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SUMMARY

Margins on the electricity market are somewhat higher than before, but the differences between the various end-user categories have largely levelled out. An increasing number of small customers are changing supplier: approximately 14,000 subscribers have a different supplier than the traditional one. Electricity prices have fluctuated in step with the energy situation and have fallen since last winter.

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KEY WORDS	AUTHORISED SIGNATORY
Electricity market, prices, margins, change of supplier, households	Jan Moen Director of Department

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Contents

1. Background

The annual electricity market survey carried out by the Norwegian Water Resources and Energy Administration (NVE) is an important element in the NVE's efforts to monitor the electricity market. Large profit margins[1], significant price variations or major differences between customer categories may indicate that the market is not functioning as intended. These are important signals for the authorities in their efforts to facilitate market-based electricity trading.

1.1 Difference from previous surveys

In previous years, NVE surveys have had a dual focus, analysing the wholesale market and the end-user market individually. This year's survey focuses on the entire value-added chain[2] in order to be able to evaluate the size of margins on sales to the various end-user segments. One of the reasons for this is the unusual situation last winter, when prices rose higher than ever before. In spring 1997, prices on the wholesale market dropped again and the NVE wished to find out if this fall in prices was passed on to end users. Furthermore, the NVE wished to follow developments on the household market and the extent to which household customers are making use of the opportunity to change electricity supplier. After a winter with a great deal of media focus on electricity prices and the electricity market, more people are likely to utilise market opportunities now than at the same time last year.

The purpose of this year's market survey was to obtain information about the following:
1. Margins on electricity sales from wholesalers to retailers
2. Margins and prices on sales to various end user categories
3. The period of bilateral[3] contracts
4. Portfolio combinations[4] and sensitivity to spot prices.

A separate chapter is devoted particularly to the household end-user market

[1] On the electricity market, the term margin may be defined as the difference between purchase price (or production cost) and sales price.

[2] A value-added chain analysis treats all the operations in an enterprise as a links in a chain where the value of the product increases from one link to the next. The primary areas of focus may, for example, comprise purchasing, processing, and sales and support functions such as marketing, administration etc. This survey focuses on the purchase or production of electricity and onward sales. The margin between acquisition costs and sales revenues must cover support functions and provide a profit.

[3] Bilateral contracts are contracts between two parties.

[4] A portfolio may include fixed price contracts, anticipated purchases on the spot market, contracts linked to spot prices and own production.

2. Data and method

In order to carry out the survey as rapidly as possible and with as little trouble to electricity companies as possible, the NVE has this year chosen to base the survey on a sample of respondents. Since the NVE is this year investigating the entire value-added chain, with focus on supplies to end users, electricity companies were selected on the basis of the quantity of electricity supplied for ordinary purposes in 1996. The questionnaire was sent to the fifty largest electricity companies, which account for approximately 80% of total volume. The questionnaire was distributed by mail and responses were returned by telefax to save time. All respondents were assured that the data would be handled anonymously so that no information could be traced back to individual companies. For this reason, the data given in the report is aggregate data.

2.1 The design of the questionnaire

Since the entire survey was reorganised in order to focus more on the value-added chain than on the various markets, this year's questionnaire was significantly altered and simplified in comparison with those of previous years. The target group for the survey comprised suppliers to end users and the questionnaire was designed for this purpose (see appendix).

The questionnaire was divided into three main parts:

- Part 1: general information concerning the activities of the company
- Part 2: electricity acquisitions under various types of contract and own production
- Part 3: a breakdown of anticipated supplies to households, the manufacturing industry and service industries.

Respondents were asked to exclude sales to electricity-intensive industry. Electricity sold to local authorities at specially agreed prices was to be recorded in the category that best described the terms of contract between the recipient local authority and the electricity supplier. Some of the largest electricity suppliers are also major electricity producers. In the case of these suppliers, total electricity acquisitions may exceed total sales. The difference between acquisitions and sales may be due to sales of electricity to cover losses on their own grid (if the supplier is integrated with a grid company), or wholesale electricity sales. Pure wholesale sales are not included in the survey but, in terms of volume and price, will be recorded in the electricity acquisition portfolios of other suppliers.

Since the data includes anticipated prices and volumes, the material is uncertain and should be analysed with caution. Assumptions about this year's sales and prices were made at the end of May/beginning of June 1997 and are based on the situation on the electricity market at that time.

One important difference from last year is the fact that financial agreements are not included in this year's survey, and the electricity companies' actual financial situation may therefore deviate somewhat from the conclusions of the survey. The prices and margins given in this survey must therefore be regarded as estimates of the sector's margins before adjustments for trade in financial instruments.

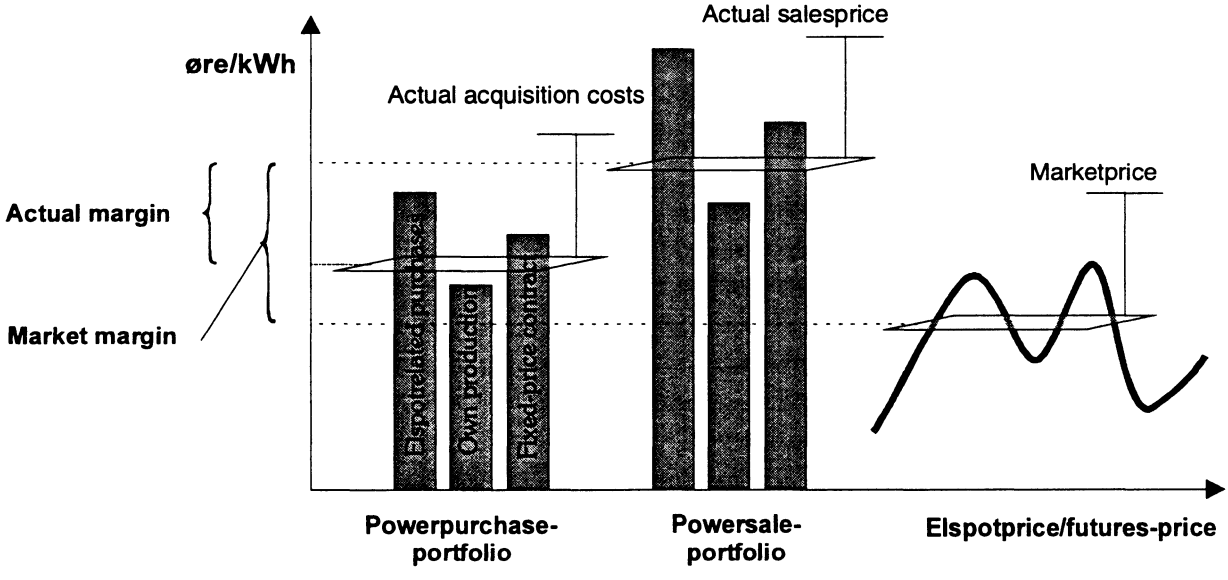
2.2 Definitions

An analysis of the four areas mentioned in the introduction must take into account the various factors that apply to each category. For example, there is not just one price but many prices; they include historical cost price, market price, fixed price and portfolio price. Differences between end user segments may be due to different price strategies for fixed price contracts, but they may also be due to different portfolio combinations. For example, customers in the manufacturing industry have generally opted for a higher degree of exposure[5] to the spot market than households and service industries.

The survey is therefore based on the following terms and definitions:

Actual electricity acquisition cost = Average price for a portfolio based on an actual portfolio combination. Calculated either for the fixed price element alone or for the entire portfolio.
Actual sales price = Equivalent to actual cost price, but on the downstream side[6].
Market price = The market's valuation of the price of electricity based on future expectations.
Actual margin = The margin between actual cost price and actual sales price.
Market margin = The margin between market price and actual sales price.

These terms can be illustrated as follows:



Unless otherwise indicated, all references in the text refer to the entire sample. So-called tariff customers are those with fixed price contracts, but must be regarded having floating prices if the market price should move far beyond the anticipated price range.

For some suppliers, the number of customers on the end user market is difficult to break down into industrial and service customers. Some companies have therefore reported the number of facilities or subscriptions. This may be considerably higher than the number of customers, since a customer may have several facilities or subscriptions. Some services, e.g. day-care

[5] A high degree of exposure means that a large proportion of purchases are made at variable prices. The potential for gains, but also the risk of losses, is therefore higher than in the case of fixed prices.
[6] Downstream means down the value-added chain.

centres and other small businesses, may have been defined as household customers by some electricity suppliers because they have the same tariff as household customers. This is a source of error with respect to the calculation of the total number of customers on the end user market and their distribution by business category.

Electricity tax is currently 5.62 øre/kWh, 0.32 øre/kWh higher than in the last survey. VAT is unchanged at 23 per cent. Note that households in the counties of Nord-Troms and Finnmark are exempt from electricity tax and households in the counties of Nordland, Troms and Finnmark are exempt from VAT. The manufacturing industry, the mining industry and industrial greenhouses are all exempt from electricity tax. Production tax of 1.88 øre/kWh is included.

Unless otherwise indicated, prices in this report are given excluding transmission costs, electricity tax and VAT.

Taxes are excluded because this year's survey is focusing on company margins. Since electricity tax is paid only by the end user, it would be methodically difficult to deal with taxes from the perspective of the value-added chain. Taxes also vary according to the geographical location of end users, which further complicates the picture. Taxes are therefore excluded in the general analysis, but are included in the presentation of prices to households in chapter 5.

We regard both the response rate and the quality of the data as providing sufficient evidence of the changes that have taken place on the market.

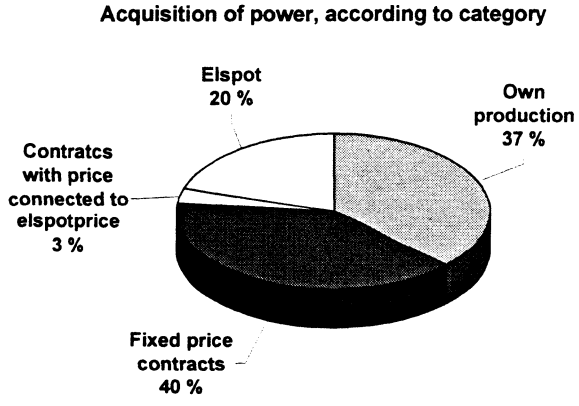
Otherwise:

- All **types of contract**, both tariff customers and contract customers, are included in the survey.
- A **customer** is a person/legal entity. A customer may have several subscriptions/ facilities.
- The **contract quantity** is given in GWh.
- The **average price** for 1997 has been calculated by the companies themselves and is given excluding transmission costs, electricity tax and VAT. The prices applied as of 1 June 1997. The electricity companies answered the questionnaire in June 1997.

Efforts have been made to ensure that occasional electricity for electro-boilers is excluded from the survey.

3. Electricity acquisition costs

In order to be able to calculate the margins achieved by electricity suppliers, it has first been necessary to analyse their purchasing costs. We have chosen to divide electricity purchasing costs into four sub-categories: own production, fixed price contracts, contracts linked to spot prices and anticipated purchases on the spot market. The composition of the total electricity acquisition portfolio is illustrated in the diagram on the right.



3.1 Own production

Own production consists of electricity produced at suppliers' own power stations and electricity from partly owned power stations where costs are directly distributed according to ownership shares. The "price" that is to be reported for this electricity is the actual cost of producing the electricity. One possible source of error may be that some suppliers have valued their own production at market prices. This may particularly be the case if electricity is sold between divisions or companies in a group. In cases where this has been discovered, the relevant volume has been deducted.

3.2 Fixed price contracts

All contracts where the price is fixed or linked to a fixed price range are regarded as fixed price contracts. Volume is also reported in this category in cases where electricity is produced and sold internally within a company, provided that the electricity is valued on the basis of fixed prices.

3.3 Contracts linked to the spot market

All contracts where the price is dependent upon the spot price are reported in this category. Only a very small proportion of contracts are designed in this way, partly because most contracts of this type are purely financial contracts, which are not included in this survey.

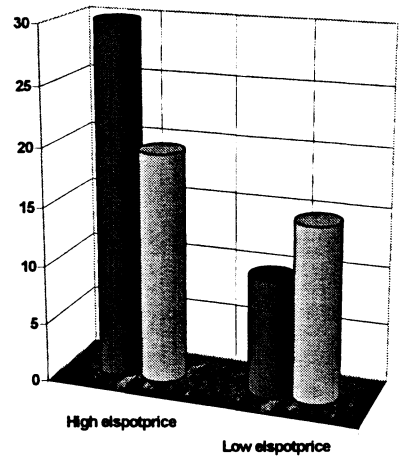
3.4 Anticipated purchases on the spot market

Direct purchases on the spot market are reported in this category. Purchases on the spot market will normally be covered by the financial futures market. Exposure to the spot market will therefore not necessarily be as great as the 20% shown in the survey.

3.5 Summary: electricity acquisitions

Category	TWh	Average price (øre/kWh)	Percentage with a period of less than one year
Own production	23.3	13.96	
Fixed price contracts	24.8	18.73	44.4%
Contracts linked to spot price	1.9		81.6%
Anticipated acquisitions on the spot market	12.4		
Total electricity acquisitions	62.4	16.42	

We first consider the volume sold at fixed prices and disregard the volume linked to spot prices. The actual acquisition cost of electricity for the entire sample was **16.42 øre/kWh**. This includes the costs of own production and purchases on fixed contracts.

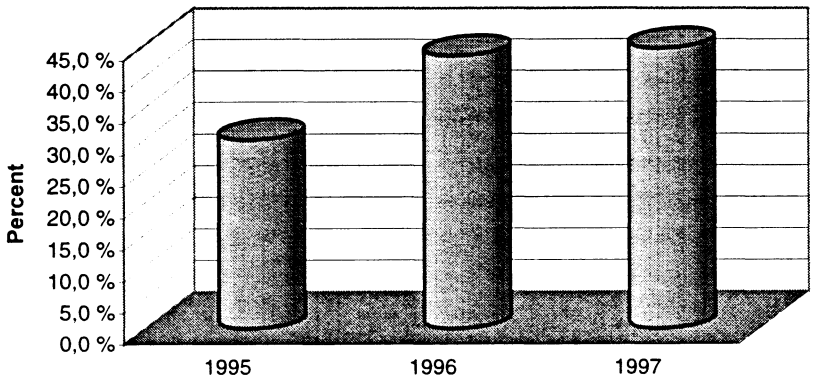


If we include the volume where the price is linked to the spot market, the average portfolio price will depend upon assumptions concerning the average spot price in 1997. By establishing various scenarios for the future spot price, it is possible to analyse how sensitive the portfolio price is to swings in the spot price. The diagram on the right shows the average portfolio purchase price for electricity with an average spot price of 10 and 30 øre/kWh respectively. We see from the diagram that the expected average acquisition cost for the 50 largest electricity suppliers will be between 15 and 19.5 øre/kWh provided that the average spot price is between 10 and 30 øre/kWh.

	High elspotprice	Low elspotprice
Elspotprice	30	10
Average portfolioprice	19,54	14,95

Contracts linked to the spot price are generally more short-term (81.6% of the contract volume is for less than one year) than fixed price contracts (44.4% of contracts are for less than one year). In comparison with previous years, there is a continuing trend for contracts to be for a shorter period of time.

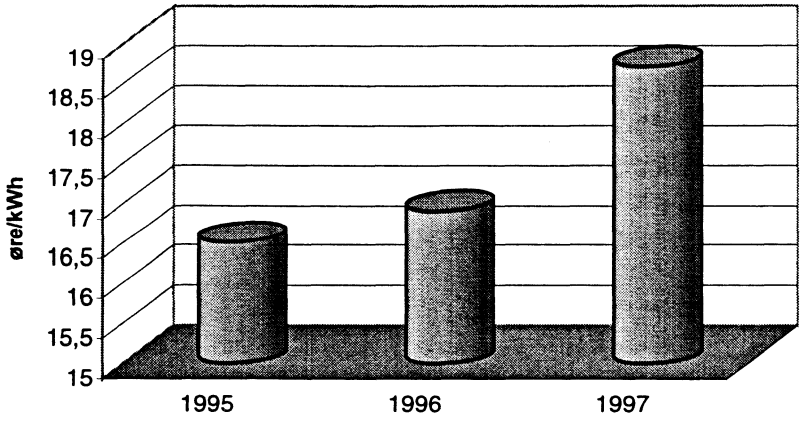
Portion of fixed-priced contracts with a duration below one year



As previously mentioned, the actual acquisition cost of electricity will not necessarily be between 15 and 20 øre, since trade in financial contracts may significantly change this picture.

The diagram illustrating trends for electricity prices over time shows that average acquisition costs for electricity on fixed price contracts have increased from 1996 to 1997. In the 1995 and 1996 surveys, which covered the total volume in Norway, the average wholesale price was estimated to be 16.5 and 16.9 øre/kWh respectively, but in this case own production was not included. In order to be able to make a direct comparison, own production must be deducted from the 1997 material, which gives an acquisition cost for fixed price contracts of 18.73 øre/kWh. This is equivalent to an increase of 1.83 øre since last year, reflecting the unusual electricity situation in Norway last autumn and winter.

Average wholesale purchase price, fixed-price contracts



4. Electricity sales

The questionnaire included a question about anticipated physical sales to end users. Sales to end users are defined as all contracts entered into either with households (including agriculture) or commercial customers. The market has been divided into two sub-markets; the household market and the commercial market. Commercial customers have been divided into customers in the manufacturing industry and in service industries. Electricity-intensive industry and the wood processing industry are not included in the survey, since a large proportion of supplies to these customers involve long-term industrial contracts at prices determined by the Storting (the Norwegian national assembly).

The tables below show expected physical sales to end users on the basis of the results of this year's market survey. The average price for sales to households does not apply to contracts linked to spot prices. Floating prices refer to suppliers' standard contracts where the price can be altered at two weeks' notice.

Households

Category	*TWh*	*Average price (øre/kWh)*
Floating price (not linked to spot price)	23.9	20.77
Fixed price contracts	3.6	20.75
Contracts linked to the spot price	0.12	
Total electricity purchases	27.7	20.77

Service industries

Category	*TWh*	*Average price (øre/kWh)*
Floating price (not linked to spot price)	4.5	20.67
Fixed price contracts	8.7	20.74
Contracts linked to the spot price	1.3	
Total electricity purchases	14.5	20.72

Manufacturing industry

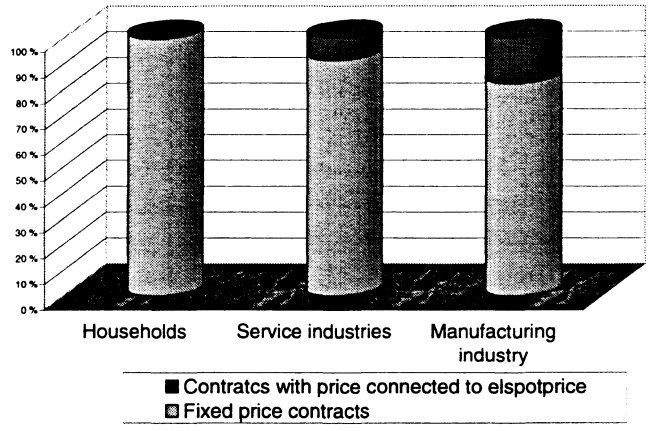
Category	*TWh*	*Average price (øre/kWh)*
Floating price (not linked to spot price)	0.6	19.32
Fixed price contracts	4.8	20.14
Contracts linked to the spot price	1.2	
Total electricity purchases	6.6	20.04

4.1 Summary: electricity sales

The survey has divided electricity sales to end users into three segments: households, service industries and the manufacturing industry. The reason for this was to find possible systematic differences between customer groups that have no basis in natural factors (e.g. the consumption profile), but rather in institutional barriers which indicate that competition is not as effective in all areas. Previous surveys have shown that industrial customers have actually achieved an average price below the wholesale price while the price for household customers has been above the wholesale price.

This year's survey shows that there are still differences between the prices offered to industrial and household customers. These differences can rather be attributed to different portfolio combinations (cf. the illustration above; the "fixed price" category includes both fixed price contracts and standard prices) for the various categories than to direct discrimination. Nevertheless, there are still differences in prices for fixed price contracts in the various categories. The table below summarises aggregate prices offered to customers in the three segments in June 1997.

Portfoliocomposition according to end-user categories



	Households	*Service industries*	*Manufacturing industry*
Fixed prices øre/kWh[7]	20.77	20.72	20.04
Standard deviation	2.46	2.45	2.48
Portfolio price[8] ***- spot = 15 øre/kWh***	20.75	20.23	19.15

As the table shows, the difference between fixed prices (fixed price contracts and standard prices) to households and industry is 0.73 øre/kWh. If we include the volume linked to the spot price and assume an average spot price of 15 øre, the difference will be somewhat greater, 1.6 øre/kWh. The 1996 survey gave approximately the same result (a comparison of the trend over time is given in the following chapter). The standard deviation gives a figure for how much prices vary. The above table shows an interesting situation, since households and industry have an equally high standard deviation. In principle, one might assume that greater competition in the industrial segment would lead to a lower standard deviation. If we look more closely at the figures for industry, we find that some electricity suppliers offer prices to industry that are considerably below the average price. If these 3-4 suppliers are excluded, the standard deviation drops to 2. It therefore appears that there is still a great deal of competition in industry, but there are some instances of local subsidy.

[7] Fixed prices include fixed price contracts and standard price agreements

[8] The portfolio price includes fixed prices and spot prices.

5. Margins

In a well-functioning market, the players are left with only a "normal" gross profit, or margin, from which to cover fixed expenses and other operating costs (for example costs associated with marketing, customer relations, administration etc.). Gross profit must be related to market risk. If the gross profit is higher than normal, this may indicate that the market is not functioning properly and the players are utilising their powerful position. On the electricity market, gross profit can be defined as the difference between the purchase price (or production cost) and the sales price for electricity.

Profit is the difference between gross profit and other costs. (Sources in the industry maintain that an effective supplier can handle purchases and sales of electricity at a cost of 1-1½ øre/kWh). This profit can be related to the capital values in the sector in order to compare the electricity sector with other sectors. It is nevertheless difficult to determine whether profits are excessive or not, since the market is still subject to considerable uncertainty. The risks involved in electricity trading may indicate that profits should be higher in the electricity sector than in other sectors.

Depending upon the prices upon which calculations are based, we can speak of two different margins; the actual margin and the market margin. The actual margin is the supplier's gross profit based on the supplier's actual electricity acquisition portfolio. This margin shows what existing suppliers may earn on the basis of historical coverage strategies and contract agreements.

A market margin, on the other hand, will indicate the margin a supplier could have achieved by covering all his obligations 100% on the market on a given date. If a supplier has an average electricity acquisition cost of 20 øre while the market price is 16 øre, this indicates that the market value of electricity is lower than the price the supplier managed to acquire it for. A new supplier can therefore establish business, purchase cheaper electricity and sell it on the market. If the first supplier sold the electricity at an average price of 23 øre, the actual margin would be 3 øre/kWh. On the other hand, the new supplier could purchase electricity for 16 øre, which would have given a margin of 7 øre provided that prices were not forced even lower. The market margin in this case would therefore be 7 øre/kWh.

The reason for using these two concepts is that if the market margin over a period of time is higher than the actual short-term margin, new players should be able to establish a position on the market and sell electricity more cheaply than the established companies and competition would therefore lead to lower prices for the end user. This type of situation occurred in the first years after the electricity market was deregulated in 1991 and contributed towards the establishment of a competitive market. In the longer term, the market margin and the actual margin will converge.

5.1 Actual margin

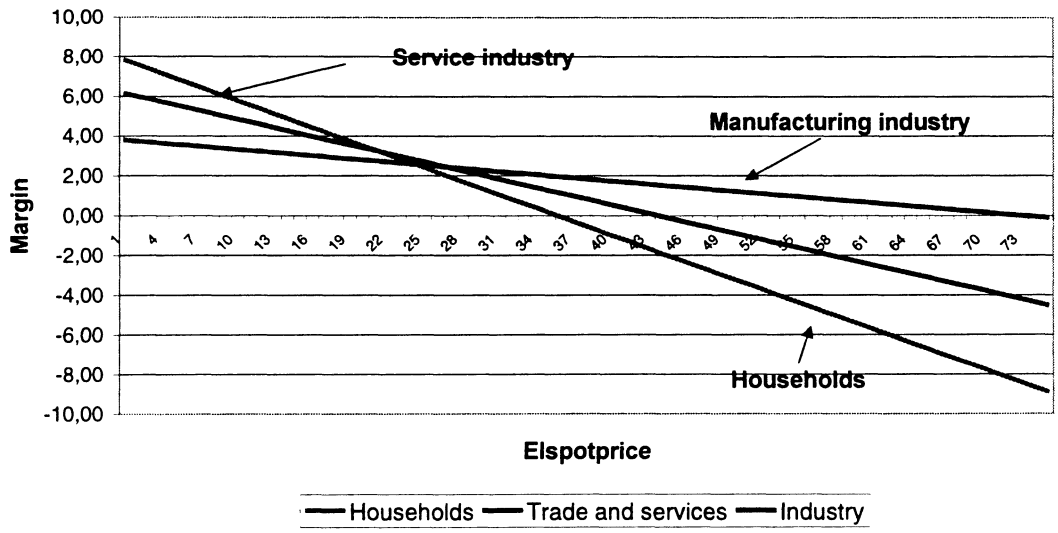
A comparison of acquisition costs and sales prices shows margins in relation to the various customer groups.

	Households	*Service industries*	*Manufacturing industry*
Sales price	20.77	20.72	20.04
Electricity acquisition cost, fixed prices	16.42	16.42	16.42
Margin at fixed prices	4.35	4.30	3.62
Margin at portfolio price[9] - (Spot = 15 øre/kWh)	4.65	4.13	3.05

The margin on sales of electricity to households and service industries is fairly similar but is lower for the manufacturing industry. This can be explained by different volume consumption and the consumption profiles for the various customer groups, but also by local industry benefiting from various degrees of subsidy. The survey shows examples of prices to industry that are far below average, but this is far less common than previously.

Portfolio margins will naturally vary according to spot prices but, as the example above shows, margins may vary proportionately more for sales to household customers than to industrial customers due to the different composition of the portfolio. The figure below illustrates this point.

The effect of spot prices on portfolio margins by end user segment



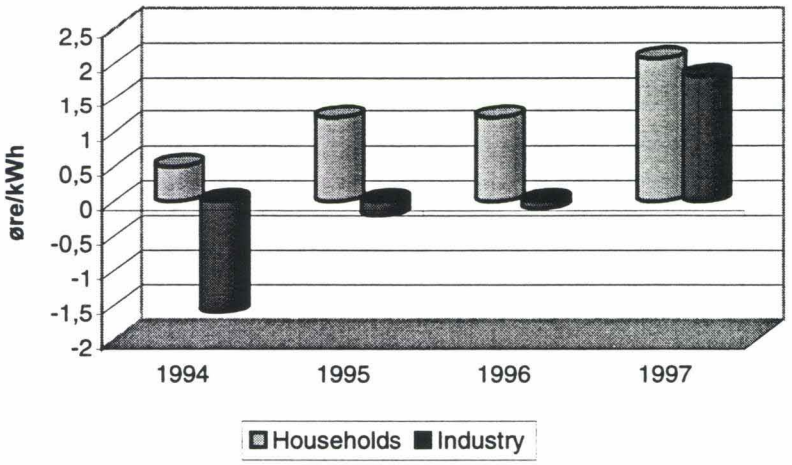
At a spot price of approximately 26-27 øre/kWh, the portfolio margin is approximately the same for all end user segments. With spot prices above 37 øre/kWh, household customers will give a negative margin, but in this type of extreme situation, suppliers may be expected to increase prices for standard contracts (which can be changed at two weeks' notice).

[9] The margin at portfolio price corresponds to the difference between sales price and purchase price when the electricity acquisition includes electricity purchased at spot price, and is based on an assumed average spot price for the year.

5.2 Margin trends over time

In order to be able to compare these results with previous surveys, it is necessary to make some adjustments to the figures. Since the wholesale price in previous surveys did not include own production, own production must be excluded from this year's survey in order to undertake a direct comparison of actual margins. The "comparable acquisition price" will then increase from 16.42 to 18.73. Furthermore, service industries and the manufacturing industry must be combined to a weighted average. If we then compare this year's figures with previous surveys, we see that margin trends are different for households and industry. In the years 1994-1996 the margin for supplies to industry was negative while the corresponding margin for supplies to households was positive. This may indicate that household customers subsidised industrial customers, and may be explained by households having limited access to the market during this period.

Evolution of margins - fixed-price contracts exclusive own production



From 1997, we see that both margins are positive and that they are relatively similar for both customer groups. The fact that the margin on sales to industry/commercial customers is still lower than for household customers may be due to different consumption profiles and volumes. In absolute terms, it is worth noting that margins have increased somewhat in comparison with previous years. This may be due to several factors. Margins may have been too low in previous years in relation to the exposure to risk, or fewer suppliers may be subsidising their customers and the average price to the end user has therefore increased. Another reason may be that the competitive market is still not functioning properly and suppliers are therefore not being forced to reduce their prices. The real situation is probably a combination of all these factors. It will be interesting to follow the trend for actual margins over time, and own production should also be included. It is also interesting to analyse market margins.

5.3 Market margin

The first step towards finding the market margin is to establish a price that will be regarded as the market price for electricity. Several methods can be used to calculate the price a supplier must expect to pay to cover his anticipated sales. It is necessary to make a number of assumptions concerning customers' consumption profiles and the various markets' possibilities for providing the required volumes. In order to simplify the calculation, we have assumed that industrial consumption is stable throughout the year, while households and

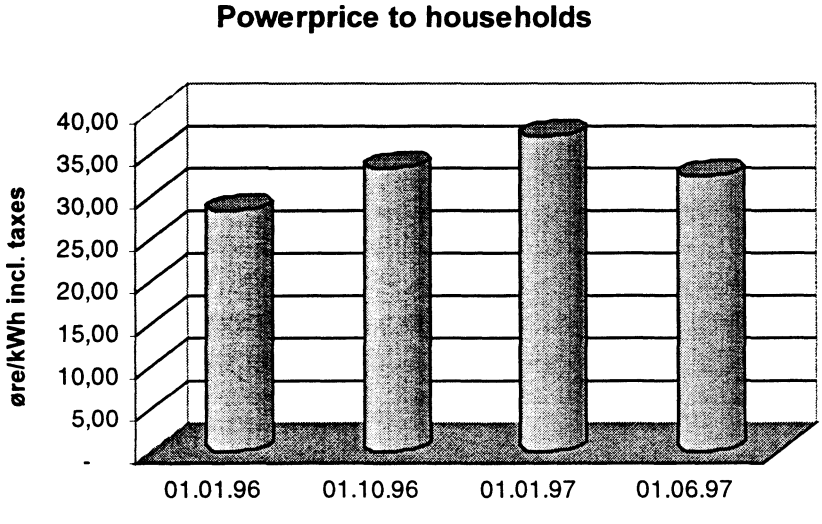
service industries have a normal consumption profile. It is assumed that prices on the bilateral futures market more or less reflect the NordPool futures market. We therefore assume that an electricity supplier can cover his sales by purchasing futures contracts through a year that gives full coverage according to the assumed consumption profile. NordPool's futures prices[10] for delivery one year hence give a market price for purchases of electricity for onward sale to households and service industries of 17.0 øre/kWh. For industry, with stable consumption, the market price will be 16.6 øre/kWh. This gives the market margins for the various customer categories shown in the table below:

	Households	*Service industries*	*Manufacturing industry*
Sales price (fixed price)	20.77	20.72	20.04
Market price August (April)	17.0 (24.0)	17.0 (24.0)	16.6 (23.1)
Market margin August (April)	3.77 (-3.23)	3.72 (-3.28)	3.44 (-3.06)
Actual margin	4.35	4.30	3.62

The table shows that the market margin on sales to industry in August is relatively identical to the actual margin, while it is somewhat lower for households and service industries. If we compare these figures with the April figures, a new supplier on the market who based his operations on the futures market would have to expect a negative margin, since the market price for electricity one year hence was 24 øre/kWh for electricity to customers with an adjusted input profile and 23.1 øre/kWh for industrial customers (flat consumption) respectively. This shows that the market margin may fluctuate significantly in comparison with the actual margin. The trend on the futures market also shows considerable variation in price over the year, and the date for the calculation of the market price is therefore important for the purposes of comparison.

5.4 Price trends over time

A review of price trends from the beginning of 1996 until mid-1997 illustrates how the market has reacted to the difficult energy situation Norway experienced last winter. Now that the situation has normalised again, we see that prices are also falling. The table below shows prices including and excluding taxes. The figures have not been weighted according to the consumer price index.



This survey was carried out among the fifty largest suppliers in Norway. Previous years' surveys have covered the entire sector and the figures are therefore not directly comparable. Nevertheless, the survey

[10] Dated mid-August, weighted with the adjusted input profile (JIP) to Oslo Energi Nett for 1995.

covers more than 80% of the total volume to end users in Norway (ordinary supplies) and the figures should therefore be fairly representative.

Electricity prices to households[11]

Date	Excluding taxes	Including taxes[12]
1 January 1996	17.80	28.41
1 October 1996	21.80	33.33
1 January 1997	24.70	37.29
1 June 1997	20.77	32.46

It is interesting to study the extent to which high prices and significant differences in price levels in various parts of the country affect the number of changes of electricity supplier and the expected future trend. These issues will be discussed in the next chapter.

[11] Prices in 1996 and as of 1 January 1997 are standard prices to all household customers. Contract prices are excluded. The price as of 1 June 1997 is the average price for supplies to household customers from the 50 largest companies, including both customers with ordinary standard price contracts and contract customers.
[12] The electricity tax rose from 5.30 øre/kWh in 1996 to 5.62 øre/kWh in 1997.

6. The end user market

In addition to the general market survey, NVE has carried out two special surveys, in April and July respectively, focusing on end user mobility[13]. The 40 largest distribution grid owners were asked how many customers had changed electricity supplier, how many customers the grid covered, the proportion of customers held by the dominant electricity supplier and the standard prices offered. The dominant electricity supplier is the supplier on the grid with the highest market share. In every case, this supplier was identical to, or had ownership or contract ties with, the traditional supplier in the area. For example, Oslo Energi AS will be the dominant supplier on the grid owned and operated by Oslo Energi Nett AS.

6.1 The connection between price and change of supplier

Interviews with electricity suppliers show that electricity prices play an important role in the decision to change supplier, but there are probably other reasons too. The market for household customers is still relatively young, and the players on the market are probably mainly active consumers interested in investigating the potential of a new market rather than a representative sample of the general mass of consumers. We may assume that this will change, since there is now a trend for more customers to change supplier. Pressure on prices will therefore presumably increase. The standard deviation for prices on standard contracts prior to the end of April was 4.1, while by July it had dropped to 3.2.

6.2 Strong rise in the number of customers changing supplier

The survey covers 1.5 million of approximately 2 million household customers in Norway, or approximately 75% of the population. By scaling up the figures from the sample, it is possible to give an indication of the situation for the population as a whole.

	No. of changes 7 April	*No. of changes 7 July*	*No. of customers with a different supplier than the dominant supplier on the grid*
40 largest	3,225	5,427	10,631
Scaled up for the whole country	4,225	7,109	13,926

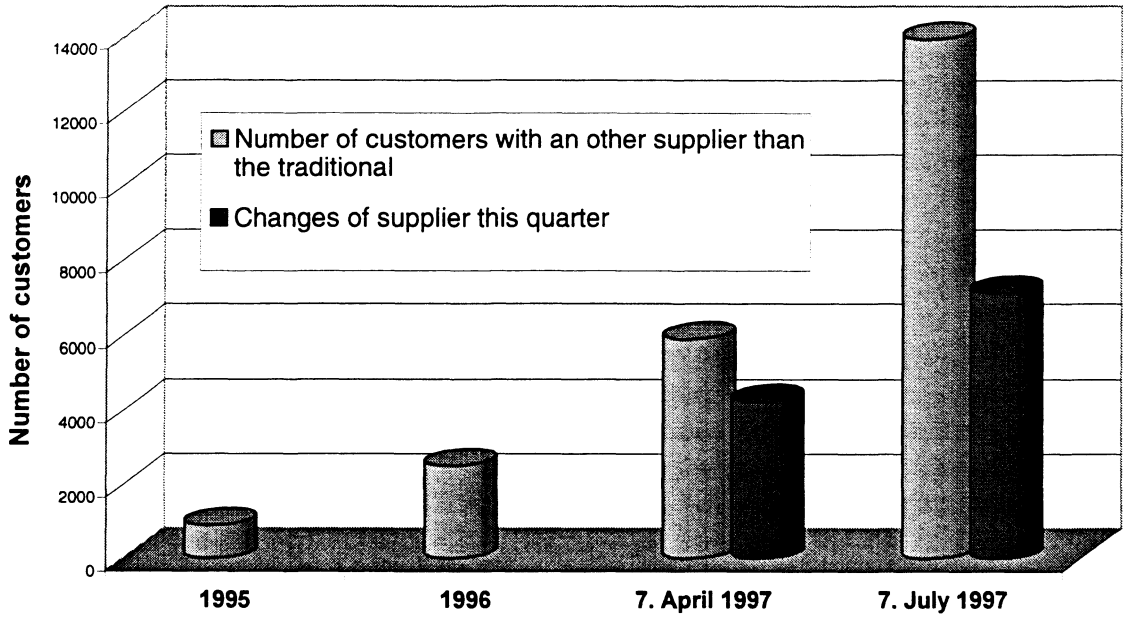
On 7 April, 4200 people had changed supplier. In the following quarter, 7,100 customers changed supplier. This is equivalent to a 68% rise from April to June. At the same time, the number of customers with a different supplier than the dominant supplier on the grid (i.e. the traditional supplier) reached 13,900. Of these, as many as 81% had changed supplier in the last two quarters. The figures clearly indicate that the market for household customers is taking off. Even though encouraging a large number of customers to change supplier is not a primary goal, price differences indicate that there is still some way to go before the trend declines, provided that the market functions properly.

The figure below shows the trend from the time when the household market opened up in 1995 until mid-1997. 1995 was the first year in which households (and small businesses) could change supplier without a metre that measured hourly consumption. The customer had to pay a charge of NOK 246 to change supplier, and the supplier had to pay NOK 4,000 to

[13] End users' change of electricity supplier.

enter a new grid (the total market consists of more than 200 grids). In 1997, all charges were eliminated and it is now possible to change supplier free of charge.

Market development for household customers



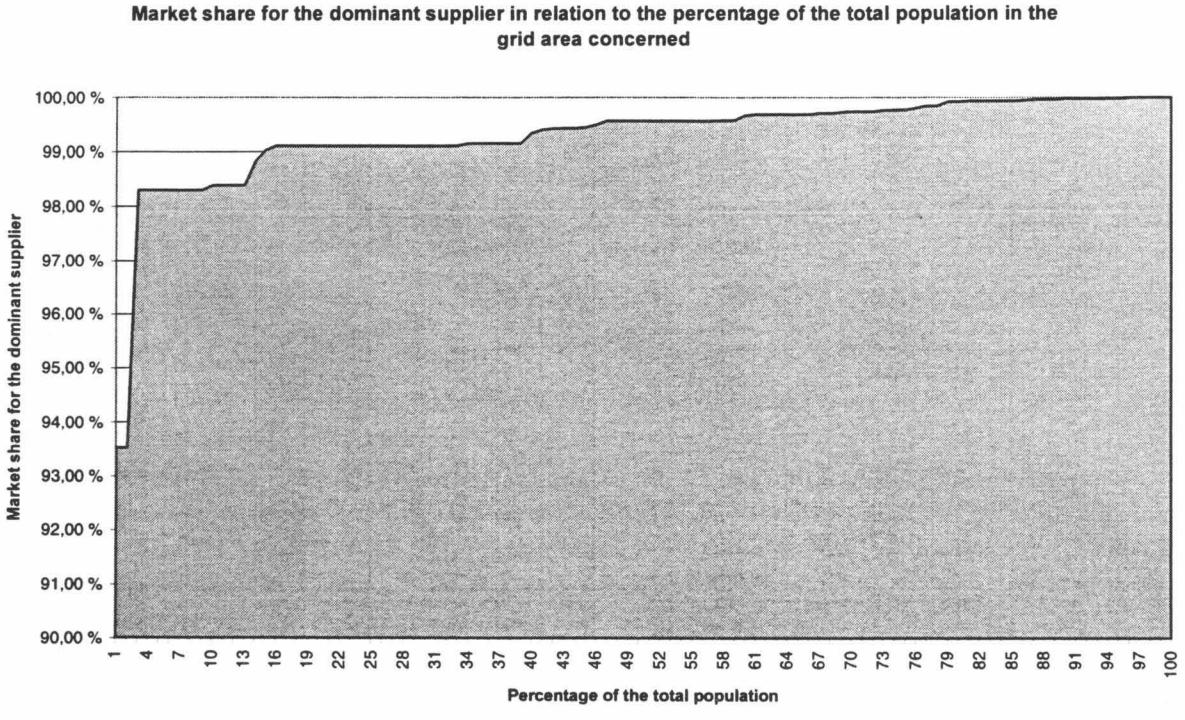
6.3 Sub-markets and market shares

The Norwegian household electricity market really consists of more than 200 sub-markets, since each distribution grid is measured and calculated separately. The NVE is attempting to liberalise this system and make the various grids as transparent as possible so that the market becomes one national market. Since the total market is the sum of all the sub-markets, it is interesting to look at the market concentration of the various sub-markets. By deducting from the total customer mass the customers who have chosen a different supplier than the dominant supplier, we find the average market share of the dominant supplier. On 7 July, this share was 99.3%, 0.3% less than on 7 April, when the corresponding market share was 99.6%.

The market share on these sub-markets is still far higher than in other sectors, and it is difficult to envisage that they will retain this high market share over time, since there are significant differences between prices and margins. There are major variations between individual sub-markets. A small number of players still have a 100% market share on a grid, while others have 99% and a few 98%. One interesting observation is that the grid area with the lowest market concentration is Drammen Energinett, where the grid has become an independent legal entity directly under the local authority. The difference between the second lowest and the lowest market share for a dominant supplier is considerable: 98.3% compared with 93.5%. This may indicate that independent grid companies have a favourable influence in promoting a well-functioning market.

The highest price in a grid area on 7 July was 39.6 øre/kWh (standard price) compared with 41.25 øre/kWh in April. Corresponding figures for the lowest price were 23.6 øre/kWh in July compared with 23.5 øre/kWh in April. The prices given here are including all taxes. Although

prices are gradually falling, customers paying a high price still have plenty of opportunities to make savings.



The figure above shows that 20% of electricity customers live in areas where the market share for the dominant electricity supplier is below 99%. It also shows that although the traditional supplier still holds a totally dominant position in an individual grid area, only approximately 10% of customers live in grid areas where no-one has changed supplier.

7. Summary

The annual electricity market survey carried out by the Norwegian Water Resources and Energy Administration (NVE) is an important element in the NVE's efforts to monitor the electricity market. Large profit margins, significant price variations or major differences between customer categories may indicate that the market is not functioning as intended. These are important signals for the authorities in their efforts to facilitate market-based electricity trading.

This year's survey focuses on the entire value-added chain in order to be able to evaluate the size of margins on sales to the various end-user segments. One of the reasons for this is the unusual situation last winter, when prices rose higher than ever before. In spring 1997, prices on the wholesale market dropped again and the NVE wished to find out if this fall in prices was passed on to end users. Furthermore, the NVE wished to follow developments on the household market and the extent to which household customers are making use of the opportunity to change electricity supplier. After a winter with a great deal of media focus on electricity prices and the electricity market, more people are likely to utilise market opportunities now than at the same time last year.

The diagram below illustrates the flow of electricity from supplier to end user and the prices and volumes upon which the survey is based.

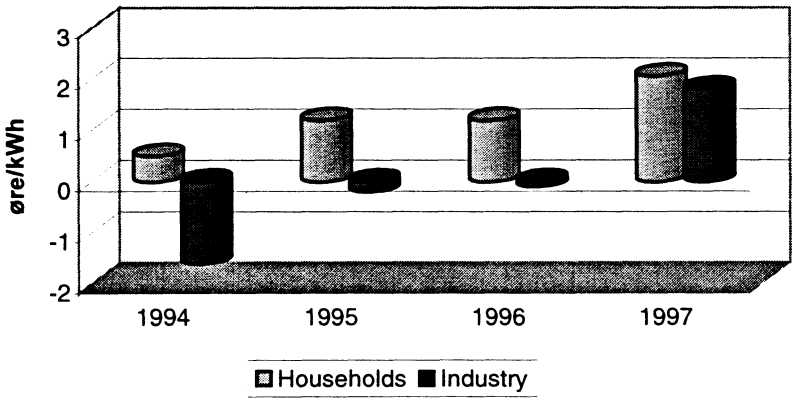
Powerpurchase	**62,4**	**16,42**
Own production	23,3	14,6
Fixed price contracts	21,4	18,9
Contratcs with price connected to elspotprice	13,6	

Powersale to end-user	**48,7**	**20,67**	**4,25**
Households	27,6	20,77	4,35
Service industries	14,5	20,72	4,3
Manufacturing industry	6,5	20,04	3,62

Loss, wholesale, elspot	**13,8**

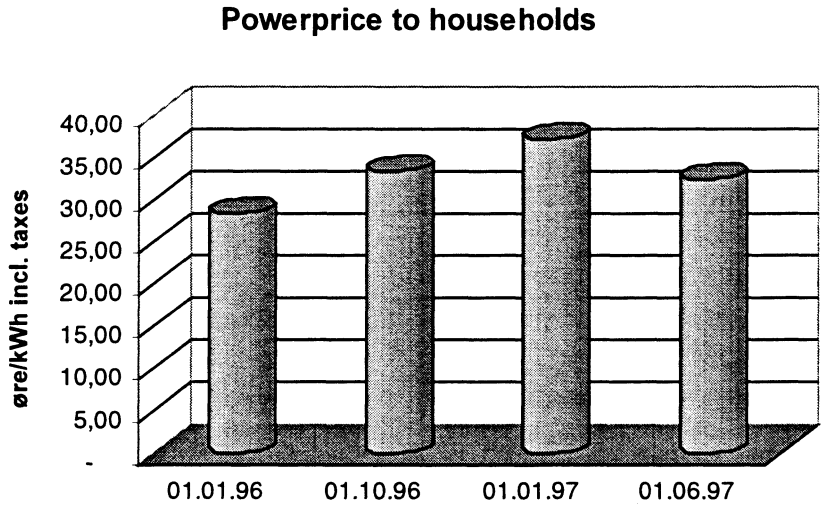
In a well-functioning market, the players are left with only a "normal" gross profit, or margin, from which to cover fixed expenses and other operating costs (for example costs associated with marketing, customer relations, administration etc.). Gross profit must be related to market risk. The actual margin shows what existing suppliers may earn on the basis of historical coverage strategies and contract agreements. The market margin, on the other hand, will indicate the margin a supplier could have achieved by covering all his obligations 100%

Evolution of margins - fixed-price contracts exclusive own production

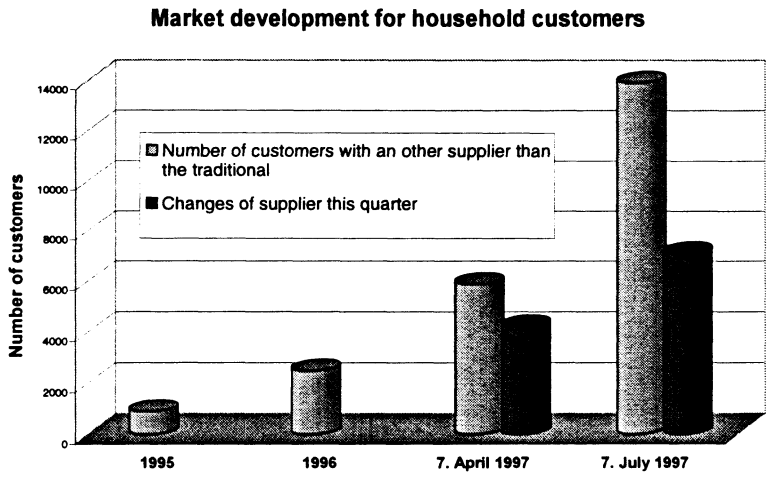


on the market on a given date. The diagram above shows the trend for actual margins (excluding own production) from 1994 to 1997

A review of price trends from the beginning of 1996 until mid-1997 illustrates how the market has reacted to the difficult energy situation Norway experienced last winter. Now that the situation has normalised again, we see that prices are also falling. The figure on the left shows prices including taxes. The figures have not been weighted according to the consumer price index.



In addition to the general market survey, the NVE has carried out two special surveys, in April and July respectively, focusing on end user mobility[14].



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[14] End users' change of electricity supplier.

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