Comments of Energy Probe Research Foundation ("Energy Probe")

EB-2010-0249

Initiative to Develop Electricity Distribution System Reliability Standards

October 29, 2010

Introduction

It is the submission of Energy Probe that the Board should develop an electricity distribution system reliability benchmark that includes the United Kingdom of Great Britain and Northern Ireland (`"United Kingdom" or "UK") jurisdiction. The UK benchmark is stable and has been proven over time to be successful. The country has benefited from one of the most reliable electricity markets in Europe with few outages that generally affect fewer people and that are restored relatively quickly. Based on the results of Capgemini's European benchmarking survey that took place in 2008, among 46 Distribution Network Operators (DNOs) in 13 European Union countries, the UK distributors achieve some of the lowest average European operating costs and the highest levels of efficiency[1].

Apart from the United Kingdom's success in regulating its electricity distribution, the rationale for using it as a benchmark in Ontario is the following:

- The UK has a similar operational environment to that of Ontario, with a combination of both large and small cities, and rural and remote areas with low population density.
- Some customers are difficult to reach during power cuts because of the difficult terrain and long distances between a distributor's warehouse and a customer.
- The current UK system is a successor of the Central Electricity Generating Board, a public power system similar in many ways to that of the old Ontario Hydro.

- The culture in the UK is similar to that of Ontario in terms of the public's expectations regarding openness, privacy, and access to government information. The use of the same language is also an advantage for access to information as is a proven track record that is described below.

An independent regulator for the electricity markets, the Office of Gas and Electricity Markets (Ofgem) in the UK, uses both standards and incentive schemes to ensure quality and network reliability. *Guaranteed Standards of Performance for Electricity Distribution Companies in England, Wales and Scotland* (reported annually) ensures each individual customer receives a minimum level of service and describes fines that the distributor would face if certain standards of service were not achieved.

According to the standards, the payment for an electricity outage of over 18 hours during normal weather conditions is £54 for a domestic customer and £108 for a business customer, with an additional fine of £27 for every extra 12 hours of outage[2]. In the case of a major event, electricity distributors can make a claim to Ofgem of an extraordinary event occurrence, having a significant impact on their performance, and request exemption from a payment. Adjustment to performance measures could be made if Ofgem finds an event to be exceptional and a distributor proves that reasonable steps to prevent or minimize the outage and to reconnect customers in a timely manner were taken.

In addition to standards, Ofgem initiated the Information and Incentive Project (IIP) in 2002. The main goal of the IIP was to create a better connection between performance and allowed income. Currently, there are three system reliability indicators that are used to ensure high quality of service performance:

- Customer interruptions (CI) – comparable to SAIFI
- Customers minutes lost (CML) – comparable to SAIDI, and
- Quality and speed of telephone response.

Additionally, distributors must report the number of short supply interruptions per year (defined as the number of customer's interruptions that lasted less than three minutes per 100 customers per year), information on interruptions by source, voltage and HV circuit[3].

The success and effectiveness of both standards and incentives are demonstrated in the *2008-2009 Electricity Distribution Quality of Service Report*. According to this report, which was published by Ofgem, starting from April 2001 to March 2009 among 14 distributors, the average number of customer interruptions declined by 18 percent and the number of customer minutes lost declined by 8 percent[3].

Performance targets are set for each distributor based on its historical performance. In 2008-2009, 12 out of 14 distributors beat their CI targets and 8 beat their CML targets. These distributors were rewarded and those who didn't meet their targets were penalized. Ten percent of interruptions on other networks that influenced the distributor's performance are included in the performance results[3].

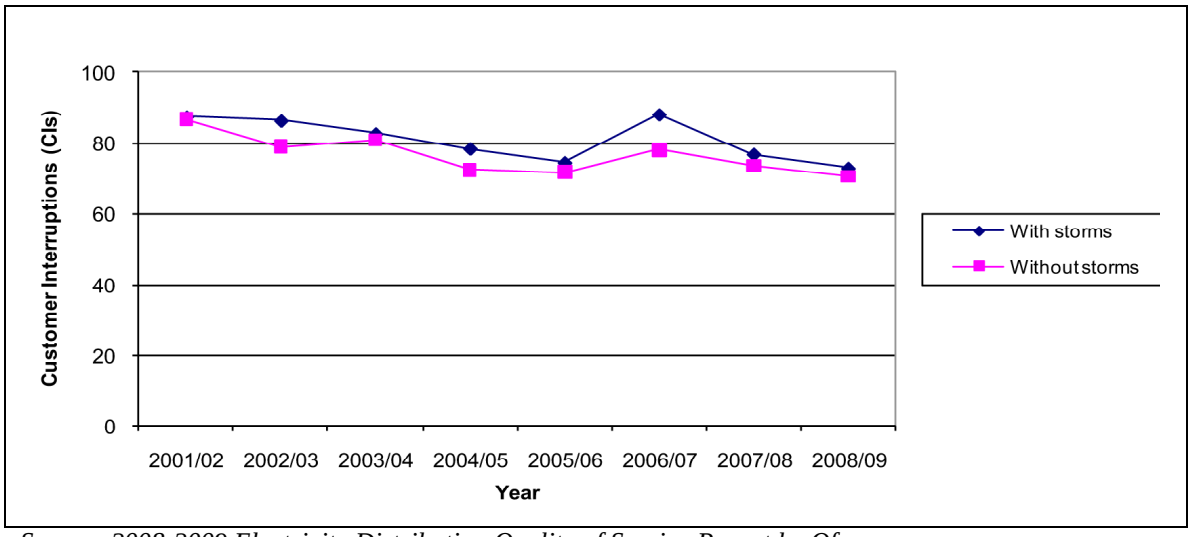
In the case of severe weather events that significantly impact their performance, distribution utilities may request an adjustment from Ofgem. Ofgem will then determine if an event is exceptional or not and allow an adjustment where appropriate. For exceptional weather events, their full impact on CI and CML performance will be excluded and for one-off exceptional events (any event falling outside of the severe weather exceptional events process; examples of one-off exceptional events are faults on transmission networks and third party damage such as vandalism or terrorism[4]), only the impact that exceeded the relevant CI and CML thresholds would be eligible for exclusion.

It is important to note that the size of an adjustment would also be determined based on prior steps that the distributor had taken to prevent the incident from happening as well as actions taken afterward. In 2008-2009 Ofgem recognized 11 exceptional weather events and a one-off exceptional event. For the one-off exceptional event it was allowed to exclude only exceeded relevant CI and CML thresholds[3].

In 2008-2009 the average number of short interruptions was 78 per 100 customers[3].

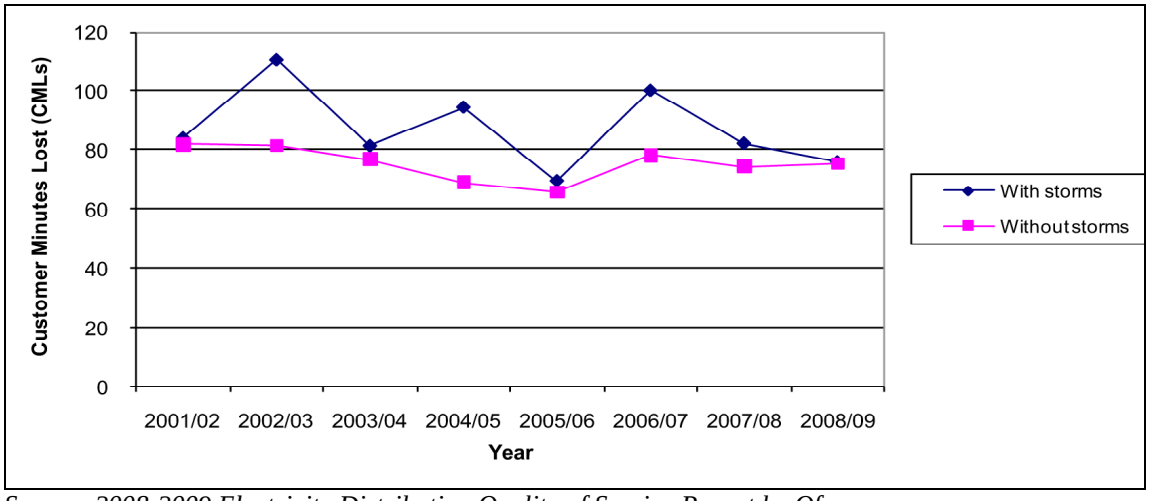
Improvements in the distributors' performance in the United Kingdom can be seen in the figures below.

Figure 1.1 Average Customer Interruptions (CIs) per 100 customers in the UK



Source: 2008-2009 Electricity Distribution Quality of Service Report by Ofgem

Figure 1.2 Average Customer Minutes Lost (CMLs) per customer in the UK



Source: 2008-2009 Electricity Distribution Quality of Service Report by Ofgem

In order to ensure effective communication between distributors and customers, a survey of the quality of telephone response performance is carried out monthly for each distributor. It is assessed based on five factors that include politeness of the staff members, willingness to help, accuracy and usefulness of provided information and satisfaction about the speed of the telephone response[3].

There is a sliding-scale penalty mechanism for distributors whose performance drops below a minimum annual average performance level and a small reward for those who beat a certain performance score. This serves as an incentive for distributors to maintain a high level of quality in telephone responses.

SUMMARY OF ENERGY PROBE'S COMMENTS AND RECOMMENDATIONS

The following is a summary of the recommendations offered by Energy Probe, followed in some instances by elaborations:

- Develop an electricity distribution system reliability benchmark that includes the United Kingdom
- Establish a service quality penalty/reward mechanisms approach
- Initiate a performance target for each distributor
- Record and report short interruptions
- Set a standard for "extraordinary/major events"
- Include extraordinary/major events in the outage statistics
- Create restoration standards for normal and extraordinary/major events
- Improve distribution communications to customers
- Make information public through annual reporting of quality performance for all distributors

Electricity distribution system reliability benchmark that includes the United Kingdom

An electricity distribution system reliability standard benchmark that includes the United Kingdom will help to improve reliability performance, compensate customers if standards aren't met, increase utilities' accountability by publishing statistics on the number of outages and by publishing targets for future improved performance, and by improving customer awareness of outages on a timely basis.

According to the customers' surveys initiated by the Ontario Energy Board, the number of reported electricity outages in Ontario on average is 4.78 per year and the average number of anticipated outages by customers is 3.43 per year. Torontonians experience two outages per year lasting 80 minutes in total a year on average. At the same time residents in London, the United Kingdom, can expect one outage every three years, with the exception of short outages that last three minutes or less, with an average length of interruption of 40 minutes per year[5].

The data shows that in the UK there have been significant improvements in the duration of interruptions and smaller but still substantial improvements in the number of interruptions. Benchmarking that would include the UK standards of performance would help improve reliability of the electricity system in Ontario.

Performance target and service quality penalty/reward mechanisms approach

Electricity distributors in Ontario operate in different environments, making a province wide performance standard impractical. Therefore, Energy Probe recommends separate performance targets for each electricity distribution utility in Ontario, based on its particular operating environment.

In addition, each distributor should provide customer guarantees that would include financial penalties for failure to meet their individual performance targets. The utilities would also be rewarded for success in exceeding their targets.

In the United Kingdom each electricity distributor has its own set of targets. Annual rewards and penalties depend on each distributor's performance measured against its targets for the number of customers interrupted per 100 customers (CI) and the number of customer minutes lost per customer (CML). According to the UK system the proportion of the revenue exposed will be 1.2 percent for CI and 1.8 percent for CML[6].

Energy Probe recommends using CI and CML as system reliability measures, as well as two additional reliability measures that are currently in use in the UK. They are:

- The number of customers interrupted by short interruptions per year (SI), defined as the number of customers whose supplies have been interrupted by a short interruption per 100 customers per year over all short interruptions, where the initial interruption to supply is restored in less than three minutes. In such European countries as France, Norway, the United Kingdom, Italy and Hungary short interruptions are already separately recorded. It is important to note that with an increasing use of computers and other electronic equipment, short interruptions are becoming of a greater concern to customers[7].

- The number of customers re-interrupted per year (RI), defined as the number of customers whose supplies have been re-interrupted per 100 customers per year.

It is therefore recommended that clear reliability performance targets for both CI and CML should be developed for each distributor in the province, combined with strong incentives to reach and exceed those targets.

A standard for "Extraordinary events/major events"

Under the Institute of Electrical and Electronics Engineers (IEEE) Standard 1366 "major events" can be excluded when calculating system reliability performance. Each utility can define for itself the "major event" and this has a significant impact on the calculated reliability performance results[8]. From the customer's point of view, major events are the most significant ones and are the ones that have the most impact on their day-to day activities. Extraordinary/major events have a significant effect on performance results. Distributors should provide a set of figures including interruptions and a set of figures excluding extraordinary/major events.

The first step to reporting and managing extraordinary/major events is to define those events in the standard. This would eliminate performance measurement variations across province and would permit comparing utilities to each other based on their performance against target (see below).

Restoration standards under various weather events

Distribution utilities should have an incentive to continually improve the way they build and maintain their system. Compensation to customers for prolonged outages that occurred due to extraordinary/major events could be such an incentive. By making utilities accountable for the financial effects of both normal and extraordinary/major events, the system would provide very strong incentives to decrease outages and to reconnect customers quickly. Therefore, Energy Probe submits that the Board should introduce separate standards or incentives of performance for normal and extraordinary/major events using the UK system as a guide.

To avoid penalties, UK distributors must restore supply within 18 hours of first becoming aware of a problem during a normal weather event and within 24 hours when 5,000 customers or more are affected[2]. If the power supply is not restored within this timeframe, distributors must compensate their customers in accordance to the Guaranteed Standards of Performance for Electricity Distribution Companies in England, Wales and Scotland.

There are three different categories of major events, depending on the scale of the event. Category 1, 2 and 3 are medium, large and very large events, respectively.

A Category 1 major event can be further separated into lightning and non-lightning events. According to the UK regulation during lightning events, when a distributor experiences no less than 8 times the normal number of faults in 1 day (a fault comprises an unplanned incident or a series of related unplanned incidents each resulting from a single direct cause on the same single item of equipment), supplies must be restored within 24 hours. During non-lightning events, when a distributor experiences between 8 and 13 times the normal number of faults in 1 day, supplies must be restored within 24 hours[2].

Under Category 2 non-lightning events, when a distributor experiences 13 times the normal amount of faults or more in 1 day, supplies must be restored within 48 hours[2].

Category 3 is defined as any severe weather event where at least 35% of exposed customers are affected. Supplies will be restored within a period calculated using a formula based on the number of customers affected, as set out in the UK regulations[2].

Energy Probe submits that this regulatory construct will support just and reasonable rates in Ontario and suggests developing and using similar categories for major events and restoration timeframes.

Energy Probe submits that some interruptions caused by such extraordinary/major events are outside of a utility's control and can occur regardless of the utility's adequate maintenance of its systems and reasonable actions taken to reconnect customers after the supply failure. In such cases, utilities should be able to apply to the OEB to have their interruption performances adjusted to reflect the fact that a major/extraordinary event has happened. However, utilities would need to demonstrate that they took all reasonable steps to prevent or minimize the outage.

Improve distribution communication to customers

Energy Probe believes it is important to continuously improve communication between customers and utilities. Quality and telephone response time performance standards should be introduced and Energy Probe submits that the UK approach could form the basis for the standards.

Regulators in the UK have introduced incentives to improve quality and speed of telephone response to customers. An ongoing customer survey (carried out on a monthly basis) measures customer satisfaction in a scale of 1 to 5. The optimal satisfactory rate is set at 4.1 and all distributors who would fall below that face penalties[3].

If the annual mean score falls below 3.6, the distributor would face a penalty in the amount of 0.25 % of revenue. At the same time, if the annual mean score performance is greater than 4.1 it would realize a reward of 0.05 % of revenue[6]. Developing a similar approach in Ontario could provide a strong incentive to distributors to improve their communication with customers.

Making information available to the public through annual reporting of quality performance by each distributor in Ontario issued by OEB could help ensure that distributors continue to perform well and help customers understand the performance they receive from their distributor.

Energy Probe's Comments about Electricity Outage and Reliability Study

Energy Probe submits that it is important to carry on electricity reliability surveys among customers and suggests two questions that would be beneficial additions to the next survey. The questions might be framed in the following way:

> *Would you like to know how your utility is performing compare to other utilities in the province?*
>
> *Should your utility compensate its customers in the case of a prolonged electricity outage?*

Energy Probe thanks the Board for the opportunity to submit Comments on these very important measurements of distributors' service quality and performance.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

October 29, 2010

Energy Probe Research Foundation

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