October 29, 2010

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319, 27th Floor
2300 Yonge Street
Toronto, ON M4P

Dear Ms. Walli:

Re: **OEB Initiative to Develop Electricity Distribution System Reliability Standards**
Submission of AMPCO's Comments
Board File No. EB-2010-0249

AMPCO has reviewed the Board's correspondence, the reports by PEG and Pollara and AMPCO's technical consultant Mr. Wayne Clark attended the stakeholder consultation on October 15, 2010.

Attached please find AMPCO's comments including a small amount of research conducted by AMPCO.

Sincerely yours,

ORIGINAL SIGNED BY

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Comments
Distribution System Reliability Standards
OEB File: EB-2010-0249

AMPCO's Interest

Most of AMPCO's members are served by LDCs, split approximately 50/50 between Hydro One and the rest of the Ontario's LDCs. AMPCO's membership threshold is monthly demand of 1000kW, which places its interest in service to GSd, Intermediate and Large User customers.

As with all customers, AMPCO has a keen interest in both reliability and cost of service. AMPCO's members are as diverse as other customer groups in their sensitivity to unreliability. Some are more susceptible to outage frequency than duration, while others' sensitivity is more related to the length of an outage. AMPCO's members also display adaptive behaviour similar to other customer groups.

General Comments

It is fundamental that customers expect their LDC to provide power at a high level of reliability. It is also basic to the culture of a utility to provide its service at the highest level of quality it can. While these two perspectives align generally, differences arise when cost and value are considered. Moreover, customer perspectives differ greatly, depending on how they use electricity and how important it is to their situation.

The result of these differences is that reliability is a difficult area in which to set standards, both for measurement and performance. It is even harder to establish the value proposition for reliability. The best that can be said of most attempts is that they are "nice try" approximations.

Fortunately, customers generally are satisfied with the reliability they currently receive. Also, customers in all classes increasingly have access to the means to mitigate or avoid entirely the consequences of unreliability, without having to rely on the LDC for help. This trend needs to be acknowledged and integrated into any discussion of the regulation of service reliability.

With respect to measurement, discussion on reliability has always been made more difficult by differing standards, definitions and reporting practices. Because reliability is seen by LDCs as a *system* performance issue, it has been natural that the existing measures are derived from a *system* performance view. While this perspective is essential for LDCs to manage performance, it has less value in communicating the customer experience of service quality. With the advent of smart meters, the

opportunity is presented for all stakeholders to gain an improved perspective of the customer experience of reliability.
In summary, AMPCO does not believe the Board needs to make major changes to reliability performance standards at this time, although there are opportunities to improve reporting and begin work on the development of metrics that communicate the customer experience more directly.

Specific Comments

1. The PEG Report - Other Jurisdictions

The PEG report appears to show that other jurisdictions are, by and large, not significantly ahead of Ontario.

There isn't anything on the PEG report that suggests Ontario should make any particular modifications to its reliability regime, except that the Board may wish to consider the use of IEEE 1366.

What is most apparent is that reliability performance regulation is, in most jurisdictions, still relatively undeveloped. This is unsurprising, since even reliable and standardized reporting methodologies have not yet been generally implemented.

Another observation is that, except for a couple of countries trying out "Energy Not Served" (ENS) measures, few have adopted customer-centric measures. This is also not surprising since the current state of technology is that the available data must come from the distribution system and its operators rather than the customer or customer meter.

2. The Pollara Report - Importance of Customer Opinion

The key messages communicated in the Pollara report are threefold:

a) Customers are generally satisfied with the reliability they receive.
b) Customers are generally unwilling to pay more for improved reliability.
c) Customers regard price as more important than reliability, at this time.

There is also fairly solid evidence that customers would appreciate better communication from their distributor when an outage occurs. Given the state of technology and the ability of linked customer and outage management systems to automate much of this communication, this is a somewhat surprising finding. It may be worth examining where the dissatisfaction is most prevalent and whether this is in distributors that have weak or non-existent outage communication processes.

The graphic below illustrates the issue presented by the Pollara survey:

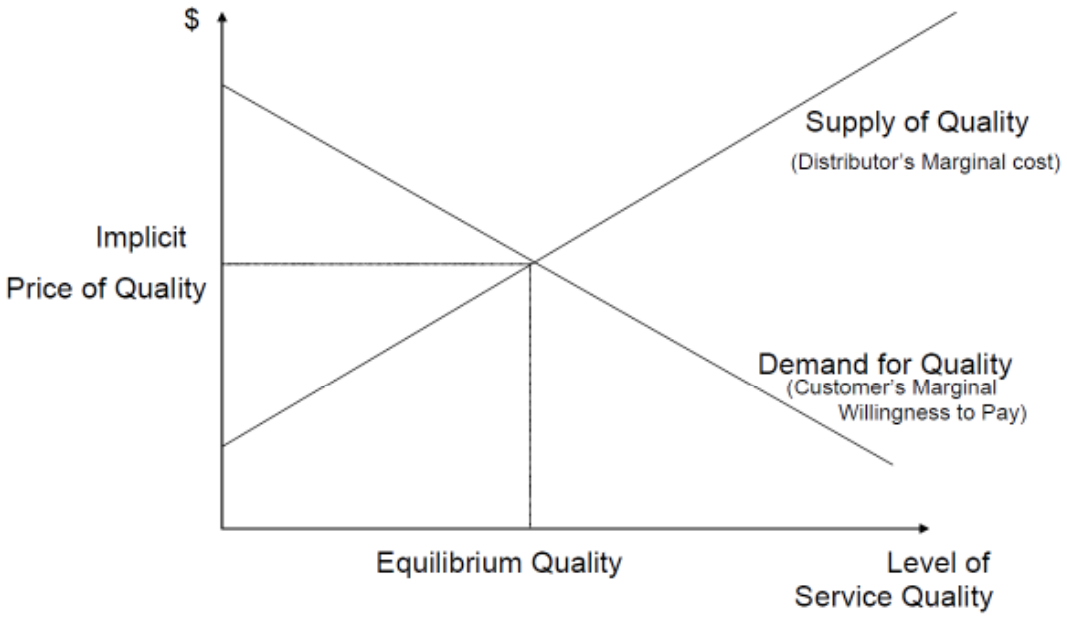


Figure 1: **The marginal benefits and costs of service quality**

It is clear from the Pollara survey that the available evidence from customers is that Ontario distributors' reliability is generally at the equilibrium point.

There were several questions in the stakeholder session about the accuracy and reliability of the Pollara survey. All surveys have limitations, but there does not seem to be any reason not to trust the basic message being conveyed, especially as the data were generally unequivocal. A refinement that changed some percentages by even five points would not have altered the message.

The Board should plan to repeat the Pollara survey at periodic intervals to track trends in the data, should customer expectations or willingness to pay change over time.

The Pollara report raises an important related issue for the Board. If the customers of a distributor are generally content with the service they receive, should the Board accept and support business objectives and strategies that strive to improve reliability significantly beyond current levels? Many companies have "first quartile" or "best in class" goals for a number of performance parameters, including service reliability. If the customers are content with median or even third quartile performance, should the Board approve investment initiatives in support of first quartile goals? This is perhaps the key issue raised in the Pollara survey.

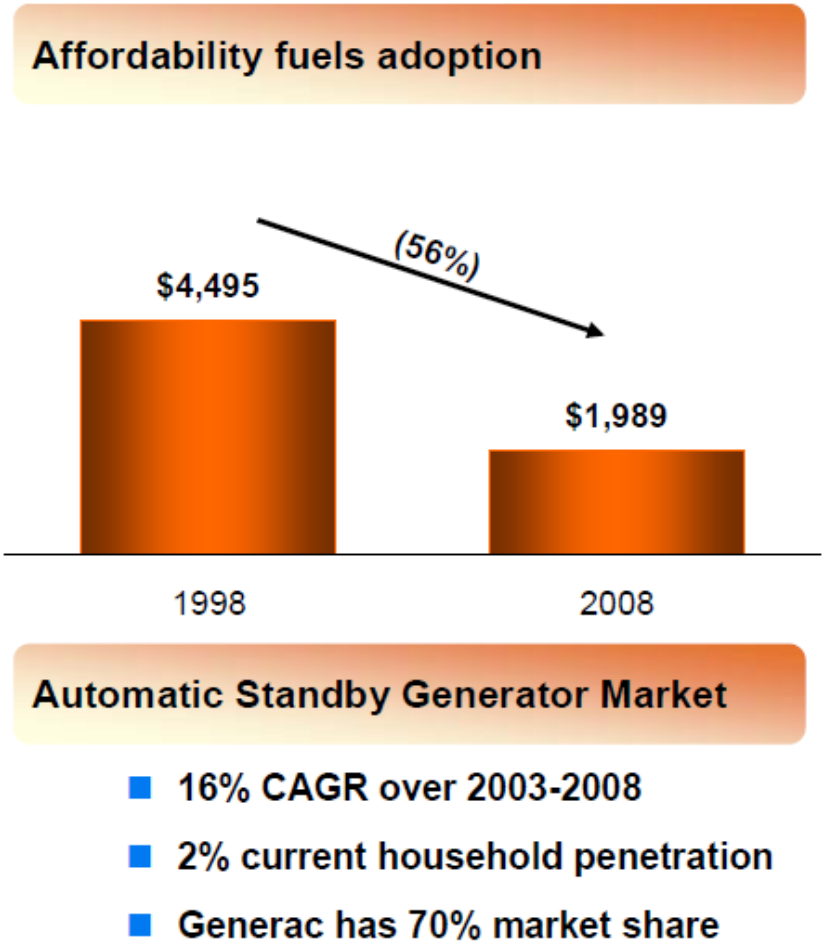
3. Reliability is not a monopoly service

While distribution service is a monopoly, service reliability is not. This is an important distinction in a regulated environment.

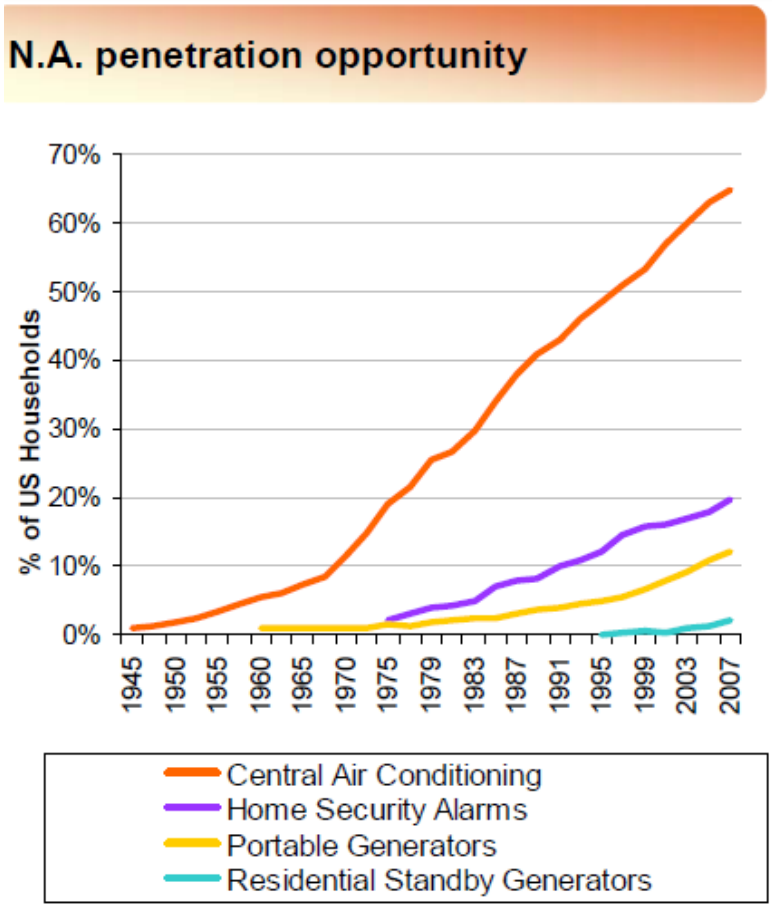
Historically, customers that exhibit a high degree of sensitivity to unreliability have invested in equipment that mitigates the financial or human risk associated with interruptions. Hospitals, airports and data centres are examples. Aside from these few examples, most customers were not able to economically access outage mitigation technologies. Residential customers and small businesses could rarely afford the equipment to ride out an outage.

This situation has been changing steadily over the past several years, likely due to a confluence of several factors. At least one driver has been the declining cost of portable generators, standby generation and uninterruptible power supplies (UPS) for residential and small businesses customers. The increasing numbers of small and home based businesses reliant on computers has probably also been a factor, particularly in the market for small UPS appliances.

All of the charts in the section below were copied from the Generac website investor presentations section (www.generac.com). Generac is a leading supplier of portable and standby generators and its products are widely available at such mass market retailers as Costco , Home Depot and Rona.



The following chart illustrates the growth of the market for portable generators and residential standby generation in the US market. As these same products are widely available in Canada, it can be safely assumed that the Canadian and Ontario trends are similar, although perhaps at a slightly different point in their evolution.



Small UPS appliances designed to power computers through a momentary or short power interruption are also an important customer strategy for mitigation of service unreliability. These devices are also widely available through mass market retail outlets such as Costco, Staples and Future Shop.

The existence and growth of the retail market for equipment specifically designed to help customers through power interruptions raises an important point. When it comes to the cost of reliability, customers now have choices other than to turn to their LDC for better service. These alternative choices have a range of costs associated with them, whereby customers can select the equipment best suited to their particular need and circumstance.

In short, there is now a growing competitive market for service reliability. The LDC is no longer the monopoly service provider in this area.

For the Board, the implication of this is that any regulatory initiative must be carefully managed so as to avoid forcing choices upon customers that they might more properly make on their own.

4. Reliability Indicators

4.1. SAIDA,SAIDI,CAIDI

These are useful measures, especially for the utility trying to analyze performance and should remain in place.

4.2. MAIFI

The effect of momentary interruptions can range from business-threatening to unnoticeable, depending on customer sensitivity. For residential customers, momentaries are normally an irritant at worst.

For some businesses that rely on automated control processes and/or computer processing, momentaries can be highly impactive. These customers, however, must (and usually do) recognize that momentary interruptions happen and they need to make the investments necessary to mitigate problems. These investments can include anything from battery backup system to standby generation with automatic transfer switches and capacitor smoothing.

Except in rare cases, it is not practical to ask distribution utilities to focus on momentary interruptions. Indeed, momentaries are often a natural consequence of a utility seeking to optimize the performance of its system, including reliability performance.

Moreover, relatively few distributors have the ability to gather momentary interruption data and integrate it correctly into a useful MAIFI measure.

At this time, we recommend against the adoption of MAIFI as a standard reliability indicator for distributors.

Minimum Standards

While customers may have a high degree of tolerance for outages, there are limits to what is reasonable.

The Board and distributors may wish to consider the use of some minimum standards of reliability, below which customers should be compensated for lack of service. Minimums would likely be well below the average and even below what one would receive on a "worst 10" feeder. There could be various ways to establish minimums, and they would probably vary by distributor. For example, urban customers in high rise buildings may be less tolerant of outages than cottages.

Probably, a minimum standard may be something in the area of 15 outages/yr for a residential customer. As a starting point, the Board may want to ask some distributors for information on how many outages are experienced by customers whose reliability falls two standard deviations from the mean.

4.3 Worst Performing Feeders

The general concept behind worst feeder reporting is that the regulator and the distributor should focus attention on those parts of the system that are delivering the lowest performance to customers. This is similar to a continuous improvement approach, whereby attention is always placed on the next roadblock to an incremental improvement in quality or productivity. As such, it is intuitively attractive to anyone familiar with statistical quality control and continuous improvement.

For distributors that may be performing below customer expectations, a worst feeder approach can result in a gradual raising of overall performance. For utilities that already provide generally acceptable performance, this approach has problems.

As with other continuous improvement methodologies, "worst feeder" approaches will gradually raise performance over time, so long as reliability is maintained on the rest of the system. There is, however, a key difference between "worst feeder" management and continuous improvement approaches.

Continuous improvement approaches typically focus on work process improvement and not directly on asset performance. As such, continuous improvement approaches often produce incremental improvement at modest cost. In fact, the original continuous improvement work in Japan began as a means to overcome cost constraints with improved processes.

This is where "worst feeder" approaches differ from process improvement. There are essentially three ways to correct a worst feeder problem. The feeder can be shortened, maintenance can be increased, or capital investments can be made to upgrade the line. Usually, each of these strategies carries with it a significant cost, which must be borne by customers.

This generates an issue whereby continuous improvements in reliability may be pursued without feedback from customers on whether or not they perceive useful value from these improvements.

There is another, technical problem with "worst feeder" approaches, which was pointed out by Toronto Hydro in the stakeholder session. Namely, automated distribution systems in densely populated areas are dynamically reconfigured on a regular basis,

such that the concept of a fixed feeder which performance can be usefully measured is not applicable.

There is another problem with the worst feeder approach, that it is only another proxy measure for customer experience. Especially in rural areas, feeders are segmented by protective equipment, so that customers receive reliability not equal to that of the feeder as a whole, but equal to the segment on which they are connected, plus all upstream segments. As with electrons and water, unreliability accumulates as it goes downhill. Even on a worst performing feeder, the customers connected closest to the supply station may experience reliability well above the LDC average, while a customer at the end of a "normal" feeder may experience reliability worse than that of most customers on poorly performing feeders.

It is possible that a worst feeder approach to reliability regulation could be made to work for distributors with relatively static feeder configurations, if the distributor were not allowed **incremental** funds for projects to be justified on a reliability basis. So long as average reliability was acceptable, then a worst feeder approach could incent the distributor to focus maintenance and capital investments where they are most needed. It is difficult, however, to see how this would work in practice as a regulatory (as opposed to management) approach.

4.4 Customer Delivery Point Performance Standards (CDPP)

The Board and Hydro One have pioneered valuable customer-centric performance standards for transmission customers, complete with a regulatory framework for managing substandard performance.

AMPCO believes that the work on transmission CDPP regulation provides a good indicator of how similar standards might be developed for the distribution system, including how mitigating investment costs may be shared.

4.5 Cross - LDC comparisons

Ontario is a very large service area and it is unrealistic to expect similar service quality in Toronto and Hearst. The current Board practice of measuring distributors against themselves over time makes more sense than comparing across jurisdictions. If customers believe that the reliability they receive from their distributor falls below a reasonable expectation, they have recourse with the Board to seek review.

Absent direct customer input, it would seem unproductive for the Board to set cohort reliability standards at this time.

The Board should, however, continue to use reliability performance within cohorts for purposes of establishing Total Factor Productivity data.

4.6 Future Indicators

Previously, this commentary expressed misgivings about the Board using a "worst feeder" approach to regulating reliability. One reason for these misgivings is that feeder performance is not accurately indicative of customer experience.

Since reliability is only an issue because of the effect it has on customers, it follows that ideal indicators of reliability would try to more directly measure what is happening to customers.

The approach used in some European countries that considers the amount of energy not served (ENS) has some merit, but is currently a difficult measure to use.

In the future, smart meters should enable the gathering of more precise reliability information. Smart meters should not only be able to gather information on how many outages a customer experiences and for how long, but also on when they occur and, to some extent, the impact of the outage on the customer.

The issue of when an outage occurs is not gathered in any current measure. It is, however, important. Outages that occur when people are not at home or are asleep do not have the same impact as dinner hour outages. Collecting ENS data from smart meters could aid understanding of the customer experience, since higher usage would normally indicate greater cost to the customer when an interruption occurs.

Looking further ahead, it may be possible in the future to look at outages and correlate them with SAIC codes, which could indicate relative severity and cost. For example an interruption to a gas station on a holiday weekend would be expected to be more impactive than it would be to a bank closed on the same weekend.

Most importantly, using smart meters to collect outage information would provide the capability to know exactly which customers were experiencing performance outside of acceptable limits.

A corollary benefit of using smart meter information to track unreliability is that, since smart meter data collection is automated, problems with reporting practices and inaccuracies due to manual data collection are removed.

It is recommended that the Board begin a process initiative aimed at determining how smart meter data may be used to better understand and report on reliability.

5. Penalties and Rewards

The customer feedback evidenced in the Pollara report is clear that customers as a group are generally unwilling to pay more for an increase in reliability. Assuming that a reward for higher reliability would be financially significant for the LDC, it would follow that LDCs would be incented to make incremental investments in order to realize the reward; investments that would in turn be recovered from customers. This would be counter to the wishes of customers as expressed in the Pollara survey.

Penalty avoidance might present an incentive similar to a reward system and would seem to be inadvisable as well. There is also another problem, which is that reliability performance is currently as much a function of reliability reporting as it is of actual performance. This is a well understood and documented issue, where there is a history of apparent reliability declines whenever automated outage reporting is introduced. Lastly, a penalty regime has a natural counter-incentive built in, which is that reporting of interruptions becomes a "performance punishing" practice. The more outages an LDC reports, the more likely it will be to incur penalties. Such an incentive would not be conducive to developing an accurate understanding of actual performance.

Prepared for AMPCO by:

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