HOW POWER OUTAGES AFFECT CONSUMER ATTITUDES TO GRID COMPANIES

Eva Fosby LIVGARD
TNS Gallup Norway
eva.fosby.livgard@tns-gallup.no

ABSTRACT
The power grid is subjected to an increasing amount of strain. This is due to higher power consumption, but also to climate changes. Although the average age of overhead power lines in Norway is more than 30 years, Norwegian consumers enjoy a reliable and stable power supply when compared with many other European countries. Power outages are rare, and their duration marginal. However, climate changes are altering this situation. In the years to come, we need to be prepared for more intense weather systems, larger quantities of downfall, more rapid changes in temperature, increased danger of avalanches and higher water levels along parts of the coast. This will increase the probability of damages to the grid, which in turn will affect the grid companies’ security of supply. For the consumers it will mean more frequent and longer lasting outages.

INTRODUCTION
The questions raised in this paper are:

- What is the effect of experiences of power outages on the consumers’ attitudes to their own grid company?
- When power outages occur; is it the outage in itself, the uncertainty of not knowing when power will return, or the consequences the consumers experience as the effect of the outage, that is most crucial for their attitude to the grid company?
- What can grid companies do to diminish the negative effect power outages are likely to have on customers’ satisfaction?

Insight into these questions will provide the grid companies with information on how to deploy their resources in order to limit the loss of customer satisfaction as much as possible. In this way, the companies will be able to build and strengthen their reputations.

To find answers to these questions, this paper takes as its starting point results from TNS Gallup’s Energy Barometer. The survey is targeting a representative sample of Norwegian electricity customers, and has been conducted quarterly since 1997. This paper uses data collected in the fourth quarter in the years 2008 and 2011-2015. Answers from more than 6000 electricity customers inform these assessments.

The paper sets out by considering electricity customers’ attitudes to their own grid company before addressing the effect power outages have on customer satisfaction. Further, it looks into which incidents during the outage that is most crucial for loss of customer satisfaction. Finally, the article considers what grid companies can do to maintain customers’ satisfaction when power outages occur.

ELECTRICITY CUSTOMERS’ ATTITUDES TO OWN GRID COMPANY

Norwegian customers are very satisfied with their grid company concerning the reliability and stability of power supplies. Today the score that expresses customers’ satisfaction is at 82 of 100 possible points. The satisfaction is on a high level, and has increased with three points over the past year (fig. 1). Between 2008 and 2011, electricity customers’ satisfaction suffered a pronounced decline. In 2011, several extreme weather situations, in combination with technical malfunction in the power grid, affected the security of supply to the electricity customers. The share of households that reported an outage was higher this year (51%) than in 2008 (45%), something that might explain that customer satisfaction fell from 83 points in 2008 to 78 points in 2011. In the years since, customers’ satisfaction has been quite stable, until it increased by three points from 2014 to 2015.

Fig 1: Customer satisfaction with the grid company’s security of supply, score 1-100, and share of households reporting power outage, 2008-2015.
EFFECT OF POWER OUTAGES ON CUSTOMERS’ SATISFACTION

About half of the households (49%) report that they have had power outages over the past year (2015) (fig. 1). The actual share might have been higher since outages could have occurred at night or while the consumer was away from home. The number of households with outages has been fairly stable since 2013, and complies with what the Norwegian Water Resources and Energy Directorate (NVE) reports in their outage statistics for 2014: that 51% of the end users had outages in 2014 [1].

If the customers experience outages, this has a pronounced negative effect on their satisfaction with the grid company’s security of supply. Based on data collected through TNS Gallup’s Energy Barometer in December 2015, customers without outages in average give a satisfaction score of 85 points, while customers who recently have had an outage in average give 78 points (fig. 2). A score of 78 points is considered very good, but the difference in satisfaction between the two customer groups shows that outages cost the grid company seven lost points in customer satisfaction (fig. 4).

Fig 2: Effect of power outages on customers’ satisfaction.

If we look at the consumers who recently experienced an outage, the results show that half (51%) think they received the information they needed under the power outage (fig. 3). The customers’ feedback indicates that there has been a clear improvement of grid companies’ information routines during power outages over the past years. In 2008, only 36% of the electricity customers received the information they felt they needed during the outage.

Fig 3: Proportion of customers that received information during the power outage.

Grid companies have much to gain from good information routines

If the customers do not get the information they feel entitled to during the power outage, the grid company loses another four points of customer satisfaction (fig. 4). Those who did not receive the information they need give their grid company an average of 74 points. In comparison, satisfaction increases among those who received the information they needed (fig. 2). Customers with power outage initially gives the grid company a satisfaction score of 78 points, but if they receive the information they need the score rises to 82 points. This amply illustrates that good information routines during power outages limits the loss of customer satisfaction.

Problems due to outages leads to loss of customer satisfaction

18% of the customers who recently experienced a power outage state that the outcome caused problems. The share is fairly stable from 2011 and to this day. If consumers have problems because of power outages, this has major consequences for the grid company in the form of lost customer satisfaction. Among customers who report problems as a result of outages, the level of satisfaction is at 66 points. In comparison, the average satisfaction among customers with outages who did not have any problems is 81 points. Thus, the problems the customers experience costs the grid company 12 points in lost customer satisfaction. Compared with customers who have not been subjected to outages (score 85 points) the estimated loss of customer satisfaction if the outage causes problems, 19 points (red highlighting in fig. 4). From other surveys [2] we know that the problems customers experience because of power outages are quite different, ranging from damage to technical devices to not being able to serve dinner as planned. This shows that small,
every-day problems can have a high cost for grid companies in lost satisfaction.

![Graph](image)

**Fig 4:** Loss of customer satisfaction as a result of different incidents related to the power outage.

**In sum, the numbers show that:**
- Customers without outages have a satisfaction of 85 points.
- If power outages occur, satisfaction falls by 7 points to 78 points.
- If the customer fails to receive the information he needs, satisfaction falls by 11 points to 74 points in relation to customers who have not experienced an outage (85 points).
- If the customers experience any problem caused by the outage, satisfaction falls 19 points to 66 points in relation to customers who have not experienced an outage (85 points).

**Number of outages is acceptable**

Numbers from NVE show that security of supply was 99.99% in 2014. The customers experienced in average 2.4 prolonged outages with duration over three minutes. In average, each of the outages had a restoration time of 1 hour and 6 minutes. [1] The vast majority of electricity customers (87%) think that the number of outages in Norway is within what is acceptable in relation to weather situation and their place of residence [2]. Only 11% disagree with this. With a security of supply at 99.99% the customers are well accustomed, which is probably the reason that more than every fifth electricity customer thinks that outages lasting more than an hour are unacceptable. 47% of Norwegian electricity customers can accept 1-2 power outages of more than one hour during a year. 23% can accept 3-5 outages, while very few (2%) accept more than five outages lasting more than an hour.

**Extreme weather situations no exception**

Even during extreme weather situations, Norwegian electricity customers’ expectations to the grid company’s security of supply are high (fig. 5). More than half (54%) of the electricity customers expect the power to be restored within three hours under such weather conditions. Expectations are largely similar regardless of where in the country respondents reside. While those who live in and around the capital have somewhat higher expectations, the differences are nonetheless marginal. The numbers show that Norwegian electricity customers have a secure power supply, which they appreciate, but also expect to deliver.

![Graph](image)

**Fig 5:** Expectation to when power is restored after power outages in extreme weather situation.

**INFORMATION AND PREPARATION CRUCIAL TO MAINTAIN TRUST AND CREDIBILITY**

To maintain trust and customer satisfaction it is a precondition that grid companies have a stable and secure power supply. Power supply is the kernel of the customer relationship and must function. Customers take for granted that power is supplied, and that the company alerts them at power outages.

The most important reason for power outages in Norway is hard winds (29%) and vegetation falling over the lines (25%) (fig. 6) [4]. Preventive work such as clearing power lanes to avoid trees falling over the line, power masts maintenance, ensuring that the equipment is fit for the demands of temperature, weather and winds, are good investments both for everyday operation and to create satisfied customers.
Fig. 6 Reasons for power failure in Norway.

At the same time, it is important to have good contingency routines to ensure the quickest possible restoration of power to the customers. Grid companies should also establish good information routines for power outages, and ensure that customers get the information they need during outages. This analysis shows that customers who get the information they feel entitled to during outages are more satisfied (82 points) than customers who do not get the information they feel entitled to (74 points). The difference in satisfaction is eight points.

To avoid customers experiencing problems due to outages, much would be resolved by restoring power to customers as quickly as possible. In addition, it is important to inform the customers on what they themselves can do to avoid damage to technical devices. 12% of power outages are caused by lightning, something that often short circuits. In these cases, customers can prevent damage on their own equipment by using surge protectors or lightning protectors.

CONCLUSION

Grid operation in Norway is well esteemed among the electricity customers with regards to security of supply. The electricity customers are basically very satisfied with their grid company with regards to reliable and stable power supplies. The results still show that the consequences of power outages have a negative effect on customers’ satisfaction.

Loss of satisfaction makes itself felt when the customers fail to receive the information they feel they need during a power outage, and especially if the outage causes problems. In these situations satisfaction falls from 85 points among customers without outages to 66 points among customers who had problems due to an outage.

The grid companies have much to gain by avoiding power outages. Security of supply is the kernel of the customer relationship and must function. Customers take for granted that the grid company provides secure and stable power supply, and that the company will notify them if there is an outage.

To maintain trust and customer satisfaction, grid companies must establish good information routines in connection with outages, and make sure that customers get the information they need during the outage. In addition, companies need good contingency plans, where the aim is to restore power as quickly as possible.

Preparatory measures like clearing power lanes, ensuring that masts are of good quality, and informing the customers on what they themselves can do to avoid damage to technical equipment, will probably generate more satisfied customers. Norwegian electricity customers have a good, stable power supply, which they appreciate, but also expect to deliver.

REFERENCES


