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December 20, 2011

BY EMAIL & BY COURIER

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge St, Suite 2701
Toronto ON M4P 1E4

Dear Ms. Walli:

Board File No. EB-2010-0249
Initiative to Develop Electricity Distribution System Reliability Standards
Energy Probe – Phase II - Comments on Board Letter

Pursuant to the letter from the Board, dated November 23, 2011, in respect of Phase II, please find attached the Comments of Energy Probe Research Foundation (Energy Probe) and responses to the questions posed therein.

Should you have any questions or require additional information, please contact me.

Yours truly,

David S. MacIntosh
Case Manager

cc. Paul Gasparatto, Ontario Energy Board (By email)
Peter Faye, Legal Counsel to Energy Probe (By email)
Roger Higgin, Sustainable Planning Associates (By email)

**Comments of Energy Probe Research Foundation
("Energy Probe")
EB-2010-0249**

**Initiative to Develop
Electricity Distribution System Reliability Standards
December 20, 2011**

Introduction

Energy Probe Research Foundation (Energy Probe) considers that as a result of recent policy initiatives by the OEB, the EB-2010-0249 initiative is strongly linked to the more recent Renewed Regulatory Framework initiatives, in particular those policy initiatives related to the planning and performance of the distribution networks in Ontario (EB-2011-0377/0379).

Given these initiatives, it appears to Energy Probe that the focus of the System Reliability Standards Consultation has accordingly been narrowed towards standards for, and measurement of, system performance/reliability among distributors.

However in Energy Probe's view, the context for system reliability should remain the larger picture, which we believe is providing reliable efficient electricity service to Ontario customers commensurate with the rates for such service being not only just and reasonable, but also affordable.

Energy Probe's Previous Submission

In our previous submission of October 29, 2010 Energy Probe recommended for consideration for Ontario, the customer-focused or customer-centric approach taken to System Reliability in the UK:

- 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.

- As well as establishing 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, in the UK 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), as well as information on interruptions by source, voltage and HV circuit.

The following is a summary of the recommendations offered by Energy Probe:

- Develop an electricity distribution system reliability benchmark that includes the Same features as 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

Energy Probe continues to advocate that the features inherent in such an approach adapted to the Ontario context provides an appropriate long term balance between customer and utility interests.

Board Staff Report Phase 1

Board staff's principal recommendation in its Report of March 31, 2011 is that the Board proceeds with the establishment and codification system reliability standards.

In order to achieve that end, staff believes that the next step should be to engage stakeholders in further consultations aimed at:

1. Resolving issues relating to the quality and consistency of reliability data gathered and reported by distributors; and
2. Identifying any practical or other implementation issues associated with the introduction of the new elements recommended by staff (as described in sections E.2 to E.5 above), as well as the means by which those issues can best be Resolved.

Energy Probe suggests that this recommendation continues a largely “Engineering” approach (see below) to System performance/.reliability standards.

Recent Policy Developments

The Board has initiated a consultation on a Renewed Regulatory Framework.

As part of that initiative there are two specific components that relate to Energy Probe’s main focus-- customer-focused or customer-centric distribution system performance and service quality.

- Staff Paper on Transmission and Distribution System Performance EB-2011-0379
- Staff Paper on Distribution System Performance EB-2011-0377

While informed by the new work commissioned by OEB Staff, Energy Probe continues to advocate for a pathway leading to a customer-centric approach to electricity distribution system performance and reliability in Ontario.

The framework that we propose does not fit neatly into the narrow context of System Reliability Measurement and Standards set out in the Board Staff Paper and the questions posed by Board Staff to participants in EB-2010-0239.

Accordingly, the first section of this submission (**Section 1**) will outline our proposals for a shift towards a customer-centric approach to Electricity Distribution system reliability. **Section 2** provides Energy Probe’s responses /comments on the main questions posed by Board Staff.

Section 1: A Customer-Centric Approach to ED System Reliability for Ontario

A review of the literature has lead Energy Probe to conclude that when considering system performance and reliability in networks there are two sometimes distinct approaches:

- An “Engineering” approach that treats the network as a interconnected system with specific technical performance attributes related to the delivery of the gas, water, telecommunications or electricity being carried
- A customer-centric approach that addresses the quality of the services provided by the network and the economic consequences related to this service provision

The two approaches are clearly linked, but designing appropriate standards for network performance, including reliability, can be different, depending on which approach is used.

Under the “Engineering” approach System Reliability Standards are predominantly based on overall network/system averages:

SAIDI
SAIFI
Etc, etc

Under the Customer-centric approach System Reliability Standards are based on the service provided to (and paid for, by) customers and the related economic consequences of the quality of that service:

CAIDI
MAIFI
Telephone Response Time
Etc, etc

Some system reliability performance regimes try to merge elements of both approaches, for example as Board Staff propose including *Worst Performing Feeders* and other indicators.

One other major difference is that under an “Engineering” approach, measurement of network performance, inter alia, is intended primarily to inform system reliability-driven capital investment; whereas under the customer centric approach customers may alternatively or also be compensated for lower quality of service and/or tangible economic loss, from inferior or under- performing networks or portions thereof.

The literature suggests that a key objective of any system reliability regime is over time optimizing the economic performance of the network(s). This is a very complex issue especially given the diversity of the network attributes in Ontario --Urban high voltage underground--to rural low voltage.

Optimization does not just mean investing more capital in the network, but rather selective investment to maintain or improve performance and service quality with due regard to cost and rates.

The following Chart from a 2000 EPRI Report¹ illustrates the concept:

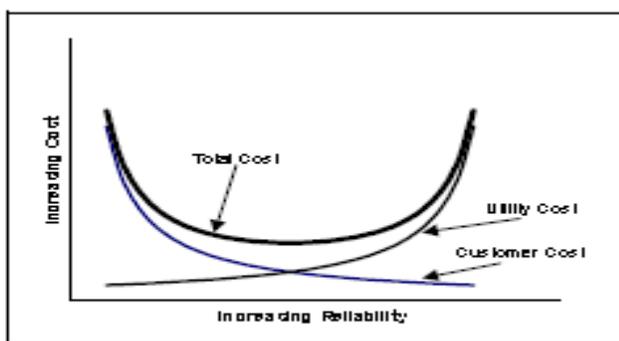


Figure 5-3
Total Cost in Value-Based Reliability Planning

Another key consideration is *What is an appropriate level of system reliability?* As noted above, customers that are located in service areas with intrinsically lower network performance can be compensated through mechanisms such as the establishment of appropriate rate zones.

¹ Reliability of Electric Utility Distribution Systems: EPRI White Paper 1000424 Final Report, October 2000 page 9-7

To consider that system performance as viewed from a customer perspective is a function of the network requires that a review of customer expectations and economic consequences be undertaken and appropriate classifications of system performance established.

Some jurisdictions including (to note just a couple that our research has uncovered), Tasmania and parts of Canada (CRTC regulated Telecommunications service providers) recognize that system reliability standards cannot be based on “one size fits all”. This is also a tenet of system planning (N-0, N+! etc.).

For example, a Working Group in Tasmania² recommended five community classifications of service and standards based on those classifications:

:

- high density commercial, which includes all major commercial centres;
- urban, which also includes significant regional centres;
- higher density rural;
- lower density rural; and
- critical infrastructure.

The Working Group also proposed two new categories:

- a critical infrastructure classification, recognizing where a community places a very high value on reliability and security of supply to critical areas; and
- a higher density rural classification,

Tasmania also has a current standard for Guaranteed Service Levels and the The working group recommended continuation of the GSL scheme, whereby individual customers receive an \$80 payment for prolonged or too frequent outages. The extension of the urban category to additional communities would result in an expansion of the number of urban customers under the GSL scheme.

The lessons to be learned from such examples are that given Ontario’s diverse geography, demographics and economy, pragmatic considerations may dictate that rural/remote customers do experience and should expect, lower system reliability than those in urban centres for a variety of reasons, including the robustness of the network and the time and cost to restore the system. Accordingly rates should reflect this

² Office of the Tasmanian Energy Regulator; Aurora Energy; Office of Energy Planning and Conservation Joint Working Group Final Report; Distribution Network Reliability Standards Volume I – Summary of Recommendations and Overview. February 2007

difference in quality of service or specific compensation provided when minimum quality is not met.

It is unfortunate that the Pollara Study conducted for Board Staff did not attempt any delineation/differentiation of system performance and customer satisfaction/value among customers served by distribution in urban, suburban/rural and low density/remote areas.

Such information would have informed the policy discussion of appropriate system reliability standards.

Customer- Utility Interactions

An important adjunct to system reliability standards is measuring and reporting customer-utility interactions related to provision of distribution service. The current consultation does not address this and in Energy Probe's view this is a major deficiency of the scope of the consultation.

Customers are often the first to report outages and there needs to be easy access 24/7 by telephone, Internet and other means including social media.

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.

As part of the proposed Working Group Scope there needs to be a best practices review of standards for a shortlist of common customer-utility interactions including

- Telephone response Time
- Quality of Telephone Response

Conclusions

As Board Staff noted at Page 13 of the Letter:

"In phase one of this initiative both ratepayers and distributor groups suggested that in the future, there should be a move towards indicators and standards that are focused on the impact of outages on individual customers rather than system wide impacts."

Energy Probe advocates that The OEB should move as soon as possible, towards a Customer-Centric regime of System performance/ Reliability Standards:

1. System performance/reliability goals and standards should shift from a focus on an "Engineering" or System Average (SAIDI, SAIFI etc.) approach to a customer-centric approach (CAIDI, MAIFI, Worst Performing Circuits etc) to standards and measurement.
2. Customer-centric Standards should include customer- utility interactions (Telephone Response Time etc.)
3. A study should be conducted on delineation /classification of appropriate Service levels (urban -rural.)
4. Rates should reflect the quality of service in each service classification
5. The implications of such an approach may include inter alia, re-examination of universal postage stamp rates and the establishment of Guaranteed Minimum Service levels,
6. The OEB should follow a pathway towards long term system cost/performance optimization for regulated Electricity Distributors and as part of that institute a regime based on best practices for reporting and managing system performance/reliability
7. The Board should conduct a best practices review of customer-utility interactions and set minimum standards and reporting requirements for several aspects that are important to customers

Section 2: Energy Probe Response to Questions posed by Board Staff

The topics covered in the Board Staff letter are:

- Collecting and Reporting Reliability Data in the Board's RRR
- Updating the current wording of the SAIDI, SAIFI, CAIDI definitions.
- Improved monitoring and reporting processes.
- Normalizing reliability data for major events.
- Reporting of reliability data for outages caused by distributor-controlled factors.
- Standardizing certain customer-specific measures.
- Standardizing a Worst Performing Circuit measure.

Board Staff Questions

As noted in Section 1, Energy Probe's comments primarily relate to customer-centric measures.

As part of that approach the frequency and duration of system interruptions and duration and impacts of customer-specific system performance and quality should be measured. The widespread installation of smart meters should allow the enhanced monitoring of distribution system performance/quality at a customer level.

Also as noted in Section 1 a review of Customer-utility interactions and related minimum standards and reporting requirement should be undertaken as part of the proposed Working Group.

Questions on Improving Current Definitions

1. Are the reliability definitions currently set out in the RRR's sufficient?
2. If not, what revisions would be recommended?

Energy Probe suggests that the current System Average indices (SAIFI, SAIDI) are adequate for the purpose of benchmarking overall system performance between distributors and from year to year. However the definitions need some clarification regarding major outages resulting from causes outside of the distributors system.

The RRR Guidelines indicate:

2.1.4.2.5 - *Customer Average Interruption Duration Index (CAIDI)*

CAIDI is an indicator of the speed at which power is restored. All planned and unplanned sustained interruptions should be used to calculate this index.

CAIDI is defined as the number of sustained interruptions normalized per customer served, and is expressed as follows:

$$\text{CAIDI} = \frac{\text{Customer-hours of Sustained Interruptions for all Customers}}{\text{Number of Sustained Interruptions for all Customers}}$$

With regard to CAIDI, Energy Probe disagrees with this as too coarse a measure. By that we mean in particular the inclusion of "sustained interruption". The assumption that only sustained interruptions result in negative economic consequences for customers is simply wrong.

We suggest that if the purpose of the index is to simply indicate how long it takes to restore service to customers, then an alternative definition should be considered. As a minimum there should be a continuum with MAIFI. For example MAIFI should include interruptions lasting x minutes or less and CAIDI interruptions lasting more than x minutes

Energy Probe strongly supports the inclusion of Worst Performing Feeders and MAIFI. However in the latter case we are concerned with the exemption wording in the RRR Guidelines (Page 20):

"Distributors that do not have the systems capability that enables them to capture or measure MAIFI are exempted from this reporting requirement"

We would have thought that with the operation of smart meters all distributors would now have the capability. Accordingly exemptions should require written justification to the Board.

3. What is the most effective way to define an interruption?
4. What is the most effective way to define the start time of an interruption?
5. What is the most effective way to define the end time of an interruption?

*Energy Probe notes that from a customer perspective, an interruption means **any** loss of supply, or reduction of voltage that affects customer equipment resulting in inconvenience, damage and/or negative economic consequences.*

In Section 1 we suggested that service levels be defined based on realistic expectations for power quality for areas/zones within a distributors system. We also suggested that minimum Guaranteed Service Levels be established. Accordingly the number and duration of interruptions would be measured at the customer level using the same definitions as used for the GSL.

6. What is the most effective way to define a "customer"?
7. What is the most effective way to define the "total number of customers served"?

In Energy Probe's view a customer should be anyone who pays for electricity service. To date this has meant accounts however with the introduction in suite metering by distributors and third parties that definition needs to be amended to a person that has a customer account and is billed for electricity service.

8. Are there any other factors of an outage that should be defined?
9. It has been suggested that the Board provide example calculations for various situations. Which types of situations would benefit from having examples provided?

Energy Probe suggests that a guide to approved indices with detailed illustrative data recording, data manipulation and index calculations would help to establish consistency.

Consideration should also be give to spreadsheet based calculation templates to allow the Board and other interested parties to do comparisons among distributors

Questions on Customer Specific Reliability Measures

For the reasons outlined in Section 1, Energy Probe supports moving as quickly as possible to reliability measures that focus among others, on the frequency and duration of outages experienced by individual customers rather than outage statistics based on the performance to the “average customer” across the entire distribution system.. Such information is consistent with a customer-centric regime.

We agree with staff that Measures of this kind could also be an important element of a robust reliability standards regime, and lead to the improved service to customers who experience poor reliability. The caveats are that service levels should be established based on economics and benefit cost and compensation should be available for customers that experience lower than a Guaranteed Minimum Level of Service (ex force majeure events).

1. Which, if any, customer specific reliability measures are distributor’s currently using?
2. Please provide the complete definitions of any customer specific reliability measure currently being used.

Distributor response required

3. Of the 4 customer specific measures mentioned (Customers Experiencing Multiple Interruptions, Customers Experiencing Long Duration Interruptions, Customer Interruptions per KM, and “Customer Hours of Interruptions per KM.) which one (or combination of more than one) would be the most efficient and effective for all distributors to monitor?

Some of the Measures are based on customer density e.g. number of customer interruptions /km is a useful indicator, because it is a step towards a classification of service levels

4. How great of an administrative burden, or increased costs, would distributors face if required to monitor measures which are directed at tracking the reliability experience of individual customers? What would those burdens or costs be?

Distributor response required

5. What, if any, other barriers exist to requiring distributors to monitor measures which are directed at tracking the reliability experience of individual customers? How could these barriers be addressed?

Distributor responses required

Normalizing Reported Data

Board staff notes there are different approaches for normalizing data used throughout the world.

The two most common approaches used in Ontario are:

- Events that affect a certain percentage of the customer base (e.g. 10% of customers affected); or
- The IEEE standard 1366

For reasons outlined in Section 1 Energy Probe supports using the Number (and/or %) of customers affected as the primary method of normalization.

Under section 2.3.12 of the RRRs, distributors are currently required to keep records of, but not report to the Board, interruptions by "cause code". The Board has recently begun requiring distributors to report SAIDI, SAIFI and CAIDI inclusive and exclusive of Cause Code 2 – Loss of Supply. The rationale behind this decision is that the loss of supply is an event that is outside of the distributor's control, as such any assessment of reliability performance should not include those outages.

Building upon this approach, staff suggests that the Board could consider requiring distributors to report their reliability statistics based solely on outages that are caused by factors that are within the control of the distributor. The most relevant causes appear to be:

Code 1 – Scheduled Outages,

Code 5 – Defective Equipment, and

Code 8 – Human Element

Energy Probe agrees with Staff that, other than scheduled outages resulting from an appropriate level of System Maintenance where customers are advised in advance, customers should expect reliable service and most other forced outages within a

distributors system (as opposed to external to that system) should be considered within the distributors control.

Perhaps the most critical issue relates to Defective Distribution Equipment. For economic reasons should equipment be “run to failure” or be replaced on a scheduled basis

Questions on Cause of Outages Reporting

Energy Probe agrees with staff that the primary use of cause codes should be to identify which outages are within the distributor’s control. The purpose of such identification should be to inform the operational practices of the distributor with a view to improving performance reliability and quality of customer service.

1. Which Cause Codes should be selected as those which are within the control of the distributor?

Energy Probe agrees with Staff that Code 1 – Scheduled Outages, Code 5 – Defective Equipment, and Code 8 – Human Element are within the distributor’s control.

Tree Contact may be more difficult to attribute because sometimes this occurs on private property on which the distributor has an easement

2. Which would be the best reporting approach to use:
 - Reporting total SAIDI, SAIFI and CAIDI results based solely on all the relevant Cause Codes?
 - Reporting SAIDI, SAIFI and CAIDI results based on each separate relevant Cause Code?
 - Reporting the number of outages (normalized to X number of customers) by each relevant Cause Code?
 - Another option that could be considered?

Energy Probe suggests maintaining System average data by Cause Code may have limited value, compared to reporting outages and the number of customer interruptions normalized by X number of customers

An even better option may be to report interruptions (customer hours) by cause code.

3. What improvements to distributor practices or procedures, could be implemented to ensure the cause is being categorized accurately?
4. Are the current definitions of the Cause Codes sufficient or are there any suggestions on how to update the definitions so as to improve understanding?
5. How great of an administrative burden, or increased costs, would distributors face if required to report data on the causes of outages to the Board? What would those burdens or costs be?
6. What, if any, other barriers exist to requiring distributors report data on outages caused by factors within the control of the distributor? How could these barriers be addressed?

Questions on Worst Performing Circuit Measure

Energy Probe again commends an approach of classification of service areas. This would link directly into measurement of the performance of circuits/feeders and allow for Guaranteed Minimum Performance Standards. Simply identifying the worst performing circuit doesn't do it for customers. It is critical to identify All under performing circuits/feeders and take steps to remediate problem circuits/feeders.

1. Which would be the most effective way to define or designate a "worst" performing circuit:

Worst SAIDI?

Worst SAIFI?

A combination of both the Worst SAIDI & SAIFI?

Feeders Experiencing Multiple (ex: 5 or more) Interruptions in a year?

Feeders Experiencing the Longest Interruptions?

Another option to consider?

Energy Probe suggests that the only indicator that meshes with a customer-centric regime is “feeders experiencing multiple outages” combined with the “number of customer hours of interruptions”

2. Should the number of customers who are being provided service by a feeder have an impact on the designation of “worst” performing? (For example, using Customer-minutes of outage as a performance measure would result in feeders with the most customers naturally being highlighted more frequently than feeders with fewer customers, even though such a feeder may have poorer reliability.)
3. Should there be expected distributor response to the identification of a worst performing feeder?
4. If so, what type of expected response should be considered? (E.g. No feeder should be designated the “worst feeder” more than 2 years in a row.)

Energy Probe suggests the term Worst (performing) Feeder is too narrow. All under performing Circuits/feeders and the associated customer impacts should be identified

The Distributor should compensate customers for under-performing feeders based on the difference between the average performance/reliability of similar feeders

5. How great of an administrative burden, or increased costs, would distributors face if required to monitor their worst performing circuits? What would those burdens or costs be?

Energy Probe suggests that monitoring should include assessing the number of complaints/telephone contacts related to localized outages

6. What, if any, other barriers exist to requiring distributors to monitor a Worst Performing Circuit measure? How could these barriers be addressed?

Distributor Response required