NORWEGIAN ELECTRICITY CUSTOMERS' ATTITUDES TOWARDS SMART METERING

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What attitudes do Norwegian electricity customers have when it comes to smart metering? Until now they have read the meter themselves and reported the meter level to the grid operator four to six times a year. In a few years everything will be done automatically. Consumers will also be offered other services related to the new technology. How will these services be received by the customers? Will consumers be confident that the readings will be accurate? Are they willing to pay for the new technology, and will they be interested in using the additional services on offer? This article provides answers to these issues and also touches upon the challenges grid operators face in implementing the new solutions.

The article is based on results from the TNS Gallup Energy Barometer, a quarterly survey directed at a countrywide representative selection of Norwegian electricity customers. A total of 40 surveys have been carried out since 1997.

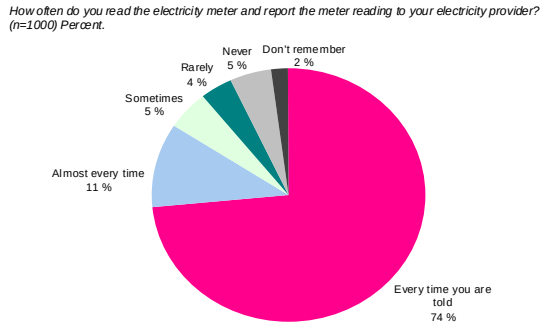
BOTH CUSTOMERS AND GRID OPERATORS WILL BENEFIT

Norwegian authorities will soon pass a bill entailing all Norwegian households to have smart metering installed. Both customers and grid operators will benefit from more accurate billing, continuous updates of electricity consumption and simpler invoices. Smart metering will also give electricity customers access to new, advanced services such, as viewing electricity consumption in real time, the effect of turning electrical appliances on and off, estimation of the next bill, receiving messages directly from the grid operator etc. The Norwegian Water Resources and Energy Directorate estimates that full roll-out will have a price tag of approximately EUR 0.6 billion and may be completed by 2013.

POSITIVE ATTITUDE TOWARDS SMART METERING

Norwegian electricity customers are generally conscientious about reporting meter levels to the grid operator. The grid operators usually receive meter levels from 85% of households. Three out of four (74%) electricity customers say they report meter readings *every* time they are asked to do so, while 11% do it *almost* every time.

Figure 1



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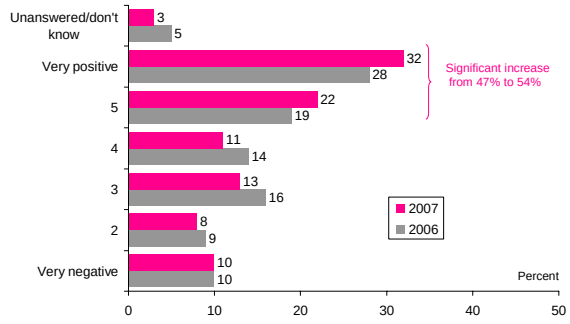
Even though the work with smart metering started several years ago, less than 10% of Norwegian households currently have the technology installed. Most of them (78%) are positive or very positive to be spared from reporting meter readings to the grid operator. By comparison just above 53% of those who do not have access to the technology view the arrangement in the same way. *"I want contact with and control over the fuse box myself,"* is a typical comment from this customer group.

MORE CUSTOMERS ARE POSITIVE TOWARDS AVOIDING MANUAL METER READING

Viewed over time, the greatest change in attitudes is among those who do not have the technology installed.

Among these, the share who views smart metering as positive increased from 47% in 2006 to 53% in 2007. Among those with smart metering installed the share is stable at 78%. This may indicate that media attention and positive experiences with smart metering has contributed to reducing scepticism amongst consumers. Those with high electricity consumption, (more than 25,000 kWh per year), are more positive towards smart metering. The explanation is probably the fact that automatic metering is more accurate, thus benefiting those with the highest consumption.

Figure 2



54% of the whole sample are positive or very positive towards smart metering, an increase of seven percentage points during the last year.

LOW WILLINGNESS TO PAY

The willingness to pay for the new technology however is very low. In 2006 88% responded that they were not willing to pay to have the technology installed. *"The arrangement represents considerable savings for the electricity provider and should not cost consumers anything,"* agreed many electricity customers.

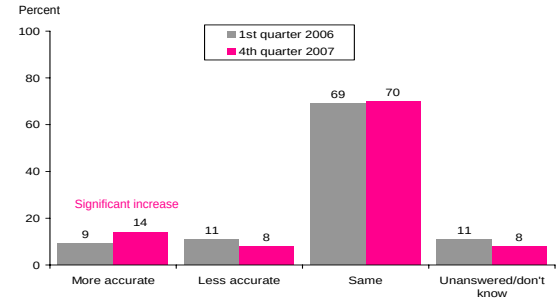
Following several estimates of the cost of the new technology, consumers were presented with a solution during interviews in 2007 where they would pay EUR 18 per year for a ten-year period. Faced with this scenario, the majority (68%) still responded that they were not willing to pay.

However, willingness to pay is higher among those who currently have smart metering (39%) than those who do not (27%). This may indicate that experiences with smart metering are positive and that this contributes to increasing the willingness to pay.

HIGH CONFIDENCE THAT SMART METERING PROVIDES AN ACCURATE READING

Confidence in the accuracy of smart metering is high. 84% of consumers are of the opinion that meter readings will be as good as or better than the current arrangement. The share increased from 78% in 2006. There are very few (8%) who doubt the accuracy of the readings.

Figure 3



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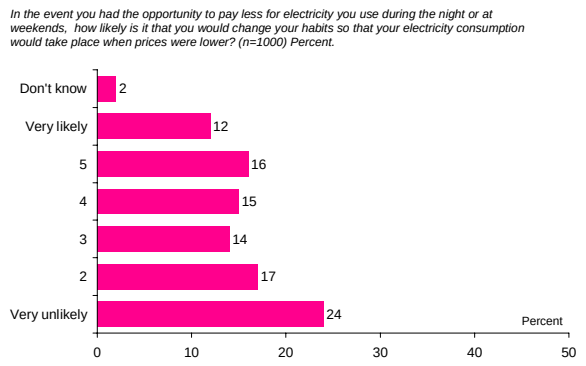
LITTLE INTEREST IN ALTERING BEHAVIOUR

The new solutions make it possible to price electricity consumption in households by the hour in accordance with prices in the electricity market. In Norway, electricity prices are generally lower during the night and during weekends.

Nevertheless, there are relatively few consumers (28%) who consider it likely that they will change their consumption patterns. More than 40% consider it unlikely or very unlikely that they will change consumption to periods when prices are lower. The youngest consumers (below 30 years of age) are those who are least willing to change consumption patterns. Statements such as *"I can't be bothered to track electricity prices by the hour", "To me it is completely idiotic to change consumption patterns to the time of day when prices are lower. Should you go to work so that you can come home at 11 a.m. to make dinner and reduce consumption at 6 p.m.?", "I use electricity when I need it, regardless of what time it is"*, demonstrate that Norwegian electricity customers are accustomed to using electricity without considering price.

This is probably due to the fact that electricity prices in Norway have always been low and a lot lower than in many other countries.

Figure 4



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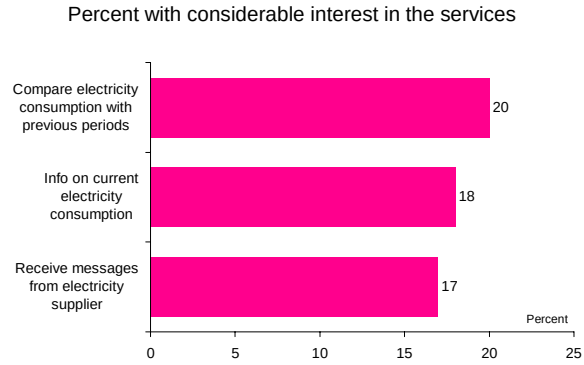
MODERATE INTEREST IN BUYING ADDITIONAL SERVICES

The technology behind smart metering will allow electricity providers to offer consumers several new products and services, but the interest among electricity customers is moderate. Less than 20% state that they are very interested in services such as viewing electricity consumption in real time, the effect of turning electrical appliances on and off, estimation of the next bill or receiving messages directly from the grid operator.

We believe this is due to an immature market. The majority of respondents are positive towards the services, but very few display significant interest. Many fail to grasp the actual usefulness of the products they are queried about. One possible reason may be that the solutions are difficult to comprehend for those that do not have a special interest in new technology. Another reason is that automatic metering and the possibilities inherent in the technology have received little attention beyond the electricity industry. This is probably the reason why the market appears to be immature – a fact that represents considerable communication challenges for those who are going to provide the services.

Many consumers are also of the opinion that the rationalization the grid operators achieve through smart metering and communication automatically should benefit the customers. *"The electricity provider will benefit the most because everything will be automated", "Such services will save both parties a lot of trouble and customers should be saved from paying for it*", are typical comments.

Figure 5



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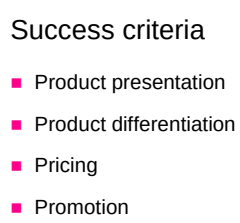
CHALLENGES FOR THOSE OFFERING SMART METERING

The results also suggest that customers have problems distinguishing the new services offered through smart metering from current arrangements available in the market. Smart metering will for instance make it possible to compare electricity consumption with previous periods, but many customers already get this information through internet based systems or as a graph on their invoice. *"This is not new. I have received consumption history via SMS, email, the internet and invoices for years"*, several customers respond. Similarly, the new technology will facilitate automatic control of household electricity consumption, which is also to some degree possible today through thermostats, night mode on electrical heaters, and movement sensors turning on and off lights. Many consumers seem to believe that these demands are already met, and since they have problems seeing the need of such services via smart metering, they are also reluctant to pay. To better highlight their value to customers, it is thus very important to focus on how to distinguish partly similar products, particularly in terms of which positive features to emphasize.

Next, companies also need to settle on a suitable pricing strategy. Should the customer pay a one-time fee at the time of purchase, a one-time fee plus consumption charges, a fixed monthly price, or only for the actual usage? In Norway the experience so far is that many consumers are skeptical of accepting more monthly expenses.

Finally, consumer interest could be influenced by resources spent on marketing and sales, the marketing activities of competitors, together with other external factors beyond control of single companies.

Figure 6



Product presentation, product differentiation, price strategy and marketing activities are success criteria for those who are going to promote smart metering and connected services.

CONCLUSION

Even though only 9% of the country's households currently have automatic meter reading installed, more than half of all electricity customers are positive or very positive towards not having to read the meter themselves in the future.

Most customers (84%) are of the opinion that readings will be at least as accurate as manual readings.

Because automatic meter reading is rare and not widely discussed outside the industry, we must assume that most consumers have little knowledge of the benefits and opportunities in two-way communication. This may cause some questions whether the readings are correct, and these may cause some noise in the market.

Lack of knowledge may also make it difficult for suppliers to request payment for the services. The industry should therefore at an early stage provide information that in a simple and comprehensible manner presents automatic meter reading and the benefits this provides to consumers.

REFERENCES

[1] TNS Gallup Energy Barometer Norway 1997 - 2008