SUPPLIER SWITCHING IN THE NORDIC COUNTRIES

Current practices and recommendations for the future development

Nordic Energy Regulators (NordREG)
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Preface

The Forum of Nordic Energy Regulators (FNER)\(^1\) set in its Work Programme for the year 2005 four strategic objectives for its work on the Nordic electricity market. The strategic objectives are the following: 1) A truly common Nordic retail market with free choice of supplier, 2) A well-functioning wholesale market with competitive prices, 3) Reliable supply, and 4) Efficient regulation of TSOs.

Under the strategic objective of “A truly common Nordic retail market with free choice of supplier” four tasks were stated. These are 1) To develop a common balancing market, 2) To develop easy and harmonised procedures for all customers switching supplier, 3) To ensure adequate level of transparency in the market, and 4) To create harmonised criteria for unbundling to ensure neutrality.

In the Work Programme 2005, a working group to review the issue “To develop easy and harmonised procedures for all customers switching supplier” was established. All the Nordic energy regulators have participated in the working group. The representatives nominated by the regulatory authorities have been the following persons: Mr Lars Olav Fosse (Norges vassdrags- og energidirektorat, NVE), Ms Marie Larsson (Energimarknadsinspektionen, EMI), Ms Anu Mikkonen (Energiamarkkinavirasto, EMV), Mr Jan H. Pedersen (Energitilsynet) and Ms Elín Smaradottir (Orkustofnun). The working group was chaired by Ms Asta Sihvonen-Punkka (Energiamarkkinavirasto).

During the course of its work, the working group organised a workshop in Helsinki on the 2\(^{nd}\) of June, 2005 to hear the views and get input from the Nordic electricity industry. The workshop was arranged on an invitational basis and it was attended by the Finnish, Icelandic, Norwegian and Swedish branch organisations and/or member companies of branch organisations.

As the chairperson of the working group I would like to express my warmest thanks to the participants of the working group. This group has been exceptionally active, efficient and co-operative during the process.

Helsinki the 23rd of September 2005

Asta Sihvonen-Punkka

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\(^1\) On the 9\(^{th}\) of June 2005, the Forum of Nordic Energy Regulators (FNER) changed its name to Nordic Energy Regulators NordREG. The new name and the acronym will be used later in this report.
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1. Introduction

One of the challenges of the opening of Nordic electricity markets has been to ensure that customers enjoy the benefits of the competitive market. Measured by the level of switching activity, the degree of competition in the retail electricity markets in the Nordic countries has varied. That, of course, is the outcome of many factors. However, one significant factor influencing the switching activity is the degree of obstacles in switching procedures.

The objectives of the working group have been threefold. Firstly, to review the issue of supplier switching and factors affecting it in each Nordic country. This has been carried out by preparing country reports, in which the central themes for supplier switching have been reviewed in each Nordic country. Secondly, the working group has made an effort to identify obstacles to switching on the basis of the information and experience gathered in the Nordic countries. Recommendations to overcome the identified obstacles have been described as well. These recommendations amount to a common Nordic approach on policies to harmonise the procedures for supplier switching and thus to arrange for a common Nordic retail market. Thirdly, the working group has drafted a proposition for best practice regarding supplier switching.

The following topics among others have been covered in the resulting report:

- metering requirements for electricity users
- load profile systems used
- change of supplier fees, if any
- information management
- standard format for the exchange of data
- obligations on network operators regarding supplier switching (neutrality, allowed time for carrying out the switch etc.)
- other issues affecting switching
- data on the development of supplier switching

The work has been carried out recognising and taking into account the simultaneous work carried out by the European Regulators’ Group for Electricity and Gas (ERGEG) in its Customer Focus Group. During the year 2005, the Customer Focus Group will prepare three status reports in the areas of customer protection, customer switching and transparency of prices and contracts. Subsequently, the Customer Focus Group will prepare best practice propositions on these three areas. It has been the aim of NordREG’s working group to report the Nordic experiences and recommendations to the European forum as the Nordic electricity market has been in the forefront as regards market opening and retail market competition as well as supplier switching.

The emphasis of the work has been on the small-user market, namely households and small and medium-sized firms as this is the segment of the electricity market where the potential problems of supplier switching have been most evident. In the wholesale market, the skills and expertise of electricity buyers are high and the purchasing activities are accordingly business-like. Thus, the problems of supplier switching are not likely to be as evident.

The report starts with the conclusions and recommendations followed by the best practice proposition on supplier switching. Thereafter the country descriptions reviewing the supplier switching issues in Norway, Denmark, Finland, Iceland and Sweden are presented in this order.
2. Conclusions

2.1 Overview of the Nordic models of market opening

The Nordic countries have opened up their electricity markets to competition ahead of the requirements placed by the Electricity Directives of the European Union. The market opening started in Norway by the enactment of the Energy Act in 1990, which launched the market liberalisation and the related reforms in 1991. Norway was followed by Finland and Sweden in mid 1990’s and Denmark initiated the market opening process in the year 1998. Quite recently, Iceland has followed the liberalisation road.

In all the Nordic countries, as has been the case also everywhere, the liberalisation has proceeded in stages either set by eligibility criteria or metering requirements. The Norwegian end-users have enjoyed from total market opening since the year 1995 when the customers were allowed to switch a supplier every three months with a maximum charge just below 250 Norwegian crowns. In Finland the small customers were able to avail of the electricity market in autumn of 1998 when the hourly metering requirement was dropped. In Sweden, the similar development took place in autumn 1999 when the load profile system was introduced for small customers. In Denmark, all the customers have been eligible since the beginning of the year 2003.

The level of switching activity has varied remarkably in the four Nordic countries. The most active switching behaviour has been seen in Norway followed by Sweden, Finland and Denmark. The collection of switching information and the definitions of key figures to describe switching differ among the countries, which make more precise comparing difficult.

There are many factors that partially explain the different levels of switching activity. Among them are the importance of the price of electricity to the customer’s budget and the resulting interest in switching suppliers to make savings in electricity bills, the obstacles to switching, how informed the customers are about electricity market and the switching opportunities, availability and access to switch-specific information like competing suppliers and prices, and the share of the total end-user price that is influenced by a switch.

Despite being the forerunners of small user market opening, there still seems to remain room for improvement in the Nordic retail electricity markets. Within each country the switching process seems to need fine-tuning to decrease the time needed to carry out a switch. Furthermore, it seems that in some Nordic countries the information needs of the customers are not taken care of well enough – there is a need to get price information in an easy and reliable manner. Furthermore, end-user price regulation systems to protect small customers may stiffen the retail electricity market and create a certain degree of passivity among the customers.

And last but not least, the really Nordic retail electricity market is still missing – it is a vision to be reached in the coming years. The retail markets are still national as compared with the integrated Nordic wholesale market. It will be the task for the stakeholders of the Nordic electricity market to identify the obstacles to the integrated retail market and to propose the further steps to overcome these impediments.

Below, some of the most important issues related to supplier switching in the Nordic countries have been presented. The similarities and differences among the Nordic countries in the area of supplier switching have been identified. It has been the aim to recognise the
obstacles to supplier switching and where possible, to propose measures to be taken either by
the Nordic regulators or other stakeholders.

2.2 Price comparisons

The NordREG customer switching working group has made an attempt to compare prices in
the Nordic countries’ retail market. However, price statistics and contracts differ between
countries. Thus, the graphs below can only give an illustration on the potential effects of
integration. They also illustrate to what extent customers are exposed to the spot price.

There are no common standard contracts used in the electricity sector across the Nordic
countries. By a common standard contract in this context it is meant a group of terms like the
length of the contract and for instance the link to the wholesale spot price, i.e. the issues
affecting the resulting price of electricity.

The group has compared monthly prices on obligation to supply contract (the price can be
changed on one month’s notice) in Finland, contract with a conditional tenure in Sweden,
standard variable contract in Norway and a market-based contract in Denmark. We have
added the monthly average of the Nord Pool system price into the picture.

The margin between the price offered in the retail market and the Nord Pool system price
would be the real margin of a supplier had he exposed himself 100 per cent to the spot price.
However, most suppliers only do a fraction of their wholesale trading in the spot market.

A single-unit dwelling with electric heating consumes about 20.000 kWh per year. Electric
heating is as a principal rule not permitted in new or existing houses which are supplied by
natural gas or district heating in Denmark. Despite the fact that a 20.000 kWh customer is not
typical in Denmark due to limited number of electrically heated houses, some electricity
prices are given in figure 2.1 for such customers.

![Diagram showing electricity prices with consumption of 20000 kWh/year](image)

Figure 2.1 Electricity prices with consumption of 20,000 kWh per year, year 2004.

For Finland the prices are fact for a consumption of 18 000 kWh/year.
The retail price in Norway by and large tends to follow the spot price. This is better revealed with weekly data, but monthly data also show some relationship between the spot and the retail price. Prices in Finland are quite stable and there seems to be no correlation with the spot price. Prices in Sweden seem to follow a pattern more similar to that of Norway, and weekly prices would most likely reveal some correlation with the spot price. Prices in Sweden tend to be higher than in Norway and Finland.

For an apartment or a house without electric heating, a typical amount of consumption per year is approximately 5,000 kWh. All the countries have experienced a downward trend in prices during the beginning of the year. With an annual consumption of 5,000 kWh, prices in Finland are very stable over the year and are at the same level as those in Sweden while prices in Norway and Denmark seem to be on the same level overall, even though they follow a completely different path.

![Prices with consumption of 5 000 kWh/year](image)

**Figure 2.2 Electricity prices with consumption of 5,000 kWh per year, year 2004.**

Electricity prices in the Nordic countries’ retail markets follow the spot price at varying degrees. For consumption of both 5,000 and 20,000 kWh Sweden has the highest prices. In Finland prices are stable over time whereas in Denmark prices tend to be low and follow a different path than prices in Norway and Sweden.

**Recommendations**

- Reliable price information and comprehensive price comparison are a prerequisite for a well-functioning retail market. Nordic regulators, bureaus of statistics and if required the branch associations should co-ordinate in order to obtain better statistics on both prices and contracts in the retail market in order to ensure better and continuous comparison of retail electricity prices across the Nordic countries.

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3 The Swedish prices are calculated on the basis of price information from 23 of 97 electricity suppliers in Sweden. The price information is gathered from Montel Powernews.
To increase price transparency, it would be preferable to have common standard contracts developed by the branch in the Nordic retail market. Common standard contracts enable electricity price comparisons across national borders.

2.3 Obstacles to switching and related recommendations

2.3.1 Supply obligations and end-user price regulation

In the Nordic countries the safety net to take care of uninterrupted power supplies has been organised in various ways. Firstly, it is important to make a difference between the concepts of supplier of last resort and default supplier. In the case of the supplier of last resort it is the question of the supplier of electricity who temporarily provides electricity to customers in emergency situations when the supplier chosen by the customers cannot serve for instance because it has gone bankrupt. The default supplier is such a supplier who provides electricity to eligible customers who have not chosen actively their supplier.

In Norway it is the local distribution network operator who acts as supplier of last resort for customers without contract with an ordinary supplier, for instance when moving or between supplier switches. Since the market opening the incumbent suppliers have in reality acted as default supplier for those customers not switching or moving. The electricity prices charged by the distribution network operator are normally higher than the prices of retail suppliers, thus giving an incentive to the customer to actively search for a retail supplier.

In Sweden the electricity retail market is a fully competitive one. The system of obligation to supply was abolished in 1999 with the introduction of load profile system. The system for default supplier has been arranged so that those customers who have not done a supplier switch or have not renegotiated an agreement are remaining with the once assigned supplier on an agreement with prices on a conditional tenure. The most common situation when the arrangement of default supplier is used is when the electricity customer is moving and has not actively chosen a supplier to make an agreement. In these cases it is the distribution network operator that signs a supplier. Often the supplier of last resort is the incumbent supplier, i.e. the local supplier.

In Finland the tasks of supplier of last resort and default supplier are carried out by the local dominant retail supplier. The selection of the local dominant retail supplier is based on the fact, which retail supplier has the significant market power or has the biggest market share in the distribution network area. This so called “obligation to supply system” is limited to consumers (households) and other small customers having the main fuse of 3x63 A at the maximum or annual consumption not exceeding 100,000 kWh. There is independent tariff setting by the suppliers but the tariffs have to be reasonable and can be investigated by the regulator or the competition authority. In its present form, the system does not spur on customers to be active in the retail market.

In Denmark the supply-committed suppliers are obliged to offer electricity at regulated prices to all customers but in practice it is most relevant for template, i.e. load profile customers with an annual consumption not exceeding 100,000 kWh. These supply-committed suppliers are default suppliers, but they also act as suppliers of last resort. The regulator regulates prices ex ante based on the requirements of the Electricity Supply Act.

The approaches towards electricity end-user price regulation differ in the various Nordic countries significantly. The systems in Denmark and Finland are more comprehensive than the systems in Sweden or Norway. In Denmark, the retail electricity prices are regulated ex
ante by the regulator to the extent that the electricity is being supplied by the supply-committed company. In Finland, the prices under obligation to supply have to be public and reasonable. Whether the prices are reasonable can be assessed ex post either by the regulator or by the competition authority. Until now, no such assessment has been conducted.

If regulated prices are set too low, the system may lead to passive behaviour of the customers as they get only a weak incentive to better offers in the market. The system may result in a two-price system – having the regulated and the competitive prices – and depending on the relationship between these two, this may capture customers in with the incumbent supplier. This leaves little room for independent suppliers, maintaining the concentration in the market and hampers competition.

On the other hand should customers with de facto limited incentive to switch supplier be protected against excessive pricing.

An efficient price regulation of retail supply companies is not straightforward. Ongoing changes in the regulatory framework may prevent an efficient outcome for the customers and/or the suppliers. The different systems of regulating or supervising retail supply prices to small customers is a major challenge for the development of the national electricity retail markets and in the foreseeable future, for the creation of the Nordic retail market.

**Recommendations**

- The systems of default supplier/supplier of last resort as well as retail supply price regulation and supervision could be further elaborated. The effects of the systems as such for the development and functioning of the electricity retail markets, and furthermore, for the future common Nordic retail electricity market could be evaluated.

**2.3.2 The relationship between retail and wholesale prices**

The number of customer switches is not single-handedly an indicator of a well functioning market. In order to assess the competition in the retail market, you need to examine prices as well. Large differences in prices quoted by retail electricity suppliers over a long period of time may be a sign of a malfunctioning retail market. In a competitive market, suppliers with high prices should see a drop in their market share. This should contribute to the convergence of electricity prices and to a decrease in price variation among the sellers. There should also be a correlation between the prices in the wholesale market and the retail market, especially for contracts with floating prices.

We saw in chapter 2.2 that prices in the Nordic retail market correlated to different degrees with the wholesale spot market. Particularly in Finland prices seemed to be unaffected by price changes in the spot market.

If prices are set in a competitive market, the margin between the retail price and the price in the wholesale market should be reduced until it reaches equilibrium equal to the risk-adjusted normal rate of return. To some extent this is observable on the graph below comparing the Nord Pool spot price and the price on standard variable contract for a sample of the dominant suppliers in the largest grid areas in Norway. Due to the rule stating that the change of price on a standard variable contract should be given on a two weeks notice, there is a lag between the spot price and the price on standard variable contract.
Figure 2.3 The spot price in Oslo and the volume weighted average price on a standard variable contract for a sample of the dominant suppliers in the largest grid areas in Norway.

After the price peak in the winter 2002/2003 where the dominant suppliers lost many customers to more competitive suppliers, they seem to be responding more quickly to changes in the wholesale price. Of course this could also be due to an increase in the share of electricity purchased on the spot marked in the supplier’s portfolio.

The relationship between the wholesale price and the retail price is of importance also when it comes to security of supply. In a market based power system scarcity in electricity supply is reflected in higher wholesale prices. If end users get these price signals, they will reduce their consumption and this reduced demand will ease the pressure on the power system. However, if end users are not exposed to the increase wholesale price, for instance because they are on long term fixed price contracts, they will have no incentive to reduce their consumption.\(^4\)

The Nordic power system is vulnerable to fluctuations in the level of precipitation. Approximately 50 percent of electricity production in the Nordic market is based on hydro power. By storing water in reservoirs, especially in Norway, the fluctuations in precipitation can be “smoothed out”. However, in extreme situations like the autumn of 2002 when the inflow of water to the hydro power system in Norway, Sweden and Finland was reduced by 35 TWh from July to December, the reservoir capacity is not sufficient to avoid a price peak.

In Norway the price peak in the whole sale market was followed by a peak in retail prices (see graph above). Since most consumers where on contracts with floating prices, the majority became exposed to this price peak. The high prices lead to a small reduction in consumption in the household segment in Norway. More important was the temporary shut-down of some power intensive industry and electric boilers. The reduced consumption equalled 4 TWh the first six months of 2003. This reduced the likelihood of government rationing, a policy that would have induced large cost if it had been implemented. In the Nordic countries overall however, consumption increased by 0.7 percent in the twelve month period from July 2002 to

\(^4\) That is, if they don’t have the possibility to resell their contracted electricity supply which is only the case for large, industrial consumers.
June 2001 compared with the preceding 12 month period. This was largely due to higher production in the Finnish power intensive industry, but also in Sweden, where spot prices reached the same high levels as in Norway, consumption increased. This is probably mainly due to the lower share of power intensive industry, fewer households and office buildings with electric heating and a larger share of households on fixed price contracts. The last factor reduced the price signal to the household consumers from the wholesale market.

**Recommendations**

- If a common retail market is put into practice we should see an increased correlation between the prices in the wholesale market and the retail market. This is under condition the prices in the retail market are unregulated and competition is strengthened both within and between countries.

- The extent to which the wholesale prices are reflected to retail prices is also a key element to demand elasticity. In the case of a scarcity in production and high wholesale prices it is important that end-users get proper market signals about the scarcity of electricity and can thus cut their consumption to ease the situation.

### 2.3.3 Price transparency

From the customer’s point of view price transparency is a key prerequisite in a supplier switching process. If a customer cannot obtain information on various prices of suppliers, it is impossible to decide which supplier to choose. Especially, it is a matter of great importance that information is comprehensive, easily available, updated and free of charge.

Price comparison services are available to the customers in all Nordic countries except Iceland. However, many systems have some deficiencies due to lack of information from all suppliers or because the suppliers or customers are charged for the service, which lifts up the threshold to use the service. The Norwegian service is the most comprehensive.

In Norway the service is provided by the Competition Authority and in Sweden by the Consumer Agency. The Danish system has until now been provided by the private branch association ELFOR. In Finland the Energy Market Authority maintains price comparison of the obligation to supply –prices and some private organisations have comparison systems for offer prices of the suppliers. In Denmark the regulator publishes prices of the default suppliers on a quarterly basis.

The Norwegian system is compulsory so that all the suppliers are responsible for informing their prices to the Competition Authority. In Denmark a new obligatory system has come into force from 1 September 2005. The prices must be published at the website of each supply company and at one or more price comparison services pointed out by the regulator. In Finland and Sweden the systems are voluntary. In Sweden, however, most of the suppliers contribute with their prices. In Finland a complete price comparison system exists only for obligation to supply –prices, but not for offer prices.

Norway, Denmark and Sweden have quite a similar content of the service. In general, the offers are divided into different categories based on the consumption and different types of contracts. The Swedish model contains most choices available, for instance concerning the origin of electricity and billing frequency. In the present Finnish system containing the public list prices, only the type of the electricity user can be specified.
As some of the systems are voluntary no regulation exists on how often the suppliers are responsible for updating the price information. In Norway the price information is updated weekly and in Finland obligation to supply-prices are updated monthly.

**Recommendations**

- It is advisable that all Nordic countries provide small electricity users with a well-functioning and comprehensive price comparison system. Regulators should consider the possibility of a common Nordic standard for price comparison.

2.3.4 *An efficient switching procedure*

It is important that the communication between grid companies and suppliers is functioning. If not, the consequences will be delayed switches, incorrect invoices and expensive manual routines for correcting the mistakes.

Some important similarities and differences between the Nordic countries concerning experience of exchange of information and communication problems between distribution companies and electricity suppliers have been identified.

In the Nordic countries there have been incidents of communication problems between distribution companies and electricity suppliers in the electricity supplier switching procedures.

EDIEL messages are used for exchange of information in all Nordic countries except Iceland, which has not decided what type of information management system to implement. The protocol SMTP is becoming standard in the majority of the Nordic countries.

In Norway the use of EDIEL is regulated in a detailed way, whereas in Sweden it is only specified in regulation that electronic communication should be used. In Finland the use of EDIEL for data exchanging in balance settlement has been stated in regulation, but for supplier switching there are only recommendations from the branch to use PRODAT messages. Denmark has guidelines in using EDIEL.

Norway and Denmark are using EAN codes to identify each customer and to make the electricity switching procedure easier. In Sweden a special commissioner\(^5\) has proposed that also Sweden should use such codes.

**Recommendations**

- It is important that the switching procedure is easy with a minimum risk of mistakes. All Nordic countries have however already today a similar system for communication. The further work to harmonise these systems and practices should be encouraged.

- The Norwegian and Danish practices to use EAN codes to identify metering points should be studied further.

2.3.5 *Customer-oriented focus*

It is important that the customers are in focus and that the Nordic countries pay attention to problems and needs of the customers. The requirement on information about a supplier switch

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\(^5\) The government decided in February 2003 that a special commissioner should analyse the need of changes on the electricity market. Several proposals including the use of EAN codes were presented in January 2005.
procedure, electricity invoices that are easy to understand, reliable and efficient dispute settlements (alternative to court) and consumer protection rules are important factors.

Some important similarities and differences between the Nordic countries concerning electricity invoices, dispute settlements and customer protection legislation have been identified.

Sweden and Denmark, unlike Finland, Norway and Iceland, have no specific legislation or regulation on which specific items to be included in the electricity invoice, there are only general rules for invoices. The branch organizations in Sweden and Denmark have however written recommendations for electricity invoices.

All the Nordic countries have either a general dispute settlement or a specific one that deals with disputes concerning electricity. The dispute settlements submit recommendations on how disputes should be resolved.

All the Nordic countries have specific consumer protection rules in their electricity legislation. They also have general consumer protection rules in other legislations.

**Recommendations**

- There are already today wide similarities between the Nordic countries when it comes to dispute settlements and consumer protection rules. For that reason these questions do not need further elaboration at the moment.
- In the next phase, the itemization of electricity bills could be reviewed to identify good practices in this area.

**2.3.6 Neutrality of distribution system operators**

Neutrality of distribution system operators (DSOs) towards all suppliers is of utmost importance to the competition in the electricity market. The DSOs have to be non-discriminatory towards all suppliers and customers. In that context there are three important aspects:

1) The rules and practices of supplier switching have to be transparent, reasonable and uniform

2) No supplier should have exclusive access to data from the DSO, for instance customer data or meter IDs.

3) Information should be handled in such a manner so that no particular supplier is given a competitive advantage.

The regulations and practices related to neutrality differ between the Nordic countries. According to the Icelandic Electricity Act (§ 16) a DSO shall operate in a non-discriminatory manner and maintain confidentiality regarding information to the business interests of final customers and all other information that should remain confidential. In Finland the legislation does not contain a clear common obligation for DSOs to act in a neutral manner towards suppliers in all contexts. However, one of the objectives of the law laid down in the Electricity Market Act is to secure reasonable and equitable service principles in the operation of electricity networks. This, together with other more specific sections, could be interpreted as a requirement for network operators to act neutrally in all situations.

In Sweden the distribution companies must always act neutrally towards all suppliers, also in the procedure of a supplier switch, whereas in Denmark net companies shall establish a
compliance programme, which sets out measures taken to ensure that discriminatory conduct is excluded. An annual report, setting out the measures, shall be submitted to the regulator DERA. The regulation regarding compliance programmes is presently being prepared in Finland, too.

In Norway DSOs should in all manner act neutrally towards suppliers and end users, including information about suppliers and the power market, supplier switching, transmission of meter data and invoicing. It is underlined that DSOs shall handle information in such a way that no particular supplier is given a competitive advantage.

In Sweden, Norway and Finland independent suppliers have expressed their concern about DSOs favouring the incumbent suppliers. The most common situation is when customer information systems are shared by the DSO and the in-house supplier. For the regulator it is challenging to supervise whether rules and regulations on neutrality are followed. It is important that clear internal codes of conduct are established and actively followed up by the company’s management. Another example of breaching of neutrality regulations is when the DSO gives notice to the incumbent supplier about a customer switching to a new supplier giving the incumbent supplier a chance to win back the customer. Fortunately there are only few examples of such grave breaching of the neutrality regulations.

**Recommendations**

- Whereas grid operation is a natural monopoly subject to regulation, electricity supply is an ordinary business subject to competition. The separation of these activities should be the foundation of energy regulation. Following from this principle, the DSO should act in a neutral manner towards all suppliers and end users.

- Clear and specific rules or regulations stating about the information handling of DSOs should be enforced to ensure that no particular supplier is given a competitive advantage.

2.3.7  **Common regulation on supplier switching**

Although the model for supplier switching is by and large the same across the Nordic countries, there are some regulatory differences. These can create an obstacle to retail market integration.

EDIEL messages are used for exchange of information in all Nordic countries but Iceland, which has not decided yet what type of information management system to implement. The protocol SMTP is becoming standard in the majority of the Nordic countries.

In all the Nordic countries the new supplier has to send a notification of the switch to the network operator. The network operator then informs the old supplier. After the meter value has been collected by the network operator, a notification is sent to the old and the new supplier confirming the switch.

In Denmark and in Sweden a switch can only take place on the 1st of every month. In Norway a switch can be carried out on every Monday and from the 1st of January next year, most likely on any day. In Finland there are no limitations regarding the switching day.

In all Nordic countries except Finland there are no fees attached to supplier switching. In Finland a network operator may collect a meter reading fee if a customer switches more than once a year.
Recommendations

- The Nordic Energy Regulators should aim at common rules on supplier switching. Legal, technical and economical aspects need to be elaborated further before a Nordic standard is agreed upon. Co-operation with all major actors in the industry is a prerequisite for well-functioning model on switching.

- The Nordic regulators should seek to agree on best practices on supplier switching before agreeing on common Nordic rules. Issues like access to regional databases on metering ID and meter values should also be discussed.

2.3.8 Information on switching activity

Information on switching activity is gathered in all the Nordic countries except Iceland, where the collection of information is planned to get started.

Information is gathered by different organizations. In Norway the regulatory authority collects information on switching activity. This will be the case for Iceland, too. In Sweden the information is gathered by both the central statistical authority and the branch organisation. In Denmark and in Finland it is the branch organisation which gathers the data. In addition, the Finnish regulatory authority collects data concerning the amount of electricity that has been supplied at public list prices and at offer prices.

The most usual practice is to collect switching data on a quarterly basis. This is the case in Norway and Denmark and will be the situation in Iceland, too. In Sweden the information is gathered every month by the central statistical authority. In Finland the information is collected only on an irregular basis by sample surveys. It also varies in which form the statistics are compiled. In Norway, Denmark and Sweden (the central statistical authority) the data is presented in number of switches and in Finland in per cent (sample survey).

The information collected in each country varies due to the differences in defining supplier switch (re-switchers, movers etc.) and sample used.

Recommendations

- Information on the switching activity is one of the central indicators for the functioning of the electricity market. Although the information is not important for the switching process itself, it is an important source of data to follow the development and functioning of competition in the retail market. Furthermore, it serves as a means of benchmarking national markets to detect differences in them and to evaluate the success of retail market opening in each country. It is also important that regulators have access to this type of data as it serves to assess whether some actions to enhance functioning might be needed.

- At the moment the definitions of switching activity and practices in gathering the information vary between the Nordic countries and it hinders comparability of the figures. In the Nordic countries and more generally on the European level a common understanding on the definitions of switching should be sought and a common statistical definition/methodology should be established. However, the data should be collected at a national level.
2.3.9 Other issues affecting switching activity

The liberalization process in the Nordic countries has meant and still means a lot of restructuring among the companies in the electricity sector. Through legislation the five Nordic countries have enforced or will enforce an unbundling of some of the old incumbent monopolies. However, the industry has responded by merging into larger corporations. A split in ownership between distribution and supply has not been politically feasible in any of the Nordic countries.

A reduction in the number of suppliers and/or in the number of independent production plants will increase the concentration in the industry, which could lead to oligopolistic or monopolistic pricing in some countries or regions. This leads to a socioeconomic loss, higher prices for customers and few options for supplier switching. The number of competing suppliers has decreased due to takeovers and/or increased vertical integration during the recent years. However, more lenient regulation to act as supplier again may raise the number of suppliers as is the case in Denmark.

The number of retail electricity suppliers is approx. 130 (N), 7 (ISL), 50 (DK), 70 (FIN) and 97 (S) respectively. A special feature with electricity supply may be that the relevant market is not necessarily even national, but limited to each grid area. That is because a customer within a grid area can only choose a supplier offering its services within that specific area. As long as there are a sufficient number of national suppliers, this is not an issue, but competition issues in a common Nordic retail market should be examined more deeply.

The tax burden on the electricity consumption of the customers differs considerably between the Nordic countries. Typically the tax burden consists of a tax on the consumption per kWh, a CO2 related tax, as well as a value-added tax (VAT). The tax costs of an ordinary end user amounts to approx. 32% (N), 20% (ISL), 59% (DK), 26% (FIN), and 40% (S). In Denmark, the relative tax burden is slightly lower for customers using electricity for heating. The composition of total electricity bill to a customer using 20,000 kWh in Denmark, Finland, Iceland and Norway can be seen in the figure below.

\[\text{For Finland the prices are for a consumption of 18,000 kWh per year. In Iceland the tariffs power generators must pay for access to the grid are included in the electricity price.}\]
A high tax burden may reduce the customer’s incentive to switch. The problem takes place due to the fact that an ordinary customer can have an unclear picture of the prices and how taxes contribute to the final price. Even an active competition between the suppliers may result in overall price differences that are too marginal that an ordinary customer will get any incentive to change supplier.

**Recommendations**

- Nordic energy regulators should in co-operation with national competition authorities monitor the competition in the Nordic retail market. Issues related to energy retail market competition should be put on the agenda as national markets merge into a common Nordic retail market.
3. Best practice proposition for supplier switching

3.1 An efficient supplier switching model

A prerequisite for a well-functioning retail electricity market is an efficient model for supplier switching. The model should guarantee an efficient and manageable switching procedure for households and small business customers. A customer who has decided to switch a supplier should need to contact only one market actor – the new supplier – to initiate the switching procedure. In the best practice model the new supplier contacts the distribution network operator (DSO) in order to carry out the switch. The DSO confirms the supplier switch both to the new and the old supplier. If possible, the customer reads his meter and sends the meter value to the DSO either through a web page, by SMS or ordinary mail. If the customer has not access to his meter, the meter value can be estimated by the DSO. When the DSO has accepted or estimated the meter value, it is subsequently sent to the old and the new supplier.

![Figure 3.1 An efficient switching model](image)

To operate the switching process smoothly electronic data interchange is required. Every metering point should have an identification number exclusive for that point only. The identification number should be known to the customer, for example through the electricity bill or on a label next to the meter.
Contracting should be possible electronically, for instance through the Internet. However, there should be regulations on the information required from the customer in order to implement the switch.

3.2 Standard contracts

There may be a variety of electricity contracts in the retail markets, and thus for the customer it can be a challenging task to compare the costs of different contracts.

To ease the comparison among the contracts, several standard contracts should be available.

This does not restrict the possibility of suppliers to offer other types of contracts and to engage in product development. On the contrary such innovations are desired. However, what is important is that the comparability of contracts is possible to make the customers decision easier.

3.3 Price transparency

An issue related to standard contracts is price transparency. Prices have to be easily accessible and comprehensible to the customers so that the choice between different suppliers is straightforward. Despite other factors affecting the choice of supplier, price ranks amongst the most important ones. A way of ensuring availability of up-to-date price information for the small customers is a price comparison system through which the customers can compare prices free of charge and find out information on the suppliers. In the Nordic countries, there are several examples of such services.

3.4 No obstacles for switching

There should not be any unnecessary obstacles for switching. These may include the restrictions limiting the number of costless switches per year or fees related to supplier switching.

The switching period should be as short as possible and the restrictions regarding the dates when a switch can take place, should be minimized.

The costs incurred by a supplier switch are costs related to market operations fundamental for the functioning of the market. If these costs were covered by the individual customer, it could prevent many customers from switching. That is why the Nordic countries have guaranteed at least one switch free of charge per year for each customer. Instead of charging each individual customer, the system of supplier switching should be financed through the regulated income of DSOs.

3.5 Customer protection

There should be in place specific customer protection rules to safeguard the position of small end-user customers in the electricity retail market. Furthermore, a reliable and efficiently functioning dispute settlement, the use of which would be without charge, should be available.
3.6  **Switching information availability**

In the monitoring of the end user market, the number of supplier switches within a certain period of time is a central indicator for the functioning of the market. However, the definition of a supplier switch and statistical definitions vary between countries and this hinders comparability of figures.

A common understanding on the definitions of switching should be sought. However, the data should be collected at a national level.
4. Norway

4.1 A brief description of the electricity market

By the 1st August 2003, the Norwegian Water Resources and Energy Directorate (NVE) had issued 415 concessions for trading electrical energy of which 315 were ordinary concessions and 100 were simplified concessions. Each entity operating in the electricity market is required to hold such a license. Of the total amount of concessions 183 were issued to grid companies. This is down from 217 in 1999. Though the number of grid companies is still high, the industry is more concentrated. The eight largest grid companies represented more than half the network revenue in 2003.

73.2 per cent of the companies in the Norwegian electricity market are vertically integrated within one legal entity. These are smaller companies of which only 6 have more than 20,000 customers. Their total revenue adds up to 25.7 per cent of revenue from distribution networks in Norway.

The supply side is getting increasingly concentrated. From 1997 to 2003 the three largest suppliers increased their total market share from 37.2 to 56.2 per cent. Most grid companies have a vertically integrated supplier or a supplier within the same corporation that is the dominant supplier within the grid area. The market shares of these suppliers vary from 30 to nearly 100 per cent of all customers. Altogether 76.2 percent of Norwegian households are customers of the dominant supplier within the local grid area.

Private households consumed 30.8 TWh of electricity in 2003. Total net electricity consumption was 103 TWh, the lowest number since 1994. This was due to an extraordinary dry autumn in 2002 followed by high prices in the winter for 2002/03 and somewhat higher temperatures. Private households consumed 34.6 TWh of electricity in 2002.

Steps and status of market opening

The Energy Act of 1990 opened up the possibility of supplier switching in Norway. There was a maximum switching charge of NOK 5,000 preventing most household customers from switching. The maximum switching charge was reduced to NOK 4,000 in 1994, but it was the following year that the retail market really was opened up in Norway. In 1995 consumers could switch supplier every quarter and the maximum charge was reduced to NOK 246. Still each supplier had to pay a fee of NOK 4,000 per distribution area where it was active. In 1996 the fees were all removed and in 1998 consumers could change supplier on a weekly basis.

Until 1997 there had been only 2,500 consumer switches in the Norwegian household market. Since then the activity in the retail market has increased significantly. In the third quarter of 2004 the accumulated number of switches since 1997 passed 1.5 million. In 2003 there was a record high of 441,000 switches due to great differences in margins between different suppliers after a rapid increase in household prices following the high spot price of the winter 2002/2003. Last year there were 240,000 consumer switches in the household market in Norway. In the business market there were 30,660 switches last year.

The Regulations concerning Metering, Settlement and Co-ordinated Action in connection with Electricity Trading and Invoicing of Network Services (Regulations on Metering) are the statutory basis regulating supplier switching. These regulations are under the provisions of the Energy Act of 1990. The regulations can be downloaded at this web page:
The Regulations on Metering are being revised in 2005. One of the aims is to shorten the delay for switches to take effect from three to two weeks. The new regulation will be effective from the 1st of January 2006.

**Box 4.1 Quarterly survey on supplier switches**

Every quarter NVE collects data on supplier switching the retail market. At the present data is collected from a sample of the 29 largest grid areas in Norway. This constitutes 80 per cent of household customers and 93.7 per cent of business customers, or more precisely metering points. The data are reported on a web page with a login function. So far the reports are only available in Norwegian, but from the 2nd quarter of 2005 an English summary is published as well.

### 4.2 End-user prices and contracts

**End-user prices**

Norwegian end-user prices follow by and large the Nord Pool spot price. The most common contract in the residential market is the standard variable contract. The price on this type of contract can be changed with a two weeks warning upfront, in principle without any significant reason. This implies that there is a lag in the price on the standard variable contract compared to the spot price. The graph below shows the course of the spot price and the volume weighted price on standard variable contract for a sample of the dominant suppliers in the 29 largest grid areas in Norway in the period 1998 until the 1st quarter of 2005.

![Graph showing the course of the spot price and the volume weighted price on standard variable contract for a sample of the dominant suppliers in the 29 largest grid areas in Norway in the period 1998 until the 1st quarter of 2005.](image)

*Figure 4.1 Volume weighted price on standard variable contract from a sample of the dominant suppliers within the largest grid areas compared with the spot price, both prices incl. VAT. Source: The Norwegian Competition Authority, Nord Pool and NVE.*

The dominant supplier within each grid area tends to have somewhat higher prices than the more competitive nation-wide suppliers. These are either independent suppliers, smaller
integrated suppliers serving all grid areas or low-price brands of larger, integrated suppliers. The difference between the volume weighted price on standard variable contract of the dominant suppliers and an average of the 15 best offers from nation wide suppliers is approximately 2 øre/kWh at most times.

![Graph showing price trends](image)

**Figure 4.2** Volume weighted price on standard variable contract, price on a spot price contract with mark-up of 2.5 øre/kWh (average of nation wide suppliers 2004) and an average of the 15 best offers on standard variable contract. Source: The Norwegian Competition Authority and NVE.

If we look at prices in the different segments of the Norwegian end-user market, the picture is fairly similar. Prices were low in general from 1998 until 2002. The winter of 2002/2003 prices on spot price contracts and standard variable contract peaked in all markets. It seems like prices have stabilised on a higher level than before the price peak, and prices on fixed price contracts follow the upward trend of the spot price in all markets although with a greater lag for services and manufacture.
Contracts

When it comes to contracts there has been a shift away from standard variable contracts over to fixed price contracts and contracts based on the spot price plus a mark-up in the household market. The shift took place from the 1st to the 4th quarter of 2003 following the high prices of the winter 2002/2003. This coincided with a shift away from the dominant supplier within each grid area. Most customers on contract with the dominant supplier are on a standard variable contract.
The picture is totally different in the business market. Within the service market spot price contracts dominate. One explanation could be that spot price contracts tend to be economically more favourable over time, but with a higher price risk. Electricity makes up a relatively small share of costs within the service sector. In manufacture however, electricity is a major cost component, thus the major share of electricity is bought on fixed price contracts.
Composition of end-user prices

Since 1998 the variation in the total price of electricity has mainly been due to variations in the price of electric energy and in the tax level. Roughly the electricity price, the network tariffs and taxes each make up one third of the total electricity costs of a household with a consumption of 20,000 kWh/year. In the table below we have estimated the total cost for a household consuming 20,000 kWh/year when using the system load profile for the region of Oslo. A high spot price during the 1st quarter of 2005 gives somewhat high electricity costs, 37 per cent of total cost. Taxes and network tariffs represent between 31 and 32 per cent of total costs. The total costs for a household are about NOK 5,500 in the 1st quarter of 2005. Total costs per year are approximately NOK 17,000. This equals to about € 2.100 dependent on the exchange rate.

<table>
<thead>
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<th>1 quarter 2005</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Electricity cost</td>
<td>NOK 2 039</td>
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</tr>
<tr>
<td>En. tax and VAT</td>
<td>NOK 1 758</td>
<td>31,9 %</td>
</tr>
<tr>
<td>Network tariffs</td>
<td>NOK 1 717</td>
<td>31,1 %</td>
</tr>
<tr>
<td>Total</td>
<td>NOK 5 514</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4.7 Composition of end user costs, 1st quarter of 2005., Source: NVE

Although there was a peak in prices during the winter 2002/2003, real prices have been fairly stable and are now approaching the real level of the period before the price peak. Grid tariffs have more or less followed the inflation rate while the tax level has been increasing slightly.

There are clear sings that the rising prices on CO2-quotas have had an impact on the Nord Pool spot price during the 1st half-year of 2005. With the strong correlation between the wholesale price and retail market prices in Norway, the prices on CO2-quotas will most likely influence retail market prices as well.
4.3 Neutrality and access to information

Neutrality is a cornerstone in the regulation of the retail market. Chapter 7 in the Regulation on metering etc. treats neutrality in addition to information, fees and outsourcing. The Regulation states that “the network owner shall in all contexts act in a neutral manner towards electricity providers and end users.” This is the main principle of the Regulation. The paragraph also specifies areas where neutrality is of particular concern, for instance handling supplier switches and information about suppliers within the grid area.

The network owner shall, according to the Regulation, handle information in such a way as to ensure that individual suppliers cannot be given a competitive advantage. This is of particular concern when it comes to integrated corporations both operating the local grid and supplying in the retail market, often with a common customer information system.

The network owner shall on request make all information that is mandatory under chapter 7 available in a universally used, electronic format. Concerning meter ID this shall be collected by the new supplier before notification on a supplier switch is sent to the network company. However, chapter 7, paragraph 3 says that the network owner shall in the case of services described in the Regulation, not collect fees or payment over and above normal distribution tariffs.

In some cases the meter ID is missing on notifications on supplier switches. Generally the network company will then add this information without any cost for the supplier. Only in cases where the network company suspects that the omission of meter ID is systematic, will they ask NVE for permission to collect a fee.
4.4 Metering requirements and load profile system

The distribution companies are responsible for the metering value from all the metering points within their networks, and they are also responsible for ensuring that energy consumption/energy flow at metering points is metered and read.

From the 1st of January 2005, all metering points with an estimated energy input/output exceeding 100 MWh/year shall be read every hour (hourly metering). Approximately 90,000 metering points or just below 4 per cent of the total number of metering points are comprised by this. However, these metering points constitute 60 per cent of electricity consumption.

Metering points with an estimated energy flow of less than 8 MWh/year shall be read at least once a year while metering points with an estimated flow between 8 and 100 MWh/year shall be read every third, second or single month (periodic reading).

Metering points should also be read upon change of supplier and upon termination of electricity supply. If obtaining a meter reading entails unreasonable cost or inconvenience of the network owner, the meter value may be estimated.

For metering points that are not hourly (or automatically) read, meter readings are generally provided through self readings by the customers. This functions reasonably well in Norway.

Load profile system

The network owner's system load profile represents the hourly net input into the network owner's power network. The adjusted system load profile is derived by taking the system load profile as a point of departure, deducting the network loss, and then deducting the actual end users and producers with hourly metering. The adjusted system load profile thus represents the average consumption profile for those end users that are not metered hourly. In this connection it is worth noting that the profile is not a so-called predefined profile determined prior to consumption of the power. This is a profile that is derived on the basis of the actual hourly power input.

The adjustment for network losses should be made on the basis of empirical data. This means that the hourly loss values shall be deducted from the hourly power input. The empirical data that many network owners have with regard to losses is quite inadequate. Firstly, it is
uncertain how large the losses will be on an annual basis, due, among other things, to the fact
that the meter readings are scattered throughout the year. Secondly, there has been little
knowledge of how the losses are distributed throughout the year.

Both of these conditions are of significance if the total cost of losses to be charged to the
network tariff is to be calculated. The purpose of the method of settlement based on the
adjusted system load profile is, however, not to calculate losses with a high level of accuracy.

An inaccurate estimate will only result in an incorrect distribution of the losses throughout the
year. The loss volume will be correct, because all the suppliers are settled in the end
according to the actual volume of energy supplied.

The estimates the network owner has for the annual losses combined with the hourly network
load and network configuration are an adequate basis for calculating the hourly losses.

4.5 Information management

General

In order to ensure low transaction costs for power trading and to prevent misunderstandings
and conflicts, the market participants must know what information is to be exchanged and
how it should be done. The exchange of information in Norway is clearly defined through the
EDIEL standard messages that are defined in the regulations. Below the messages that must
be used in connection with supplier changes, the transmission of meter data from network
owners to suppliers and the settlement of regulating power are shown.

![Figure 4.10 Supplier switching model with information exchange flows](image)

The parties that are involved in changing suppliers are the customer, the network owner and
the new and old supplier. Figure 4.10 shows the flow of the exchange of information from
when a new supplier enters into a contract with an end user until the supplier receives the
meter value on the change date three weeks after the delivery has started.

The new supplier sends a message to the network owner containing the name, address, meter
number etc. no later than three weeks before the change is to take effect. One week before the
change the network owner sends a supplier change confirmation to both the new and old supplier. The new supplier receives in this connection more detailed information on the customer such as the expected annual consumption. The network owner has three weeks after the change date to send meter data at the time of the change to the new and old suppliers. In the amendment to the Regulations on Metering a proposal is made to reduce this deadline to two weeks.

**Standard format for the exchange of data**

Information is exchanged between the end user, power supplier and network owner in connection with a change of power supplier. Settlement data is sent from the network owners to the power suppliers and the power pool for regulating power for settlement of the power market. Without the existence of a standard method of transmitting data, this entails a high degree of manual handling in connection with the transmission of data and import of data into the settlement and customer information systems.

The purpose of transmitting data in a standardised manner is to enable electronic handling and storage without manual intervention. This increases the speed, security and reliability of the data transmissions and ensures that the stored information is correct. It has been decided that EDIEL (Electronic Data Interchange in the ELectricity industry) shall be used as a standard of communication.

Effective 1 January 1998, the Norwegian Water Resources and Energy Administration (NVE) introduced a requirement that the EDIEL message MSCONS (Metered Service Consumption Report) shall be used for the transmission of settlement data. Effective from the 1st of July 1999 the EDIEL message PRODAT (Product Data Message) shall be used for the transmission of data in connection with the change of suppliers. Effective from 15 October 2002 the EDIEL message APERAK (Application message and acknowledgement message) shall be used to confirm receipt of messages and that their content is understood by the receiving application.

**EDIIL in general**

With a higher demand and need for reliable data at the right place and at the right time, the use of Electronic Data Interchange (EDI) as a tool is necessary. Electronic Data Interchange (EDI) will replace the routines that are currently performed manually. Operations can be made more efficient in this manner.

EDIEL is an acronym for EDI (Electronic Data Interchange) in the ELectricity industry. EDI is defined as the “electronic transmission of business documents between different computers in a standardised format”. EDIEL makes use of EDIFACT messages. EDIFACT is a standard that has been developed by the UN and is currently approved as an ISO standard. The standard describes the layout and syntax of various documents. An interchange defines a collection of several messages and message groups. The layout of a message is formed by means of a defined fixed format of codes and data elements.

EDIEL makes use of a selection of EDIFACT messages where the document types that are relevant to the power market have been defined. EDIEL is in other words based entirely on the established EDIFACT standard. The format will thus be widely used in general in the future, at the same time as a number of defined documents that can be used are available.
**MSCONS message**

MSCONS is used in the power market to report metered values. This includes for example the reporting of production and consumption data to be used for settlement and statistics. The message can be sent between various market participants such as network owners, suppliers and Statnett.

In the Regulations relating to metering, settlement and coordinated joint action in connection with power trading and the invoicing of network services the Norwegian Water Resources and Energy Administration (NVE) stipulates mandatory use of MSCONS for:

- Transmission of settlement data from network owners to suppliers.
- Transmission of settlement data from network owners to Statnett.
- Transmission of meter readings from network owners to suppliers.
- Quarterly transmission of expected consumption per metering point.

The implementation guide for MSCONS (Message handbook for Ediel, Implementation Guide for Metered Service Consumption report) describes the content of the MSCONS message. The guide can be downloaded from EDIEL Norway’s Internet site http://www.ediel.org/norge/.

The User Handbook for the MSCONS message describes how EDIEL’s MSCONS message is to be implemented in Norway. The document is intended as an aid for market participants who will be implementing the MSCONS message in Norway and it must be read together with EDIEL’s Implementation Guide for the MSCONS message.

**PRODAT message**

Information is exchanged between the end user, power supplier and network owner in connection with a change of power supplier. The PRODAT message is used within the electricity supply market in connection with the change of suppliers for the transmission of master data – data that is rarely changed – between network owners and producers.

At the start of the message a message function is defined that describes the function of the message in question. There are several different PRODAT messages, not all of the used in Norway.

The implementation guide for PRODAT (Message handbook for Ediel, Implementation Guide for Product Data Message) describes the content of the PRODAT message. The guide can be downloaded from EDIEL Norway’s Internet site http://www.ediel.org/norge/.

The Norwegian user handbook for the PRODAT message describes how EDIEL’s PRODAT message should be implemented in Norway and is intended as a supplement to the Implementation Guide for the PRODAT message from EDIEL. The document is designed for suppliers of customer information systems and others who send or receive the PRODAT message. The document is based on requirements and guidelines from the Norwegian Water Resources and Energy Administration (NVE) and the Scandinavian EDIEL Forum. The document will be updated as required. New versions will be published on EDIWL Norway’s website http://www.ediel.org/norge/.
**APERAK message**

The function of this message is:

- To inform a message issuer that his message has been received by the addressee's application and has been rejected due to errors encountered during its processing in the application.
- To acknowledge to a message issuer the receipt of his message by the addressee's application.

A message, (i.e. DELFOR, MSCONS, etc.) being first controlled at system level (CONTRL) to detect syntax errors and to acknowledge its receipt is then transmitted to the application process to be processed.

If an error is detected at the application level, which prevents its complete processing, an APERAK message is sent to the original message issuer giving details of the error(s) encountered. If no error has been detected and when an acknowledgement is necessary (e.g. when no dedicated answer to the original message exists) an APERAK message is sent specifying the reasons for acknowledgement.

In case of an application error, the APERAK message will need manual processing e.g. when the underlying reason is a programming error. In case of acknowledgement the APERAK message may be automatically or manually processed at the recipient's discretion.

### 4.6 Obligations on network operators regarding supplier switching

The network operator is required to implement a supplier switch once it has received a notification in accordance with section 2-4 in the Regulations on Metering. Section 2-4 states that a notification shall contain:

- metering point ID,
- supply commencement date,
- end-user’s name and postal address, and
- installation and invoicing address, if different from the end user’s postal address

The network operator shall no later than one week before the change of supplier notify the supplier switch to the new and the old supplier. The notification to the new supplier shall contain among others:

- metering number,
- the installation’s expected annual volume,
- the settlement method used, and
- priority of installation (prioritised or disconnectable)

The network owner shall in all contexts act in a neutral manner towards electricity suppliers and end-users, including change of supplier
4.7 Other issues affecting switching

The Regulations on Metering are being revised in 2005. One of the main aims of the revision is to decrease the processing time of a supplier switch from three to two weeks. In the proposal, the model for supplier switches is kept as it is. However, NVE will examine over the next twelve months whether a more rational model is within reach. This work will most likely be concluded during spring 2006.

One of the most debated proposals is a mandatory split of the invoicing of grid tariffs and electricity supply. It is the option of the NVE that this will improve the competition in the retail market by reducing the advantage of vertically integrated entities as opposed to independent once. The amendments will replace the current regulation on the 1st of January 2006.

There are several other issues related to supplier switching in Norway:

- Access to metering point ID for both customers and suppliers is an issue in some grid areas. On the other hand there are suppliers deliberately sending huge numbers of notifications on supplier switching without any metering point ID leaving it to the grid companies to complete the notifications. In these cases grid companies are bound to apply to NVE if they want to charge suppliers for this extra work.

- There have also been examples where grid companies automatically cancel supplier switches if the customer is under contract with its associated supplier.

- In the case of an installation of a new metering point (or a customer moving to a new address and hence metering point) most customers are supplied by the grid company for some week unless they chose the local supplier associated with the grid company. In some grid areas new customers are automatically assigned to the local supplier unless actively choosing another supplier.

4.8 Data on the development of supplier switching

Until 1997 there were few switches within the household market. As the fees were phased out in 1997 the number of switches increased. Still, low electricity prices and small differences in prices between suppliers kept the number of switches on a fairly low level. This really changed during the winter of 2002/2003 when an extraordinarily dry autumn led to low reservoir levels and a peak in electricity prices. This resulted in an increased focus on electricity prices and record high of 441 000 switches during 2003. This is equal to one fifth of Norwegian household consumers. During 2004 the prices and price differentials between different suppliers dropped decreasing the incentive to change suppliers, thus the number of switches dropped by 200.000 compared with the year 2003.
4.9 Conclusions

The Norwegian system has handled up to 150,000 supplier switches per quarter without major problems. There are few problems related to the flow of information, technical solutions and, with some exceptions, neutrality issues. The process is somewhat cumbersome from a customer’s point of view since the customer first has to contact the new supplier and then has to send in the meter reading three weeks later.

There have, however, been some examples of vertically integrated entities breaching the neutrality provisions in the Regulation on Metering. This is one reason why NVE has proposed a mandatory split of the bills on grid tariffs and electricity supply.
5. Denmark

5.1 A brief description of the electricity market

The number of supply-committed companies (electricity suppliers of end-users) in Denmark is at present 37. The supply-committed companies must operate in a given but not necessarily coherent geographic area, corresponding to the local/regional grid area. The companies may also sell electricity outside their geographic area at market prices and at market terms.

A supply-committed company must supply sufficient electricity in its licensed, geographic area to default customers (primarily template costumers) and customers having lost their supplier (supplier of last resort). The regulatory responsibility such as granting licenses falls to the Minister of Transport and Energy and the licenses are issued for a period of 5 years.

The price set by the supply-committed company must correspond to the price level of the market. General rules about the control of prices set by supply-committed companies are laid down in the Electricity Supply Act, but instructions to these companies about notifications and approval of prices settings are laid down by the Danish Energy Regulatory Authority (DERA).

The supply-committed companies are competing with approximately 15 trading companies (which can supply consumers with electricity). These companies are not regulated by DERA and the trading companies do not need to have a license from the authorities to operate. Danish trading companies are covered by the Competition Act. The Danish Financial Supervisory Authority is considering regulation of financial trading instruments used by the trading companies as well as the supply-committed companies.

Two power generating companies dominate the Danish electricity market: Elsam A/S in Western Denmark (DK1) and Energi E2 A/S in Eastern Denmark (DK2). The total installed capacity is approx. 7,000 MW and 5,500 MW (including windmills) in DK1 and DK2 respectively. Of the total installed capacity in DK1 Elsam A/S owns approx. 50%. In DK2 Energi E2 A/S owns approx. 80%. As primary fuels the generating companies use coal, oil and natural gas. The two dominant power generating companies were partly taken over by DONG, the national state-owned gas company, and partly by Vattenfall in 2005. It is the future intention of the Danish Government to sell (a fraction of) DONG.

The 125 Danish grid companies (distribution) are owned directly by the local consumers (cooperatives), by the municipalities or by DONG. They are licensed by the Minister of Transport and Energy. The license is granted for a period of a minimum of 20 years. The license is granted under certain conditions. According to the Electricity Supply Act grid companies must secure an efficient and sufficient supply of electricity by 1) up-keep and enlargement of existent networks, establishing new networks, 2) connecting suppliers and consumers installation to the network, 3) supplying the needed capacity, and 4) metering the supply and take outs from the networks.

In order to sustain a technical quality and to measure transported electricity, the grid companies must also provide and settle payment, conduct information activities, map energy consumption, plan and secure energy savings in the supply area, and co-operate with the TSO’s to provide the users of the grid with necessary information about measurement of electricity transported.
However, as described above, the industry is getting more vertically integrated and the concentration in the industry is increasing. Many grid companies are part of an energy corporation (holding company) together with the local supply-committed company. Some of these companies are part of the above mentioned mergers of generating companies. It is worth noting, that the take-over of Elsam and Energi E2 by DONG and Vattenfall respectively have not yet been approved by the Danish Competition Authority or the European Commission.

The companies must be legally and functionally unbundled in according to the EU Directives.

Private households consumed 9.662 GWh of electricity (2004) out of a total electricity consumption of 33.247 GWh that is 29% of the total consumption.

5.2 Steps and status of market opening

Every customer in Denmark has the right to be supplied with electricity upon payment. This right implies the right to delivery of electricity by the local supply-committed company and from the dates mentioned below the right to choose supplier.

Customers with access to choose a supplier have the right to cancel and resume deliveries from the supply-obligation companies within reasonable time limits and on reasonable conditions.

<table>
<thead>
<tr>
<th>Date</th>
<th>Threshold:</th>
<th>Share:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st April 1998</td>
<td>≥ 100 GWh</td>
<td>3%</td>
</tr>
<tr>
<td>1st April 2000</td>
<td>≥ 10 GWh</td>
<td>15%</td>
</tr>
<tr>
<td>1st January 2001</td>
<td>≥ 1 GWh</td>
<td>35%</td>
</tr>
<tr>
<td>1st January 2003</td>
<td>All customers</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 5.1 Steps and timetable of electricity market opening in Denmark

The Danish market model valid from 1st January 2003 has ensured that all customers on the Danish electricity market are offered easy access to choose their electricity supplier. The administration of the switches is based on an automatic electronic transfer of information between the partners on the electricity market in order to ensure administratively practicable switches. The electronic switch of supplier will take place as requested by the customers - and with no costs to the customers.

The grid companies are at all times responsible for updating a register that holds the exact information on every measuring point (customer) with regards to the electricity supplier and the authorised balance holding market partner for that particular metering point.

As of January 1st 2003, all the 3.059.800 Danish customers (metering points) are eligible. About 30.000 of these customers with a consumption >100.000 kWh/year are billed on the basis of an hourly metering with a daily data control and electronic transfer of data. This situation demands focus on the procedures of the grid companies with regards to fault location and fault correction of measured data. Any switch of supplier must be handled electronically. The quality of the measured data must be the same as before the full market opening.
5.3 Tasks of the Regulatory Authority

5.3.1 The set up of regulatory functions

The regulatory tasks in Denmark are shared between the Danish Energy Regulatory Authority (DERA) and the Danish Energy Authority (DEA, a directorate in the Ministry of Transport and Energy). DERA deals with complaints about prices, conditions of supply and grid access. DEA will deal with complaints about technical aspects of grid connection.

Technical standards and other requirements are set by the TSO. The rules are published by the TSO and compliance is monitored by the TSO. Decisions of the TSO can be appealed to the DEA. Pure competition issues are monitored/regulated by the Danish Competition Authority.

DERA’s task is to ensure efficient and transparent energy markets in Denmark. DERA’s supervisory activities help to ensure that Danish households, enterprises and other customers can buy energy at fair prices and on fair terms. DERA fulfils its task by controlling the prices and the terms of supply of monopoly companies, including conditions of access to transmission and distribution networks, and by supporting efficiency and structural development in the energy sector.

A new private Energy Supplies Complaint Board has been established in November 2004:

Powers

The Board has a mandate to handle disputes arising from the contractual relationship between private energy consumers and an electricity supply undertaking, natural gas electricity supply undertaking and district heating supply undertaking.

There are no thresholds as regards to the value of the dispute. The Board does not take up disputes settled by court judgement. On the other hand, shall a case, which is being dealt with by a Court of Law, on demand be postponed and transferred to the Board.

The Board shall reject the complaint if:

- The nature of the case implies that it cannot be adequately handled without oral statements from the parties given under liability to punishment or

- The case implies questions of evidence that are not likely to be clarified during a written procedure.

The Board is established in co-operation between the Consumer Council, the Association of Danish Energy Companies, DONG (Danish Oil and Natural Gas), Greater Copenhagen Natural Gas/Natural Gas Middle-North, Natural Gas Funen and Danish District Heating Association.

The Board is composed of a neutral chairperson and four members. The chairperson is a lower court judge. The Consumer Council appoints two members, and two members represent the energy trade area respectively. The secretariat for the Danish Energy Regulatory Authority (DERA) has the responsibility for a secretariat to serve the Board.

There is a fee of DKK 150 for handling a case. The fee is to be paid back, if the Board upheld the consumer’s contention. In this case, the energy company has to pay a fee to of DKK 7,000 to the Board.
Nature of the decision

Decisions are not binding or enforceable. When the Board has made a decision, either party can take the matter to court.

Enforcement

If the Board’s decision is not complied with, the secretariat can send the case to the Danish Consumer Agency. The Agency will then take the matter to the court, at the request and on behalf of the consumer.

If the consumer does not want to bring the decision to the court, the Board shall publish the decision on its website on the section “Pillory” with name and address of the energy company.

5.3.2 The regulatory control of supply and network companies

Supply-committed companies

Starting 1 January 2005, DERA carries out a forward-looking (i.e. ex ante) price control of prices set by supply-committed companies in their respective grid area. Forward-looking price control is required by law (according to the amendment of section 72 of the Electricity Supply Act). It replaces the retrospective (i.e. ex post) adjustment of supply committed companies, based on an efficiency assessment, which has been applied up till now.\(^7\)

The price control applies to the fixed quarterly price for non-time-metered customers and the extra charge on the price for time-metered customers to cover for the costs related to balancing and administration. Thus, it influences around 3 million Danish consumers.

In the latter half of 2004, the DERA secretariat made preparations for the launch of forward-looking price controls, so that they could enter into effect in the first quarter of 2005, as stipulated by law. No relevant and publicly available market prices existed on which the secretariat could base its price setting. In order to establish a price that is fair and as close to the price to be expected in an efficient electricity supply market, the secretariat had to collect information from various sources. It requested figures from Danish companies and from the Nordic energy stock market, Nord Pool, as well as from Norway, which has had a liberalised electricity market for some years now. Companies were required to inform the DERA secretariat no later than on the 16th of December 2004 about their planned prices for supply obligation services in the first quarter of 2005. DERA analysed these prices and on the basis of that analysis DERA set the prices which the individual companies could charge in the first quarter of 2005. The prices found by DERA were in many cases lower than the prices the companies had planned.

As required by law, the companies were informed about the prices three days prior to their entry into force. Moreover, the prices were disclosed and made available for all on the DERA website. The way DERA has handled the transition to the new regulation spurred many reactions from the sector. In the beginning, some companies refused to comply with the prices set by DERA. On behalf of a number of the companies, the Association of Danish Energy Companies subsequently appealed DERA’s decision to the Energy Board of Appeal. It is DERA’s belief that these cases are a necessary part of the process of implementing the new regulation.

In 2004, the DERA secretariat also reviewed the 2002 prices and revenues of the about 40 Danish electricity companies with supply obligation. A number of companies were approved with regard to their prices after a first review. Others had to be studied in more detail. In several cases the outcome was that DERA ordered the company to pay back six figure sums to consumers on the grounds that the company’s electricity prices in 2002 did not reflect free market conditions. In other words, the customers had paid too much for their electricity.

All cases have their individual characteristics. However in many cases the problem concerns the fact that the supply-committed company had bought electricity from a fellow group trading company at a price that did not in DERA’s assessment reflect the market conditions.

The Association of Danish Energy Companies and other parts of the sector are far from agreeing with DERA in these matters and have appealed DERA’s decisions to the Energy Board of Appeal.

Generally, the energy sector has suggested that some of DERA’s initiatives are not conducive to the desired competition in the energy market. The course of this is that DERA shall approve the pricing after notification and the approval is often conditional. But the sector’s point of view is not necessarily entirely right. DERA believe the problem is the size and configuration of the Danish energy taxes which, unfortunately, provide ordinary consumers with an unclear picture of the price signals. Even active competition on electricity (and gas) prices results in overall price differences that are so marginal that the individual consumer probably has no real financial incentive to change supplier, due to their relatively modest annual electricity consumption compared with customers in the other Nordic countries. Incumbent companies which supply 97-98% of all consumers thereby have less incentive to be cost effective, because they compete on the total price including taxes. DERA’s forward-looking price control is therefore important in order to prevent high prices for those customers who are not buying electricity on the free market, and, indirectly, it contributes to enhancing the competition in the market.

The business-to-business market is not influenced by the energy tax policy to the same degree. So far DERA are observing satisfactory customer mobility here, which reflects that customer behaviour is directly affected by competition.

All in all less than 20% of the payment of a typical household consumer’s bill today is determined by competitive conditions.

**Network services (distribution and transmission)**

The current regulation of net companies had to be revised. During 2004, DERA participated in the preparation of a new executive order for the revenue framework, which was issued by the Danish Energy Authority (Energistyrelsen) in late December 2004. The key principle in the new executive order is that the net companies’ tariffs are frozen at the 1 January 2004 level and from then on, basically, can only be subject to indexation, though extra costs to cable the electricity-supply grid in connection with the establishment of new grids may be granted.

The so-called "tied up" equity capital has (until 2003) only been allowed a low return when fixing the income caps. This can now be increased by increasing the cost-efficiency. This will be a major incentive over the next couple of years.

This new revenue framework regulation (a sort of price cap regulation) is easier to manage, for enterprises and DERA alike. However, in 2005 DERA has spent a considerable amount of time on establishing the administrative basis for the new regulation system (a new income cap
regulation), and on preparing general and specific interpretations of the new regulation. The administrative benefits of the new regulation will therefore only become evident later.

DERA will communicate efficiency requirements from 2008. In the years to come, DERA will develop an improved benchmark model to be used in the communication of efficiency requirements from 2008.

System operator (TSO)

From 1 January 2005 Energinet.dk was established as the state-owned enterprise to serve as system operator with responsibility for overall electricity and gas transmission in Denmark. Energinet.dk will be among the companies regulated by DERA. Depending on the development of its acquisition obligation with regard to regional electricity and gas transmission, the establishment of Energinet.dk will mean fewer enterprises for DERA to regulate in future.

DERA regulates prices and terms and conditions of access to both the electricity and gas-transmission networks. DERA will continue to be responsible for these tasks with regard to Energinet.dk, including advance approval of methods for determining tariffs/prices and terms and conditions. However, the way financial regulation is carried out will be changed. The electricity transmission companies were previously regulated via revenue frameworks including efficiency requirements. Now these companies are being regulated, along with the gas transmission companies, through price setting based on the costs of efficient operation (‘cost plus’ regulation). Furthermore, the owners of Energinet.dk (i.e. the Danish State) cannot withdraw assets from the company.

In addition, DERA is participating with other national regulatory bodies in activities which, through international price and costs comparisons for electricity and gas transmission, will improve the foundation for the financial regulation of Energinet.dk with regards to both electricity and gas.

5.4 Price comparisons within Denmark

DERA is providing a service with a monthly survey of the Danish electricity prices. This survey is shown at the web site www.energitilsynet.dk (see “Publikationer”, “Elprisstatistik”). DERA also provides a quarterly survey of the prices of the supply-committed companies.

The Association of Danish Energy Companies (Dansk Energi) provides a survey every year (normally in April/May) concerning network tariffs of the Danish grid and transmission network operators and energy payment of the local supply-committed companies.

At the website www.elpristavlen.dk some of the suppliers (traders and supply-committed companies) have contributed with an overview of their electricity prices. Customers with annual consumption not exceeding 100,000 kWh can compare the prices of the companies which provide information to this service facility.

5.5 Composition of end-user electricity price

The regulatory regime of the electricity industry in Denmark is related to the category of the company, the company being a system operator (TSO), a production company, a transmission or distribution (network) company, a trading company or a supply-committed company.
DERA can regulate the prices, costs and conditions of the network (transmission and distribution) companies, the TSO and the supply-committed companies.

The table 5.2 indicates the electricity prices with respect to different kinds of customer categories (customer profiles). The electricity prices differ between the consumer categories. Although most of the price variation is due to a rather heavy tax burden on the consumption of electricity by households, some variation is related to differences in costs among the companies that have provided input to the survey. Approx. 70 per cent of the market is covered by the survey.⁸

<table>
<thead>
<tr>
<th>Price (øre/kWh)</th>
<th>Households</th>
<th>Light industry, trade/commerce ¹⁾</th>
<th>Industry, manufacturing ¹⁾</th>
<th>Trade/commerce/industry (average) ¹⁾</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscription payment (standing charge)</td>
<td>16.7</td>
<td>2.1</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Market electricity (commercial electricity)</td>
<td>29.1</td>
<td>28.7</td>
<td>24.7</td>
<td>24.7</td>
</tr>
<tr>
<td>Network tariff of this PSO²⁾</td>
<td>29.0</td>
<td>26.8</td>
<td>22.8</td>
<td>24.9</td>
</tr>
<tr>
<td>of this transmission of this distribution</td>
<td>10.2</td>
<td>10.3</td>
<td>10.1</td>
<td>10.2</td>
</tr>
<tr>
<td>of this distribution</td>
<td>6.0</td>
<td>6.0</td>
<td>5.9</td>
<td>5.9</td>
</tr>
<tr>
<td>Price (exclusive VAT/taxes)</td>
<td>74.8</td>
<td>57.6</td>
<td>47.5</td>
<td>49.8</td>
</tr>
<tr>
<td>VAT/taxes of this CO2 tax of this electricity taxes of this VAT</td>
<td>101.9</td>
<td>11.0</td>
<td>0.4</td>
<td>8.6</td>
</tr>
<tr>
<td>of this electricity taxes of this VAT</td>
<td>9.0</td>
<td>9.0</td>
<td>0.3</td>
<td>7.0</td>
</tr>
<tr>
<td>Total</td>
<td>176.7</td>
<td>68.6</td>
<td>47.9</td>
<td>58.5</td>
</tr>
</tbody>
</table>

Table 5.2 Customer electricity prices in Denmark, July 2005

Note 1: Households 3.5 MWh/year, light industry, trade/commerce 160 MWh/year, and industry, manufacturing 300 GWh/year.
Note 2: PSO = Public Service Obligation.

Only the part of the payment of electricity labelled market electricity (commercial electricity) is under competition.

⁸ Information about their electricity prices are collected from these companies: NESA, NVE/SEAS, NRGi, ESS, Østjysk Energi, Energi Horsens, BOE, Energi Nord, Energi Midt, TRE-FOR, Københavns Energi.
5.6 Share of different types of contracts

The Association of Danish Energy Companies have constructed two types of standardized contracts. These contracts are available for their member companies. The contracts are regarding an agreement with customers with hourly metering and with customers without hourly metering (template customers) respectively. The contracts are only recommendations. Currently there is no information or statistics available regarding the shares of different types of contracts.

5.7 Neutrality

Most Danish distribution network companies belong to a company-group with companies also carrying out competitive activities. The neutrality of the network company, however, is secured in various ways according to the Electricity Supply Act.
Network activities are licensed activities. Network activities must be legally unbundled (= company unbundled) from all other activities, meaning that the company dealing with licensed network activities may not deal with any other activity.

The network company must own the assets (networks etc.) necessary for carrying out the licensed activity.

The EU-rules on functional unbundling apply for network companies with more than 100,000 customers. This means that neither employees nor board-members of a network company can be active in any trading- or generation company. In the case of employees this separation also covers holding companies.

The EU-rules on “compliance” apply for all network companies. A recent Danish secondary legislation defines the elements of the compliance programmes to be established. The main elements are:

- Treatment of sensitive/confidential information
- Treatment of network customers in a non-discriminatory way
- The various unbundling requirements
- Market-based agreements with other companies of the group
- Network pricing.

DERA (and DEA as regards licensing) are responsible for monitoring as well as dealing with complaints.

Finally, an additional “monitoring” of the neutrality is aimed at by requiring, that at least two members of the board are appointed by the local network customers.

The neutrality of the TSO – Energinet.dk – as well as of the regional transmission companies is secured in a quite similar way. In addition the state-ownership of Energinet.dk in general is regarded as adding to the aspect of neutrality, despite the fact that also the new major Danish generating company DONG is state owned.

5.8 Access to information

A new supplier must provide evidence (for instance an agreement) that the new customer concerned has given his/her approval if the new supplier wishes to get information/data from the network operator about the customer.⁹

If an approval has been given by the customer the (possible) new supplier may get the same information as the customer. This information can comprise

- name of customer,
- address of metering point,
- expected consumption,
- when the meter is (expected to be) read,
- metering point ID,
- date of (new) connection/supplier,
- the present type of settlement.

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5.9 Metering requirements for electricity users

As of 1st January 2003 hourly metering was a mandatory demand for metering points with an annual consumption exceeding 200,000 kWh/year. As of 1st January 2005 the limit was lowered to 100,000 kWh/year. This means that approx. 9,000 new customers (metering points) have been equipped with hourly metering. At present 30,000 customers have hourly metering.

The grid companies are allowed to further reduce the declared levels for hourly metering if the company can offer the service to its entire grid area and the service can still be handled by an electronic switch in a simple and secure way. In the long term all metering points may be subject to hourly metering.

For the customers without hourly metering the initial costs and the operation costs of the metering system are for the time being too high compared to the potential benefits related to market access with hourly metering.

However, it is important to note that free access to hourly measuring is an available service for everybody. Any customer who is included in the common profile (template) at the beginning can choose whether the metering point shall be changed to hourly based settlement for a pro rata charge to the grid company.

A grid company shall maintain the technical quality of the grid and measure the electricity transported through the company’s grid. The grid company shall conduct information activity in order to create the greatest possible transparency concerning market conditions for all customer groups. The grid company must co-operate with the TSO when the tasks above are being carried out and must provide the users of the grid with all the necessary information about the measurement of the electricity transported though the grid. In co-operation with the TSO, grid companies shall draw up annual surveys and forecasts for the use of actual and potential market actors. In short, the grid companies are responsible for metering value from all metering points in their network, and that energy consumption and flow at a metering point is metered and read.

As mentioned, 30,000 metering points or approx. 48% of the consumption shall be read every hour. The grid companies are responsible for all metering points. The metering points shall be read upon a change of supplier and if the electricity supply is terminated as well. If the meter read is incorrect, the value must be estimated.

If DERA finds that the prices and delivery terms are in contravention of the provisions of the Electricity Act, DERA can order the prices and conditions to be amended. An electricity company shall amend customer prices if the company has conducted a transaction that cannot be regarded as reasonable towards the customers.

5.10 Load profile systems used

For customers without hourly metering one profile for each grid company is established. The metering points of these customers are included in one common customer profile (“template”). This template will be calculated currently for each grid company on an hourly basis calculated as the grid area’s residual consumption.
The residual consumption is defined as the total consumption in the grid companies less the total of hourly measured/hourly settled end user consumption. The loss in the distribution grid is also included in the residual consumption and is made up as an “ordinary” settlement of load profile on the consumption.

*Figure 5.3 Establishment of the common consumer load profile in Denmark*
5.11 Information management

The Danish model of information management resembles in many ways that of Norway.

**Procedures when switching supplier of electricity**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Negotiation stage:</td>
</tr>
<tr>
<td>2)</td>
<td>Contract is signed:</td>
</tr>
<tr>
<td>3)</td>
<td>Acceptance /confirmation:</td>
</tr>
<tr>
<td>4)</td>
<td>Final settlement:</td>
</tr>
</tbody>
</table>

It has to be mentioned that the respite times are somewhat different (ref.: [www.elmarked2003.dk](http://www.elmarked2003.dk), direction (Forskrift) I, version 3.0, part 2.3.3):

A new supplier must send a request of start of supply in a specific month, at least 30 days before the switch shall take place. The switch can only take place on the 1\(^{st}\) of a month (i.e., a request have to be sent in March for a switch the 1\(^{st}\) May).

The maximum time to make a confirmation from the grid company to the new supplier is 2 hours after the announcement of the switch. Respectively, the maximum time to make a confirmation from the grid company to the old supplier is 5 days after the announcement of the switch (since the new supplier may cancel the switch up to 5 days after the announcement). And eventually, the maximum time to send data/information about a meter read is 5 weeks. In Denmark consumption and not meter stands (unlike Norway and Sweden) are applied: If a grid company cannot manage to send a read value in 5 weeks, the grid company must instead send an estimated consumption value.

5.12 Standard format for the exchange of data


The general description of EDIFACT and Ediel are correct with respect to EDIFACT in Denmark, but the work concerning Ediel is different for Denmark. Edifact is today taken over by ebIX.

From the website of ebIX:

"European forum for energy Business Information eXchange: ebIX."

The purpose of ebIX, the European forum for energy Business Information eXchange, is to advance, develop and standardize the use of electronic information exchange in the energy industry. The main focus is on interchanging administrative data for the internal European markets for electricity and gas. ebIX shall also cover the needs both for the wholesale market (upstream) and the retail market (downstream). ebIX will follow the rules of the European Union where applicable:

- Development of usage of electronic information exchange in the energy market
Standardize the information exchanges, irrespective of which syntax or data communication means are used or needed
- The information exchange will cover the interchange of administrative data between the participants in the European energy market
- The energy market covers the processes in the whole-sale market (both gas and electricity) and the processes on retail level. Especially the multi-utility suppliers and distributors / grid companies are involved in all these sub-markets
- To promote and advance the process of defining and using standards in the European energy market
- Keep close contact and coordination with other EDI/XML and standardization organizations.
- Following the rules of the European Union.”

Ediel messages are not developed any more, but maintenance of the existing messages still occurs in a sub group in ebIX. When greater improvements in the existing market systems are under consideration the ebIX messages have to be used.

In Denmark the Danish ebIX working group (www.ebix-dk.dk) is responsible for the Danish guidelines. The work is taking place at the Committee for the electricity market 2003 (ref. www.elmarked2003.dk).

In Denmark a mixture of Ediel and ebIX messages is applied: MSCONS (Ediel) is used for metering (production, consumption and exchange of information).

Instead of PRODAT message Denmark uses the ebIX message UTILMD - Utility Master Data – when exchanging data in connection with the change of supplier. UTILMD and UTILTS are developed by ebIX and their target is the electricity industry in contrast to Ediel messages that are developed from other industries and adjusted to the electricity industry.

The new Danish APERAK message is founded on Ediel but contains a few extensions (references to Business Transaction, responsible authority, market process). It is today demanded that an Ediel APERAK can be received.

Finally, the companies use e-mail (SMTP) when exchanging EDIFACT messages in Denmark.

5.13 Obligations on network operators regarding supplier switching

The grid companies shall implement a supplier switch once they have received a request according to the ‘market rules’. (Ref. Direction (Forskrift) I “Skift af leverandør”, version 3.0, 08.06.2004):

The notification shall include among other things: Metering point ID, supply commencement date, installation address, the expected annual volume of the installation and the settlement used.

5.14 Other issues affecting switching

The economic incentive to switch supplier in Denmark is not strong for all customer categories due to a high tax level and a low level of electricity consumption. Firstly, the supply-committed companies may calculate a profit which is reasonable in relation to the level of the turnover and the efficiency in purchasing electricity and other costs. But DERA
shall approve the pricing after notification. The approval can be made conditional. DERA has due to the regulation in force reduced the prices of some of the supply-committed companies. This has again reduced the incentive for customers to switch because the variability of the end user prices most likely has been reduced.

Secondly, the taxes levied on consumers (households) are rather high. If one includes energy taxes, CO₂ taxes and VAT, an ordinary invoice of a typical residential consumer (household) is made up by:

- approx. 15% commercial (market) electricity
- approx. 17% grid and transmission tariffs and public service obligations (PSO)
- approx. 9% in subscription payment (standing charge)
- approx. 59% energy taxes, CO₂ taxes and VAT.

This implies that less than 20% of the payment of a typical (household) consumer’s bill today is determined by competitive conditions. For industrial customers the incentive to switch is probably higher due to lower energy taxes.

It should be noted that it is in general not allowed to use electricity for heating purposes in new Danish houses. Approx. 140,000 houses (excl. weekend cottages, farming etc.) are using electricity heating today.

Fees and conditions

The customers may switch supplier continuously on 30 days notice to the end of a coming month. The switch is without expenses for the customer (see 5.11).

By change of address the switch of supplier can take place within 3 days before the day of delivery (i.e. the relevant contract has been signed).

If a customer has not given any instruction about the relevant supplier for the coming period at the end of an agreed period of electricity supply, the ‘market rules’ recommends, that the grid companies switch the customer to the local supply obligation company. In this situation a customer may switch supplier again in less than two months (present month + 30 days). An unacceptable alternative to this recommendation is to cut the power delivery to the customer.

5.15 Number of invoices

The full market opening in Denmark means that a customer may receive two bills after a switch of supplier:

- A bill for payment of the electricity from the supplier and
- A bill for grid and system services as well as taxes.

In Denmark the network company is responsible for collecting the payment of network tariffs (distribution, transmission and PSO), the taxes (electricity taxes and VAT), and a fraction of the subscription payment concerning the network company. The customer will normally get one invoice covering these payments.

If an independent supplier has been chosen the customer will normally also get an independent invoice concerning the electricity (energy) payment.
Customers that still get their electricity form a supply-committed company (which normally takes part of a holding company that includes the local network operator as well) will normally receive only one bill. The bill will then cover the electricity payment (to the supply-committed company) and the other payments mentioned above (to the net company).

But today it is possible for a customer to get his/her **total** electricity bill concerning payment of network tariffs and taxes as well as the payment of electricity (energy) collected on one bill, even if the electricity supplier is independent (i.e. a trading company).

A new **voluntary** agreement between the Danish electricity companies states that an (independent) electricity supplier can use the opportunity to issue one bill only as a service to their customers.

The agreement also contains a very important new ‘rule’ stating that a consumer not is responsible in any respect if her/his electricity supplier do not pay for the network tariffs to the net company. At the same time is the network company not responsible if the customer does not pay her/his bill (as for instance the net tariffs) to the supplier.

This new agreement has become effective from 1 July 2005.

Any complaint about the above mentioned agreement as well as about the transfer of liability and responsibility of the payments between the customers and among the companies will be handled by DERA.

### 5.16 Data on the development of supplier switching

The Association of Danish Energy Companies provides a quarterly survey concerning the switching activity in Denmark. The number of quarterly switches is collected from the network operators. These companies again collect information from the market players as for example trading companies, supply-committed companies etc.

The survey is available at the web site of the Association of Danish Energy Companies (see: ‘statistik’, ‘nøgletal’, ‘leverandørskift på kvartaler’). Please note that the survey is divided into consumers without hourly metering (‘template customers’) and consumers with hourly metering respectively.

The switching of supplier in Denmark has increased since the opening of the electricity market in 2000 and peaked in 2003 as the electricity market was fully liberalised. As indicated earlier the rather small differences in the prices at the electricity market - partly due to regulation - have apparently reduced the total number of switches. On the other hand may the cancellation of the regulation that every consumer had to buy a certain minimum quantity of prioritized electricity from windmills etc. (renewable power) from January 2005 again increase the incentive to switch supplier.
5.17 Conclusions

The process of access for all customers to switch electricity supplier is now fulfilled. From the 1\textsuperscript{st} of January 2003 estimated 3 million customers have grid access. A switch of supplier is without expenses for the customer.

The administration of the switches is based on automatic electronic transfer of information between the partners without expenses for the customer. Some technical implementation problems have been observed.

About 30,000 customers are billed by hourly metering. As of 1\textsuperscript{st} January 2003 hourly metering was an mandatory demand for metering points with an annual consumption $>$200,000 kWh and as of 1\textsuperscript{st} January 2005 the limit was lowered to $>$100,000 kWh.

A process where about 3 million customers have gained access to the electricity market may imply some disturbance as well.

DERA has observed the following problems:

- Some companies have underestimated the magnitude of resources and manpower needed to prepare the liberalisation process
- Different software programs have induced communication problems among the involved companies and their IT systems
- Information between the companies has in some cases been delayed due to misunderstanding of the technical requirements.
Some of the technical problems will still need some extra time to be dealt with. In these cases the change of supplier must be dealt with by manual transfer of information between the partners in the market. In principle no end-customers may be harmed by such interim procedures.

DERA has noticed that the number of complaints passed to DERA until the middle of 2004 was remarkably low. This may be the result of the fact that many of the suppliers are part of the same holding company as the grid companies. Since the middle of 2004 especially some of the new suppliers trying to enter the electricity market have been very keen to get still existing communication and IT problems resolved.

In other cases the complaints are about the new designed invoices which have been difficult to understand. Finally, in some cases the customers have not been satisfied with the level of information, either from the grid companies, the suppliers or from the authorities in relation to handle a change of supplier.
6. Finland

6.1 The Finnish electricity market

Finland consumed 86.8 billion kilowatt-hours of electricity in 2004, nearly two per cent up on the previous year. Cogeneration of electricity and heat covered 32 per cent of the consumption of electricity, nuclear power nearly 25 per cent, hydro power 17 per cent and coal-based and other conventional condensing power a good 20 per cent. Wind power accounted for 0.1 per cent. Electricity was imported from Russia to Finland nearly according to the maximum capacity of the import connection and a substantial amount of electricity was exported to the west. Net imports of electricity covered 5.6 per cent of electricity consumption.

The balance of electricity consumption remained nearly unchanged compared to the previous year. The industrial and construction sectors accounted for nearly 54 per cent, households and agricultural enterprises for about one quarter, or 25 per cent, and services and the public sector for 18 per cent of electricity. Power transmission and distribution losses were approximately four per cent. Owing to increased production, electricity consumption in the industrial sector grew by 3.8 per cent from the previous year. Due to the warm year, the increase in household and agricultural customers’ electricity consumption was only 0.2 per cent.

The Finnish electricity industry is characterized by a relatively large number of actors in all the parts of the electricity supply chain. At the beginning of the year 2005, the electricity network operations were carried out by 92 distribution network operators, 13 regional network operators and one transmission network operator. To operate an electricity network, a licence is required from the Energy Market Authority.

The generation, foreign trade, wholesale supply, and in principle the whole of retail supply of electricity are carried out in the competitive market. No licence is required from the Energy Market Authority to be active in any of these businesses. Currently, there are more than 100 electricity generating companies that are producing electricity in some 400 plants. The biggest actors in generation and wholesale supply are the majority state-owned company Fortum Plc, Pohjolan Voima Ltd, which is mainly owned by the energy-intensive industry and half a dozen municipal utilities and companies. Furthermore, the industry is a significant producer as well.

For every licensed distribution network area there is one electricity retailer, who has the obligation to supply electricity to a restricted group of customers. On the basis of the latest amendment to the Electricity Market Act, these customers are consumers and other electricity users whose main fuse is 3x63 A at the maximum or who buy electricity 100,000 kWh per year at the maximum. It is the retail seller who has the significant market power in that distribution network area that is under obligation to supply. At the beginning of 2005, there were about 70 such retailers.
6.2 Steps and status of market opening

The Electricity Market Act (386/1995) came into force in 1995 and opened up the Finnish electricity market to competition. At first only the big electricity users whose consumption site-specific power requirement was more than 500 kW could change their electricity supplier. Since January 1997 all users have been allowed to switch their supplier. However, the cost of the required hourly-metered equipment was so high that small consumers refrained from inviting tenders from suppliers. In September 1998 it came possible to small electricity users excluding leisure time residences and agricultural users to participate in a competitive market without an obligation to use hourly metering. Furthermore, since November 1998 it has been allowed to all small users to choose their supplier without the requirement of hourly metering.

In the Finnish electricity retail supply market about 11% of household customers have changed the supplier by the year 2004. The number has increased a bit as in 2002 the equivalent share was 5% and in 2000 it was 2%. Taking into account also the share of negotiated contracts with the local supplier (supplier having obligation to supply), the share of electricity sold by non-local supplier or by the local supplier according to the negotiated contracts was in 2004 for household customers 30% and for small and medium-sized commercial users 82%.

6.3 Price development

The Energy Market Authority collects and publishes information on the public list prices of electricity. All the retail sellers under obligation to supply are obliged to submit information on the changes in their public list prices. Prior to the latest amendment to the Electricity Market Act this information had to be submitted 30 days after the price changes had taken effect. Since the amendment, the changes have to be informed to the Energy Market Authority prior to they are implemented.

It has been typical of the Finnish end-user prices of electricity to change rather slowly and with a lag in relation to the spot prices in the Nordic power exchange when compared with the end-user prices in Norway and Sweden. The slow reaction of the public list prices of household customers can be seen from the picture below. In the same picture, the spot prices and the offer prices collected by VaasaEmg – the Nordic centre for expertise in energy & utilities marketing located within the University of Vaasa in Finland – have been shown.
In April 2004, the end-customer price of electric energy clearly started to show a falling trend due to a relatively good water situation and forecast. The average end-customer price of electricity fell by approx. five per cent in Finland in 2004, whereas a year before the price rose by approx. 20 per cent. In practice, the distribution prices of electricity have remained unchanged for several years. The total price of electric energy including distribution fell by 2.5 per cent. The price level of electricity fell slightly again at the start of 2005. The falling trend in electricity prices seems to continue, because some companies have declared that they will lower their prices during the spring.

To describe the development of public list prices for household customers, two standard users were selected. The one is a household customer with a main fuse of 3x25A and with an electricity consumption of 5 000 kWh per year (K2). The other one is a household customer having electric heating with a main fuse of 3x35A and with an electricity consumption of 18 000 kWh per year (L1).
Composition of end-user electricity price

The share of electric energy of the total electricity bill varies to some extent depending on the type of customer. Generally, the share of energy is between 35 and 45 per cent. For a household customer without electric heating the share of electric energy is approximately 39% as shown in the pie chart below.

The price of electricity for households

For a household customer with electric heating the share of electric energy is slightly higher amounting to some 41% as shown in the pie chart below.
The price of electricity for households with electric heating

6.4 Share of different types of contracts

Information on the number of different contract types has not been gathered by the Energy Market Authority or the branch organization. However, the estimation for the share of the contracts concluded for an indefinite period is approximately 85%. This includes all the customers who have not yet been active in the electricity market and the part of the customers who have either switched supplier or negotiated a new contract with the present supplier. The rest of the customers are supposed to have an electricity contract for a fixed term. Most of these fixed-term contracts have been made for one or two years. The contracts which have been made with a household customer have normally not been agreed for more than two years. If they are, a fixed-term contract that has been concluded outside the obligation to supply with a consumer for a period longer than two years may be terminated by the consumer after the period of two years in the same way as he may terminate a contract that is valid indefinitely.

The amount of the spot related flexible price contracts is very limited. There are some, but the percentage is near zero. There are only a few suppliers in Finland who offer this kind of contracts to the household customers.
6.5 Metering requirements for electricity users

The distribution companies are responsible for metering. A meter in a consumption place that is connected to a distribution network shall be read on regular basis. The consumption places that are equipped with main fuses of over 3 x 63 amperes must have metering based on hourly metering. However, if an electricity user does not want, the hourly metering is not required for those consumption places to which electricity is bought with terms and conditions applying to retailer’s obligation to supply, if a service (connection) contract applied to a consumption place has been agreed before the 1st of January 2005 or if consumption in a consumption place is no more than 5,000 kWh per year.

In consumption places where the load profile system is used, the meter shall be read at least once a year. If the load profile system does not apply to a consumption place and the place is not hourly metered either, meaning that a small user is buying electricity under obligation to supply from his local supplier, the meter shall be read at least once every two years. However, if the consumption place is not in use all-year-round, the meter shall be read at least once in every four years. The meter reading can be conducted either by the network operator, the electricity supplier or the customer.

The distribution network operator has a right to estimate the meter reading based upon the previous consumption in the consumption place, if the meter equipment is located so that the network operator has no access there and the customer has not provided the result of meter reading to the network operator in a reasonable fixed time after the operator has asked for it. Likewise, the distribution network operator has a right to estimate the figure from meter reading when a customer changes the supplier, if the customer has not provided the figure or has no access to the meter.

Balance settlement is based on hourly energies, which are obtained from hourly energy measurements, load profiles and fixed deliveries.

The network operators report the hourly summed-up data on deliveries, which have taken place in their network area to the balance provider of the seller and to their own balance providers. Balance providers then use this data to calculate the power balances of the parties included in their balance responsibility and sends the data to Fingrid. Fingrid determines the national power balance and the power balances between Fingrid and the balance providers.

Predetermined load profiles are used in balance settlement for all the customers with main fuses of 3 x 63 A or less who are purchasing their electricity from a supplier other than the supplier who has the obligation to supply. The network operator allocates each customer within the load profile system to one of the three groups below. The groups are:

- group 1: dwellings with yearly consumption of 10,000 kWh or less
- group 2: dwellings with yearly consumption of more than 10,000 kWh
- group 3: others than those in group 1 and 2

If the consumption pattern of a customer group differs significantly from the standard load profiles, the network operator may instead use a local load profile. In such case the network operator shall inform the regulator and the suppliers in its distribution area at latest one month in advance.
The standard load profiles include hourly energy values for three day types (Monday-Friday, Saturday, Sunday) for each month. Estimated yearly energies of the customers within the load profile system are used to get the right level of the load profiles. When the outdoor temperature is below +15° C, temperature correction is conducted for those customers whose consumption is greater than 10,000 kWh. The hourly energy values are adjusted 4% per centigrade difference from the monthly nominal temperatures of the load profiles.

The energy meters of customers within the load profile system are usually read only once a year, so there is some difference between the estimated energies which are used in balance settlement and the afterwards measured energies. The network operator is responsible for adjustment calculation and settles once a year the differences. The refund or extra charge that each supplier will get or pay is calculated for each hour of the year. As energy price the network operator uses the Area Price for Finland on the spot market for physical delivery that specific hour multiplied by 1.1.

When multi-time-period measurement is used at the customers’ site (e.g. time-of-day tariff), the energy sums of the periods are kept separate also in the yearly adjustment calculation. If the supplier’s time period is defined differently from the network operator’s, the latter’s shall be used in adjustment calculation.

### 6.6 Change of supplier fees

Since September 2003 it has been directly enacted in the Electricity Market Act that the network operator shall not collect a separate fee on registration and balance determination services and other corresponding services related to changing the electricity supplier. Furthermore, the network operator shall not collect a separate fee on the reading of a meter in connection with changing the supplier, if at least one year has elapsed from the customer’s previous change of supplier. Thus, if the customer switches more often the network operator may collect a meter reading fee.

In addition, it is forbidden under the law to use any unfounded terms or restrictions obviously limiting competition within the electricity trade (Electricity Market Act section 14 subsection 3). It can also become assessed under this section if the network operator collects other fees that obviously aim at to restrict changing the supplier.

Before the amendment of the Electricity Market Act, the fees for changing the supplier, especially for reading the meter, were hampering the change of supplier. In many cases the fee might have amounted to the expected saving from the supplier switch. This naturally affected the interest to change the supplier.

### 6.7 Information management

**Standard format for the exchange of data**

Ediel has been in use in Finland since 1997. Ediel messaging connects to Fingrid and to the balance responsible companies or traders all companies in the Finnish electricity market. The Ministry of Trade and Industry has given a decree, which states that meter reading data and balance settlement data exchange shall be conducted with MSCONS.D96A-messages as approved by Ediel Nordic Forum in compliance with its Implementation guide IG version 2.3

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The Ediel standard used in the Nordic countries is now in version 2. This is a common standard for all the Nordic countries, but there are wide possibilities for national naming conventions. Germany and the Netherlands are using a version 3 also with national naming conventions. The most important work of Ediel Nordic Forum today is to design a version 4 with a common European naming convention.

Data in switching procedure

The exchange of information in connection with supplier switching is not defined by legislation. However, the branch organization has given the Procedure Recommendations regarding PRODAT messages (lately amended 7th December 2004). Since the procedure is not regulated, it is not binding, but in most cases exchange of information is carried out by PRODAT messages between network operators and suppliers. There are some network operators who have not taken into use electronic information management and use other methods for information exchange e.g. telefax or phone. It happens also that messages provided by PRODAT system are delayed or deficient.

The recommendations primarily apply to the load profile customers, but they can be applied to hourly metered customers as well. According to these recommendations the new supplier notifies the network operator about the new contract. A notification shall be done at the earliest three months and at the latest 21 days before the contract enters into force. If the metering changes are needed in the consumption place, a notification shall be available to a network operator at the latest 30 days before.

The network operator shall no later than 14 days before the proposed beginning date of the new contract notify the present supplier about the contract. After that the present supplier will check whether it is possible to conclude the present contract and notify the network operator about it. That notification shall be available to the network operator ten days before the proposed beginning date of the contract. The network operator shall then confirm the beginning of the supply to the new supplier no later than five days before the contract will enter into force.

Regarding metering data the network operator shall notify the new supplier about the metering value at the time of the beginning of the supply and the old supplier about the metering value at the time of the terminating of the supply. The notifications shall reach the addressee ten days after meter reading at the latest. The expected annual consumption shall be reported to the new supplier by the network operator ten days after the beginning of the supply at the latest.

There are no exact rules for the maximum delay for switching and the Energy Market Authority has not collected statistical information on actual time delays. According to some estimations switching normally takes approximately three weeks.

Access to information

Most of the general information such as the name and address of the customer and the meter ID are normally received from the customer. As mentioned above, the information on meter value and the expected annual consumption is distributed by the network operator. There have been suggestions by the branch organization and other stakeholders to introduce a unique
consumption site register which would include information such as the number of the consumption site that is needed in connection with supplier switching. However, some problems have occurred regarding who would fund the register and how to ensure that the information would be correct and continuously updated.

6.8 Obligations on network operators regarding supplier switching

Neutralino
According to the Electricity Market Act the sale prices and terms of the network services and the criteria according to which they are determined shall be equitable and non-discriminatory to all network users. Likewise, balance settlement services must be offered on equitable and non-discriminatory terms to the market participants. Thus the clear rules regarding the network operator’s neutrality in the Electricity Market Act refer only to balance settlement services and pricing of the network services. However, one of the general objectives of the law laid down in the Electricity Market Act is to secure reasonable and equitable service principles in the operation of electricity networks. On the basis of these provisions it could be interpreted that network operators shall act neutrally towards all suppliers also in all its other procedures in connection with supplier switching. So far any such complaints about neutrality of network operators have not been made to the Energy Market Authority to examine and make a decision in an individual case.

Some general concerns have been expressed by suppliers that the network operators favour the local supplier. At least if not done on purpose, the network operators and suppliers may have shared data processing systems and the local supplier may obtain such information that is not available to all the other suppliers or they must pay for receiving the same information. By obtaining information related to consumption or termination of the old supply contract the local supplier can have the advantage over the other suppliers by having the possibility to make special offers or try to win the customer.

At present regulation is being prepared to issue a decree by the Ministry of Trade and Industry on the requirements for operative unbundling. This will contain the obligation for network operators to draw up a compliance programme. The programmes shall include the measures ensuring that the network operator meets its obligations in a non-discriminatory manner. However, the obligation to draw up the programme will apply only to six biggest legally unbundled companies having 100,000 customers or more.

The Finnish Competition Authority for its part supervises under the Act of Competition Restrictions the companies in a dominant market position.

6.9 Other issues affecting switching

6.9.1 Price transparency
The issue of price transparency and the difficulties with comparing electricity prices and finding information on price offers have emerged as a problem in the Finnish retail market. It has been the household customers as well as small industrial users who have found it difficult to find information on the alternative sellers and electricity prices in order to compare them and make decisions on whether to change a supplier and where to buy electricity. The problem was clearly recognized during the winter 2002/2003 when the electricity prices rose significantly due to tight hydro situation in the Nordic market.
The Energy Market Authority discussed the issue with the other relevant Finnish authorities, namely the Competition Authority, the Consumer Authority and the Ministry of Trade and Industry’s Energy Department. Accordingly, an ad-hoc working group was established to review the subject. The result was a proposition to develop and set up a system to enable the necessary price comparisons for the small electricity customers. During the review work, a couple of problems were listed. Firstly, an internet-based service to compare price offers had already been established, but it covered only a minor part of the retailers as it was a voluntary system. The idea of establishing a competing system by a government authority was viewed problematic from the competition point of view. Secondly, it was the opinion of the electricity retailers that the Energy Market Authority should not get involved and a service for price comparisons was not needed as the market was functioning well enough.

Simultaneously, a couple of studies had been undertaken, where the problem of price transparency was raised as one of the major problems in the electricity retail market. As a result, the authorities recommended proceeding with the project to increase price transparency and to establish a service for price comparisons.

The Energy Market Authority commissioned a study, which was finalized in April 2005. In the study, the various domestic and foreign systems for price comparisons have been analysed and a proposition for the eventual Finnish system hosted by the Energy Market Authority has been made. The next step will be the development of the system itself to enable the retail sellers to submit their price information directly to the database and to prepare the website together with all the necessary IT applications so that the price comparison service can be available to the customers by the end of this year.

6.9.2 Obligation to supply

Since the start of the opening up of the electricity market in 1995, an obligation to supply system has existed in the Finnish electricity market. Originally, this was planned as a transitory system to safeguard the small customers who were not free to choose their supplier either because of the restrictions of eligibility (from 1.11.1995 until 31.12.1996 only customers with a need of effect of 500 kW or above were allowed to the competitive market) or because of obligations on metering (from 1.1.1997 until 1.9.1998 all the customers were required to have hourly metering to move to the competitive market).

For each distribution network area, the supplier that has the significant market power in that area is the one that has the obligation to supply as far as customers with the main fuses of 3x63 A at the maximum or electricity purchase 100,000 kWh per year at the maximum are considered. The amount of these suppliers is 71 at present. According to section 21 in the Electricity Market Act they have to supply electricity to the above-mentioned customers at reasonable prices. The Energy Market Authority can thus investigate the reasonableness of the prices, but it has not done it so far partly due to the fact that there have not occurred any requests of investigation. Furthermore, the Finnish Competition Authority for its part supervises under the Act of Competition Restrictions the companies in a dominant market position.

From the customer point of view, the obligation to supply system strengthens passive behaviour of the customers. They do not have to compare suppliers nor make active decisions on where to buy their electricity. It also increases the stiffness of the retail market.

The obligation to supply system decreases on its part price transparency as it keeps alive the two-price-system in the small customer market.
6.9.3  **Number of invoices**

If the supplier and the network operator belong to the same parent company the customer normally receives only one bill including both distribution and supply. After supplier switch there will be two separate bills in most of the cases. However, some suppliers offer to take care of both supply and distribution billing, if this is accepted by the network operator.

It has been an issue in Finland whether the customers should have one or two bills. Some customers get confused about receiving separate bills and this may make it harder to understand the content of an invoice and to become interested in switching supplier. On the other hand, two bills support the basic idea of having electricity supply and network services separate.

According to the Electricity Market Act (§ 25 d) a user of electricity who is encompassed by the obligation to supply shall have the opportunity to agree with the supplier that the contract includes not only electricity but also the network service. In this case the supplier sends the bill concerning the both elements.

6.9.4  **Automatic meter reading**

The network operators have been introducing automatic meter reading to save meter reading costs, to introduce billing based on actual consumption and to lower costs connected to the network. In addition to transmitting meter reading information and controlling it the systems can be used to monitor the quality of electricity supply and to manage it.

Automatic meter reading also improves the ground for switching. It speeds up the services provided by the network operator in connection to supplier switching.

6.10  **Data on the development of supplier switching**

The Energy Market Authority does not gather data on the actual switching activity, but the branch organization the Finnish Energy Industries does it on irregular basis by the sample surveys. The Energy Market Authority, however, asks suppliers to send data on the amount of electricity that has been supplied at public list prices and at negotiated prices.

In the Finnish electricity retail supply market about 11% of household customers have changed the supplier by the year 2004. The number has increased a bit as in 2002 the equivalent share was 5% and in 2000 it was 2%. Thus the percentage is still relatively low.

Taking into account also the share of negotiated contracts with the local supplier (supplier having obligation to supply), the share of electricity sold by non-local supplier or by the local supplier according to the negotiated contracts was in 2004 for household customers 30% and for small and medium-sized commercial users 82%. There has been a steady increase in this share since 2001 (Table 6.1).
6.11 Conclusions

In Finland, the retail electricity market has been fully opened since autumn 1998 when the load profile system was introduced for small users of electricity. Introduction of competition has clearly affected the end-user prices. This was seen during the latter part of 1998 when the keen competition started among the retailers for household and other small customers and at the same time the spot prices in the Nordic market decreased remarkably.

Despite the positive results of the market opening, there still remain areas for improvement. They vary in significance to the functioning of the retail market and in the means that can be used to tackle them.

The most important thing from the customer’s point of view is the cost of switching. If the switching itself bears a price tag in the form of fees, this will clearly affect the willingness to switch. Especially if the expected saving equals to or remains smaller than the fee for changing the supplier. Accordingly, there should not be any specific fees for switching but the related costs should be recovered through normal network access fees. However, an issue is whether switching frequency should be unlimited or not, as the switching procedure causes some costs to the network operator. Anyway the longer the period between free switches the stiffer the market will assumably be.

Another important thing affecting switching is the access to the information on sellers and prices. If the information is scattered and difficult to get this might decrease the motivation of the potential switchers. It seems that some kind of central system for getting information on the sellers and the prices is necessary. There is always the problem of asymmetry of information as regards sellers and customers in the electricity market – the sellers are very well informed about the prices and price development but the customers, especially small customers, usually seldom have to find information on electricity prices and accordingly, they are in a weaker position when making their decisions on the electricity supplier and the contract. This asymmetry can be alleviated by establishing a service system of price comparison where the small-scale users can obtain information and make price comparisons to support their decision-making. In Finland, such a system is under planning and construction and a clear need and demand for such a service has been recognized.
A third issue is the role of obligation to supply system in a competitive market. When an electricity retail market is 100% open, it can well be asked whether a system of obligation to supply still is needed to take care of the electricity customers or whether the market itself could take care of the fact that all customers are served appropriately. Usually the obligation to supply system is established for the transitory period but often they are difficult to abandon. In Finland, the continued existence of an obligation to supply system has resulted in two-price system with poor price transparency. The system also creates stiffness in the market as it helps to preserve the status quo of incumbent sellers. This is because the system signals to customers that there is no need to change a supplier and that the present supplier has even the obligation to take care of your electricity supply needs. This created loyalty can be broken with rising electricity prices but still it is an obstacle in the way towards well-functioning electricity retail markets.

Furthermore, there are also other issues affecting the smoothness of customer switching. The fact that not all the network operators and retail sellers are using PRODAT messages hampers the customer switching procedures. In Finland still some old tariff structures inhibit the change of supplier as the result of the change would be a higher total price (electrical energy + network tariff) even though the competing offer for energy price would be lower than the present one.

From the legislation point of view, one deficiency can be the missing section of the present Electricity Market Act. Today the present law does not clearly enough oblige the network operators to act in a non-discriminatory way in all contexts. The only rules related to non-discriminatory behaviour are explicitly related to pricing and balance settlement services. For the sake of transparency it would be relatively important to have clear rules regarding other types of behaviour of the network operator as they are an important group of actors when switching processes are considered.
7. Iceland

7.1 A brief description of the electricity market

The annual electricity demand in Iceland is around 8.500 GWh. The number of customers is around 162,000, thereof 3 power intensive industries, that account for 60% of the national consumption, and 822 that use more power than 100kW (these are free to choose their supplier today). These consumers account for around 20% of the consumption. The rest, household customers and small customers, are around 161,000, and use 20% of the electricity.

No official trading license has been issued by the Ministry of Industry yet, but the Distribution Companies do not need a license to sell electricity to customers in their distribution zone. There are 7 distribution network companies in Iceland. There are some companies known to be preparing to apply for a license to engage in trade in electricity, but as stated previously, none has been issued yet.

7.2 Steps and status of market opening

The Icelandic Electricity Act came into force in 2003. According to the Act, until and including 31 December 2003, only those parties purchasing 100 GWh of electricity or more annually may purchase electricity from parties other than the distribution system operator in their distribution zone. From 1 January 2005, final customers who are power measured and use more power than 100 kW may purchase from the electricity supplier of their choice. From 1 January 2006 all parties shall be entitled to select the electricity supplier of their choice. The regulation on the matter also came into force on January 1st 2005. Therefore the experience of customer switching in Iceland is yet very little. The Regulator, NEA (Orkustofnun), has not received any reports on customer switching from the companies.

7.3 Prices and contracts

7.3.1 Regulated tariff systems

Transmission and distribution tariffs are regulated through income caps and monitoring of tariff settings according to given income cap. According to the Electricity Act, Orkustofnun shall establish an income cap for distribution system operators relating to the cost of distributing electricity. If permission is granted for a separate tariff for rural areas, separate income possibility curves shall be established for the distribution of electricity in urban areas, on the one hand, and in rural areas, on the other hand.

The income cap shall be determined based on the following criteria:

Expenses relating to the business activities of the distribution system operator, including expenses relating to maintenance, depreciation of assets necessary for the operation of the system, expenses relating to transmission through the transmission system, cost of energy losses, general operating expenses and expenses incurred by system management in the distribution system.

The profitability of the distribution system operator shall be as close as possible to the market yield of non-indexed 5-year treasury bonds or similar securities. Profitability is calculated as
the ratio of earnings before financial income, financial expenses and taxes (EBIT) to the book value of fixed assets.

Efficiency requirements based on reasonable costs, as assessed by Orkustofnun, taking into account the services provided by the distribution system operator.

The distribution system operator shall establish a tariff for his services in accordance with the income cap. The same tariff shall apply in the distribution zone of each distribution system operator for the consumption of low voltage electricity, i.e. 230–400 V. If energy from the distribution system is delivered at a different voltage the tariff may be adjusted accordingly. In the same way, account may be taken of other differences in service in the tariff.

Distribution system operators are permitted to apply to Orkustofnun for permission to maintain a separate tariff for rural areas where the cost of distribution is demonstrably higher than in urban areas. The condition for permission to maintain a separate rural tariff is that the use in the rural area in question must amount to a minimum of 5% of the total use in the distribution zone of the distribution system operator.

Energy prices are not regulated in Iceland but are subject to competition law.

7.3.2 Price comparisons

There is no Icelandic spot market.

There have been no separate prices for electricity in Iceland until January 1st 2005 and smaller customers will not be able to choose a supplier until the 1st of January 2006. There is also no spot market for electricity in Iceland and thus, in reality, no competition on household electricity prices.

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<tr>
<th>kWh/year</th>
<th>EUR</th>
<th>ISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st of January 2005</td>
<td>4.000</td>
<td>15.000</td>
</tr>
<tr>
<td>ISK/kWh</td>
<td>EUR/kWh</td>
<td></td>
</tr>
<tr>
<td>Hitaveita Suðurnesja</td>
<td>3,45</td>
<td>0,0413</td>
</tr>
<tr>
<td>Norðurorka</td>
<td>3,9</td>
<td>0,0467</td>
</tr>
<tr>
<td>Orkubú Vestfjarða</td>
<td>3,5</td>
<td>0,0419</td>
</tr>
<tr>
<td>Orkuveita Húsavíkur</td>
<td>5,88</td>
<td>0,0704</td>
</tr>
<tr>
<td>Orkuveita Reykjavíkur</td>
<td>3,24</td>
<td>0,0388</td>
</tr>
<tr>
<td>Rafveita Reyðarfjarðar</td>
<td>4,51</td>
<td>0,054</td>
</tr>
<tr>
<td>RARIK</td>
<td>4,35</td>
<td>0,0521</td>
</tr>
<tr>
<td>Average</td>
<td>4,12</td>
<td>0,05</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0,909</td>
<td>0,011</td>
</tr>
</tbody>
</table>

Table 7.1 Electricity end-user prices in Iceland
7.3.3 Composition of end-user price

<table>
<thead>
<tr>
<th>kWh</th>
<th>Distrib. and transm.</th>
<th>Electricity cost under competition</th>
<th>Taxes (VAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reykjavik Orkuveita Reykjavikur 4.000</td>
<td>4.76</td>
<td>3.24</td>
<td>1.96</td>
</tr>
<tr>
<td>Reykjavik Orkuveita Reykjavikur 15.000</td>
<td>3.59</td>
<td>3.24</td>
<td>1.67</td>
</tr>
<tr>
<td>Rural areas RARIK (rural areas)* 4.000</td>
<td>5.81</td>
<td>4.35</td>
<td>2.49</td>
</tr>
<tr>
<td>Rural areas RARIK (rural areas)** 15.000</td>
<td>3.96</td>
<td>3.62</td>
<td>1.86</td>
</tr>
</tbody>
</table>

* Included in the distribution are special rural subsidies in distribution, 0.68 ISK/kWh (0.854 ISK/kWh with VAT)
** Households which use electricity for heating get 85% of energy used subsidised for 2.99 ISK/kWh before VAT and only have to pay 5.6% VAT of the same 85% instead of the usual 24.5%. This is not included in this example
There are no other taxes than VAT on electricity in Iceland

Figure 7.1 – 7.2 Composition of end-user price in Reykjavik
Figures 7.3 – 7.4 The composition of end-user price in the rural areas
7.4 Neutrality and access to information

If the distribution system operator is engaged in activities other than the distribution of electricity, the company shall, according to the Electricity Act, in its internal accounting, keep its accounts for distribution separate from accounts for other activities. If the same distribution system operator is responsible for the operation of distribution systems in more than one tariff zone, the company shall, in its internal accounting, keep separate accounts for each zone. If a distribution system operator owns transmission structures, the company shall, in its internal accounting, keep accounts for such structures separate from other accounts. A distribution system operator shall not subsidize a competing operation in which he is engaged by means of operations relating to distribution or other licensed operations or operations having a comparable status.

According to a proposed amendment to regulation on the implementation of the Electricity Act, a distribution company that is also engaged in supply shall put down written rules on security of information within the company. The rules shall be reported to Orkustofnun (NEA). The access of the suppliers’ employees shall also be limited according to the proposal.

7.5 Metering requirements for electricity users

Every distribution company is responsible for the metering in its distribution zone. That involves installation, running and maintenance of meters, as well as the gathering, correction and verification of metering data. The distribution companies shall also make sure that the meters used for the settlement of electricity are certified.

Meters for general household shall be read at least every four years. The distribution company is anyway obliged to gather information on the metering status annually.

If the distribution company so wishes, a household customer shall provide the company with information on the metering status of all meters mentioned in the connection contract. A customer can ask for an extra reading of meters, but has to pay for the cost of the reading.

Meters with an estimated energy flow exceeding 100 kW shall be read at least every hour.

Metering points shall always be read upon change of suppliers at a date as near to the actual date of the change as possible. A notice shall be sent to the concerned parties.

7.6 Load profile systems used

Each distribution zone, (that is, the areas served by each distribution company, areas are not necessarily inter-connected) has its own load profile, that is calculated by finding the difference between the total energy input to each distribution zone and deducting the measured use of individual customers and the losses in the distribution system.

7.7 Change of supplier fees

According to the regulation 1051/2004 it is prohibited to claim a fee from the customer for the change of suppliers. The regulation does not conclude who shall bear the cost, but it is likely that the cost will be levelled out through the distribution company.
7.8 Information management

The issue of information management is still pending, and accordingly, the TSO and the federation of electric utilities are currently working on a project regarding information management. It is most likely that an EDIEL system according to the Swedish standards will be used.

As regards the information on supplier switching, Orkustofnun (NEA) has informed the companies about the intention to gather information on switching activity every three months and asked the companies to send information on a certain form no later than 10 days after each period.

7.9 Obligations on network operators regarding supplier switching

The new supplier sends the network operator a copy of its contract with the consumer, and the network operator informs the old supplier about the end of its contract. A notification about the end of contract shall reach the network operator two weeks before the actual switching of suppliers takes place.

The network operator (a distribution company) has an obligation to be neutral towards the suppliers and can not in any way favour its own supply-department.

The customer gets information about his use from the network operator. The network operator shall deliver the information within 14 days.

7.10 Other issues affecting switching

In the regulation on the implementation of the electricity Act there is an obligation for the distribution companies to send only one invoice per customer, but to break down the cost of transmission, distribution and electricity on the invoice. The companies have been discontent about this and have asked the Ministry of Industry and Commerce to amend the regulation and allow each company to be responsible for its own invoicing, and thereby open the possibility for separate bills.

The switching of suppliers should be encouraged in every possible way, and thereby the competition on the energy market. The switching should be facilitated for the consumer, without burdening the companies too heavily. As mentioned before, a proposal for the amendment of the regulation on the implementation of the Electricity Act is in preparation. The aim of the amendment is to facilitate the above mentioned.
8. Sweden

8.1 A brief description of the Swedish electricity market

When the Swedish electricity market was deregulated in 1996 there were 221 electricity suppliers in Sweden. In 2004, the number has decreased to 97.

![Figure 8.1 Changes in the number of distribution and electricity trading companies since 1996. Source: Swedenergy](image)

The majority of the electricity trading companies are rather small, and the three biggest companies have increased their market share from 30 per cent in 1996 to 50 per cent of the customers in 2005.

The number of companies owned by municipalities has declined, from 143 in 1996 to 56 in 2004. Foreign ownership of electricity suppliers has increased. In 1996, approximately 10 per cent of the companies were foreign-owned, whereas about 40 per cent are so today (see figure 2). The two big foreign-owned electricity suppliers are Sydkraft (E.on) and Fortum.
Swedish electricity production is concentrated to three companies with a market share of almost 90 per cent.

Private households consumed 19.5 TWh of electricity in 2003. Total electricity consumption was 145.6 TWh.

Table 8.1 Electrical energy consumption in Sweden, TWh
Source: The energy market 2004, Swedish Energy Agency
8.2 The customer and the deregulation of the Swedish electricity market

The Swedish electricity market was deregulated on the 1st of January 1996. After the 1st of January 1996 customers were free to choose electricity supplier. However, the customer was required to have an electricity meter that could be read every hour in order to be able to switch electricity supplier. This equipment was rather expensive which prevented most household customers from switching.

In 1997 the Swedish government decided that the maximum price for the equipment should be 2,500 SEK. Even though there was a maximum price, very little supplier switching occurred. For that reason the legislation was changed on the 1st of November 1999 and then the customers were charged for an estimated consumption and the requirement of an hourly electricity metering equipment was abandoned.

8.3 Present supplier switching process

Today it is free of charge to change electricity supplier. The customers can choose among 97 electricity suppliers (2004).

The process of supplier switching includes the following steps. At least one month before the electricity supplier switch the consumer must sign the contract with the new supplier. For example, if the consumer wants the new supplier on the 1st of May the contract with the new supplier must be signed before the 1st of April. Thus, an electricity supplier switch is valid from the first day in every month.

The new supplier sends a notification to the distribution company informing of the supplier switch. The distribution company checks the customer’s data and then sends a notification about the switch to the previous electricity supplier. The distribution company will also inform both the new and the previous supplier about the customer’s meter reading at the time of the switch.

8.4 Information on switching activity

The Energy Markets Inspectorate is supplied with information about switching activity from Statistics Sweden. Statistics Sweden is a central government authority for official statistics and other government statistics, and in this capacity it also has the responsibility for coordinating and supporting the Swedish system for official statistics. All net companies, about 200, send information about the switching activity monthly to Statistics Sweden. The answering frequency is high so the statistics are reliable. These statistics are public, shown on the homepage of Statistics Sweden.

The Swedish branch organization Swedenergy has also bought a service to gather information about the energy market, including switching activity. This service is bought from TEMO. TEMO is a market research agency, privately run. Also these results are public, shown on the homepage of Swedenergy.
Statistics

A survey from TEMO, (winter 2005) shows that 55 per cent of the consumers have been active, either by renegotiating their contracts or switching supplier. 32 per cent of the consumers have made a supplier switch. This is an increase of 3 percentage point from the autumn 2004.

Most of the customers that switched supplier live in the big cities. Furthermore, consumers living in detached houses are more likely to make a supplier switch than consumers living in apartments. 89 per cent are satisfied with the switch-procedure but only 40\(^{12}\) per cent of the consumers who have made a supplier switch are satisfied with the switch-procedure and did not think it was difficult, nor did they think it was hard to compare the prices. Among those consumers who have made a supplier switch, the statistics show that 62 per cent have made one supplier switch, 26 per cent have made a supplier switch twice and 9 per cent have made a supplier switch three times or more\(^{13}\). Most of the consumers, 46 per cent, that have switched supplier are fairly satisfied, and only 3 per cent are dissatisfied\(^{14}\).

The TEMO survey also shows that 32 per cent\(^{15}\) of the consumers claim that they are not interested in a supplier switch. Two reasons stated are that switching supplier is too complicated and that there are seemingly modest sums of money to save by switching supplier.

8.5 Prices and contracts

8.5.1 Renegotiate a contract

Some consumers want to have a low price for the electricity but do not want to make a supplier switch. Then the consumers can renegotiate an agreement with their present supplier. In Sweden there are three different types of contracts: Agreement with a conditional tenure, flexible price or an agreement with a fixed price for a specific period of time.

The price for the electricity in an agreement with a conditional tenure is compared to the other contractual types, high. Most of the consumers who have such an agreement have not done a supplier switch or have not renegotiated the agreement. Often these are consumers remaining with the once assigned supplier.

Statistics\(^{16}\)

A survey from TEMO (2004) shows that 25 per cent of the consumers have renegotiated an agreement. Among those 3 per cent have chosen an agreement with flexible price, 15 percent have chosen an agreement with fixed price during one year and 71 per cent have chosen an agreement with fixed price during two years or more. Most of the consumers who have renegotiated an agreement live in the countryside and in detached houses. Among those who have renegotiated an agreement 7 per cent are dissatisfied, 45 per cent are fairly satisfied and 22 per cent are very satisfied.

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\(^{11}\) The answer “I don’t know” is excluded from these results.

\(^{12}\) Survey from TEMO autumn 2004

\(^{13}\) Survey from TEMO autumn 2004

\(^{14}\) Survey from TEMO winter 2005

\(^{15}\) Survey from TEMO winter 2005

\(^{16}\) The answer “I don’t know” will not be presented.
### 8.5.2 Number of customers divided into different kinds of agreements

The table shows number of customers divided into different kinds of agreement.

<table>
<thead>
<tr>
<th>Type of agreement</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>apr-04</td>
</tr>
<tr>
<td>Standard price agreement</td>
<td>57.4</td>
</tr>
<tr>
<td>Flexible price agreement</td>
<td>3.1</td>
</tr>
<tr>
<td>One-year agreement</td>
<td>15.1</td>
</tr>
<tr>
<td>Two-year agreement</td>
<td>8.7</td>
</tr>
<tr>
<td>Three-year agreement</td>
<td>15.7</td>
</tr>
</tbody>
</table>

Table 8.2 Types of agreements. Source: Statistics Sweden.

The statistics above include all customers, i.e. both customers who have been active on the electricity market and those who have not. The statistics above shows that most of the customers have a standard price agreement.

Statistics from TEMO show that most of the customers who have been active and either have made a supplier switch or have renegotiated the contract with the present supplier, have chosen a fixed contract during 3 years or more with the supplier.

### 8.5.3 Regulated tariff system

The Energy Markets Inspectorate is following and analysing the prices on electricity and net services but is not supervising that the household and the enterprises can buy electricity at fair prices. The suppliers are acting in a free market and the competition between the suppliers is the guarantor for fairly prices. The distribution company is – in the opposite of suppliers – acting in a monopoly position and for that reason the Inspectorate is supervising that the tariffs of the distribution companies are reasonable. The Performance Assessment Model is a tool which the Inspectorate has developed in order to be able to assess transparently and efficiently whether or not network tariffs are reasonable.

More information about the Performance Assessment Model is available on [www.stem.se](http://www.stem.se).

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17 There are small differences in the statistics from Statistics Sweden and from TEMO about consumers’ activity but about 50 per cent have been active and have either switch supplier or have renegotiated their contract with the present supplier.
8.5.4 Price comparisons

The Swedish Consumer Agency is providing the service concerning price comparisons. It is voluntary for suppliers to send price information to The Swedish Consumer Agency. Due to the voluntary nature of it, there is not a complete price register including all suppliers. But since the suppliers recognise that this list is very popular among the households, most of the suppliers contribute with their prices. The Swedish Consumer Agency compiles the received price information and publishes the comparison on their homepage from which the household customers easily can obtain information. This register contains price information including special offers divided into different categories of consumption and different types of contracts. The different categories of electricity consumption in the comparison are:

- consumption of 2000 kWh
- consumption of 5000 kWh
- consumption of 20000 kWh

The different types of contracts in the comparison are agreements with

- a conditional tenure
- a flexible price
- a fixed price for a specific period of time

The suppliers are responsible for updating the price information.

You can find more information on [www.konsumentverket.se](http://www.konsumentverket.se).
8.5.5 *Prices on electricity for different kinds of consumers and agreements*

The table shows a time series over the prices on electricity for different types of consumers and agreements. Price at the 1st of January SEK/kWh excluding taxes.

<table>
<thead>
<tr>
<th>Type of consumer</th>
<th>Price per kWh, CSEK (excluding taxes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
</tr>
<tr>
<td><strong>Flexible price agreement</strong></td>
<td></td>
</tr>
<tr>
<td>Dwelling, flat</td>
<td>25.6</td>
</tr>
<tr>
<td>One- or two dwelling house without electric heating</td>
<td>21.4</td>
</tr>
<tr>
<td>One- or two dwelling house with electric heating</td>
<td>19.3</td>
</tr>
<tr>
<td>Agriculture and forestry</td>
<td>18.9</td>
</tr>
<tr>
<td>Business activity</td>
<td>18.1</td>
</tr>
<tr>
<td>Small industry</td>
<td>18.0</td>
</tr>
<tr>
<td><strong>One-year agreement</strong></td>
<td></td>
</tr>
<tr>
<td>Dwelling, flat</td>
<td>23.8</td>
</tr>
<tr>
<td>One- or two dwelling house without electric heating</td>
<td>19.7</td>
</tr>
<tr>
<td>One- or two dwelling house with electric heating</td>
<td>17.8</td>
</tr>
<tr>
<td>Agriculture and forestry</td>
<td>17.0</td>
</tr>
<tr>
<td>Business activity</td>
<td>16.8</td>
</tr>
<tr>
<td>Small industry</td>
<td>16.1</td>
</tr>
<tr>
<td><strong>Two-year agreement</strong></td>
<td></td>
</tr>
<tr>
<td>Dwelling, flat</td>
<td>24.3</td>
</tr>
<tr>
<td>One- or two dwelling house without electric heating</td>
<td>20.0</td>
</tr>
<tr>
<td>One- or two dwelling house with electric heating</td>
<td>17.7</td>
</tr>
<tr>
<td>Agriculture and forestry</td>
<td>17.3</td>
</tr>
<tr>
<td>Business activity</td>
<td>16.8</td>
</tr>
<tr>
<td>Small industry</td>
<td>16.5</td>
</tr>
<tr>
<td><strong>Three-year agreement</strong></td>
<td></td>
</tr>
<tr>
<td>Dwelling, flat</td>
<td>24.5</td>
</tr>
<tr>
<td>One- or two dwelling house without electric heating</td>
<td>20.4</td>
</tr>
<tr>
<td>One- or two dwelling house with electric heating</td>
<td>18.2</td>
</tr>
<tr>
<td>Agriculture and forestry</td>
<td>17.9</td>
</tr>
<tr>
<td>Business activity</td>
<td>17.3</td>
</tr>
<tr>
<td>Small industry</td>
<td>16.9</td>
</tr>
</tbody>
</table>

*Table 8.3 The electricity prices for different types of customers and agreements*

*Source: Statistics Sweden, www.scb.se*

The figures above tell that the prices have increased for all consumers independent of contract. The exceptional high prices in the year 2003 were caused of the dry year and the low level of water.
8.5.6 Composition of end-user price

40 per cent of the electricity price is a cost that is under competition (the electricity supply). 20 per cent of the electricity price is a net transference cost. The rest, i.e. 40 per cent, contains of taxes and fees. In Sweden the consumers also have to pay for electricity certificates (for renewables), that is however a very small part of the total cost.

![Figure 8.3 Composition of end-user price](image)

8.5.7 Number of invoices

If the electricity supplier and the distribution company belong to the same parent company the customer usually gets only one bill. In that case the electricity supplier is responsible for sending the bill to the customer. If the customer makes a supplier switch he often gets two separated bills. In Sweden there are different opinions whether the customers should have one or two separated bills. One of the two branch organizations, “Independent electricity retailers”, recommends two separated bills, with the argument that the customers by this easily can notice which costs the customers can reduce. The Swedish Consumer Electricity Advise Bureau also recommends two bills, with the argument that it helps the consumer to understand the basics of the electricity market – electricity and network are separate.

8.6 Metering requirements for electricity users

Distribution companies are responsible for metering and reporting of all related consumption within their network area. By regulation, all meters have to be read by the distribution company at least once every twelve months for small customers (presently below 200 A). Meters need also to be read in the case of supplier switching, change of meters or termination of supply. From July 2009, meters will have to be read at least on a monthly basis, and therefore no consumption estimation will be needed for billing customers.

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18 SOU 2004:129
19 The Swedish name is “Oberoende elhandlare”. This is a branch organisation where the member companies do not have an own production.
Currently, customers (from 200 A and above) have an hourly metering with a daily reading. From July 2006, the limit for hourly metering will be reduced from 200 A and above to 63 A.

8.7 Load profile system used

The area model is being used in Sweden for calculation of consumption estimation for load-curve customers, i.e. presently customers with power subscription below 200 A. The area model gives only one consumer profile per network area. The network owner is responsible for establishing the basis for the calculation needed to set up the consumption profile and the division of the consumption between the different suppliers. At each change of supplier within the area, the proportions for the division must be re-calculated. The consumption profile will be the same for all consumers within a given area, but varies from area to area. The area model gives competition neutrality between different players in the market, i.e. large and small suppliers, who both have more administration with category load profiles. The area model is also simpler to administer and requires less IT-support than the category model.

8.8 Information management

8.8.1 Use of Electronic Data Interchange

Electronic Data Interchange (EDI) systems are used for electronic communication between the different actors present on the electricity market. Information is automatically exchanged between electricity suppliers and the distribution company in case of supplier switching using an international electronic data communication standard called EDIEL. The system operator Svenska Kraftnät is responsible for coordination and development of EDIEL in Sweden.

All actors in the market (except end-users) have to use EDIEL for their communication with other actors, i.e. distribution companies and electricity suppliers. A special agreement has to be signed with Svenska Kraftnät in order to use EDIEL. The use of this system reduces the need for manual handling and communication between the different actors during supplier switching, hence ensuring fast, secure and reliable data transmission during the process.

8.8.2 Standard format for the exchange of data

Two different standards are used for electronic data transmission:

- EDIFACT - for elaboration of messages.
- X.400 – for electronic transfer of messages.

Transmission is currently performed via X.25-network, WAN, callback ISDN or telephone lines.

Different EDIEL messages are used for the various type of information to be exchanged. For instance, the EDIEL message PRODAT (Product Data Message) is used for the transmission of data related with the change of suppliers whereas the EDIEL message MSCONS (Metered Service Consumption Report) is used for the transmission of settlement data.
8.8.3 Access to information

Most of the information about the customer such as name, address and meter ID, the new supplier gets from the customer himself. Information about meter value is however distributed by the distribution company.

8.9 Neutrality

According to chapter 3 section 1 in the Swedish electricity act, a legal person who conducts a distribution company may not conduct the generation of a trade in electricity. There are however two exceptions from this basic rule. The generation of electricity may be conducted together with distribution company by the same legal person, provided that the generation

1. is exclusively intended to cover network losses, or

2. takes place within a mobile reserve plant that is intended for temporary use in connection with a power outage.

The Energy Markets Inspectorate is supervising the distribution companies and also that their net tariffs are reasonable. The suppliers are however free to set their prices for the electricity. The suppliers are acting on a free market, but distribution companies are not. Therefore it is important that the distribution companies and the suppliers are separated.

8.10 Some existing problems and suggested solutions

8.10.1 Electricity meter reading

The first problem which has been identified is the annual electricity meter reading. Sometimes the distribution companies have failed to read the electricity meter for two years or more. If the consumer has consumed more than the used consumer profile, the difference must be paid by the consumer. This may cause big and unexpected expenses for the consumers. The Energy Markets Inspectorate is systematically supervising that the meters are read every year.

The Swedish government has informed the parliament that it intends to implement a special regulation about monthly readings instead of the annual meter readings. When this change is implemented the consumers will be able to get charged for their actual consumption, not as presently, the expected consumption. This new system will be in place for all consumers in July 2009. (See also chapter 3).

8.10.2 Customer lacks knowledge of their present contractual situation

The second problem which has been identified is that many consumers do not know what their present contractual situation is. Often the consumers un-knowingly have a contract that is fixed for one to three years. This may create problems if the consumer wants to switch supplier. If the consumer breaks the present contract, he often will be liable for damages.
8.10.3 Supplier switching

The third problem which has been identified is that supplier switches sometimes are made later than expected. A study\textsuperscript{20} from the 1\textsuperscript{st} of May 2004 shows that 7 per cent of the supplier switches were done later than expected. The problem with late supplier switches often happens when some information about the power board customer is missing or when the electricity supplier and the distribution company do not have the same information about the power board customer. In some cases the consumer is not informed that the supplier switch has taken place and does not receive any bills from the new supplier.

To solve some of the problems a commission\textsuperscript{21} (SOU 2004:129, hereinafter called The Commission) proposes that a central plant register will be established. The proposed register is expected to benefit the consumers by streamlining the supplier switching process and bring about cost reductions for the concerned companies by reducing problems related to supplier switches.\textsuperscript{22}

The database should contain the following data for each exit point: Unique plant identity, distribution company, electricity supplier, balance provider and customer identity. The plant identity shall consist of an EAN code and the customer identity shall consist of a personal or corporate identity number. All companies must update the data in the register as soon as they are changed for the individual plant. All data should be submitted by the distribution companies.

A prerequisite for the register is that each player should only have exclusive access to information necessary for the company’s operations. In order to ensure market confidence in the register, it should be owned by the TSO, Svenska Kraftnät.

When the proposal was being referred for consideration the Energy Markets Inspectorate was questioning the need of a central plant register. The costs of keeping a database like this are high, and it has to be weighed against the potential benefits. It is important to keep in mind that a large majority of the supply switching (93 per cent) functions already.

The branch organization, Swedenergy, is now developing a communication central which could be an alternative to the central plant register. However, the communication central will not contain a list of customer.

Furthermore, it is proposed by the Commission that those who have been assigned a supplier should be given the opportunity to switch supplier at mid-month.

8.11 Attitudes to the electricity market

The “Swedish quality index”, is a calculated customer-satisfaction index for certain goods and services. The electricity market has been included in the survey twice. The latest survey and index calculation was made in the summer 2004. The result was that the Swedish customers (even before the storm “Gudrun” in January 2005) have low confidence in the electricity market. In a scale from 0-100 in customer-satisfaction, (where 100 is the best) the electricity market got 57.5. The reasons given for the bad outcome for the electricity market are that the customers are disappointed in customer-services and incomprehensive bills.

\textsuperscript{20} Source: SOU 2004:129

\textsuperscript{21} The Government decided in February 2003 that a special commissioner should analyse the need of changes on the electricity market.

\textsuperscript{22} A bill concerning the subject is expected in the autumn 2005.
Statistics from TEMO (winter 2005) confirm that the customers are disappointed in the electricity market. 41 per cent of the consumers are negative to the electricity industry. Women are less negative than men and those who are in the ages between 16-29 are less negative than older people. Those who live in smaller towns or in the countryside are less negative than those who live in big cities, even though the difference is small.

8.12 Institutions for consumers in the electricity market

The electricity market is under the supervision of several regulatory authorities, each with its own sphere of responsibility. The Energy Markets Inspectorate is the Swedish National Regulatory Authority (NRA). The Inspectorate is an autonomous department within the Swedish Energy Agency. The Energy Markets Inspectorate’s aim is to follow and analyze the development in the energy market and to supervise the electricity, gas and district heating markets.

Among many obligations, the Inspectorate works with specific customer-related questions, such as:

- Consumer legislation
- Electricity supplier switches
- Annual meter reading
- Distribution tariffs

The director of the Inspectorate is appointed by the Swedish government.

The Swedish Consumer Electricity Advise Bureau

The Swedish Consumer Electricity Advise Bureau’s activities started in spring 2002. The principals are two authorities, the Swedish Consumer Agency and the Swedish Energy Agency (with representation from the Energy Markets Inspectorate), together with the electricity branch organization Swedenergy.

The bureau provides advice and guidance to consumers in various matters concerning the electricity market. The bureau offers pre-purchase information concerning suppliers and their prices and gives information about the process connected with a change of an electricity supplier. The bureau also helps consumers for example to understand different terms in their electricity bill, with contracts concerning electricity supply and with common terms used in the electricity suppliers marketing. All information and guidance is free of charge.

Unfortunately only 7 per cent of the consumers are aware or its existence. The knowledge about the bureau is greater in big cities (Stockholm, Gothenburg and Malmö) than in smaller towns and in the countryside. The bureau is however well known by the municipality consumer advisors, who are providing guidance in different kinds of consumer problems.

ARN – The National Board for Consumer Complaints

The National Board for Consumer Complaints (ARN) is a public authority that functions roughly like a court. Its main task is to try disputes between consumers and business operators. The Board submits recommendations on how disputes should be resolved. The Board’s inquiry is free of charge.
The Swedish Consumer Agency

The Consumer Agency works with consumer related questions. The Agency is headed by a Director General who also is consumer ombudsman. The consumer ombudsman represents consumer interests to the business world and pursues legal action on behalf of these interests. The consumer ombudsman is responsible for ensuring that companies abide by laws and rules in the consumer field and ensures that consumer rights are respected.

8.13 Conclusions

Presently the supplier switching in Sweden works satisfactorily. Having said that the remaining problems pointed out in this report should not be taken lightly. Although the aggregated problems may seem small, the individual consumers may still be severely affected. There are, however, several institutions including The Swedish Energy Markets Inspectorate which are working with improvements of the electricity market. For example the Energy Markets Inspectorate supervises the annual meter reading and electricity supplier switches. The intention is to improve the consumers’ confidence in the energy market in order to make it work sufficiently.

Sources

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