in other words, existing network may have not enough capacity in a specific area/territory for connecting all potential applicants that are willing to connect. The Electricity Market Act provides for refusal, first of all in cases where existing network structure has lack of transmission capacity for network service.

According to the action plan the transmission network operator uses a common form in concluding connecting agreements with all connectees. The form is disclosed on their web site. In order to secure equal treatment for all customers an internal procedure for connecting has been established, following of which is obligatory for all employees dealing with connection issues. The charges/fees for connecting to the network are calculated on principles stipulated in Grid Code, i.e. on the basis of actual justified cost. The fees include the cost of new equipment and the cost of reconstruction of existing installations in order to connect the new capacity. In the connecting procedures both the undertakings belonging and not belonging to the Eesti Energia group are treated equally. Equal treatment is ensured for all entities willing to connect through same applicable connection conditions and common (standard) connection contracts. In case of refusal to connect the transmission operator follows principles stipulated in the Electricity Market Act, its paragraph 65. In situations where connecting is related to shortage of pass-through capacity the customer can get a connection offer for a maximum possible capacity. If no connection offers can be issued, because needed capacity is unavailable, the connectees are added to a waiting list. Applications in the waiting list are processed, when requested capacity becomes available, on the principle of historic priority – earliest application in the list gets a connecting offer first.

In conclusion, activities of the transmission network operator (OÜ Põhivõrk) related to equal treatment of market participants can be considered satisfactory and the CA has not observed cases of unequal treatment. The company has internal regulations and rules that regulate actions and decisions to be made when Eesti Energia AS group's undertakings are concerned. Whereas the CA is in an opinion that the transmission network operator should further develop independence of the energy trade (including balance energy) information system from the group. It is recommended to consider establishing an information system separated from the group.

3.2.9.4 Buying goods and services from enterprises of Eesti Energia AS group

Buying goods and services from enterprises of Eesti Energia AS group is important first of all from the point of view of prices. Whereas, all Estonian citizens buy services from the transmission network operator directly or indirectly. Thus, it is the case of highest monopoly level and that is why in all purchases procurement rules have to be strictly followed and goods and services have to be bought at most favourable prices.

Prices of goods and services bought by the transmission network operator are reflected in the tariffs of network services approved by the CA. That is why the CA has analysed in the approval process whether the prices of goods and services bought from enterprises of the group are not higher than market prices. Also, in 2006 the CA has ordered and analysis from consultancy Hevac OÜ, in which justification of investments, procurement procedures and other investment related aspects were analysed. In the result of the analysis it appeared that the transmission operator has followed good practice in its procurement procedures. Bidders from both inside the group and outside of it have equal conditions. As regards buying of other goods and

services the CA has followed principle that services have to be bought at common market prices. In the approval process a thorough analysis has been carried out on the justification of the prices for services bought from inside the group. If the transmission operator bought services from inside the group at higher prices than accepted by the CA, then consumers would have not suffered from, but the difference would have been paid for at the cost of company's profit.

Conclusively, the CA's position is that purchasing of goods and services is done on equal basis from both undertakings inside and outside of the group.

3.2.9.5 Public relations

In accordance with the Electricity Market and Public Information Acts network operation undertakings are obliged to maintain a web site and to disclose on it information which is important to customers, like charges for network services, standard terms and conditions for network service contracts, price for balancing energy, standard terms and conditions for balance agreements, conditions for establishing a network connection and other information. The CA's opinion is that the transmission network operator OÜ Põhivõrk fulfils public information requirements derived from relevant legislation and during the last five years it has disclosed additional information important to market participants, like system peak load, transmission capacity of the lines, planned network repairs, level of power losses in the network and other relevant information. On the web site it is also possible to get information about their economic performance: annual accounts, action plans for equal treatment, etc. In addition the operator has hired a public relation manager, independent from the group. The person is responsible for publishing information, press releases, etc.

The conclusion: the transmission network operator has significantly developed the information disclosed on its web site and the CA opinion is that their web site is one of the best among all Estonian energy undertaking's web sites.

3.2.10 Equal treatment action plan of the distribution operator OÜ Jaotusvõrk

The market share of the distribution network operator OÜ Jaotusvõrk is approximately 86% and it belongs to Eesti Energia AS group. That is why the CA has thoroughly analysed the equal treatment action plan prepared by OÜ Jaotusvõrk.

3.2.10.1 Unbundling of activities of the distribution operator OÜ Jaotusvõrk

In relation to unbundling of activities OÜ Jaotusvõrk completely fulfils the requirements of the EU Internal Electricity Market Directive and the Electricity Market Act. By legal unbundling it is guaranteed that the undertaking is not active in other electrical energy related fields than in all services needed for distribution and/or operation of the distribution network. The services particularly include carrying out

electrical works, provision of operational dispatch services, supervision on behalf of the owner and production of reserve energy.
The only activity of OÜ Jaotusvõrk is the provision of distribution service. In addition the undertaking has separated in its accounts other cost according to requirements elaborated by the CA as follows:

- sale of network service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- charges paid by customers for connecting to the network (*ex-ante* regulation, the CA approves methodology for calculation of connection charges separately for every undertaking)
- network services that are not to be approved
- secondary (ancillary) activity

Conclusively, the CA is in a position that the distribution network operator OÜ Jaotusvõrk completely fulfils the requirements for unbundling of activities required by law and the cost separation in accounts secures transparency of service prices, as well as avoids cross-subsidising of activities.

3.2.10.2 Management of the distribution operator OÜ Jaotusvõrk

According to the Electricity Market Act a member of the management board of another network operator of the group may not at the same time be a member of the management board of OÜ Jaotusvõrk, nor be in charge of it. However, it is allowed to be, at the same time, a member of the management board of a network operator and a member of the supervisory board of an undertaking belonging to the group.

According to the action plan the competence of the management board is making decisions in the following:

1) investment decisions within the budget and related to daily business
2) utilisation of funds within the budget
3) decision making on charges and prices

Unlike in the transmission network the management board of the distribution network operator consists of a single member. Law does not stipulate the number of members of the board of the distribution network. Also, the responsibility of the distribution in the functioning of electricity market is significantly lower than that of the transmission network. The CA is in position that even the single-member management board can provide independence from Mother Company. However, enlargement of the board could be a positive development.

The distribution network operator OÜ Jaotusvõrk fulfils law requirements. The Mother Company's intervention into activities of the operator where a conflict of interests could take place has not been observed. However, enlargement of the board could obviously be a positive step towards securing independence of the board.

3.2.10.3 Equal treatment of market participants

For equal treatment of market participants network services are provided in cases stipulated in the Electricity Market Act, while standard conditions for services are approved by the CA. In other cases certain customer groups are serviced on principles of equal treatment and standard conditions of contracts elaborated by the undertaking itself. The charges for services are approved by the CA as well. Charges for the services, which are not to be approved, are calculated by the undertaking using uniform methodology for all market participants. Refusal to provide a network service is allowed only in cases stipulated by law. OÜ Jaotusvõrk constantly develops its distribution network. This facilitates to continuous provision of network services in compliance with legal acts and the activity licence conditions in a manner that satisfies justified needs of customers connected to the grid.
According to the action plan OÜ Jaotusvõrk applies measures upon orders by the transmission operator OÜ Põhivõrk. Respective cooperation agreement has been concluded between the two operators in order to secure technical stability of the grid and supply.

It can be concluded that activity of OÜ Jaotusvõrk aimed at equal treatment of market participants is regarded good and the CA has not observed cases of unequal treatment.

3.2.10.4 Buying goods and services from enterprises of Eesti Energia AS group

The transmission network operator OÜ Jaotusvõrk buys a number of essential goods and services from undertakings of Eesti Energia AS group. This is an important circumstance first of all from the price formation point of view. Prices of goods and services bought by the distribution network operator are reflected in the tariffs of network services approved by the CA. That is why the CA has analysed in the approval process whether the prices of goods and services bought from enterprises of the group are not higher than market prices. Justification of the price formation for the goods and services of the group's undertakings have also been thoroughly analysed. In the approval of charges for network services of OÜ Jaotusvõrk for 2007 their operational costs have been deeply analysed, with a special emphasis on the prices for goods and services purchased from Mother Company's undertakings. The CA came to a conclusion that those prices are based on market ones and there is no advantages given to Mother Company compared to competitors on the market.

Conclusively, the CA's position is that purchasing of goods and services is done on equal basis from both undertakings inside and outside of the group.

3.2.10.5 Public relations

In accordance with the Electricity Market and Public Information Acts network operation undertakings are obliged to maintain a web site and to disclose on it information which is important to customers, like charges for network services, standard terms and conditions for network service contracts, conditions for establishing a network connection and other essential information. The CA's opinion is that the distribution network operator OÜ Jaotusvõrk has some shortcomings in their public relation activities. The CA sees possibilities of developing and updating their web site towards better customer friendliness. The operator has its communication personnel that organises communication with media. Press releases related activities of the underking are published on behalf of the undertaking.

The conclusion: the distribution network operator OÜ Jaotusvõrk has some shortcomings in their public relation activities. The CA sees possibilities of developing and updating their web site towards better customer friendliness.

3.3 Competition in electricity market

3.3.1 Wholesale market

The main features of the Estonian electricity market are transitional period until 2013 and an extreme concentration of the market. Until 2009 the market is opened only by 13% and since 2009 until 2013 the intended openness range shall be 35%. Whereas the 35% openness means that the eligible customer qualification criteria assume an annual consumption of at least 12,3 GWh and an estimated number of eligible customers shall total 615. Although three independent electricity sellers have commenced commercial operations, their activities have still been relatively modest. The largest electricity wholeseller in Estonia is Eesti Energia AS with an evaluated market share close to 100%. Considering the good market position of Eesti Energia AS it can be assumed that majority of eligible customers will remain after 2009 partly market opening as clients of Eesti Energia AS.

Compared to other EU Member States one more specific of the Estonian market is its little volume. In 2007 electricity sale totalled only 8 534 GWh and system peak load 1 537 MW. In winter 2008 the peak load was slightly lower, 1 525 MW. According to the data presented in table below an annual sales have been gradually increasing since 2001. Estonia is a net exporter and fully covers its electricity demand by its own production.

Some general indicators of the market are presented in below table 3.3.1.

Table 3.3.1 General indicators of wholesale market. Source: Statistical Office and OÜ Põhivõrk

	Electricity consumption GWh[2]	Peak load MW	Installed capacity MW	No of producers with more than 5% market share	Market share of 3 largest producers %	Average market price EEKc/kWh[1]
2001	6 970	1321	2876	1	99	
2002	6 940	1336	2726	1	99	
2003	7 210	1475	2723	1	99	
2004	7 440	1318	2675	1	99	
2005	7 510	1331	2433	1	99	40,95
2006	7 978	1555	2059	1	99	40,95
2007	8 534	1537	2052	1	99	40,95

Notes: [1]Narva Elektrijaamad production price
[2]Including network losses

The share of eligible market in 2007 was 985 GWh, which is 13% of final consumption of electricity. Relevant figures are presented in table 3.3.2 below. The right hand column contains the electricity quantity bought by eligible customers.

Table 3.3.2 Electricity consumption in Estonia

	Total consumption (without network losses) GWh	Sold to eligible customers on bilateral contracts GWh
2002	5 686	670
2003	6 013	760
2004	6 326	880
2005	6 403	850
2006	6 902	875
2007	7 180	985

According to the organisation of the market non-eligible customers may buy electricity only from the serving network operator or from seller designated by the operator. Network operators in turn shall purchase electricity for compensation of power losses or for re-selling to eligible customers produced either in AS Narva Elektrijaamad (Narva Power Plants), in cogeneration process or produced by small producers (of below 10 MW capacity). Essentially, the majority of Estonian producers comply with these criteria and are in equal conditions with the Narva plants. Therewith, electricity shall not necessarily be purchased directly from a power plant, as an important issue is the origin. This means that all sellers have possibility to purchase electricity from Narva plants and re-sell it. For example, Eesti Energia AS sale undertaking buys electricity from various power plants located in Estonia and re-sells it to other network operators. Other sellers perform similarly. To some extent a market has emerged – from the sale of electricity to network operators. Namely, dealers independently from AS Eesti Energia buy electricity directly from producers and re-sell it to network operators.

Since there is no electricity exchange in Estonia and also electricity trade is negligent, there is no market price for electricity as well. In order to compare the Estonian market with other markets in EU countries the AS Narva Elektrijaamad (Narva Power Plants) production price has been taken as the market one – which was 40,95 EEKcents/kWh. Narva plants are the dominant producer (market share over 90%). Since 1 July 2008 the Narva Power Plants production price is 44,64 EEKcents/kWh.

In conclusion it can be said that there is no effective electricity market in Estonia. However, there are very good possibilities for a Baltic electricity market, since unlike in other EU Member States there is enough transmission capacity available between the Baltic countries. Since 1 July 2007 the Latvian and Lithuanian markets are open in 100% extent and since 1 January 2009 the Estonian market will open by 35% (an estimated consumption level 2 880 GWh). In 2009 the Lithuanian Ignalina nuclear power plant will be closed and this will remarkable change the situation on the market. Through the Estonian/Finnish power cable to some extent also Finland can be considered part of the Baltic market. Moreover, since the power system of Baltic countries is connected with Russia, also Russian electricity acts on the market. As there is well developed electricity market in Finland along with the exchange price, it

can be foreseen that prices in the Baltic market will be guided to some extent by the Nordpool market price.

3.2.11 Impact of CO_2 on electricity price

Since 94% of electricity is produced from oil shale the price for electricity is significantly influenced by CO_2 emission reduction policy. It shall also be stated that the impact of CO_2 policy to price formation in Estonia is remarkably higher than in other EU countries. This is because production of electricity from oil shale has higher CO_2 emission level: production of 1 MWh of electrical energy corresponds to approx. 1 ton of CO_2 emissions. Thus, if all needed CO2 quantity should be bought at market price it would significantly increase electricity price. For example, if the CO2 ton price is €20 (313 EEK), then this adds the same sum to the price, i.e. €20 (313 EEK/MWh).

For the previous period (2005 to 2007) for Estonia, including for the possessor of Narva power plants Eesti Energia AS, enough CO_2 quota was allocated, which satisfied domestic consumption and export needs. For the current period (2008 to 2012) the European Commission by its decision cut the quota significantly. Estonia has challenged this decision in the court. Based on the decision the Estonian government validated its internal quota allocation plan for 2008-2012. The plan stipulates a permissible annual CO_2 quantity is 12,7 million ton, which includes a state reserve of 1,04 million ton. Whereas, an allocation for Eesti Energia AS is 9,2 million ton. Those significant cuts raise a question whether Eesti Energia AS has enough CO_2 quotas for the coming 5-year period for supplying domestic customers or instead, some extra quota has to be purchased. However, purchasing extra quotas influences electricity price. The CA ordered calculations from Tallinn Technical University of CO_2 quantities emitted by Eesti Energia AS. If to assume that for electricity export and for production of shale oil the quotas will be purchased, then an annual needed CO_2 quantity is 9,4 million ton. Thus, the quota deficit is minimal, presumably 0,2 million per annum. This is without considering the state reserve.

Thus, the CA is in a position that for the current 5-year period the allocations of CO_2 quota for domestic electricity production are substantially sufficient, with a minimal deficit that does not influence the price for electrical energy. However, there is an uncertainty about the next period that begins in 2013. If then all the necessary CO_2 quota is to be purchased at a market price and included in the price of electricity, then at the current CO_2 prices in-between €20 and 30 per ton the electricity price would double. Besides, because of the uncertainty Eesti Energia AS has also suspended its programmes of investing in new energy blocks in Narva power plants.

3.2.12 Retail market

Similarly the wholesale market the specific of retail market is also determined by the transitional period in market opening. Since non-eligible customers are obliged to buy electricity from the servicing network operator they have no possibility to change the

supplier. Also in the retail market the undertaking with the biggest share is Eesti Energia AS. Its market share is about 88%.
The information related to retail market is presented in table 3.3.3 below.

Table 3.3.3 General retail market information

				Market share of three biggest sellers			Change of seller		
	Total consumption GWh	No of undertakings with more than 5% market share	No of independent electricity sellers	Large and very large industries	Medium and small industries	Small undertakings and household customers	Large and very large industries	Medium and small industries	Small undertakings and household customers
2001	5 607	1	0	100	93	93	0	0	0
2002	5 686	1	0	100	93	93	0	0	0
2003	6 013	1	0	100	93	93	1	0	0
2004	6 326	1	0	100	93	93	1	0	0
2005	6 403	1	0	100	93	93	1	0	0
2006	6 902	1	3	100	92	92	1	0	0
2007	7 9180	1	3	100	92	92	0	0	0

Data on the formation of prices paid by final customers (network services + electricity) are presented in the following table.

Table 3.3.4 Electricity final consumer prices in 2007

Prices €/MWh (EEKcent/kWh)	Large industrial customer	Commercial customer	Household customer
Network service (without taxes)[1]	12,99 (20,34)	28,27 (44,24)	39,21 (61,36)
Taxes as part of network charge	0,00	0,00	0,00
Electricity	23,79 (37,23)	27,52 (43,07)	28,99 (45,37)
Subsidy for renewable energy	1,39 (2,18)	1,39 (2,18)	1,39 (2,18)
VAT 18%	6,87 (10,75)	10,29 (16,11)	12,53 (19,60)
Total (with taxes)	45,04 (70,51)	67,47 (105,60)	82,12 (128,51)

Notes:
According to Eurostat definitions:
- large industrial customer, one with an annual consumption of 24 GWh, max capacity 4000 kW
- commercial customer, one with an annual consumption of 50 000 kWh, max capacity 50 kW
- household customer is one with an annual consumption of 3 500 kWh.
Prices according to Eesti Energia AS and OÜ Jaotusvõrk (the distributor) price list
[1] the charge for network service includes the subsidy paid to renewable energy sources
1 €=15,65 EEK

3.2.13 Selling obligation and price regulation

General information on regulation of final customer price is presented in following table.

	Eligible customers	Medium size business customers	Small businesses and households
Regulated price (Yes/No)	No	Yes	Yes
Percentage share of customers buying electricity at regulated price	95	100	100
Possibility to switch back from market price to regulated price (Yes/No)	Yes	Yes	Yes
Electricity sellers with obligation to sell at regulated price	Network operator	Network operator	Network operator

As it was already described in subsections 3.3.1 and 3.3.2 until 2009 the market is opened only by about 13% and the electricity sold to non-eligible customers shall be produced either in Narva power plants (AS Narva Elektrijaamad), in cogeneration process or produced by small producers (with a capacity of below 10 MW). Both AS Narva Elektrijaamad and Iru Elektrijaam belong to Eesti Energia AS group, while the market share of AS Narva Elektrijaamad in production is 95%. Narva power plants use oil shale fuel mined in Estonia. Oil shale is mined by AS Eesti Põlevkivi, which has a market dominant position and belongs to Eesti Energia AS group. According to the Electricity Market Act the CA shall approve prices for the following:

- the price for oil shale, which is an important input in formation of production cost of AS Narva Elektrijaamad
- the production price for AS Narva Elektrijaamad, which is an important input in the formation of the tariffs for electricity sold to non-eligible customers
- the tariffs of electricity sold to non-eligible customers under selling obligation

In addition to price/tariff approval the Electricity Market Act also stipulates selling obligation, according to which network operators are obliged to sell electricity to all non-eligible customers connected to their network. If eligible customers connected to the network of a network operator have no economically competitive possibility to purchase electricity from another seller, they also have the right to purchase electricity at a price for non-eligible customers in the framework of the selling obligation. Network operators have obligation to perform the selling obligation themselves or, they have also the right to designate another seller to perform the selling obligation. For example, OÜ Jaotusvõrk, the largest distribution network operator belonging to Eesti Energia group, has designated Eesti Energia AS, as the seller of electricity.

The principles of both approvals of prices for oil shale, for production and for sale by AS Narva Elektrijaamad are similar to those for the network services. The price is formed of justified costs, capital expenditure (depreciation of fixed assets) and justified return. In the evaluation of justified costs the CA considers technical efficiency indicators, cost saving principles and monitors whether a cross-subsidising is avoided. The main difference compared to the regulation of network operators is that in production and sale price regulation there is no regulation period and the

regulatory authority monitors prices upon undertaking's application, while network charges are approved for a certain fixed regulation period and are indexed by changes of consumer (retail) price index and cost saving obligation (so-called RPI-x regulation). The general principles of price approval were described in detail in sub-section 3.2 "Regulation of electricity networks".

Regarding sale price the CA approves weighted average limit price and an undertaking has the right to form different tariffs for different customer groups within this weighted average limit. The above described regulation leaves a flexible possibility for undertakings for formation of different prices within the weighted average. According to the Electricity Market Act the CA has elaborated and disclosed unified methodology for calculation of a justified weighted average price limit for performing of selling obligation. The methodology determines the tariff period, which is one year. If during the tariff period the actual price appeared higher than the CA approved weighted average price limit, it shall be compensated for to customers during the next price period. This means the next period tariff shall be decreased. If the actual price appeared lower than the CA approved weighted average price limit, it is considered as an undertaking's risk and shall not be compensated for by customers.

For AS Eesti Põlevkivi (oil shale mining industry) the approved price limit of 133 kroons (EEK) per ton was valid until 1 April 2008. It has been approved already in 1998, i.e. the company has succeeded to sell at the same price for almost ten years. It can be stated that AS Eesti Põlevkivi has performed effectively from an economic point of view, i.e. their cost has been under control. A circumstance that facilitated to achieving that goal has been the good oil price in the world market, which increased oil shale mining for the purpose of shale oil production. In February 2008 the CA approved the price limit of 147,69 EEK/ton.

For AS Narva Elektrijaamad the CA approved price limit in 2004 and this was valid until April 2008. Their price consists of two components: a variable part, which is 24,17 EEKcents per kWh and the capacity charge of 784 637 EEK kroons per MW per year. Since it is two-component price, then a weighted average first of all depends on the quantity of sold electricity and on 2004 approvals it resulted in the level of 40,95 EEK cents per kWh. In March 2008 the CA approved a new limit price of 44,46 EEKcents/kWh, which consists of two components: a variable component of 30,415 EEKcents/kWh and a capacity charge of 784 637 EEK/MWh.

In November 2004 the CA approved for the largest sale undertaking Eesti Energia AS a weighted average price limit for electrical energy sold to end consumers of 41,83 EEKcent/kWh. Within this limit the undertaking formed its detailed price list in 1 March 2005. In 28 March 2008 the CA approved a new weighted average price limit for electrical energy sold to end consumers of 45,63 EEKcent/kWh, which serves as a basis for formation of a new detailed price list.

It can be said that both production and final consumer price regulations are cost-oriented price regulations. The price reflects coverage of justified operational cost, reasonable return (profit) on invested capital. The investments made into new capacity are also included in the price. Thus, the current price regulation prevents from a situation of selling electricity below production cost. For example, for AS Narva Elektrijaamad, as the producer in market dominant position, a return on invested

capital (assets) of 8,0% is accepted. Such level should be deemed justified, considering its market dominant position.

Since market in Estonia is opened only by 13% and is extremely concentrated (Eesti Energia AS controls practically the entire wholesale market with close to 100% market share), the eligible customers essentially have no possibility to choose alternative suppliers. That is why the CA is in a position that regulation of both production and sale price is necessary and justified in order to protect customers and avoid earning of unjustified high profits by market dominating undertakings. Without production and sale price regulation the undertakings may form their sales prices on a level of neighbouring markets and thereby earn unjustified high profits on invested capital. Stipulations of the Electricity Market Act prevent also from situations of possible market distortions, like selling to eligible customers at a higher price than to non-eligible customers.

The Electricity Market Act prevents also from occurrence of a situation in which in case of sharp rise of production cost it is impossible to transfer it to final consumers. In case of rapid changes in electricity market and if the approved weighted average price limit does not cover all costs the undertaking may, at its own initiative, apply prices exceeding the limit and after that submit a new weighted average price limit for approval to the CA. If the price appears not justified, the undertaking is obliged to compensate for the difference to customers.

3.3. Competition supervision

The Competition Act provides definitions for undertakings with market dominant position, undertakings having special and exclusive rights and undertakings possessing and controlling essential facility. An undertaking, or several undertakings operating on the same goods market, has dominant position if the position enables it/them to operate in the market to an appreciable extent independently from competitors, suppliers and buyers. Dominant position is presumed if an undertaking or several undertakings operating on the same market account for at least 40% of the turnover in the goods market.

According to the Competition Act any direct or indirect abuse by an undertaking or several undertakings of the dominant position in the goods market is prohibited, including:

1) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions;
2) limiting production, service, goods markets, technical development or investment;
3) offering or applying dissimilar conditions to equivalent agreements with other trading parties, thereby placing some of them at a competitive disadvantage;
4) making entry into an agreement subject to acceptance by the other parties of supplementary obligations which have no connection with the subject of such agreement;

5) forcing an undertaking to concentrate, enter into an agreement which restricts competition, engage in concerted practices or adopt a decision together with the undertaking or another undertaking;
6) unjustified refusal to sell or buy goods.

Special or exclusive rights are deemed the rights granted to an undertaking by the state or a local government which enable the undertaking to have a competitive advantage over other undertakings in a goods market or to be the only undertaking in the market. An undertaking is deemed to control essential facilities or to have a natural monopoly if it owns, possesses or operates a network, infrastructure or any other essential facility which other persons cannot duplicate or for whom it is economically inexpedient to duplicate but without access to which or the existence of which it is impossible to operate in the goods market.

The Competition Act stipulates obligations of undertakings with special or exclusive rights or in control of essential facilities according to which above mentioned undertakings shall:

1) permit other undertakings to gain access to the network, infrastructure or other essential facility under reasonable and non-discriminatory conditions for the purposes of the supply or sale of goods;

2) keep clear separation of accounts for different primary and secondary activities (e.g. production, transmission, marketing and other areas of activity) enabling thereby transparency of economic performance;

3) maintain separate records on revenue and expenditure related to each product or service on the basis of consistently applied and objectively justified principles of calculation which shall be clearly specified in the internal rules of the undertaking. The calculation of revenue and expenses must enable to assess whether the price of a product or service is in a reasonable ratio with the value of the product or service.

An undertaking with special or exclusive rights or in control of an essential facility may refuse to grant other undertakings access to the network, infrastructure or other essential facility if the refusal is based on objective reasons, including cases where:

1) the safety and security of the equipment connected with the network, infrastructure or other essential facility or the efficiency and security of the operation of such network, infrastructure or facility are endangered;
2) maintenance of the integrity or the inter-operability of the network, infrastructure or other essential facility is endangered;
3) equipment to be connected to the network, infrastructure or other essential facility is not in conformity with the established technical standards or rules;
4) the undertaking applying for access lacks the technical and financial capability and resources to provide services efficiently and safely to the necessary extent through or with the assistance of the network, infrastructure or other essential facility;
5) the undertaking applying for access does not hold the permit prescribed by law for the corresponding activity;
6) as a result of such access, data protection provided by law is no longer ensured;

On the basis of the Competition Act all network operators are undertakings with special and exclusive rights, as well as the undertakings possessing essential facility. The exclusive right is granted also by the concession principle, as described in section 3.2 above, by which to every distribution network has service area assigned to it and in which only one operator may provide network services. The Electricity Market Act regulates the activities of network operators in detail and assigns the supervisory function as well. That is why supervision of the activities of network operators is regulated primarily by the Electricity Market Act.

Eesti Energia AS has market dominant position both as a producer and as a seller. On the basis of the Electricity Market Act the CA is obliged to approve the price of electricity sold to non-eligible customers and in the framework of this also the production price of Narva power plants. The CA has also the right to monitor the prices of a market dominant seller and of the electricity sold by a producer.

If a market dominant undertaking or an undertaking in control of an essential facility abuses its position then pursuant to the Competition Act a precept may be issued or a misdemeanour proceedings may be initiated (punishable by a fine/penalty payment of up to 500 000 EEK). Repeated abuse may be subject to punishment by way of criminal procedure.

Conclusively, the situation on the Estonian electricity market is determined by the circumstance that due to the transitional period, given as an exemption in the fulfilment of the EU internal electricity market directive, the market is opened only by 13%. That is why essentially there is no market. There is no competition also in connection with the sale of electricity to eligible customers. Another feature of the market is an extreme concentration. Eesti Energia AS share in the wholesale market is close to 100% and in the retail market 86,5%. The next largest Fortum Elekter AS and VKG Elektrivõrgud OÜ have market shares of 2,7 and 3,8% respectively. Considering high concentration it is not very realistic to expect competition even after 2009, when 35% of the market shall be opened. Better chances for competition would be provided by a common market of the three Baltic countries. It is a unique situation in the entire EU, as there are no limitations for cross-border transmission capacity. Another circumstance that facilitates competition in the entire Baltic region is the Estonian-Finnish sea cable.

Since 1 January 2008 the CA as the authority with new functions has an obligation to supervise market functioning pursuant to both the Electricity Market Act and the Competition Act. The Electricity Market Act regulates in detail electricity network undertakings' activities – their rights and obligations. Although the Competition Act stipulates the obligations of electricity network undertakings as ones in control of an essential facility it is practical to apply in networks regulation the specialised act - the Electricity Market Act.

On the contrary, the activities of producers and traders are regulated in the Electricity Market Act quite broadly speaking. Hence, it may be more practical to apply primarily the Competition Act. In February 2008 Baltic Energy Partners, a trader of electricity, submitted a complaint about Eesti Energia AS owned Narva power plants' activity. According to the complaint the plants refused to sell electricity. In the settlement of the dispute the CA based on the Competition Act. It was ascertained that

Narva power plants are undertakings in market dominant position and the refusal to sell was an abuse of this position. The case revealed advantages of the merged Authority – energy sector problems can be solved pursuant to Competition Act while using the knowledge and experience of the energy market regulatory authority.

3.4. Obligations of market participants and customer protection

3.4.1 General obligations of market participants

The obligations of market participants are stipulated in the Electricity Market Act. In addition to law stipulations the CA issues an activity licence with conditions set forth in it. An activity licence is required for the following activities:

1) termination the exploitation of a generating installation with a net capacity of over 1 MW;
2) generation of electricity, except for generation by one producer using generating installations having a total net capacity of less than 100 kW;
3) provision of network services through a distribution network;
4) provision of network services through the transmission network;
5) transmission of electricity through a direct current line crossing the state border;
6) transmission of electricity through a direct line;
7) selling of electricity;
8) import of electricity, except for the import of electricity by the system operator.

An activity licence together with conditions thereon is issued by the CA. After issuing the licence the Authority may change the conditions or validate new conditions if this becomes necessary due to amendments of legislation, for maintaining of security of supply or in order to ensure fulfilment of obligations in compliance with the Electricity Market Act or other legal acts.

Most thoroughly the Electricity Market Act regulates activities of network operators, with their main obligations stipulated as follows. A network operator shall provide the following network services to the customers, producers, line possessors or any other network operators within its service area:

1) on the basis of a corresponding request, connect any electrical installation conforming to the requirements and located in its service area to the network at the connection point;
2) on the basis of a corresponding request, amend the consumption or generation conditions;
3) enable a network connection to be used at the connection point;
4) transmit electricity through its network to the connection point or from the connection point;
5) ensure the installation of a metering device conforming to the requirements of legislation to determine the amounts of electricity transmitted through its network
6) ensure the collection and processing of measurement data;
7) provide ancillary services directly related to the network services.

A network operator shall observe the principle of equal treatment of market participants when providing network services. A network operator has the right to refuse to provide network services if:

1) the electrical installations of the user of network services do not conform to the requirements of legislation or to the technical conditions established by the network operator for connection to the network;
2) the provision of network services is not possible for any other reason dependent on the user of network services;
3) the provision of network services is not possible for reasons independent of the network operator;
4) the network of the network operator lacks the necessary transmission capacity for provision of network services.

A network operator shall provide grounds for any refusal to provide network services. In the reasoning, the legal basis for refusal shall be indicated and the CA shall be notified of refusal to provide network services. A network operator shall develop the network within its service area such that the continued provision of network services is ensured to all customers, producers, line possessors and any other network operators connected to the network, in accordance with their justified needs, legislation and conditions of the activity licence.

In essence the described regulation ensures provision of network services to all market participants and third party free access to the network. Possibilities of refusal to provide network services are extremely limited and in practice no cases of refusal has been recorded.

Compared to network operators the Electricity Market Act sets much less obligations to producers of electricity. According to the Act the generating installations of producers shall conform to the technical requirements established by the Grid Code. Producers' actions shall comply with orders issued by the system operator. A producer shall notify the system operator promptly of any dangerous situations, accidents or other circumstances that endanger or could endanger security of supply or the performance of any contractual obligations.

In addition to law the CA has set forth an obligation to the market dominant producer AS Narva Elektrijaamad (Narva Power Plants Ltd.) to secure uninterruptible supply of electrical energy to customers. Since AS Narva Elektrijaamad and OÜ Iru Elektrijaam (Iru Power Plant Ltd.) are extremely important for securing of district heat supply to Narva and Tallinn city respectively, the CA has set forth in their activity licences an obligation of an uninterruptible supply of heat to the cities.

An electricity selling licence is required for both the network operators that sell electricity to the customers connected to their network and for undertakings performing electricity trade.

3.4.2 Rights and obligations of the Competition Authority

From a supervisory authority point of view the Estonian legislative basis can be considered as a solid one and gives for the CA enough possibilities for market regulation.

The CA has the right to get necessary information from a market participant and from state and local municipal authorities, right to enter their territory, rooms and facilities for the purpose of on-site inspection, examine the documents necessary for supervisory activities and other information and circumstances and make extracts, transcripts and copies thereof. The CA can also inspect the accounts and price formation practices applied by market dominant producers or sellers, establish development obligations for undertakings through licence conditions. For example, it can impose an obligation to invest for network operators that have not secured stable electricity supply for customers in accordance with requirements.

At the same time the CA is obliged to supervise fulfilment of the Electricity Market Act stipulations and to make prescripts in case of violation. Also, market participants (consumers or undertakings) can record complaints on activities or inactivity of other market participants and the Authority has to re-settle them by its decisions. Both the precepts and decisions are administrative acts that can be challenged with an administrative court, which has the right to invalidate a CA's decision or a precept.

Additionally the Electricity Market Act also stipulates that in case of certain violations of law the Authority has the right to initiate misdemeanour proceedings. The following violations of law are determined as misdemeanours:

1) violation of the obligation (failure) to provide network services;
2) violation of the quality requirements for provision of network services;
3) sale of electricity at a price which is not approved or which is higher than the approved price;
4) violation of the rules of cross-border electricity trade;
5) failure to submit information.

The penalty payments that can be imposed in case of violation of the above position 1) is up to 20 000 kroons (EEK), in other cases of up 50 000 kroons

If a market dominant undertaking or an undertaking in control of an essential facility abuses its position then pursuant to the Competition Act a precept may be issued or a misdemeanour proceedings may be initiated (punishable by a fine of up to 500 000 EEK). Repeated abuse may be subject to punishment by way of criminal procedure.

3.4.3 Customer information

Network operators are obliged to maintain a web site and disclose on it the following information:

1) principles of formation of the fees for connecting to the network;
2) data reflecting efficiency, quality and profitability of the network operations;

3) data on the sale enterprise in case the network operator has designated another undertaking to execute the selling obligation;
4) charges for network services;
5) standard terms and conditions of customer contracts for provision of network services.

Sellers of electricity have to disclose on their web site:

1) tariffs for the electricity sold within the framework of the selling obligation (to non-eligible customers);
2) standard terms and conditions for electricity sale;
3) data about environmental impact during previous reporting year: CO_2 and SO_2 emissions, disposed oil shale ash and radioactive waste caused in production of the sold electricity.

The network charges and the tariff for electricity sold in the framework of the selling obligation shall be published at least 90 days prior to their entry into force. In addition to web site the tariffs have to be disclosed also in at least one daily national newspaper. The standard terms and conditions for provision of network services and for the selling of electricity shall be disclosed at least 30 days before becoming valid.

If a network operator sells both network service and electrical energy, it is obliged to separate on customer bills the prices. All sellers of energy are obliged to inform customers about the distribution of energy sources used in production. Respective information shall be attached to the customer bill.

In conclusion the CA is in a position that the customer information in the electricity sector is quite well regulated. The customer pre-information time about price/tariff changes is sufficient and most network operators have good web sites from which their customers can get enough information about network services and electricity sale as well.

3.4.4 Customer contracts, supply limitations and interruptions, extra-judicial proceedings

As regards customer contracts the CA is in a position that it is a well regulated field and customer interests are enough protected. According to the Electricity Market Act standard terms and conditions of contacts for provision of network services, for electricity sale to non-eligible customers under the selling obligation and connection to network shall be approved by the CA. In approval of above mentioned standard contract conditions the CA follows the principle of proportionality, aiming balance of rights and obligations of both undertakings and customers. An important criterion in approval of standard terms and conditions is also their compliance with the Law of Obligations Act.

The contract entered into with customers for provision of network services may be both with a specified term or termless. As rule, termless contracts are concluded. Both network operators and sellers of electricity may change conditions of contract only if

there is an objective reason for that in order to take into account changes of circumstances and only if the CA has granted approval to a change of standard conditions.

Interruption of network connection is regulated very detailed and the CA is in a position that the protection of socially vulnerable customers in possible case of failure to pay in time is sufficient. A network operator may interrupt the connection of a customer to the network if the customer has failed to pay the amount payable on the basis of the contract entered into with the network operator or seller or, has in another manner materially breached an obligation arising from the contract. Before interruption of a network connection a notice concerning the planned interruption of the network connection shall be sent to the customer. The notice shall set out the grounds for interrupting the network connection and the planned time of the interruption. The network connection of a customer may be interrupted after at least 15 days have passed since the notice was sent and if, during that period, the customer has failed to eliminate the circumstances which were the grounds for interruption of the network connection and has not notified the network operator or seller, as appropriate, thereof.

If a network connection is interrupted on the grounds that a customer who is a natural person has failed to pay an amount payable according to the contract due to the temporary insolvency of the customer as a result of his or her serious illness or unemployment, the customer may notify the network operator or seller thereof in writing. Evidence of those circumstances shall be annexed to the notice. On receiving the notice and evidence, a network operator may interrupt the network connection of a customer who is a natural person after at least 30 days have passed since the notice was sent and if, during that period, the customer has failed to eliminate the circumstances which were the grounds for interruption of the network connection and has not notified the network operator or seller, as appropriate, thereof.

If a network connection is interrupted on the grounds that the amount due has not been paid, the connection may be interrupted during the period from 1 October to 30 April in a building or a part thereof which is residential space, used as a permanent residence and heated in full or primarily by electricity only when at least 90 days have passed since the notice and if, during that period, the customer fails to remove the circumstances which were the grounds for the interruption and has not notified the network operator or seller, as appropriate, thereof. A network operator may also limit the capacity of the network connection of a customer. The customer shall be notified of such limitation at least 15 days in advance.

A network operator may promptly interrupt the network connection of a customer if the customer increases, without authorisation, the limited capacity, uses electricity or without authorisation (steals electricity), uses electrical installations which do not meet technical requirements, are dangerous or interfere with the operation of the network as a whole or prejudice security of supply.

Possible cancellation of both network contract and electricity sale contract is precisely regulated by the Electricity Market Act. A network operator may cancel a network contract and disconnect the place of consumption from the network if: the network connection has been interrupted by the network operator due to a breach of the

network contract and the interruption has lasted for at least 180 consecutive days and the customer has failed, during that period, to eliminate the circumstances which were the grounds for the interruption or commence the consumption of electricity; and the customer has materially breached obligations arising from the network contract and the breach has not been remedied within a reasonable period of time granted by the network operator meaning that, as a result, the network operator cannot reasonably be expected to continue executing the contract.

A network operator shall give notice of the cancellation of a network contract at least 30 days in advance. The notice shall set out the grounds for cancellation and the date of termination of the contract.

A seller or a network operator has the right to cancel an electricity contract if: the customer has materially breached obligations arising from the contract and has not remedied the breach within a reasonable period of time granted by the seller or network operator; the network connection through which electricity was sold on the basis of the electricity contract has been interrupted on the grounds that the customer has failed to pay the amount payable; the customer has materially breached an obligation arising from the contract in another manner and the interruption has lasted for at least 60 days; the customer has used electricity or network services without authorisation or has intentionally or due to gross negligence caused damage to the property of the network operator or the seals or verification marks placed on the metering devices by the network operator or the seller. A customer shall be notified of the cancellation of an electricity contract at least thirty days in advance. The notice shall indicate the grounds for cancellation of the contract and the date of contract termination.

All market participants, both undertakings and customers have the right to refer to the CA as to an extra-judicial body. A market participant may record a written complaint with the CA against the action or omission of another market participant that is in conflict with the Electricity Market Act or legislation established on the basis thereof. The CA reviews the complaint and makes a decision thereon within 30 days as of the receipt of the complaint. If the CA requests information necessary for resolving the complaint, the passage of the term shall be suspended, but not for longer than 60 days. The CA’s decisions can be challenged with an administrative court in 30 days since receiving of a decision.

Conclusively, the CA is in a position that electricity customers are quite well protected. The tariff for electricity sold to non-eligible customers is regulated, the costs forming it is under control of the regulatory authority and for undertakings justified return on invested capital is ensured. If eligible customers fail to purchase electricity at a more favourable price they have the right to buy at the price regulated in the framework of the selling obligation. The currently enforced regulation of market dominant producer and seller is necessary in the situation of gradual market opening and to-days opening level of 10 %. Without regulation a situation is likely to arise in which both producers and sellers attempt earning unjustified high profit.

Sufficient information is available to customers about the formation of prices, standard terms and conditions of contracts, energy sources used for production, etc. Most network operators have well shaped web sites that contain sufficient

information. The standard terms and conditions of contracts for provision of network services and sale of electricity are to be approved by the CA and possible interruption of network connection or cancelling of sale contracts are regulated in detail by law.

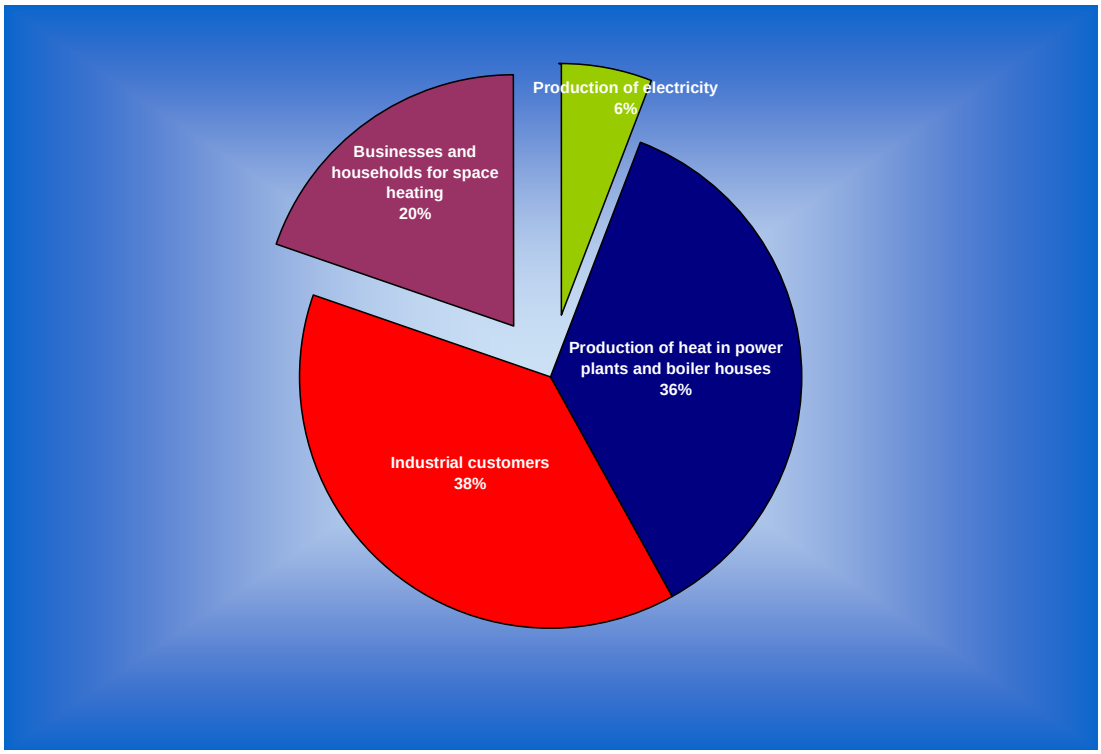
4. Gas market

4.1. Review of gas market and its regulation

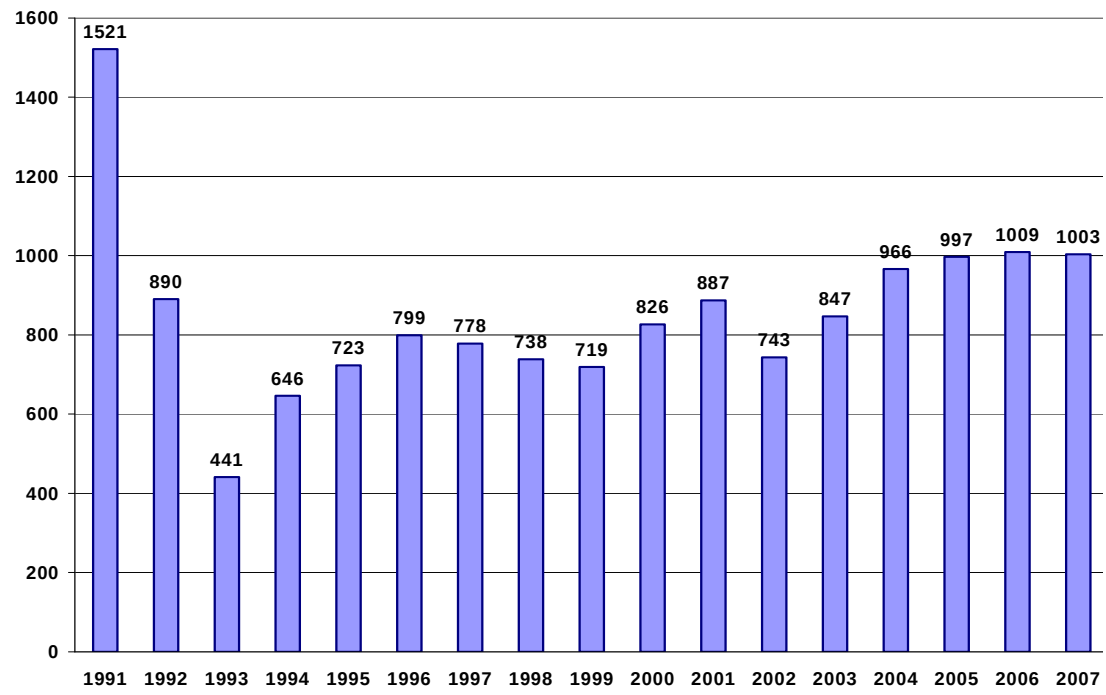
Similarly to electricity system also the gas supply system was built during the former Soviet Union and historically formed part of the Soviet gas supply system. Map of the Estonian gas supply system is presented in drawing 4.1.1 below. Estonia has cross-border connections only with Russia and Latvia. Thus, Estonia is in a situation similar to other Baltic countries and Finland, without connections with other EU member states and the only source of supply is Russia.

Drawing 4.1.1 Natural gas network in Estonia

In 2007 the consumption totalled 1 003 million m^3. 58 million out of it was used for electricity generation, 362 mln for heat production in power plants and boiler houses, 197 mln by household and business customers primarily for space heating and 386 mln m^3 for industrial purpose. Thus, a specific in Estonia is that a large share of gas is used for industrial and space heating purpose and the share used for electricity production are low. Consumption of gas by different customer groups is presented in below diagram 4.1.2. Since 2000 the consumption of gas has moderately increased and in 2006 it exceeded 1 000 mln m^3 milestone (see diagram 4.1.3).



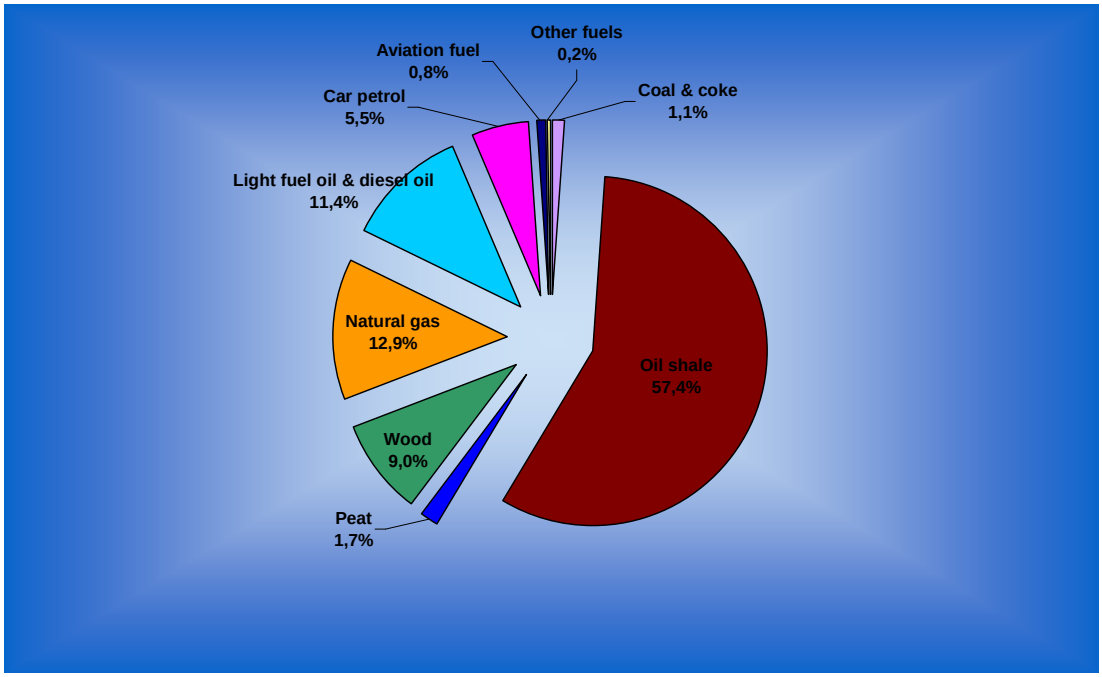
Drawing 4.1.2 Consumption of natural gas by customer groups in 2007
Source: AS Eesti Gaas



Drawing 4.1.3 Consumption of gas mln m^3
Source: Statistical Office and AS Eesti Gaas

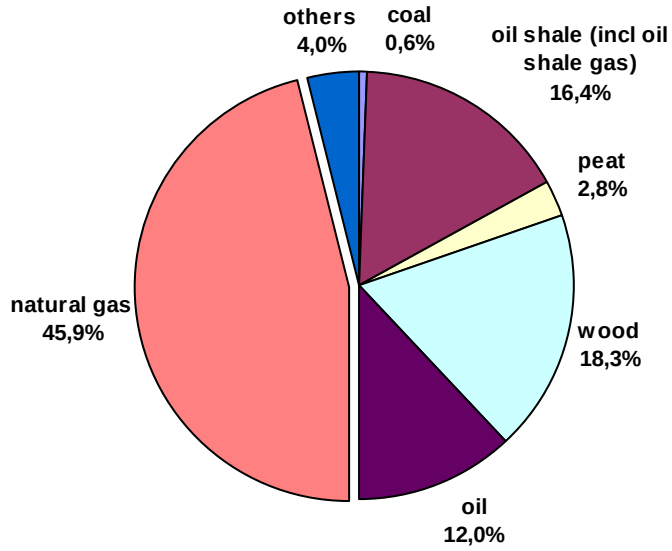
Today almost 20% of the Estonian consumption is the quantity consumed by AS Nitrofert, the producer of fertilisers. Thus, this consumer to a large extent determines future consumption of gas in Estonia. The supplier AS Eesti Gaas prognoses the consumption of gas in industrial process and production of heat remains in the same level. The CA shares this view. At the same time the EU political trend is towards reduction of CO_2 emissions, which may contribute to use of gas for electricity production. Because, compared to oil shale the CO_2 emission per produced energy unit is several times lower. However, the sharp rise in priced can seriously limit increase in gas consumption.

The share of natural gas in the Estonian energy balance is 13,9% (drawing 4.1.4), so the share is not very large and as mentioned before, gas primarily is used for space heating purpose. Therewith the share of gas in electricity generation is only 2,6%, but in heat production even as high as 45,9 per cent (see drawing 4.1.5).



Drawing 4.1.4 Domestic use of fuels in 2007
Source: Statistical Office

Besides above the Estonian gas supply is also characterised by the circumstance that in many areas like western part of Estonia including islands and central Estonia is without gas supply. To a large extent the reason is low population density of the territory. During the last years the network has expanded into Pärnu County and the town of Viljandi. The next steps are the plans to develop the network to Põltsamaa (autumn 2008) and Paldiski. Through Paldiski also possible Estonian-Finnish gas connection would go, if undertaken. Thus, the decision on construction of the line and its dimensioning (pipeline diameter) depends upon the decision of the Estonian-Finnish connection. In 2009 the pipeline connection with Ahtme Power Plant will be commissioned.



Drawing 4.1.5 Fuels used for heat production
Source: Estonian Energy in Figures 2007

Similarly to the electricity system it should be emphasised that the transmission infrastructure is strong, there is no cross-border transmission capacity deficit between Baltic countries. At the same time a specific is total dependence on supplies from Russia.

The formation of an Estonian gas market dates back to 1998 when the Energy Act entered into force, by which all customers except households were determined as eligible ones. The current Natural Gas stipulates that until 1 July 2007 all customers except households were eligible ones and since 1 July 2007 all customers are eligible ones. This means that also household customers are free to choose the seller/trader. Table 4.1.1 presents the dynamics of the gas market opening.

Table 4.1.1 Gas market opening

Year	Annual consumption GWh	Percentage of market opening
1998	All, excl. households	95
1999	All, excl. households	95
2000	All, excl. households	95
2001	All, excl. households	95
2002	All, excl. households	95
2003	1,8	95
2004	1,8	95
2005	1,8	95
2006	All, excl. households	95
2007[1]	All customers	100
2008	All customers	100

Note: [1] since 01.07.2007

4.1.1 Cross-border connections, availability and distribution of capacity reserves

Estonia has network connections with Russia and Latvia. Altogether there are three connections: from Narva and Värska to Russia and from Karksi to Latvia (drawing 4.1.1) with the total capacity of 11 000 thousand m^3 daily. As a rule, only the Värska and Karksi connections are operational. The Narva connection is typically closed because of limitations in the Russian side network. The pass-through capacities of particular connections are the following:

Karksi connection with Latvia 7000 thousand m^3 daily
Värska connection with Russia 4000 thousand m^3 daily
Narva connection with Russia, with a theoretical pass-through capacity of 4000 thousand m^3 daily, the actual pass-through capacity is not more than 500 thousand m^3 daily

The peak load of 2007 was 6350 thousand m^3 daily. Natural gas annual peak consumptions are presented in table 4.1.2.

Table 4.1.2 Natural gas peak consumption and pass-through capacity of transmission system

	Consumption peak		Pass-through capacity of transmission system	
	1 000 m^3 daily	MW	1 000 m^3 daily	MW
2001	5 400	2 099	7 000	2 721
2002	5 000	1 944	7 100	2 760
2003	5 500	2 138	7 800	3 032
2004	5 100	1 983	8 300	3 227
2005	5 200	2 022	10 400	4 043
2006	6 700	2 605	10 500	4 082
2007	6 350	2 469	10 700	4 160
2008 progn	6 700	2 605	10 900	4 237
2009 progn	6 850	2 663	11 200	4 354
2010 progn	7 000	2 721	11 400	4 432
2011 progn	7 150	2 780	11 600	4 510
2012 progn	7 300	2 838	11 800	4 587
2013 progn	7 300	2 838	11 800	4 587
2014 progn	7 300	2 838	11 800	4 587
2015 progn	7 300	2 838	11 800	4 587
2016 progn	7 300	2 838	11 800	4 587

Therefore, currently there is no lack of pass-through capacity. According to a prognosis of the system operator AS EG Võrguteenus there shall be no capacity deficiency until 2016. That is why the regulatory authority has no need for capacity distribution. After 2012 the pass-through capacity may increase because of reconstruction of the Russian side network in Narva direction. Even today the technical capacity is 4 000 m^3 daily (1 555 MW), but it cannot be utilised because of some network limitations on the Russian side. In addition AS EG Võrguteenus plans

to gradually increase the pass-through capacity that first of all will be achieved by reconstruction of gas distribution stations.

In conclusion: the Estonian gas transmission system today has sufficient pass-through capacity and until 2016 there will be no capacity deficiency. Moreover, the Estonian side technical pass-through capacity is 15 000 m^3 daily, but it cannot be utilised because of network limitations on the Russian side in Narva direction. A precondition for capacity increase is investing in network on the Russian side.

4.1.2 Gas networks' price regulation

Unlike electricity networks in issuing activity licences the so-called exclusive right principle is not applied for gas networks and according to the Natural Gas Act erection of parallel networks is allowed. In practice so far no case of construction of a parallel network has been recorded.

In issuing activity licences to distribution network operators the CA determines the service area for an undertaking on map. Network operator is obliged to develop the network in their service area in a manner that ensures gas supply to all already connected customers and to new connectees.

AS EG Võrguteenus possesses both the transmission network and the largest distribution network. Its shares belong to AS Eesti Gaas, which is the largest undertaking in the Estonian gas market. Its major shareholders are Gazprom, Eon-Ruhrgas and Fortum. Together with AS EG Võrguteenus the total number of distribution network operators is 27. This is quite big number, considering the smallness of Estonia. The list of gas distribution operators is given on the CA's web site.

The market of distribution networks is also extremely concentrated. Thus, AS EG Võrguteenus has a market share of about 92% and the number of its customers is 60 000. Other distribution operators have relatively little sale volume, typically of less than 10 000 thousand m^3 annually and the number of customers below 1000. The market share of small distribution operators today is only 8%. The main summary data of gas networks are presented in below table 4.1.3. The gas transmission service is provided only by AS EG Võrguteenus. The table also presents the company's distribution service tariffs. The tariffs of all undertakings are presented on the CA's web site.

The tariffs of AS EG Võrguteenus are formed in respect of pressure level. Therewith 3 price categories are applied:

Type of network service	Price EEK/1000 m^3
Transmission at pressure above 16 bar	93,7
Distribution at pressure 0,1 to 16 bar	217,70
Distribution at pressure below 0,1 bar	772,70

Customers connected at the higher pressure level from 0,1 to 16 bar are industrial customers, the others are network undertakings/operators, district hating boiler plants

and heat and power cogeneration (CHP) plants. Households are connected at the lowest pressure level of below 0,1 bar, as a rule. Few largest customers (AS Nitrofert, Iru Power Plant Ltd.) are connected to the transmission network with a pressure level of above 16 bar.

Smaller network operators have established a single distribution tariff for all customers, as a rule, irrespective of the pressure level and other characteristics of consumption like volume. The tariffs range between 0,5 and 0,97 EEK per 1000 m^3.

Table 4.1.3 Summary of gas network operators

	No of regulated undertakings	Tariff for network service €/MWh (EEK/thousand m^3)		
		Large industry (I4)	Commercial (I1)	Household (D3)
Transmission	1	0,65 (93)		
Distribution	27	1,51 (218)	1,51 (218)	5,37 (773)

Notes:
According to Eurostat definitions:
- large industrial customer (I4) with an annual consumption of 116 300 MWh or 12 600 thou m^3
- commercial customer (I1) one with an annual consumption of 116,3 MWh or 12,6 thou m^3
- household customer (D3) one with an annual consumption of 23 260 kWh or 2,53 thou m^3
Prices of network services according to AS EG Võrguteenus (EG Network service) price list.
Since the unit for network service prices is thousand m^3, then in brackets also prices in EEK/thou m^3); calorific heat value of gas is 9,2 MWh/thou m^3
1 €= 15,65 EEK

According to law price regulation is uniformly applied to all network operators regardless of their size. This adds significant amount of work to the CA, as first of all the volume of work depends on the number undertakings and not on their size. Saying in other words, the amount of work is more or less the same, irrespective of whether a large or a small undertaking is concerned.

The only exemption in regulation of gas network operators is the requirement for the legal unbundling of network activities. According to the Natural Gas Act legal unbundling is required when the number of customers is over 100 000 or, the same undertaking performs both transmission and distribution activities. Due to that the undertaking with legal unbundling from AS Eesti Gaas is its distribution operator. Since 2006 a separate undertaking AS EG Võrguteenus was founded. For other undertakings law stipulates requirement for separation of accounts. Since AS EG Võrguteenus performs both transmission and distribution activities and therefore, a separation of accounts for both services is required.

According to law the CA approves separately the following network services and methodologies:

- transmission service
- distribution service
- methodology of calculation of the fee for connecting to the network

The price for balancing gas and the charge for gas transit are not approved. For these prices the CA applies *ex-post* regulation, i.e. supervision/monitoring of the price.

The principles of regulation of gas network operators are the same applied in electricity networks regulation. The CA elaborates a unified methodology for calculation of network service prices that forms the basis for both the transmission and distribution service regulation and price approval. The methodology is disclosed on the CA's web site. The site also includes specially elaborated tables for collection of input data to be filled in for approval process. The tables are relatively comprehensive and include technical data and detailed accounts: profit and loss statement, balance sheet, and data about assets. Undertakings shall also submit a detailed investment plan and separately the expected sale volumes of network services. Since the tables are comprehensive, it is required to fill them in only for price approval purpose. Regular updating of the tables is not required, but the CA is entitled to request additional information about economic performance and technical indicators and in case of necessity require filling in the tables disclosed on the web site. At the same time undertakings are obliged to separate in their annual accounts network services and sale of gas. The annual accounts are public documents that can be got acquainted by all interested parties.

Submission of input data is an obligation stipulated by law. The CA can request any information needed for price approval and executing of supervisory proceedings. The CA employees can also visit enterprises any time and request data and copies of documents. The practice so far has shown that undertakings do not refuse submitting information and the established procedures for data acquisition work problemless.

In the regulation of network charges the CA has a decisive role in the selection of methodologies. However, the following is stipulated by law:

- The CA has to approve all individual network charges and the methodology for calculation of the fees for connection to the network prior to entry into force.

- The prices for network services shall be justified, based on the expenses necessary for the operation and development of the network, reliability and security of supply, metering of the gas distributed through the network, transmitting and computation of meter readings and earning of a justified profit to ensure uninterruptable supply of gas to final customers.

- The tariffs for network services shall be set in a manner which ensures:
  1) that necessary operating expenses are covered
  2) that investments for operational performance and meeting of development obligations are made
  3) compliance with environmental requirements
  4) compliance with quality and safety requirements
  5) justified profitability

- The CA elaborates and discloses unified methodologies for calculation of network charges, which serve as the basis for approval.

So it is up to the regulatory authority to decide upon the selection of methodologies. In the elaboration of methodologies opinion of enterprises has been considered and in fact the methodologies were prepared in the process of mutual consultations between the CA and the undertakings. In the regulation of network charges a principle is used by which an undertaking submits application for price approval according to necessity and the approved prices are valid until approval of new prices.

In the following the basics of tariff formation is described.

Sale volume of network service

Evaluation of the volumes of sale is of an extreme importance. As regards network services, fixed cost is dominant in the cost structure. The higher the sales, the lower the charge for the use of network. In the evaluation of the sale volume of network services historic statistical dynamics data are used, as well as the comparison of consumption and the number of customers. The latter method is effective first of all in case of household customers since there are some certain established levels of consumption per one customer (m^3 per customer).

Uncontrollable cost

Cost is considered uncontrollable if undertakings cannot influence it by their economic performance and this means that no saving obligation can be imposed on it. Uncontrollable cost is the state fees and the charges paid to other operators for network services. For example, all small operators, which have connected with the network of AS EG Võrguteenus, have to pay for the service.

Fixed cost

Fixed cost is subject to a deep analysis by the CA. The basic methods for evaluation of fixed cost is comparison with similar undertakings (*benchmarking*), analysis of cost dynamics and the analysis and audit of individual cost components. A precondition for using comparison is an availability of a number of similar undertakings. In the regulation of distribution networks comparison can be successfully used only for regulation of smaller network operators, since there are 27 distribution operators in Estonia, as mentioned above. At the same time it is problematic to apply comparison method for the regulation of the distribution network belonging to AS EG Võrguteenus, as this network is tens of times larger than other networks. This makes using of benchmarking in cost analysis of this undertaking practically impossible. The only chance is comparison with the distribution networks of other countries. Similar problem exists also with the transmission network of AS EG Võrguteenus, where it can be compared only with the transmission networks of other countries.

Other substantial methods for fixed cost analysis are the dynamics of cost and the analysis of individual cost components. In the analysis of dynamics it is assumed that their growth shall not exceed the inflation reflected by consumer price index (RPI). In addition, undertakings shall achieve cost reductions through higher efficiency and productivity. In the analysis of individual cost components justification of them is monitored. Basic cost articles of network operators are operation and maintenance, labour expenses, sales cost etc. Among others the CA verifies in the analysis process whether an undertaking buys services at a competitive market price, whether goods, works and services are purchased in compliance with procurement rules.

Capital expenditure (depreciation of fixed assets)

Similarly to the regulation of electricity networks for gas networks the CA also uses a regulatory capital cost method which, as a rule, differs from accounting depreciation. Advantages of the regulatory method are its simplicity of calculation and transparency for both customers and undertakings, as well as to the regulatory authority. Since only two fixed assets' depreciation rates are used, the monitoring of accounts of both the regulatory assets and capital expenditure becomes very simple and understandable. Accounting of regulatory depreciation use a principle in which capital cost is included in network tariffs according to the technical lifespan of fixed assets.

In the regulatory capital cost accounting a principle is used in which, from a certain selected moment in time, the fixed assets are divided into two parts, the old ones and the new investments, and a reference year is fixed. The assets acquired before that are regarded old ones and for them a single constant rate of depreciation is applied, which considers both the structure and the age of assets. A single constant weighted average depreciation rate is applied also to the new investments. The basis for calculation of the rate is the structure of assets.

The majority of the networks of small undertakings have been built during the last five years. Therefore, these are new investments that are considered new assets and in the accounting of capital cost a single depreciation rate for new fixed assets is used. Contrary, the transmission and distribution networks of AS EG Võrguteenus were dominantly built during the former Soviet Union and for these networks separate old and new fixed assets' depreciation rate is used.

Justified return

Similarly to other regulatory authorities for calculation of the justified return a model is used, which considers a weighted average cost of capital (WACC) and the regulatory assets. Besides other factors, a weighted average cost of capital depends on the risks involved in individual undertakings. Particularly, the WACC value calculated by the CA for AS EG Võrguteenus is 7,60% and for small network operators 9,35%. A foundation for determination of WACC is a risk free rate of return. In Estonia governmental bonds are essentially missing. For that reason the CA bases in the determination of risk free return on the German 10-year state bond return in the last 5 years. To this an Estonian state risk is added. The 5-year historic return is used in order to eliminate market fluctuations in the calculation of a justified return.

Regulatory assets

The basis for determination of both cost of capital cost (capital expenditure) and a justified return is the regulatory asset base, for which the CA applies principles similar to those used by other regulatory authorities. In accounting of the regulatory assets its continuity is of an extreme importance. Accounting of the regulatory assets is based on the principle according to which to an initial value of assets the investments are added and a regulatory capital cost is subtracted. As a rule, for initial value the book value is taken. In verification of the value of assets of small undertakings the CA has used comparative method as well. In this case the asset value of various undertakings is compared with the length of network (in kilometres) and with the volume of consumption. As the investments of smaller network operators have been made mainly after 2000, in the analysis of regulatory assets the CA has also verified economic feasibility of the investments made.

The investments necessary for construction of gas network are financed from two resources: equity financing of the so-called development investments and using the fees paid by customers for connecting to the network. According to the Natural Gas Act the calculation of the fees should base on the principle that covers justified cost only for the particular connecting, as well as covers the cost of securing environmental, quality and safety requirements. The Act does not stipulate which portion of the investment should be covered by equity financing and which portion from connecting fees. For example, a completely new network can be erected on principle that all investment cost is covered by consumer paid connection fees. Thus, it is up to the enterprise to decide upon the financing scheme. The connection fees paid by customers are already paid once and it cannot be charged twice from them, i.e. this cost is not included in the network charges. Therefore, in case the entire network erection is financed by consumer paid connection fees, the undertaking has no regulatory assets and neither capital expenditure nor profit is included in the tariffs.

4.1.3 Quality of gas supply

Gas supply quality requirements were established by amending the Natural Gas Act in the beginning of 2007. Pursuant to the amendments a fault caused sequential duration of an interruption of gas supply may not last longer than 72 hours and an annual total duration of interruptions may not be longer than 130 hours. Records on duration of interruptions shall be kept by network operators, while the CA's responsibility is the monitoring of fulfilment of quality requirements.

4.1.4 Balance responsibility

Initial regulation of balance responsibility was stipulated by the Natural Gas Act that entered into force in July 2003. It was amended in the end of 2005. In January 2006, in the very cold period, a shortage of gas supply took place and an insufficient regulation of balance responsibility became apparent. This caused remarkable amending of the Act, specifically its balance responsibility related section. The amendments were enforced in March 2007. According to the amendments every market participant is responsible for its balance. The trading period is one twenty four hour period and for household customers' balance their network operator is responsible. Balance is determined by the Act as the balance between the quantity of gas agreed upon by sale contract of a market participant and the quantity of gas consumed or re-sold by the market participant. This means essentially that all market participants, excluding households, are responsible to secure that their 24 hour consumption quantity corresponds to the quantity agreed upon by the contract.

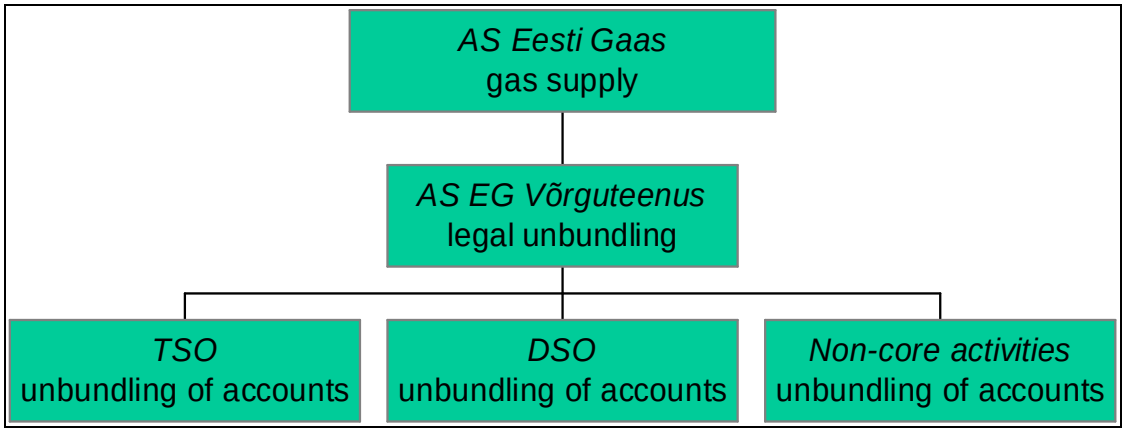
Balance responsibility is organised in a principle, where the system operator (AS EG Võrguteenus) is responsible for the balance of the whole system and there may be several balance providers on the market. In order to ensure balance the system operator buys or sells balancing gas. If, for instance, a customer consumed more gas than agreed upon by the contract, it has to buy the missing quantity at the price of balancing gas. In an opposite case it has to sell the excess quantity at the price of balancing gas. Presumably, the missing balancing gas price is higher than the

contractual and vice versa, the excess balancing gas price is lower that the contractual one. In essence, the situation shall be similar to stock exchange, in which in case of shortage the price rises and in case of excess drops. Whereas, consumers do not have to participate in the "stock games", but they can delegate all the balance responsibility to their seller that secures availability of necessary gas quantities.

A specific of the Estonian gas market is an extreme concentration. Only two undertakings import gas: AS Eesti Gaas and AS Nitrofert. AS Nitrofert is a chemical industry using gas in its technological process and imports gas for its own needs only. Thus, AS Eesti Gaas imports all the gas needed for all other customers, while besides selling of gas to other network operators and customers it is also the balance provider. This means, in doing so the sale tariff also includes balancing service cost.

4.1.5 Unbundling of activities

According to the Natural Gas Act the distribution network operator shall form a separate undertaking if the number of customers is over 100 000. In fact, there are no distribution network operators with more than 100 000 customers in Estonia. The transmission network operator shall be legally unbundled. However, it is allowed to establish a business entity that performs both transmission and distribution service provision. AS Eesti Gaas that possesses both the transmission network and the distribution network with the largest market share has established business entity AS EG Võrguteenus that provides both transmission and distribution service. So it is the so-called combined network operator within which transmission, distribution and secondary (ancillary) activities are separated by accounts and disclosed. In doing so the undertaking is obliged to establish accounting rules for distribution of assets and liabilities, revenue and cost. The annual report shall be supplemented by an auditor's evaluation of justification of the cost distribution. The structure of AS Eesti Gaas is presented in drawing 4.1.4 below.



Drawing 4.1.4Structure of AS Eesti Gaas

All other distribution networks besides AS EG Võrguteenus, currently altogether 27 undertakings, as well as the undertakings with less than 100 000 customers shall separate their accounts by areas of activity as follows:

- provision of distribution service
- sale of gas to non-eligible customers
- sale of gas to household customers

- secondary (ancillary) activities

The CA has elaborated and disclosed on its web site respective guidelines and report forms, which are helpful for undertakings in separation of accounts. In doing so undertakings are obliged to establish accounting rules for distribution of assets, liabilities, revenue and cost. Their annual report shall be supplemented by an auditor's evaluation of justification of the cost distribution.

In addition to account separation for network service, sale of gas and secondary activity undertakings shall separate their accounts also by different services (the so-called regulatory stipulated activity separation).

Combined network operators (AS EG Võrguteenus) are obliged to separate their accounts as follows:
- sale of transmission service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- sale of distribution service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- transit of gas (*ex-post* regulation, the CA has the right to monitor justification of prices)
- charges paid by customers for connecting to network (*ex-ante* regulation, the CA approves methodology for calculation of connection fees separately for every undertaking)
- sale of balancing energy (*ex-post* regulation, the CA has the right to monitor justification of prices)
- secondary (ancillary) activity

A distribution network operator, that is not obliged to form a separate business entity, shall separate its accounts as follows:
- natural gas sale to non-eligible customers (the CA approves a weighted average price)
- natural gas sale to eligible customers (the CA has the right to monitor whether cross-subsidising is avoided in the sale to eligible and non-eligible customers)
- sale of distribution service (*ex-ante* regulation, the CA approves network charges prior to their entry into force)
- customers paid charges for connecting to the network (*ex-ante* regulation, the CA approves methodology for calculation of connection charges separately for every undertaking)
- secondary (ancillary) activity

Separation of activities of AS EG Võrguteenus is reflected in table 4.1.4 below.

Table 4.1.4 Unbundling of activities in AS EG Võrguteenus

	Gas transmission	Gas distribution
Separate headquarters (yes/no)	Yes	Yes
Undertakings acting as separate business entities (yes/no)	Yes	Yes
Separate accounts together with guidelines of the regulatory authority (yes/no)	Yes	Yes

Auditing of separation of account (yes/no)[1]	Yes	No
Disclosure of separated accounts (yes/no)	Yes	Yes
Separate management board in which board members of other group undertaking's do not participate (yes/no)	Yes	Yes

4.1.6 Action plan

AS EG Võrguteenus is obliged to elaborate an action plan with measures for equal treatment of other gas undertakings and customers including duties of employees in the implementation of these measures. The CA has prepared guidelines for elaboration of such plan. It is disclosed on the CA's web site. According to the guidelines it is recommended to compile the plan in a 3-year perspective. Annually, AS EG Võrguteenus shall report to the CA on the implementation of the plan. Both the plan and the report are public documents and all interested parties can get acquainted with them. If the CA is in an opinion that the plan is not sufficient and does not comply with requirements, a revision of the plan and its changing may be required.

From the point of view of activity separation the most important is the separation within AS Eesti Gaas as the group, which has a market dominant position not only in network service provision but also in wholesale and retail. As already explained above AS EG Võrguteenus is a separate business entity with 100% shares belonging to AS Eesti Gaas. Unlike the Electricity Market Act the Natural Gas Act does not stipulate limitations for management and supervisory board. The management board has two members, while the supervisory board has three members. However, all members are employees of Mother Company AS Eesti Gaas. The company office together with dispatch centre locates in a separate building and the logo, which is remarkably different from the Mother Company's logo, is an indicator of wishes to present the company to public as an undertaking different from Mother Company.

An extremely important factor from the point of view of gas network operators' independence is the management of undertakings. Essentially, the Mother Company's competence should only be limited to investments into productivity of assets, annual budget and approval of the long-term business plan. In the rest the networks should be independent. According to the company's action plan daily management of the network operator, incl. the services of system operation, are exceptionally the competence of the management board.

As regards AS EG Võrguteenus and belonging to it the system operator (the transmission network operator) an important issue is to have an action plan for possible crisis situation in which limitation of consumption may become unavoidable. In connection with entering into force of the EU Directive 2004/67/EU, which deals

with the measures of gas security of supply, amendments to the Natural Gas Act were enforced in March 2007. Among others they regulate system operator's actions in possible crisis situation in which consumption limitations may become necessary. The company has an action plan for possible crisis situations.

In the promotion of networks' independence and their price regulation it is important to supervise the price formation for services purchased from Mother Company and other undertakings belonging to the group. Regarding services purchased from Mother Company the CA has followed principles that the prices may not exceed competitive market ones and all procurement rules have to be complied with. According to the Public Procurement Act gas network undertakings as natural monopolies have to fulfil certain requirements in procurement procedures stipulated in the Act.

In summary it can be realised that Estonia completely fulfils the EU Gas Directive's requirements for separation of areas of activity. AS Eesti Gaas has less than 100 000 customers and according to that the combined network operator AS EG Võrguteenus that provides both transmission and distribution services has been established. Both the transmission and distribution operators have separate accounts. Other distribution network operators (having less than 100 000 customers) have separate accounts for distribution service and sale.

4.2. Competition in gas market

4.2.1 Wholesale market

Since 1 July 2007 the market is opened in the whole. However, in essence the market is opened just formally as there is no real competition.

As explained above Estonia has cross-border connections only with Russia and Latvia, and the only supplier of gas is Russia. Hence there is no a real competition between sellers as in all three Baltic countries gas can be purchased only from Russia. Also in Finland the situation is similar to that in the Baltics, because all natural gas is imported from Russia. Thus, no gas market can be expected even if a gas pipeline is built between Estonia and Finland, as such common market of four countries would still have a single source of supply. However, an interconnection between Estonia and Finland could improve technical security of supply.

All the gas sold in the wholesale market is imported by AS Eesti Gaas as there is no other competitive wholesellers. In addition the chemical industry AS Nitrofert also imports gas, but exclusively for its own technological needs. Law allows import of gas for all market participants. However, the Natural Gas Act provides for an activity licence if gas is imported from outside the EU, but the application of it is simple, just limited to fulfilment of some formal requirements.

Thus, a situation takes place in which besides a network operator that belongs to AS Eesti Gaas group there are also 26 small network operators that besides network services also sell natural gas to their customers. The small operators buy gas

exceptionally from AS Eesti Gaas and the big majority of their customers are households. Since 1 July 2007 the whole gas market is opened, a situation has occurred in which independent gas sellers have to compete with AS Eesti Gaas.

General indicators of the wholesale market are presented in table 4.2.1 below. As seen from the table the Estonian gas market is essentially under control of one company AS Eesti Gaas.

Table 4.2.1 Gas wholesale market overview

Year	Gas consumption	Incl import	Consumption peak		Transmission system pass-through capacity		No of companies importing gas	Market share of three largest whole sellers
	mln m^3/year	mln m^3/year	thousand m^3/daily	MW	thousand m^3/daily	MW		%
2001	865,2	865,2	5 400	2 099	7 000	2 721	2	100
2002	723,8	723,8	5 000	1 944	7 100	2 760	2	100
2003	838,4	838,4	5 500	2 138	7 800	3 032	2	100
2004	961,8	961,8	5 100	1 983	8 300	3 227	2	100
2005	990,8	990,8	5 200	2 022	10 400	4 043	2	100
2006	1 008,0	1 008,0	6 700	2 605	10 500	4 082	2	100
2007	1 003,4	1003,4	6 350	2 468	10 700	4 160	2	100
2008 progn	985,0	985,0	6 700	2 605	10 900	4 237	2[1]	100

Note: [1]The real gas importer is only AS Eesti Gaas, as another importer AS Nitrofert imports gas only for its own needs.

Price regulation is applied neither in case of wholesale nor in case of sale to eligible customers. AS Eesti Gaas, as the only wholesaler, sells gas at negotiated price to eligible customers connected to its network, as well as re-sells gas to other network operators. The amendments to the Natural Gas Act that were enforced in March 2007 clarified the obligations of market dominant gas sellers. According to the amendments the market dominant gas undertaking has to disclose conditions of gas sale and the principles of gas price formation, as well as be guided in elaboration of them from the equal treatment and transparency principles. The sale price of gas shall ensure coverage of operational cost, needed investments and justified return. In essence, the amendments mean that AS Eesti Gaas as a market dominant undertaking has to sell gas at equal price and conditions to all eligible customers, and to all network operators as well. The regulatory authority has the legal obligation to supervise the activities of AS Eesti Gaas. In case of incompliance with above described conditions the CA is entitled to require action in order to ensure compliance.

The CA is in an opinion that the described amendments were necessary and does not at all prohibit from functioning of the market, as well as does not place AS Eesti Gaas into unfair conditions. The real Estonian situation is so that alternative gas sellers do not exist and it is unlikely that a real competition can appear in the wholesale market in the near future. Besides Russia gas can be imported from Latvia, but the situation there is similar – the majority shareholder of the market dominant gas seller is the exporter of gas Gazprom. So, potential gas importers have no real opportunities to purchase gas at more favourable conditions. The CA has constantly monitored the situation on market and the major problem has just been the selling at different prices

to customers being in similar conditions. Thereby it can be foreseen that the amendments facilitate market settlement and enable all market participants to buy gas at equal conditions.

In addition AS Eesti Gaas as the market dominant enterprise with 100% wholesale market share shall fulfil requirements derived from the Competition Act. The Act prohibits from any direct or indirect abuse of the dominant position on a goods market, including offering or applying dissimilar conditions to equivalent agreements with other trading parties, thereby placing some of them at a competitive disadvantage. The regulation pursuant to the Competition Act is in more detail explained in section 4.3.

Thus, in compliance with the Competition Act AS Eesti Gaas has to follow in its sale activity that the expenses and return are justified and reasonable, and gas is sold to all customers at equal conditions. The CA is in a position that all gas customers at equal conditions have the right to purchase gas at equal conditions and price, irrespective whether gas is purchased for own needs or for re-selling (for trade).

Since CA regulates prices of major part of district heat supply undertakings and also the price for gas sold to households by all independent gas sellers (network operators, as a rule) then there is a good overview of the prices applied by AS Eesti Gaas for various customers.

4.2.2 Retail market

AS Eesti Gaas is in the leading position also in the retail market. Its retail market share today is 93%, thus being undisputable market leader, as also the rest of retail traded gas is also purchased from AS Eesti Gaas. Its retail sales total about 731 thousand m^3 per annum. The second largest undertaking has the retail quantity of only 10 thousand m^3. This expressively shows how large in fact is the AS Eesti Gaas' share on the market. As it was described in the previous chapter, besides AS Eesti Gaas there are 26 smaller network operators that sell both network service and gas to customers connected to their network. There are no sellers which are independent from gas network operators. Table 4.2.2 below presents a retail market overview, which, similarly to the wholesale market, is characterised by an extreme concentration.

Table 4.2.2 Gas retail market overview

				Market share of three largest undertakings				
Year	Retail market consumption mln m^3	No of undertakings with market share of over 5%	No of sellers independent from network operators	Power plants	Large industries	Medium industries	Small business and households	No of customers that changed supplier
2001	789	1	0	100	100	100	100%	0
2002	675,4	1	0	100	100	100	99%	0
2003	732,4	1	0	100	100	100	99%	0
2004	748,9	1	0	100	100	100	98%	0

2005	774,4	1	0	100	100	100	97%	0
2006	793,5	1	0	100	100	100	97%	0
2007	796,0	1	0	100	100	100	93%	28
2008 progn	775,0	1	0	100	100	100	93%	0
2009 progn	750,0	1	0	100	100	100	93%	0

AS Eesti Gaas is the only importer of gas. Although, there are 26 gas sellers/traders on the market, they all buy gas exceptionally from AS Eesti Gaas. At the same time AS Eesti Gaas has a broad circle of customers, both households and eligible ones. Moreover, as a gas seller it is an undertaking in a market dominant position in the meaning of the Competition Act. Because of this Eesti Gaas has an obligation to sell gas to all customers connected to other networks at equal conditions. As all customers can change the supplier they are choosing AS Eesti Gaas as their new supplier, as a rule. Next table 4.2.3 reflects the changes of suppliers from 1 July 2007, i.e. since opening of the market for all customers.

Table 4.2.3 Change of natural gas supplier

Natural Gas Act § 6 (3), and for eligible customers § 5 (2)

	2007	
	pcs	**Sales volume, 1000 m3**
Household customers	26	37,795
Eligible customers	2	193,982
Total no. of customers	**28**	**231,777**

Thus, after the market opening some customers have changed their supplier. The CA considers such developments positive and it should facilitate to market development. In the process of approval of standard conditions for network services and sales the CA has followed a requirement to undertakings that process of change of sellers has to be simple and should not impose unnecessary obligations on customers. The maximum acceptable time for seller change is one month.

Data about gas prices are presented in table 4.2.4 below. It can be realised that for both industrial and household customers a steep price increase took place in 2007. This was caused by the increase of gas sale price. In 2007 large industrial customers paid for gas in average 3000 EEK/1000 m^3, while households had to pay 3 785 EEK/1000 m^3.

Table 4.2.4 Gas final consumer price in 2007

€/MWh (EEK/1000 m3)	I4	I1	D3
Network service	1,51 218	1,51 218	5,37 773
Taxes in network charges	0,000	0,000	0,000
Nat gas price without network service	18,06	20,97	20,97

	2 600	3 019	3 019
VAT 18%	3,52 507	4,05 583	4,74 683
Final consumer price incl VAT	23,09 3 325	26,52 3 820	31,08 4 475

Notes:
According to Eurostat definitions:
- large industrial customer (I4) with an annual consumption of 116 300 MWh or 12 600 thou m^3
- commercial customer (I1) one with an annual consumption of 116,3 MWh or 12,6 thou m^3
- household customer (D3) one with an annual consumption of 23 260 kWh or 2,53 thou m^3
Prices of network services according to AS EG Võrguteenus (Network Service) price list.
Since the unit for network service prices is thousand m^3, then in brackets also prices in EEK/thou m^3); calorific heat value of gas is 9,2 MWh/thou m^3
1 €= 15,65 EEK

4.2.3 Selling obligation and price regulation

General data on final consumer gas price regulation on the retail market are presented in table 4.2.5 below.

Table 4.2.5 Final consumer price regulation

	Large customers	Middle and small business customers	Household customers
Regulated price (Yes / No)	No	No	Yes
Percentage of customers that buy gas at regulated price	0	0	100
Possibility to change from market price back to regulated price (Yes / No)	No	No	Yes
Gas sellers which are obliged to sell at regulated price	0	0	All network operators to households

The Natural Gas Act stipulates direct selling obligation to all network undertakings in respect of household customers. According to the Act a seller of gas possessing the biggest market share within its network area is required to sell gas, within the technical limits of the network, to all household customers who have a network connection and are willing to buy. Whereas the Act provides for a general sale obligation principle in the formulation, according to which a gas undertaking shall secure gas supply to all customers in accordance with the Act, conditions of licence and contracts entered into. The CA has set forth a condition to AS Eesti Gaas in the activity licence, which requires selling to all network operators, customers and other sellers within the technical limits of the network. Activities of Eesti Gaas are regulated also by the Competition Act, as it gas dominant position on gas market. The Act particularly stipulates that the market dominant undertaking cannot refuse selling goods without reason (regulation pursuant to the Competition Act is descried in more detail in subsection 4.3).

Thus, pursuant to law and to the issued activity licence it can be concluded that AS Eesti Gaas as the market dominant undertaking has the selling obligation in respect of all market participants.

The Natural Gas Act stipulates the regulation of price for household customers, which, according to he Act shall be applicable also after full opening of the market in 1 July 2007. Principles of approval of the price of gas sold to households are similar to those of the network price regulation. The price implies three main components: justified costs, expenditure of capital (depreciation of fixed assets) and justified profitability (return). The CA elaborates and discloses the unified methodology for calculating of the price limits for household customers, which forms the basis for approval. Respective methodology is disclosed on the CA's website. In the evaluation of justified cost the CA first of all considers the principle of cost savings and monitors whether cross-subsidising of areas of activity is avoided. The prices are not indexed and instead, approved only upon applications from undertakings.

Unlike electricity sale price for natural gas no weighted average price is approved. Instead, if undertakings sell gas to various customer groups at different prices, the CA approves individually all the price limits. AS Eesti Gaas has formed a different limit price depending on the volume of annual consumption. Most of smaller network operators have established a single limit price for all households irrespective of their annual consumption volume.

4.3. Competition supervision

Similarly to electricity market also gas market is regulated additionally to the Natural Gas Act by the Competition Act as well. The Competition Act definitions for undertakings with a market dominant position, for undertaking with special or exclusive right and for undertaking in control of essential facility and for undertaking. An undertaking in a dominant position is an undertaking or several undertakings operating on the same market whose position enables it/them to operate in the market to an appreciable extent independently of competitors, suppliers and buyers. Dominant position is presumed if an undertaking or accounts for at least 40% of the turnover in the market.

When it comes to whole and retail sale of gas, AS Eesti Gaas is indisputably in a market dominating position, as it is essentially the only gas importer and re-seller (AS Nitrofert has so far imported gas merely for its own needs and has never acted as a re-seller of gas). Since 1 July 2007 the entire gas market is opened for all customers and can be considered a common market and here Eesti Gaas has a market share of 93%. As a market dominant undertaking, AS Eesti Gaas has to fulfil the requirements of the Competition Act according to which any direct or indirect abuse by an undertaking or several undertakings of the dominant position on a goods market is prohibited, including:

1) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions;
2) limiting production, service, goods markets, technical development or investment;
3) offering or applying dissimilar conditions to equivalent agreements with other trading parties, thereby placing some of them at a competitive disadvantage;

4) making entry into an agreement subject to acceptance by the other parties of supplementary obligations which have no connection with the subject of such agreement;
5) forcing an undertaking to concentrate, enter into an agreement which restricts competition, engage in concerted practices or adopt a decision together with the undertaking or another undertaking;
6) unjustified refusal to sell or buy goods.

The Competition Act stipulates obligations for undertakings with special or exclusive rights or in control of essential facilities. All gas network undertakings are in control of essential facility and according to the Act they are obliged to:
1) permit other undertakings to gain access to the network, infrastructure or other essential facility under reasonable and non-discriminatory conditions for the purposes of the supply or sale of goods;
2) keep clear separation of accounts for different primary and secondary activities (e.g. production, transmission, marketing and other areas of activity) enabling thereby transparency of economic performance;
3) maintain separate records on revenue and expenditure related to each product or service on the basis of consistently applied and objectively justified principles of calculation which shall be clearly specified in the internal rules of the undertaking; the calculation of revenue and expenses must enable to assess whether the price of a product or service is in a reasonable ratio with the value of the product or service.

An undertaking with special or exclusive rights or in control of an essential facility may refuse to grant other undertakings access to the network, infrastructure or other essential facility if the refusal is based on objective reasons, including cases where:
1) the safety and security of the equipment connected with the network, infrastructure or other essential facility or the efficiency and security of the operation of such network, infrastructure or facility are endangered;
2) maintenance of the integrity or the inter-operability of the network, infrastructure or other essential facility is endangered;
3) equipment to be connected to the network, infrastructure or other essential facility is not in conformity with the established technical standards or rules;
4) the undertaking applying for access lacks the technical and financial capability and resources to provide services efficiently and safely to the necessary extent through or with the assistance of the network, infrastructure or other essential facility;
5) the undertaking applying for access does not hold the permit prescribed by law for the corresponding activity;
6) as a result of such access, data protection provided by law is no longer ensured.

Since 1 January 2008 the CA as a merged authority has an obligation to supervise the functioning of gas market on the basis of both the Natural Gas Act and the Competition Act.

The Natural Gas Act regulates in detail the activities of network undertakings – their rights and obligations. Although, the Competition Act also stipulates obligations to networks as to undertakings in control of essential facility, it is practical to apply special law, i.e. the Natural Gas Act.

In the contrary, for sale of gas it may be rational to apply regulation based on the Competition Act.

In conclusion it should be realised that in spite of good legislative base there is no operational gas market in Estonia. Moreover, appearance of an operational gas market is unrealistic also in the future as all three Baltic countries are supplied with gas from a single source – from Russia. However, in connection with the opening of household customer market some changes of supplier have taken place.

4.4. Obligations of market participants and customer protection

4.4.1 General obligations of market participants

Obligations of market participants are stipulated in the Natural Gas Act. Besides obligations stipulated by the Act the CA issues activity licences that include also some specific conditions. An activity licence is required for the following activities:

1) import of gas (from outside the EU);
2) sale of gas;
3) provision of gas transmission service;
4) provision of gas distribution service.

In most detail the Natural Gas Act regulates activities of network operators. Their main stipulated obligations are described as follows:

1) a network operator is required to ensure that persons who have a network connection are supplied with gas in accordance with this Act, the conditions of the activity licence and contracts entered into;
2) a network operator is required to enable third party access to the network, which for the purpose of the Act means the right of market participants to connect with the network or to use network services;
3) a network operator is responsible for the functioning and maintenance of the network which it owns or possesses;
4) a network operator is required to develop the network in a manner which ensures that all consumer installations located within its network area are connected to the network;
5) a network operator shall organise the metering of gas consumed from the network and maintain corresponding records, unless agreed otherwise;
6) a network operator is required to provide other network operators with all the necessary information to ensure the distribution and sale of gas in a manner which enables interconnected networks to be used securely and effectively;
7) a network operator may not disclose the information gained in connection with performing of its duties and obligations to third parties, except if disclosure is provided for by law or, information shall be submitted for carrying out of duties and obligations provider for by this Act;
8) a network operator may terminate its activities only if it transfers its obligations arising from this section to another network operator;

9) a network operator shall give the CA at least 12 months' advance written notice of the termination of its activities, specifying the date and schedule for termination, and provide a sufficiently detailed overview of the circumstances which ensure that the requirements provided for shall be met;
10) a network operator is obliged to follow the principle of equal treatment of market participants in provision of network services.

In essence the described regulation ensures the provision of network services to all market participants and a third party free access to the network. Possibilities of refusal to provide network services are extremely limited.

For gas sale undertakings law stipulates the following obligations:

1) a gas undertaking shall ensure that final customers are supplied with gas in compliance with the Natural Gas Act, the conditions of the activity licence and contracts entered into,
2) a gas undertaking that performs both provision of network services and sale of gas shall keep separate accounts for the activities.

4.4.2 Rights and obligations of the Authority

From a supervisory authority point of view the Estonian legislative basis can be considered as a solid one and this gives to the CA enough possibilities for performing market regulation.

The CA has the right to get necessary information from a market participant, as well as from state and local municipal authorities, the right to enter their territory, premises and facilities for the purpose of on-site inspection, examine the documents necessary for supervisory activities and other information and circumstances and make extract, transcripts and copies thereof. The CA can also inspect the accounts and prices practices applied by gas undertakings and obtain necessary information concerning their economic activities. The CA can establish temporary prices for the transmission and distribution of gas for no longer than two months in situations where those prices are not justified or the gas undertaking fails to follow a precept issued by the Authority. The CA can establish development obligations for undertakings through licence conditions. For example, it can impose an obligation to invest for gas network operators in case their performance has not secured stable gas supply for customers in accordance with requirements.

At the same time the CA is obliged to supervise the fulfilment of the Natural Gas Act and to make precepts in case of violation. Also, market participants (consumers or undertakings) can record complaints on activities or inactivity of other market participants and the Authority has to re-settle them by its decisions. Both the precepts and decisions are administrative acts that can be challenged with an administrative court, which has the right to invalidate a decision or a precept.

The Natural Gas Act also stipulates that in case of certain violations of law the Authority has the right to initiate misdemeanour proceedings. The following violations of law are determined as misdemeanours:

1) failure to give notice of changes to information;
2) failure to comply with conditions of activity licence;
3) sale of gas or provision of network services at unapproved maximum prices or at prices exceeding approved maximum prices;
4) violation of obligation to connect to network and collection of unjustified connection fees;
5) failure to provide third party access to the network.

The penalty pyments that can be imposed in case of violation of the position 1) is up to 30 000 kroons (EEK), in other cases of up 50 000 kroons. In the Authority's practice an initiation of misdemeanour procedures is rather rare. As of the beginning of 2007 two misdemeanour proceedings were initiated: gas and network service provision at a price exceeding approved limit price.

If the market dominant undertaking or an undertaking in control of an essential facility abuses its position then pursuant to the Competition Act a precept may be issued or a misdemeanour proceedings may be initiated (punishable by a fine of up to 500 000 EEK). Repeated abuse may be subject to punishment by way of criminal procedure.

4.4.3 Customer information

Both gas network operators and gas sellers are obliged to maintain a web site and disclose as a minimum the following information on it:

1) charges for network services;
2) maximum (limit) prices for gas;
3) method of calculating the charge for connecting to the network;
4) standard terms and conditions of contracts.

The charges for network services and household customer gas prices shall be disclosed at least 90 days prior to their entry into force. In addition to the web site the prices shall be disclosed at least in one national daily newspaper. Besides undertakings also the regulatory authority shall disclose all the approved prices on its own web site. If a gas undertaking sells both network services and gas, it is obliged to separate in customer bills the price for the network service and for the gas.

4.4.4 Customer contracts, suspension and limitation of gas supply and extra-judicial proceedings

In March 2007 amendments to the Natural Gas Act were enforced. The amendments pay more attention to customer protection. In addition to the standard terms and conditions for selling gas to household customers now also similar standard conditions have to be approved also for provision of network services. Pursuant to the Act the standard conditions of selling to household customers besides others shall include:
1) sellers' name and address;
2) service provided;

3) requirements for the quality level of provided service;
4) customer information about the tariffs and prices;
5) contract duration, conditions of updating and termination of the contract;
6) possibility of change of supplier for free;
7) possibilities of payment for the service;
8) possible compensations and pay-back procedures;
9) settlement of complaints.

The contract on selling gas to household customers may also include stipulations from the network contract that deal with the provision of network services necessary for distribution of sold gas.

As mentioned above, standard conditions have to be approved also for provision of network services. In doing so the CA has to monitor whether a balance of a network service user's rights and obligations is contained in the contract, as this form a basis for the approval of prices for network services.

Standard terms and conditions for sale of gas to eligible customers are not approved by the CA. However, according to the Natural Gas Act and the Competition Act the market dominant seller (AS Eesti Gaas) shall ensure equal treatment of all market participants.

The Natural Gas Act provides for suspension of gas supply. According to it network operators have the right to suspend a network connection without giving advance notice thereof to the final customer if there is a danger to the life, health or property of persons or to the environment. A network operator has the right to suspend a network connection immediately after it is established if there has been an unauthorised consumption (stealing) of gas. Besides, a network operator has the right to suspend gas supply, giving at least 7 days' advance notice, if:

1) the consumer installation is adversely affecting the supply of gas to another final customer or damaging the technical parameters of the network;
2) the network operator is prevented from accessing a metering system located within territory owned or possessed by a final customer in order to inspect or replace the system or to perform necessary work for the gas installation to operate;
3) any conditions provided in the contract for the purchase and sale of gas or stipulated conditions are violated.

A new, customer protective aspect in the amendments is the clause related to household customers that fail to pay in time and a network operator intends to suspend gas supply to them. In such case, if a customer has a permanent residential space, which is heated by gas, supply may suspended during the period from 1 October to 1 May, only when at least 60 days have passed since the notice.

Before the gas supply is suspended in cases described above, the network operator shall give the final customer a reasonable term to eliminate the deficiencies and shall notify the final customer of the pending suspension in writing. The notice shall set out the grounds for suspension of gas supply, the term for elimination of the deficiencies. A network connection or gas supply that has been suspended for the reasons

explained above shall be restored after the customer has paid for the justified costs of suspension and reconnection, unless the contract has been terminated.

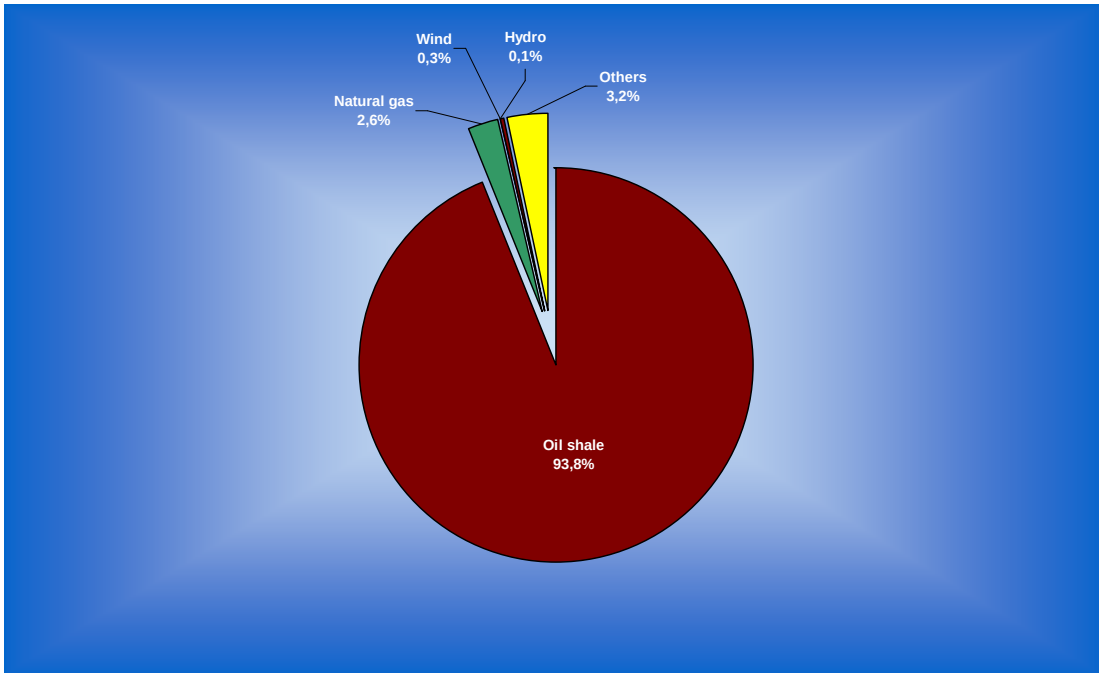
All market participants, both undertakings and customers have the right to refer to the CA as to the extra-judicial body. A market participant may record a written complaint with the CA against the action or omission of another market participant that is in conflict with the Electricity Market Act or legislation established on the basis thereof. The CA reviews the complaint and makes a decision thereon within 30 days as of the receipt of the complaint. If the CA requests information necessary for resolving the complaint, the passage of the term shall be suspended, but not for longer than 60 days. The CA's decisions can be challenged with an administrative court in 30 days since receiving of a decision.

Conclusively, the CA's opinion is that in connection with the selling obligation customers are reasonably well protected. Network operators have the obligation to sell gas to all customers connected to the network. The amendments facilitate better regulation of customer rights.

5. Security of supply

5.1. Electricity

For electricity production the fundamental fuel in Estonia is oil shale. In 2007 93,8% of electricity was produced from it, 2,6% from natural gas and the rest 3,6% from other energy sources. Thus, Estonia is independent from import of fuels and in electricity production, as all national electricity demand can be covered using domestic fuels and energy sources. Drawing 5.1.1 presents the structure of fuels used for electricity generation.



Drawing 5.1.1 Structure of energy sources used for electricity production
Source: Statistical Office

As regards installed electrical capacity the biggest share also belongs to oil shale fired power plants. Below table 5.1.1 presents data on installed capacity.

Table 5.1.1 Installed electrical capacity in 2007

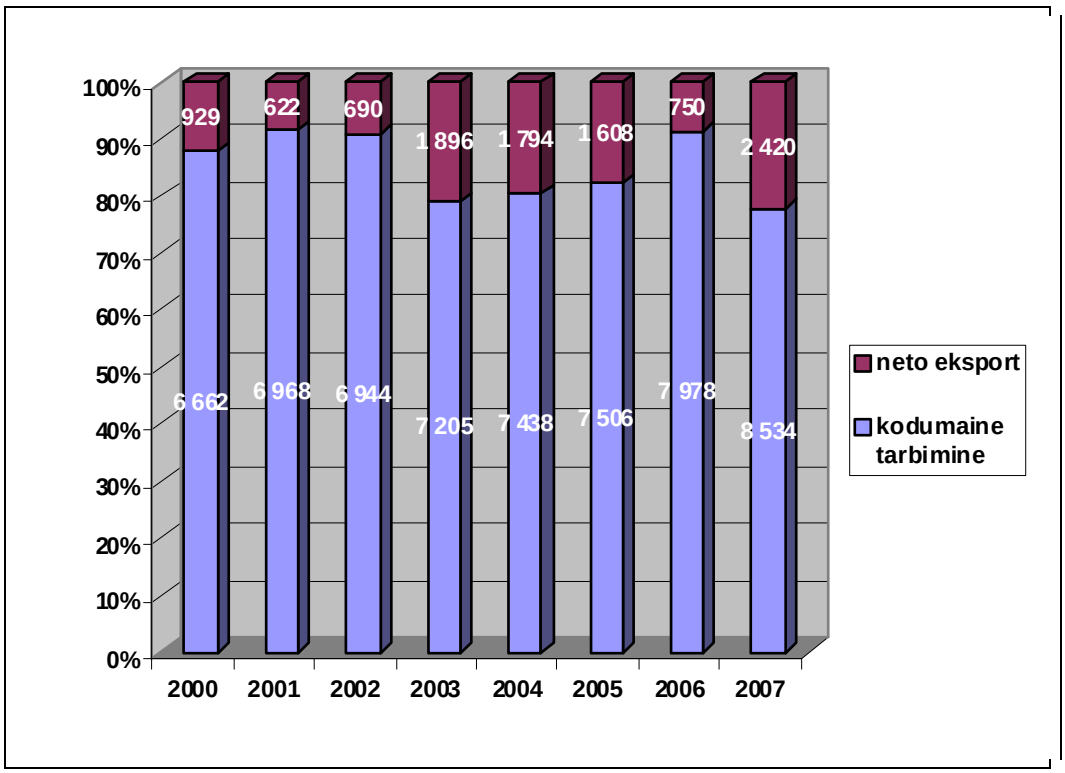
	Capacity MW	Fuel	Owner
Narva Power Plants	2 140	oil shale	Eesti Energia
Iru Power Plant	171	natural gas	Eesti Energia
Ahtme cogeneration plant	27	oil shale	Eesti Energia
Renewables, total	59	wind, hydro, biogas	Private capital
Cogeneration, others	84	oil shale, peat, natural gas	Private capital
Total	**2 481**		

In the present security of supply analysis the CA has considered supply coverage of consumption capacity (load) by year 2016. In the evaluation of coverage two extremely important factors shall be considered: firstly, Estonia is net exporter and secondly, installed capacities exceed peak load today.

Table 5.1.2 presents electricity balance from 2000 to 2007. Drawing 5.1.2 shows graphically the share of net export and domestic consumption of electricity. As seen, the share of net export since 2003 has been 10-25% of an annual production. The highest share was in 2007. It was first of all related to the fact that Eesti Energia had a surplus of CO2 quota. This enabled production of electricity at favourable conditions. In can be foreseen that in 2008 the export shall fall, as Eesti Energia has sufficient quota for domestic production only.

Table 5.1.2 Estonian power balance GWh. Source: Statistical Office

	2000	2001	2002	2003	2004	2005	2006	2007
production	7 591	7 590	7 634	9 101	9 232	9 114	8 728	10 954
final consumption	5 422	5 607	5 686	6 013	6 326	6 403	6 901	7 180
network losses	1 240	1 361	1 258	1 192	1 112	1 103	1 077	1 354
net export	929	622	690	1 896	1 794	1 608	750	2 420



Drawing 5.1.2 Share of domestic consumption and export of electricity GWh. Source: Statistical Office

The available reserve capacity and the system's peak loads are presented in following table 5.1.3.

Table 5.1.3 Available reserve capacity and system peak load. Source: OÜ Põhivõrk, Eesti Energia AS, Competition Authority

Calendar year	Domestic electricity consumption (incl power losses) GWh*	System peak load MW*	Installed capacity MW**
2007	8231	1537	2481
2008 prognosis	8452	1525	2493
2009 prognosis	8665	1632	2572
2010 prognosis	8884	1665	2645
2011 prognosis	9109	1699	2705
2012 prognosis	9339	1734	2839
2013 prognosis	9575	1770	2749
2014 prognosis	9817	1806	2749
2015 prognosis	10065	1843	2749
2016 prognosis	10300	1878	2749

The 2016 prognosis for installed capacity basis on an Eesti Energia prognosis, which assumes an erection of a new energy block and renovation of old ones.

Based on peak load prognosis and the installed capacities, no lack of capacity is foreseen until 2015. Regarding capacity problems they may arise in 2016 when AS Narva Elektrijaamad shall comply with the SO_2 and NO_x emission limitations stipulated by the Directive on large combustion plants. The problem is that the old energy blocks do not comply with the requirements of the Directive. It should be mentioned that the emission limitations does not necessarily mean immediate closing down the blocks. Modern technologies may offer opportunities for modernisation of old block and thereby bringing them into compliance with the requirements of Directives.

Especially important are AS Eesti Energia's, as the market participant with the biggest share, plans in connection with Narva Power Plants (AS Narva Elektrijaamad) and also with Iru and Ahtme Power Plant. According to presented information the following capacity developments are planned in the power plants in question:

Table 5.1.4 Eesti Energia AS production capacity

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Narva Power Plants	2 140	2 140	2 140	2 140	2 140	2 140	2 050	2 050	2 050	2 050
incl. old blocks	1 754	1 754	1 754	1 754	1 754	1 754	1 395	1 395	1 395	1 395
incl. new blocks	386	386	386	386	386	386	655[1]	655[1]	655[1]	655[1]
Iru Power Plant	171	171	171	171	171	171	171	171	171	171
Ahtme Power Plant	27	27	27	27	26	26	26	26	26	26
Others:	3,4	4	44	95	103	103	103	103	103	103
TOTAL	**2 341**	**2 342**	**2 382**	**2 433**	**2 440**	**2 440**	**2 350**	**2 350**	**2 350**	**2 350**

[1] Note: based on a new energy block erection plan by Eesti Energia AS, implementation of it is questionable.

Possible new projects are the following:
110 MW_{el} emergency reserve in Iru Power Plant by year 2012
140 MW_{el} regulation reserve in Iru Power Plant by year 2012

Though Eesti Energia AS has planned also an erection of two 300 MW brutto (2×270 MW net) oil shale burning blocks in Narva (see table 5.1.4.). According to the plans

one of them should be commissioned in 2013. Considering the fact that the decision is not made yet the commissioning in 2013 is unrealistic.

Conclusion: today Estonia has no security of supply problems. It is the other way around – the installed capacity is higher than the domestic consumption peak and this makes export of electricity possible. A capacity shortage is not foreseen before 2016. However, the decisions have to be made already today. If by 2016 no new capacity is installed nor no old blocks of Narva Elektrijaamad are renovated, then Estonia will face a sharp deficiency of generation capacity after 2016. Table below presents installed capacity in 2016 if neither investment nor renovation of the old ones is undertaken. Wind turbine capacities are not taken into account as they need a regulation reserve anyway.

Table 5.1.5. Installed capacity in 2016 if neither investment nor renovation is undertaken

Plant	**Capacity MW**	**Fuel**	**Owner**
Narva Power Plants	386	oil shale	Eesti Energia
Iru Power Plant	171	natural gas	Eesti Energia
Cogeneration and others	161	Oil shale, peat, natural gas, wood	Private capital
Total	**718**		

As peak load in 2016 will be 1 900 MW, then without investing a situation occurs in which a capacity deficit will be close to 1 200 MW or, 63% of needed capacity.

According to the amendments to the Electricity Market Act enforced in 1 May 2007 the system operator (Põhivõrk - National Grid) is obliged to prepare a report, which presents: a prognosis of offer and demand of electricity in next five years, existing supply possibilities; perspective installations and those under construction; quality of networks and their maintenance level; measures of securing maximum (peak) demand and measures undertaken in situation of capacity deficit; security of supply of network; foreseeable electricity security of supply in the period of 5-15 years and investment plans of the transmission network operator and respective ones in neighbouring countries known to him for a five-year period for erection of cross-border connections. The report in question is presented to the EU Commission, to the Ministry of Economic Affairs and Communications and to the CA. Thus, one of the parts of the report is presenting an evaluation of the need of investments into production capacity. On the basis of the prognosis of the transmission network operator the CA may oblige the transmission operator to arrange a tendering for new capacity installations.

OÜ Põhivõrk has thoroughly handled all above mentioned topics in its security of supply report. As well it points out in the report that most critical time for the Estonian energy system is year 2016. By this time all power production has to be harmonised with the EU norms. By then the following existing generating equipment can be used: two new fluidised bed blocks in Narva Power Plants, block no. 2 in Iru Power Plant and small power plants. Thus, by 2016 new capacity has to be erected or renovations carried out on equipment that does not comply with the EU norms. According to OÜ Põhivõrk information in addition to the projects that are currently under implementation and those capacities that will be added in the future (Väo, Anne

and Pärnu CHP plants, the reserve plant of the transmission network) the following extra production capacity has to implemented, in order to secure required production reserve: 22 MW by 2013 and approx. 1500 MW by 2023. Moreover, OÜ Põhivõrk declares that it is very likely that after 2012 the Estonian power system will not be able any more to secure domestic electrical energy balance.

5.1.1 Estlink and other connections

Most important new infrastructure project is the Estlink, under which a DC cable connection with a capacity of 350 MW was erected between Estonia and Finland. It was commissioned and started commercial operation in December 2006.

Regarding other infrastructure projects the transmission network operator plans to install another 650 MW sea cable in addition to the 350 MW one by the year 2010. At the latest by 2015 it is planned to raise the pass-through connection capacity between Estonia and Latvia by 200 MW.

5.1.2 Investments in Narva Power Plants

In September 2007 Eesti Energia AS submitted an application for approval of a new electricity production price. In the application it was assumed that 2 new 300 MW oil shale fired blocks will be erected. By today no decision is made upon, because of uncertainties on the EU CO_2 policy. If in the current period from 2008 to 2012 Eesti Energia AS group has enough quota for domestic production, the next period quota distributions are uncertain to a large extent. Since production of electricity from oil shale creates high CO_2 emission (production of 1 MWh of electrical energy results in approx. 1 ton CO_2 emission), the future CO_2 policy is crucial in investment decision making process. Should Eesti Energia AS buy all its needed CO_2 at market price the produced electricity price may appear non-competitive. That is why an appropriate solution shall be worked out, especially in connection with security of supply. This means, a solution that provides both competitiveness of oil shale based electricity and through it also security of supply.

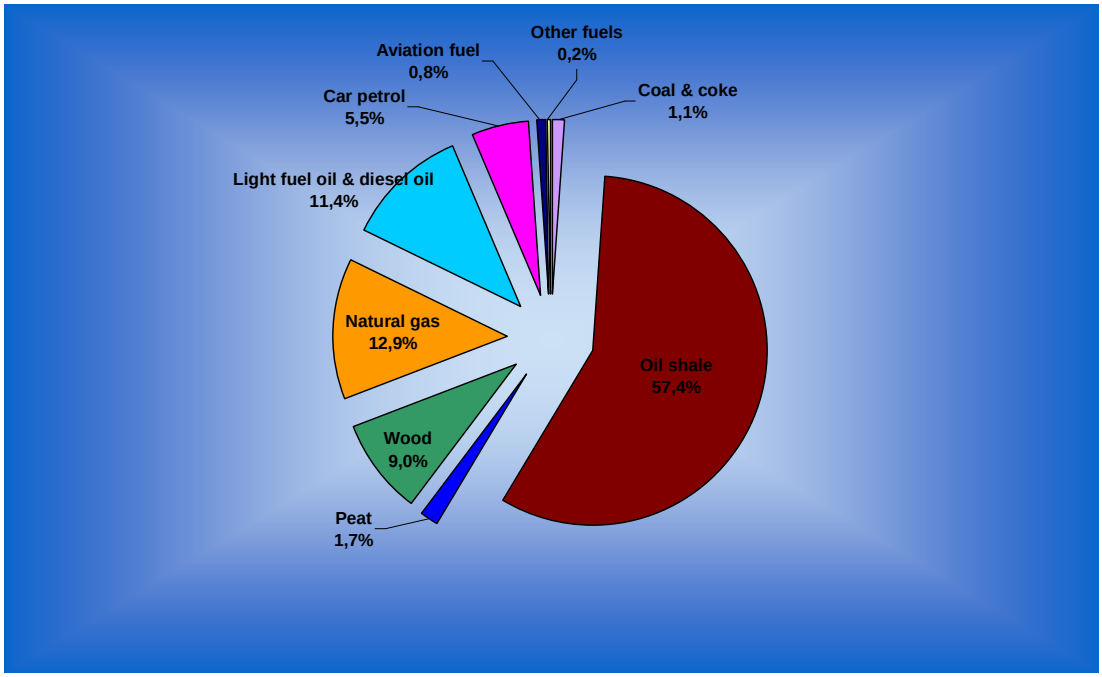
5.1.3 Lithuanian nuclear power plant

In 28 February 2006 the prime ministers of the three Baltic countries signed a joint declaration on possible erection of a new nuclear power plant in Lithuania. In 8 March respective agreement was signed also by CEO of the leading energy companies of the three Baltic: Eesti Energia AS, Lietuvos Energija AB and VAS Latvenergo. According to the agreement a joint feasibility study was carried out by November 2006 upon possible new nuclear plant in Lithuania. The study shows that a new nuclear plant is technically and economically feasible. Since the beginning of 2007 also Poland is involved in the project. By now it has not been decided yet what shall be the capacity of the plant and how big will be the Estonian share in it. According to the information from Eesti Energia AS possible commissioning time of the new plant is not before 2015 to 2020.

Conclusion: Currently Estonia has no security of supply problems. However, unless investing into new capacity or renovating existing one by 2016 there is likely to occur a significant deficiency – 700 MW available while an expected peak load will be 1 900 MW. The CA is in an opinion that Estonia must cover its load with domestically installed capacity. The current situation is problematic – there is no investment decision. This means that by the critical time – by year 2016 it is unlikely to manage an erection of new energy blocks.

5.2. Natural gas

In the Estonian primary energy supply balance the share of gas is 12,9% (see drawing 5.2.1), while among fuels used for electricity production its share is only 2,6%. Estonia is net exporter of electrical energy, hence, it is possible to cover all national demand without gas.



Drawing 5.2.1 Estonian domestic consumption of fuels in 2007

Considering security of supply issues, gas is very important in the production of heat in district heat supply facilities where its share is up to 46%. In bigger towns, like Tallinn, Rakvere, Jõgeva, Põlva and some others district heat supply bases 100% on natural gas. The share of gas is high also in Tartu, Viljandi, Sillamäe and several other towns' district heat supply. In 2006 also Pärnu and Rapla towns ware connected with the natural gas supply network. Thereby, in the supply of Rapla 100% will base on gas, while in Pärnu an important share will still remain with solid fuels (peat and wood). Thus, from security of supply point of view, natural gas has the highest importance in the district heat supply sector. Whereas, a specific of Estonia is that 38% is consumed for industrial purpose, while the consumption of the biggest customer – AS Nitrofert – constitute 20% of the total Estonian gas consumption.

Compared to Western Europe local gas heating is relatively little spread in Estonia. The development of smaller gas networks is more intense in real estate development areas. The share of natural gas in household consumption in 2006 was still about 10% from the total gas consumption.

Thus, the share of gas in electricity production is very little and Estonia has sufficient reserve capacity for covering electricity demand. Hence, from the security of supply view, gas has no significant importance in electricity generation. At the same time gas is extremely important from security of district heat supply point of view. While in most district heating systems besides gas also alternative fuels can be used, in local gas heating such possibilities do not exist and in possible gas supply interruption situations the customers would simply be left unheated.

Table 5.2.1 presents general gas supply and consumption figures, while table 5.2.2 gives gas utilisation figures by various sectors.

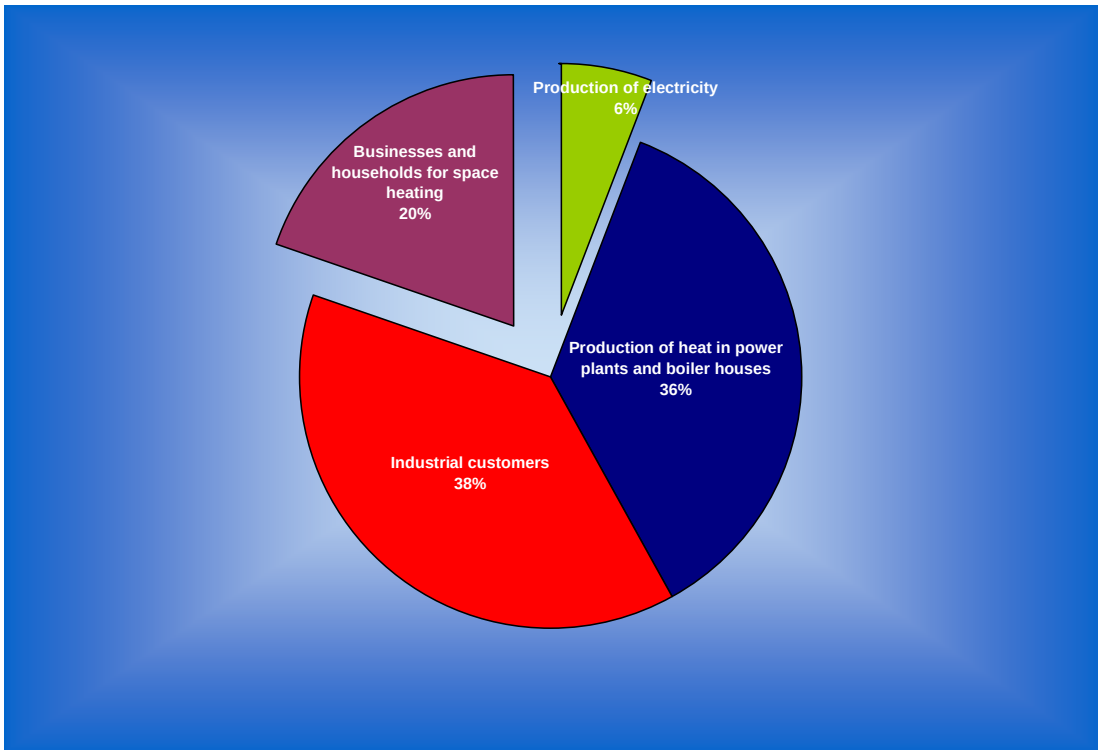
Table 5.2.1 General information on gas supply

	Total consumption mln m3	Peak load		System pass-through cap-ty	
		1000 m3/day	MW	1000 m3/day	MW
2001	865,2	5 400	2 099	7 000	2 721
2002	723,8	5 000	1 944	7 100	2 760
2003	838,4	5 500	2 138	7 800	3 032
2004	961,8	5 100	1 983	8 300	3 227
2005	990,8	5 200	2 022	10 400	4 043
2006	1 008	6 700	2 605	10 500	4 082
2007	1 003	6 350	2 469	10 700	4 160
2008 progn[1]	985	6 700	2 605	10 900	4 237
2009 progn	960	6 850	2 663	11 200	4 354
2010 progn	960	7 000	2 721	11 400	4 432
2011 progn	985	7 150	2 780	11 600	4 510
2012 progn	985	7 300	2 838	11 800	4 587
2013 progn	1 010	7 300	2 838	11 800	4 587
2014 progn	1 010	7 300	2 838	11 800	4 587
2015 progn	1 010	7 300	2 838	11 800	4 587
2016 progn	1 010	7 300	2 838	11 800	4 587

Note: [1]2008 presumable peak load according to March data

Table 5.2.2Use of gas by various sectors in 2006 and 2007

	2006		**2007**	
	Gas consumption thousand m^3	Share	Gas consumption thousand m^3	Share
Production of electricity	80 557	8,0%	57 656	5,7%
Production of heat in power plants and boiler houses	369 552	36,6%	362 370	36,1%
Industrial customers	387 777	38,4%	385 757	38,4%
Business and households for heating	170 891	16,9%	197 639	19,7%
Total	**1 008 777**	**100,0%**	**1 003 422**	**100,0%**



Drawing 5.2.2 Consumption of natural gas by customer groups in 2007
Source: AS Eesti Gaas

Concerning the security of supply of gas Estonia completely depends on the Russian gas supplies. Estonia has two cross-border transmission connections with Russia: one in Narva (east) direction and the other in Värska (south-east) direction and one connection with Latvia in Karksi. In normal situation only two of these connections are operational: the Latvian connection and the Russian connection in Värska. The Narva connection pass-through capacity is limited because of some network limitations on the Russian side and it is opened only in emergency situations. As it was already described in the gas market review chapter Estonia has no problems with exhaustion of pass-through capacity, but problems may arise only in extreme peak load conditions.

Concerning new connections possible Estonian-Finnish gas connection is in question. Currently it is under feasibility study phase. Also, a routing selection and an environmental impact assessment have been commenced. However, according to an evaluation by AS Eesti Gaas the construction of the gas connection cannot be commenced before 2013.

Gas is imported to Estonia by AS Eesti Gaas and the chemical industry AS Nitrofert. In fact, AS Nitrofert is not involved in selling of gas but imports it exclusively for its own technological needs. In winter period from November to April AS Eesti Gaas covers the gas consumption only with the gas from the Latvia located Inčukalns gas storage, while AS Nitrofert imports it directly from Russia. Actually, in winter both Estonia and Latvia, and partly also Russia and Lithuania are primarily supplied with the gas from the Inčukalns storage, which has an active volume of 2 300 million m^3.

Until spring 2008 AS Eesti Gaas rented in the Inčukalns gas storage a volume of 500-600 million m^3. Filling up of the storage takes place through the pipeline that comes from Russia through the Estonian territory. The process of filling up of the storage takes place in the period from April to October and it is observable by Eesti Gaas. A stoppage of the filling up process would indicate on possible risks in gas supply and Eesti Gaas could take measures in advance in order to mitigate the risks and be ready for supply disturbances. The mentioned quantity of 500-600 million m^3 is a sufficient for securing a strategic reserve for Estonia.

According to the storage agreement the Estonian and Latvian gas companies Estonia can consume daily 5 000 thousand m^3 from the Latvian storage to cover its needs. The analysis of consumption peak loads in years 2001 to 2007 shows that the volume has been sufficient to cover Estonian peak load. The consumption peak of AS Nitrofert is about 700 thousand m^3 daily. This has to be subtracted from the Estonian totals as AS Nitrofert buys gas directly from Russia and is not using Inčukalns gas storage.

During preparation of the present report it appeared that since spring 2008 the situation in gas supply has changed. Eesti Gaas has quit from the storing in the Latvian storage and buys gas directly from Gazprom. This means that Gazprom itself stores gas in the storage and is the owner of gas until it is handed over on the Estonian-Latvian border. Therefore, the technical solution of storing has not changed as in winter period Estonia is still supplied from the Latvian storage. However, there in an essential difference – earlier the gas in the storage belonged to Estonia, while now its owner is Gazprom.

The CA is in a position that the new arrangement reduces security of supply. The weakest point is that, as mentioned, now the owner of gas is Gazprom and the latter can now decide where to sell the gas in possible shortage situation.

In January 2006 between dates of 19 to 22, when weather conditions were extremely cold both in Russia and in Estonia some disturbances occurred in supply. The CA has initiated a supervisory proceeding in which also employees of the Ministry of Economic Affairs and Communications were involved. The proceedings identified that the legislation related to security of supply should have to be amended remarkably.

With respect to the EU Directive 2004/67, which stipulates measures for securing gas supplies and considering also the results of above mentioned analysis the Ministry of Economic Affairs and Communications elaborated proposals for amending the Natural Gas Act with measures ensuring security of supply of gas. The amendments were approved by Riigikogu (the Parliament) in March 2007. For securing of gas supplies the following measures are stipulated.
In the period from 1 October to 1 May the household customer's supply with gas may not be interrupted nor limited. In the same period gas supply may not be interrupted nor limited to an undertaking supplying residential space heating and which has no possibility to use fuel other than gas. Gas supply may be interrupted if there is a danger for people's life, health, property or environment is endangered, as well as upon an agreement between parties. A heat supply undertaking with an annual estimated production volume over 500 000 MWh per network area is required to

facilitate a possibility of using a reserve fuel since July 2008, in order secure heat supply during 3 days.

In case of occurrence of circumstances that can jeopardise security of supply, endanger people's life and health or the integrity of network, the system operator shall inform the Ministry of Economic Affairs and Communications and the CA, and makes proposal for implementation of measures which can ensure security of supply. The Ministry in cooperation with the Authority shall analyse the proposal received from the system operator and if necessary, make proposal to the Government for implementation of the following measures for ensuring security of supply:

1) limitation of gas supply to the persons which use gas other than for heating purpose;
2) allowing gas supply limitations to the undertakings that produce heat;
3) allowing lowering the temperature of water supplied for space heating;
4) oblige heat supply undertakings to using of a reserve fuel.

Since in Estonia most important is to ensure natural gas supply for heat supply facilities, it is intended to impose supply limitations of supply first of all to heat producers in Tallinn and Narva. In essence, the amendments stipulate a requirement for Tallinn and Narva district heat supply enterprises on facilitation of a possibility of using a reserve fuel and in case of gas supply disturbances switch over to the reserve fuel. One of the measures for Iru Power Plant provides for running the plant in heat only mode instead of cogeneration mode, in order to reduce gas consumption. In Estonia it is possible, as the share of gas in electricity generation is very modest. The power plants fired with gas constitute less than 10 per cent of the installed capacity and the needed electrical power can be generated in oil shale fired Narva Power Plants.

According to the enforced amendments the system operator (AS EG Võrguteenus) is required to prepare a description of emergency situations which can destroy normal operation of the gas system, as well as a plan for resolving of the emergencies. The plan shall be submitted to the Ministry of Economic Affairs and Communications. The plan is to be applied in situations when balance providers fail to ensure gas balance and it becomes unavoidable to limit consumption by certain customer groups.

In conclusion it can be said that Estonia has no shortage of transmission capacity. Based on the consumption and transmission capacity prognosis submitted by AS Eesti Gaas there shall be no transmission capacity shortage until 2016 and very likely not after that time as well. However, problems may arise in connection with security of supply and this in turn can jeopardise heat supplies which are highly dependent on gas supplies. As in the European part of Russia an overall increase of gas consumption takes place, the Estonian peak load in winter period can be primarily covered with the gas from the Latvian gas storage. For the few coming years AS Eesti Gaas foresees an increase of peak load consumption up to the level of 7 000 thousand m^3/daily, while in the past years it has peaked at 6 700 m^3/daily. The prognosis assumes that AS Nitrofert will cover its daily consumption of 700 thousand m^3 itself. This means that in addition to the current Latvian gas storage supply of 5 000 thousand m^3 daily an extra supply of 1 000 to 1 300 thousand m^3 daily is needed. According to an

explanation of AS Eesti Gaas it can be covered with either the Latvian storage or with increasing direct supplies from Russia.

As already explained above, possible gas supply risks are primarily related securing of district heat supply. Most important is the Tallinn district heating system, which requires about 2 000 thousand m^3 of gas daily. This is if electricity is not generated in Iru Power Plant. Together with electricity generation the need is 2 700 thousand m^3 per day.

The largest gas consumer in Estonia is Iru Power Plant that belongs to AS Eesti Energia and supplies district heat to the city of Tallinn. There are two cogeneration blocks installed in the plant, with capacities of 180 and 220 MW (altogether 400 MW) respectively and three hot water boilers with a total capacity of 348 MW. AS Tallinna Küte (the district heat supply undertaking) has purchased from Iru Power Plant a heating capacity of 435 MW and this has been the basis for approval of the tariff of heat sold to customers. In order to supply this capacity at least one of the cogeneration blocks has to run. In possible crisis situation involving gas supply disturbances the plant can reduce gas consumption by switching over to heat only boilers. In such solution a maximum gas consumption shall be 1 000 m^3 daily. Besides, the plant can also switch over to using of liquid fuel, as it has storage tanks with a total volume of 60 000 tons. In above described load situation a daily consumption would be 770 tons. Therefore, the storage volume is far enough for ensuring heat supplies.

The Estonian peak of gas consumption without AS Nitrofert is 6 000 thousand m^3 daily. Since it is possible to get from the Latvian gas storage 5 000 thousand m^3 daily as maximum, then in a crisis situation the rest can be covered through switching over the Tallinn heat supply to burning of fuel oil and temporary ceasing of electricity generation as well.

From technical point of view security of supply shall certainly be improved by the planned Estonian-Finnish gas pipeline connection. According to AS Eesti Gaas Finland plans to be connected to the Russian-German pipeline and if a connection between Estonia and Finland will be added then gas supplies to Estonia shall be significantly more secured. The CA shares a position of AS Eesti Gaas that possible new connections shall improve supply security from technical point of view, whereas 100% dependence on Russian supplies will still be the fact for both the Baltic countries and Finland.

In conclusion the CA is in a position that gas supply risks are related to the supply from a single source - Russia. However, in possible crisis situation the consumption of gas can be reduced almost two times (cease of electricity production, switching over to using of reserve fuels in Tallinn, Narva and other district heating systems). If supplies from the Latvian gas storage continue, then these measures enable needed gas supply to all other customers. Compared to previous year the risk of gas supply gas has increased due to the circumstance that since spring 2008 the gas stored in the Latvian gas storage is not any more the property of Eesti Gaas, but belongs now to Gazprom. In case of shortage Gazprom can decide whether to supply Estonia or any other region instead.