Customer Delivery Point Performance Standards Amendment
Stakeholder / Customer Consultations

Information sessions and consultations with stakeholders/customers were carried out to obtain feedback/comments on the proposed amendment to the existing Transmission Customer Delivery Point Performance Standards, as per the Customer/Stakeholder Plan shown in Table 1 and attached Appendices 1-4. The information gained through this process was considered and incorporated in the final standards amendment submitted to the Ontario Energy Board (OEB).

Action	Schedule	Appendix
1. Present Proposal to Hydro One's Customer Advisory Board (CAB) & Solicit Feedback	Apr 14	1
2. Present Proposed Amendment to AMPCO Annual Meeting	Apr 29	1
3. Present Proposed Amendment to EDA Operations Council Meeting.	May 4	1
4. Distribute Proposed Amendment to Customers for Comments	Jun 25	2
5. First Customer/Stakeholder Web Conference	Jul 6	3
6. Second Customer/Stakeholder Web Conference	Jul 13	4
7. Receive Customer/Stakeholder feedback submissions	Jul 20	5
8. File revised CDPPS with OEB	Sep 7	
9. Notify Customers/Stakeholders of Changes	Sep 10	

Table 1: Customer/Stakeholder Plan

The feedback received from all Stakeholders/Customers is provided in Appendix 5. The main issues are summarized below together with their impact/change on the final amendment presented. It is noted that feedback received from all (100%) customers/stakeholder respondents agreed that the (1) the existing standards should be revised to ensure individual customer reliability levels are maintained; and (2) the proposed amendment is an improvement from the original standards filed in May 2002.

Main Issues and Impact on Final Amendment

1. Use a Fixed 10-year Historical Average Instead of a Rolling 10-year Average.

Customers are concerned that the use of a **rolling** 10-year historical average plus one standard deviation (1σ) to establish the DP performance baseline triggers would permit DP performance to gradually degrade over time. **Fixing** the 10-year average would eliminate the possibility of this "creep" materializing and supports the principle of maintaining existing DP performance.
Change to Final Proposal: Use the **fixed** 1994-2003 10-year historical average performance, plus one standard deviation to establish the performance baseline trigger for the frequency and duration of forced interruptions.

2. Continuous Improvement of Individual DP Performance

Customers are concerned that the proposed amendment does not provide for the continuous improvement of individual DP performance. Networks is committed to maintaining transmission system reliability performance. Continuous improvement of reliability performance is more appropriately reflected in overall transmission system wide measures for reliability that are approved by the OEB during a rate order application, rather than in a standard for individual delivery points. The system measures encompass all DP performance and these are to be managed to drive overall system wide reliability performance improvements for optimum efficiency and effectiveness.

Also, actual reliability performance delivered depends largely on the technical supply factors or configuration of supply to a delivery point and considers such factors as the number of supply lines, line length, supply voltage, and geography. The existing or inherent reliability at each DP is, therefore, not likely to change unless wholesale changes are made to the DP's configuration of supply.

Change to Final Proposal: None. Networks is committed to maintaining transmission system–wide reliability performance levels and to meeting any system-wide service quality indicators approved by the OEB.

3. Power Quality Issues Are Not Considered in the DP Performance Standards

Customers are concerned that power quality issues are not considered in the Customer Delivery Point Performance Standards. The proposed transmission Customer Delivery Point Performance Standards are based on the frequency and duration of momentary / sustained interruptions caused by forced outages at the customer delivery point level. This is consistent with traditional industry practices for measuring reliability performance and also consistent with Networks' transmission system wide measures for managing reliability performance in accordance with the requirements of Section 2.5 of the Transmission System Code.

Networks recognizes that power quality (PQ) related incidents (e.g. voltage dips) may also have an impact on the operations of large industrial and commercial customers. Appendix 2 of the Transmission System Code sets out some power quality (PQ) performance standards for voltage unbalance, flicker, surges, harmonics and EM interference for all equipment and system elements connected to the transmission system. Networks is committed to comply with these standards and to conform to good utility practices related to the monitoring, measuring and managing of power quality of electricity delivered to customers.

Also, PQ issues are still not fully understood and measures/standards are still not generally accepted in the industry. These are still evolving. Networks is committed to monitor ongoing developments in this area to better manage PQ performance.

Change to Final Proposal:. None. Networks will work with its customers to address any PQ complaints/issues and any equipment non-compliance is to be addressed via Networks proposed "Equipment Compliance Process" that was filed with the OEB in April 2002.

4. DP Performance "Outlier" Implementation Issues

Consistent with the requirements of Section 2.5 of the Transmission System Code, the DP Performance Standards define triggers for Networks to initiate technical and financial evaluation with affected customers.

Each year Networks reviews reliability performance with its customers. For customers that are performance outliers, Networks will negotiate timing, solution, cost sharing arrangement, and any other related matters with each customer wanting to proceed with the delivery point reliability performance improvements. The timing/schedule will consider customer impacts, nature of the remedial measures, equipment deliveries, Networks resource capabilities, other investment priorities, and outage/resource availability.

Change to Final Proposal: None

5. *DP Performance Standards Do Not Apply at the Distribution Feeder Interface with Embedded Local Distribution Companies (LDCs)*

Some customers are concerned that the proposed Customer Delivery Point Performance Standards do not apply at the distribution feeder interface with embedded LDCs. Currently, delivery point is currently defined as per the Transmission System Code (TSC) definition of sections 1.2.12 and 1.2.22:

1.2.12 "Connection point means a point or points of connection between the transmitter's transmission facilities and the customer facilities."

1.2.22 *"Delivery Point" has the same meaning given in the relevant transmission Rate Order and has also the same meaning as "connection point."*

This consists of all 115 kV and above (a) transformer (TS) step-down low voltage buses station (for TSs owned by Networks); and (b) direct customer stations, distributing stations and municipal stations' interfaces with the transmission system as illustrated in the Figure 1.

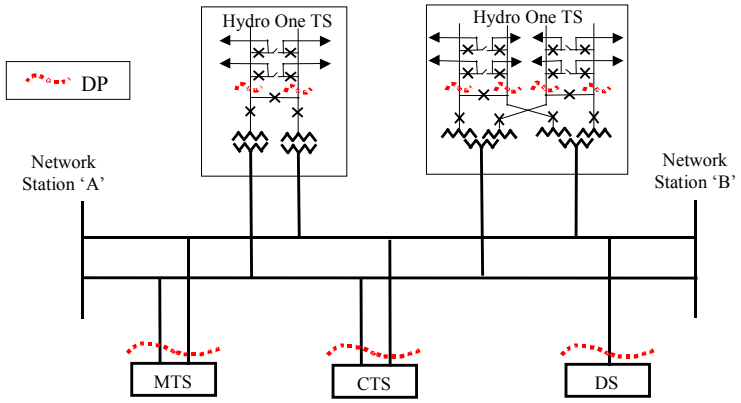


Figure 1: Definition of Delivery Point

The Transmission Rate Order (TRO) also defines delivery point at the transmission station level as given by the following:

> *" The Transmission Delivery Point is defined as the transformation station, owned by the Company or by Transmission Customer, which steps down the voltage from above 50 kV to below 50 kV and which connects the customer to the transmission system."*

By nature of these definitions, Customer Delivery Point Performance Standards only apply at the transmission level interface with customers. Any additional feeder reliability issues/concerns downstream of the delivery point at the distribution level are to be addressed with feeder's owner.

APPENDIX 1

NETWORKS PRESENTATION TO
CUSTOMER ADVISORY BOARD,
AMPCO ANNUAL MEETING
&
EDA OPERATIONS COUNCIL MEETING

Delivery Point Performance Standards: Proposed Amendment

Purpose

- In response to Customer Feedback, Networks is proposing to amend existing Delivery Point Performance Standards that have been filed with the OEB

- Amendment addresses some customers' concerns that while addressing performance outliers, Networks might allow the delivery point performance of non-outliers to deteriorate

- Obtain your feedback on proposed amendment prior to executive review & further customer review.

Background

Need

- Comply with Tx System Code (S 2.5) to Develop Tx Delivery Point (DP) Performance Standards
  - *Consistent with System Standards*
  - *Reflect Typical System Configurations & Historical Development / Performance*
  - *Provide Performance Bands or Triggers to Initiate Studies with Affected Customers*

Existing Delivery Point Performance Standards

- Existing Delivery Point Performance Standards
  i.e. relates the level of reliability of supply to the size of load being served

- Provides Performance Bands or Triggers to Initiate Studies with Affected Customers

Performance Measure	Delivery Point Performance Standards *(Based on a Delivery Point's Total Average Station Load)*							
	0-15 MW		**15-40 MW**		**40-80 MW**		**>80 MW**	
	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance
DP Frequency of Interruptions (Outages/yr)	4.1	**9.0**	1.1	**3.5**	0.5	**1.5**	0.3	**1.0**
DP Interruption Duration (min/yr)	89	**360**	22	**140**	11	**55**	5	**25**

Background

Status

- Developed Standards & Presented these to Stakeholders
  - *Accommodate Normal Performance variations*
  - *Limit No. of Outliers to Manageable/Affordable level (about 10%)*
  - *Deliver Level of Reliability Commensurate with Customer value (i.e. Cost vs value)*
  - *Direct / focus efforts for reliability improvements at Worst Performing DPs*

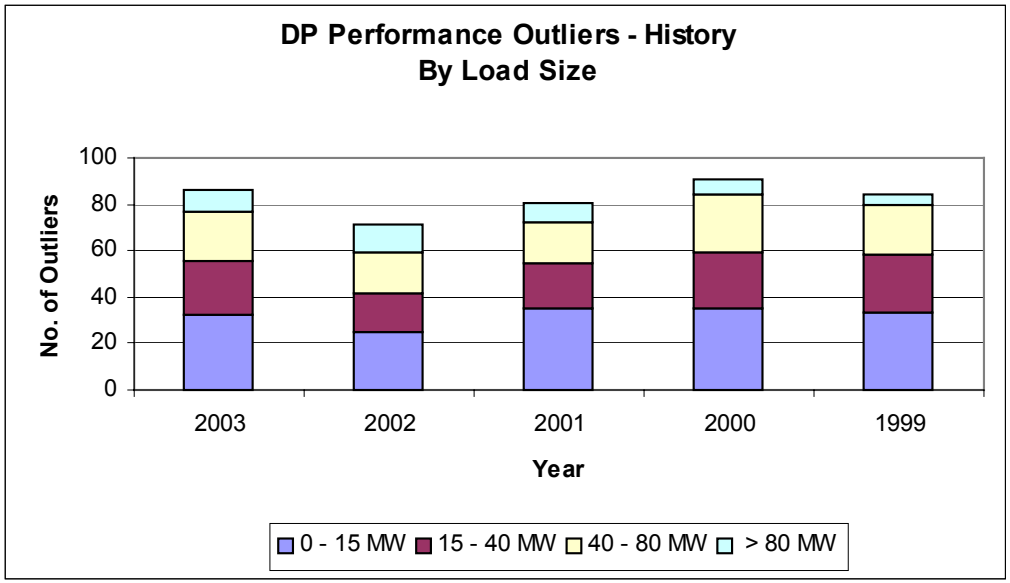
- Filed Standards with OEB in May 2002

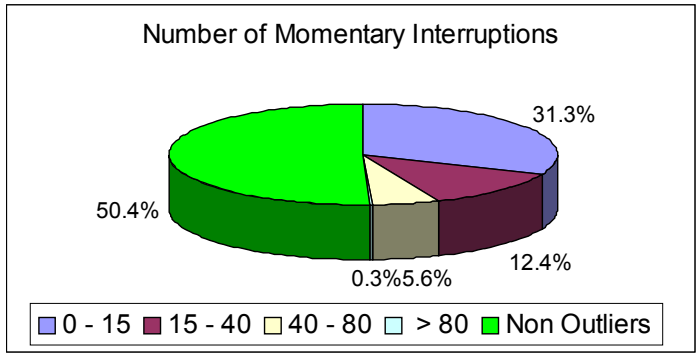
2003 DP Performance Program Highlights

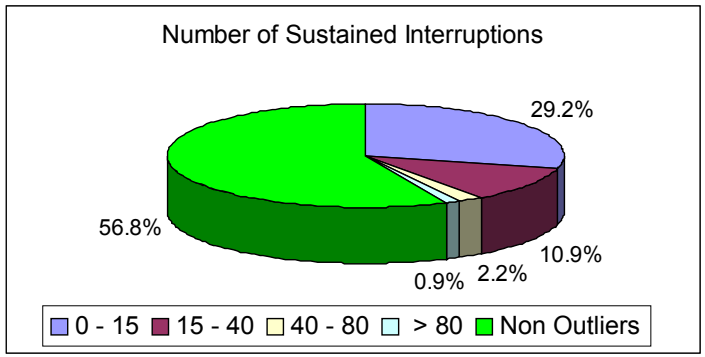
- 2002 Performance Outliers = 71
- # Isolated Incidents - 12
  (No Further Action Required)
- # Outliers Addressed - 26
- Program Expenditures in 2003 - $6M
  - *Development - $4M*
  - *Sustainment - $2M*
- Customer Contributions - $88k

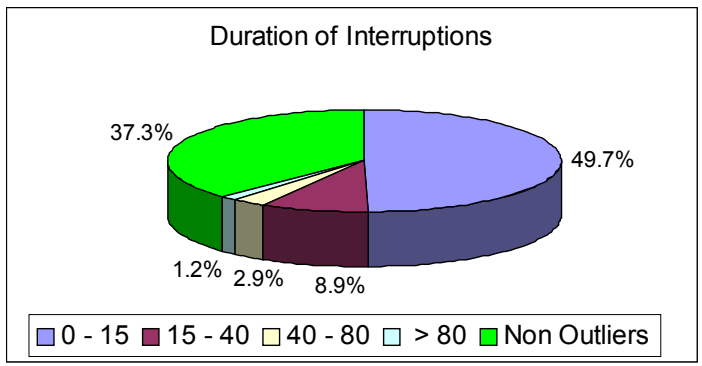
hydro one

2003 DP Performance Outliers



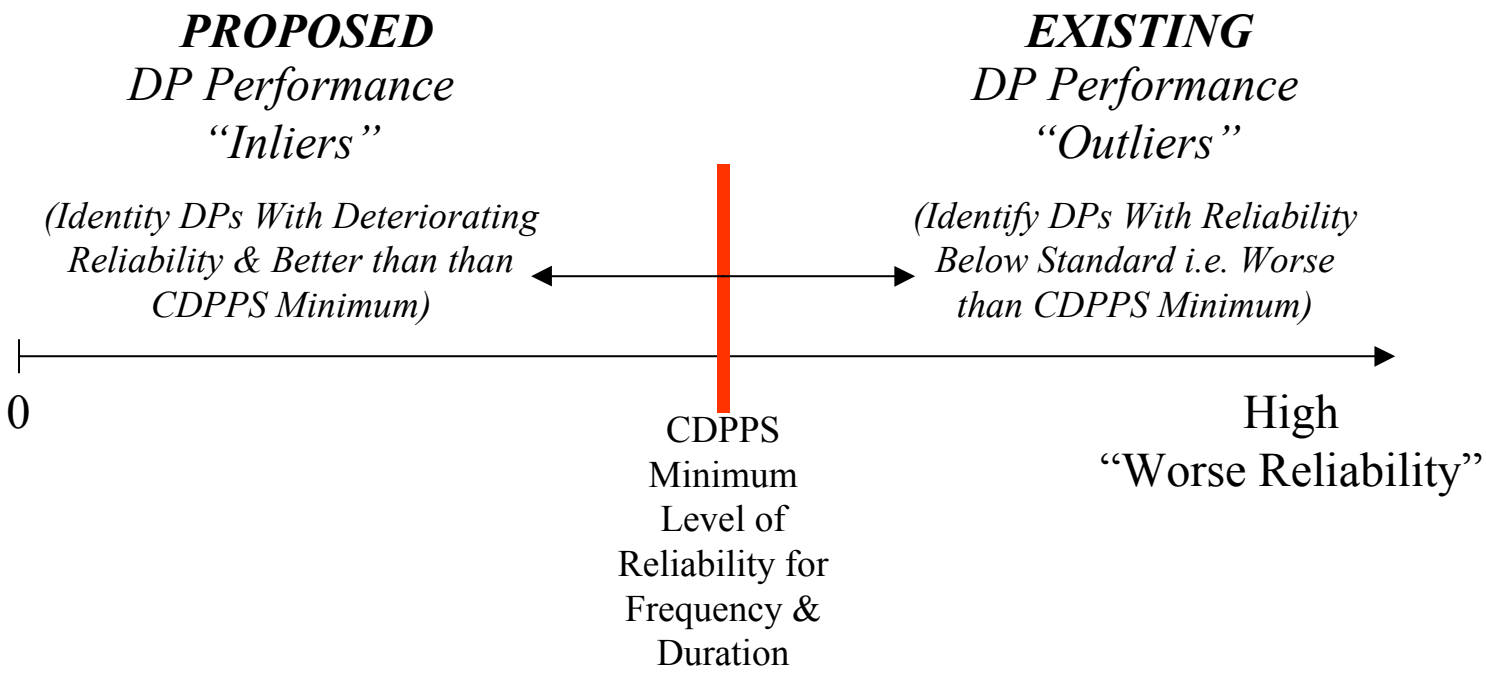






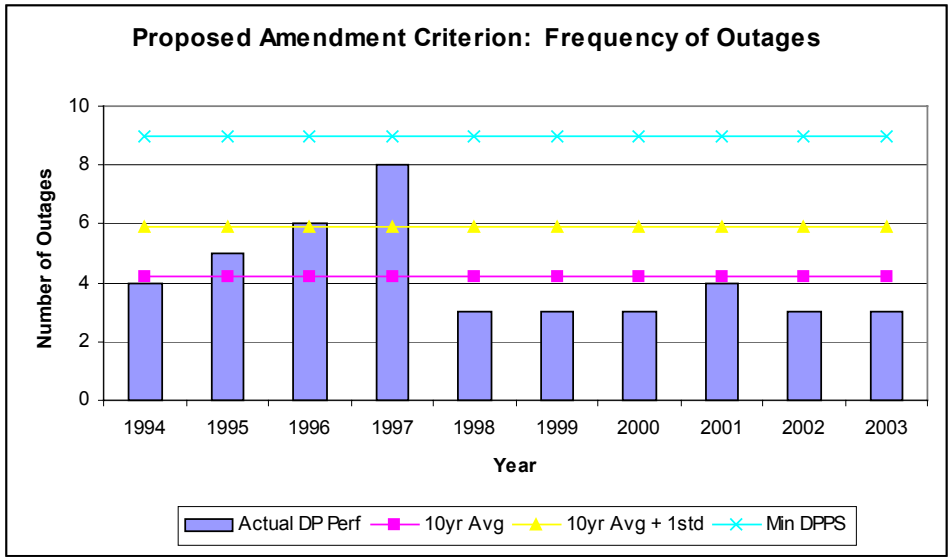
- *Existing DP Standards Consistently Identify about 10% of Delivery Points as "Outliers"*
- *This 10% contributes disproportionately to overall system unreliability.*

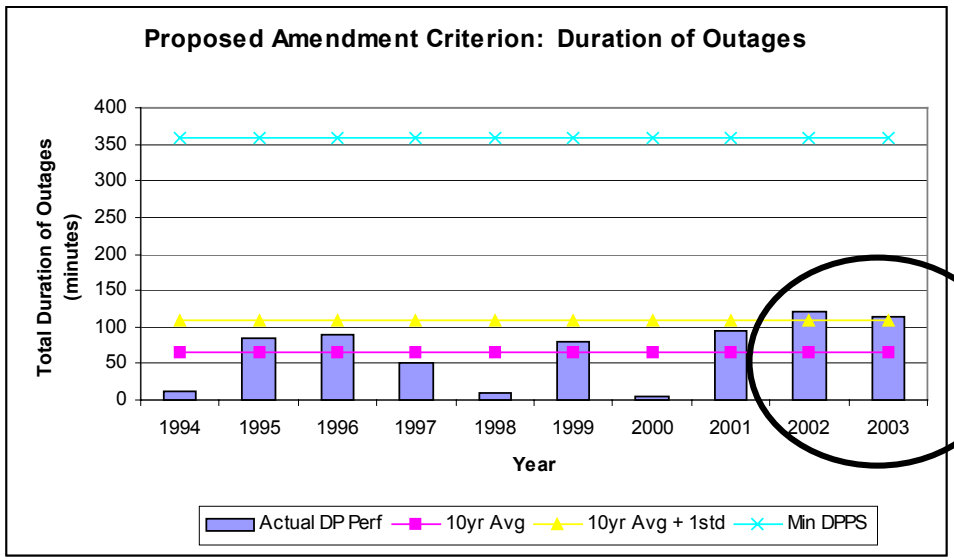
Proposed Amendment



- Append Existing DPPS - Add New Performance Standard Criterion
- Address Customer Concerns to maintain historical DP Performance by identifying DPs with deteriorating trends in reliability
- Initiate technical and financial evaluations with affected customers

Proposed New Criterion



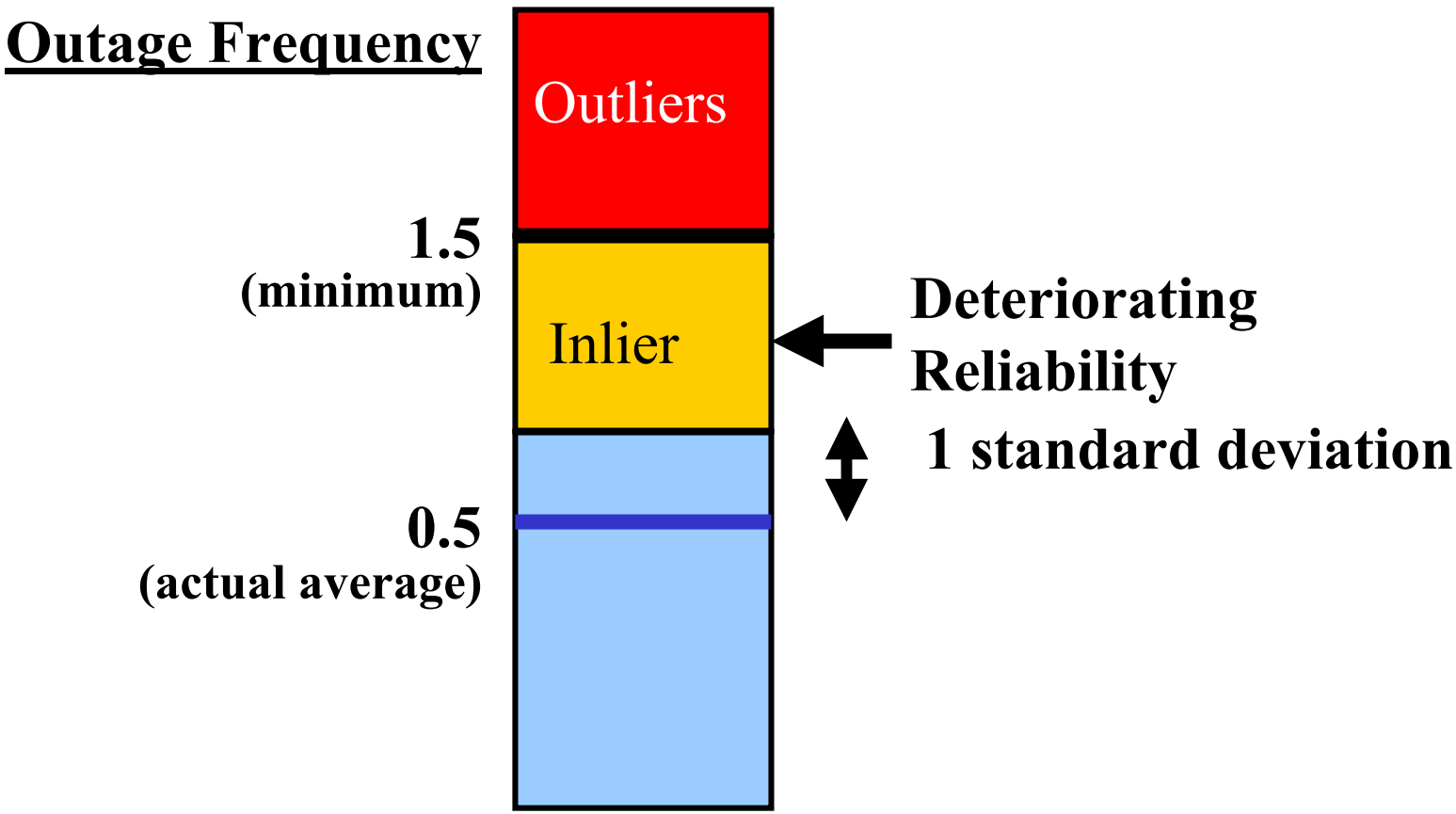


- Use 10-Yr Historical Performance of Frequency & Duration of Forced Outages at Each DP
- Establish Baseline = $\text{Average}_{10\text{-yr}} + 1\sigma$
- Performance that exceeds baseline in two consecutive years is identified as an outlier for either Frequency or Duration

"DP Performance Inlier"

Revised Standard

40 - 80 Mw Customer



Other Issues Still To Be Resolved

1. Funding to Address "Inliers" & Restore Historical Level of DP Performance vs Funding to Address "Outliers" & Move DP Performance to Better than Historical Level
   - *Treat Same as "Outliers" ?*

2. How to establish baseline for new Delivery Points?
   - *What is minimum number of years required?*

3. What happens when DP Inlier moves off list in year that "fix" is planned?
   - *Do we proceed with "fix?"*

Customer/Stakeholder Plan

Action	Schedule
1. Present Proposal to Customer Advisory Board (CAB) & Solicit Feedback	Apr 14
2. Include in Dave Barrie's AMPCO Presentation.	Apr 29
3. Put on EDA operations council next agenda.	May 1
4. Distribute Standards to Customers For Comments	May 15
5. Stakeholder Proposal at Spring Customer workshops.	May 30
6. Accept Customer/Stakeholder written feedback	Jun 15
7. Update/revise OEB Filed Policy	Jun 30
8. Present Final Proposal to CAB	Jul 15
9. File revised DPPS with OEB	Jul 30
10. Notify Customers of Changes	Aug 15

APPENDIX 2

NETWORKS NOTIFICATION TO CUSTOMERS REGARDING PROPOSED CUSTOMER DELIVERY POINT PERFORMANCE STANDARDS AMENDMENT

JESUS Bruno

From: LANDGRAFF Colleen
Sent: Tuesday, July 13, 2004 11:35 AM
To: JESUS Bruno
Subject: Hydro One Customer Delivery Point Performance Standards Amendment Proposal

To: Customer Mailing List

Date: June 25, 2004

Proposed Customer Delivery Point Performance Standards Amendment

In accordance with Section 2.5 of the Transmission System Code, Hydro One Networks Inc. (Networks) filed its Customer Delivery Point Performance Standards (CDPPS) with the Ontario Energy Board (OEB) in April 2002. Customer feedback received since this filing indicates a concern about Networks maintaining the existing performance levels for customers that are currently within the CDPPS. In other words, while addressing performance "outliers," the concern was that Networks might allow the historical delivery point performance to deteriorate.

In response to this feedback, Networks proposes to append the existing CDPPS to address these customer concerns with a new performance standard criterion. The proposed amendment reflects Networks' commitment to customers of meeting their electrical service expectations by driving the planning, maintaining and operating of transmission assets to reduce the risk of power interruptions.

Networks is in the process of stakeholdering the proposed amendment with customers and will hold two Web Conferences to review and solicit feedback; details are below. Networks will finalize the amendment prior to filing it with the Ontario Energy Board on August 13, 2004.

The following documents have been attached for your review: CDPPS Amendment Proposal, PowerPoint presentation, and feedback form. We encourage you to attend one of the Web Conferences prior to submitting your feedback.

Once the material has been reviewed, we ask that you fill out the feedback form and mailto:colleen.landgraff@hydroone.com. Alternatively, you can also mail or fax the form back, contact information is provided below.


Hydro One CDPPS Amendment Prop...


Hydro One CDPPS Amendment Prop...


Hydro One Feedback Form.doc

Web Conferencing Details

Web Conferencing involves both the internet, to view the presentation and submit questions, and the telephone, to listen to the audio portion of the conference. The time, date, telephone conference number, and web link to enter the conference website is listed below. You can attend either session; there is no pre-registration required.

An ID # and password have been entered for you on the login screen of the Web Conference main page. Enter in your first and last name to gain access to the presentation.

The links will be available a half hour prior to each Web Conference. If you have any trouble, the technical support number is 1-866-861-2121 or 416-695-9871.

First Web Conference

Subject: Hydro One Networks Meeting
When: Tuesday, Jul 6, 2004 1:00 PM (EDT)
Duration: 2 Hours
Audio Information: 1-888-789-0089 or 416-695-6140

Click on the following link to attend
http://www.placeware.com/cc/accutelprem/join?id=T506874H&role=attend&pw=8PN6Z9

If you are having any difficulty with the above link, please use the link below.
Alternate Attend Instructions:
Go to: http://www.placeware.com/cc/accutelprem/join
Your Name: (enter your name)
Meeting ID: T506874H
Meeting Password: 8PN6Z9

To check your browser prior to the meeting, click the following URL or
enter it into your browser:

http://www.placeware.com/cc/lmcheck/join?id=lmconsoletest&role=attend&cn=user&pw=&recording

For further support or inquiries contact ScreenPlay Support via e-mail at
screenplaysupport@accutel.com or by calling 1-866-861-2121 or 416-695-9871.

Second Web Conference

Subject: Hydro One Networks Meeting
When: Tuesday, Jul 13, 2004 1:00 PM (EDT)
Duration: 2 Hours
Audio Information: 1-888-789-0089 or 416-695-6140

Click on the following link to attend
http://www.placeware.com/cc/accutelprem/join?id=T506876H&role=attend&pw=N5K84R

If you are having any difficulty with the above link, please use the link below.
Alternate Attend Instructions:
Go to: http://www.placeware.com/cc/accutelprem/join
Your Name: (enter your name)
Meeting ID: T506876H
Meeting Password: N5K84R

To check your browser prior to the meeting, click the following URL or enter it into your browser:

http://www.placeware.com/cc/lmcheck/join?id=lmconsoletest&role=attend&cn=user&pw=&recording

For further support or inquiries contact ScreenPlay Support via e-mail at screenplaysupport@accutel.com or by calling 1-866-861-2121 or 416-695-9871.

If you have any questions on the Web Conference, please feel free to contact me.
Thank you,
Colleen Landgraff

Customer Contracts & Business Relations
Hydro One Networks
483 Bay Street, North Tower - 15th Floor
Toronto, Ontario
M5G 2P5
Phone: 416-345-5972
Fax: 416-345-5977
colleen.landgraff@HydroOne.com

E-Mail Attachment 1:

Hydro One CDPPS Amendment Proposal

Proposed Customer Delivery Point Performance Standards Amendment

1.0 Introduction

In accordance with Section 2.5 of the Transmission System Code, Hydro One Networks Inc. (Networks) filed its Customer Delivery Point Performance Standards (CDPPS) with the Ontario Energy Board (OEB) in April 2002. These are attached as Appendix 1. Customer feedback received since this filing indicates a concern about Networks maintaining the existing performance levels for customers that are currently within the CDPPS. In other words, while addressing performance "outliers," the concern was that Networks might allow the historical delivery point performance to deteriorate.

In response to this feedback, Networks proposes to append the existing CDPPS to address these customer concerns with a new performance standard criterion that it plans to file with the OEB in August 2004. The proposed amendment reflects Networks' commitment to customers of meeting their electrical service expectations by driving the planning, maintaining and operating of transmission assets to reduce the risk of power interruptions.

The new performance standard criterion will identify delivery points (DPs) with deteriorating trends in reliability performance that are currently within the existing CDPPS. This would be used by Networks to initiate technical and financial evaluations with affected customers in accordance with Section 2.5 of the Transmission System Code.

2.0 Proposed Amendment

The new performance standard criterion will identify delivery points with deteriorating trends in reliability performance. Specifically, a trigger would be set for each delivery point, based on that delivery point's own historical 10-year rolling average performance, plus one standard deviation (1σ). Performance that is worse than this level for two consecutive years would be a candidate for remedial action and called a **"Performance Inlier".** Networks would respond by initiating technical and financial evaluations with affected customers in accordance with Section 2.5 of the Transmission System Code.

It is noted that statistically, 2σ (i.e. 95% confidence) are typically used with a normal distribution as the boundary to identify performance inliers in two consecutive years. But given Networks' commitment to customer reliability and the fact that transmission outages do not follow a normal distribution, we have chosen to keep the tolerance to 1σ to flag performance inliers. This is expected to accommodate normal year-to-year performance variation with about 90% confidence.

These performance standards will apply to all transmission load customers, and not only "outliers" covered by the previously filed standards. The baseline at each delivery point will be updated annually based on the previous 10-year performance of frequency and duration of forced interruptions. They include outages resulting from force majéure events, but exclude events which have excessive impact on the Transmission system that in Networks' assessment, strongly skew the historical trend of the measure e.g. 1998 ice storm and 2003 blackout.

New or recent load customers with fewer than 10 years of historical performance data are to be excluded from this analysis until a minimum of 5 years of data is available to establish a baseline.

A deteriorating trend in the underlying inherent DP reliability is detected and differentiated from purely random incidents by requiring that, to qualify as an inlier, a DP must exhibit two consecutive years of performance that falls outside this confidence band.

Application of the proposed amendment for a typical delivery point with an average load of less than 15 MW is illustrated in Figures 2 and 3 below for both frequency and duration of interruptions, respectively. These figures show the historical performance over the period 1994-2003, the 10-year average, the baseline (10-year average + 1σ), and the CDPPS minimum level of reliability for a delivery point with an average load of 0-15 MW.

Figure 2

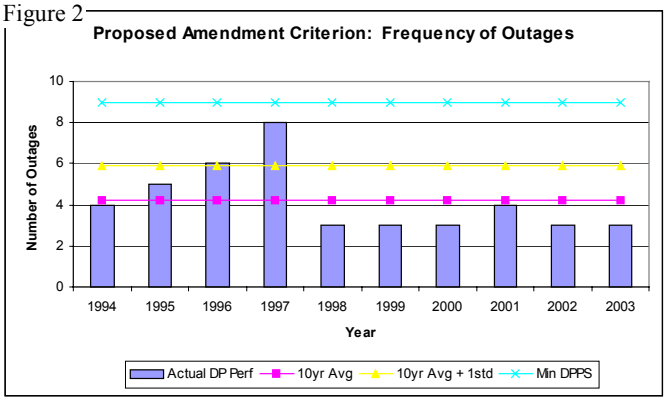
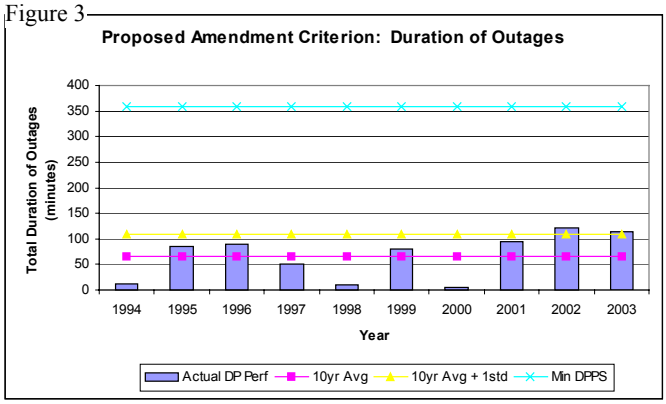


Figure 3



In this example, the delivery point is an inlier, but not an outlier. Based on the proposed new criterion, the delivery point frequency performance for 2002 and 2003 is better than the 10-year historical average. But the duration of outages exceeds the inlier baseline in both 2002 and 2003 and it would be flagged as a performance "inlier." This would initiate technical and financial evaluations with affected customers to determine the root cause of the unreliability and remedial measures required to restore the historical reliability of performance.

4.0 Remedial Costs

Hydro One Networks is committed to maintaining Customers' historical level of delivery point performance. As such, Networks will cover the remedial costs, including appropriate asset sustainment costs, on-going maintenance and asset replacement to restore/sustain the inherent reliability performance of the existing assets to what was designed originally. Networks remedial work will not include capital reliability improvements that significantly enhance the reliability of supply inherent in the original system design or configuration of supply.

Also, for new or expanding customer loads, the delivery point performance requirements will be specified by the customer based on their connection needs and negotiated as part of the connection cost recovery agreement.

4.1 Customer Stakeholder Process & Action Plan

Networks is in the process of completing its stakeholdering of its proposed amendment. On April 14, 2004, Networks presented its proposal to its Customer Advisory Board. On April 29, 2004, Networks presented its proposed amendment at the AMPCO Annual meeting. On May 4, 2004, the amendment was presented to the EDA's Joint Operations and Regulatory Council.

Networks will complete its stakeholdering of this proposed amendment in July with an email and feedback form sent to every transmission load customer of Networks. Two Web Conferences will be held to inform customers and solicit feedback. If requested, Networks will make presentations for clarification to any interested customer group. Based on feedback received through the stakeholdering, Networks will finalize the amendment prior to filing it with the Ontario Energy Board in August 2004.

Appendix 1

Customer Delivery Point Performance Standards

Filed with the OEB

April 2002

Customer Delivery Point Performance Standards

April 2002

Customer Delivery Point Performance Standards

Hydro One Networks Inc.

In accordance with Section 2.5 of the Transmission System Code, Hydro One Networks Inc. (Networks) is required to develop performance standards at the customer delivery point level, consistent with system wide standards, that reflect:

- typical transmission-system configurations that take into account the historical development of the transmission system at the customer delivery point level;
- historical performance at the customer delivery point level;
- acceptable bands of performance at the customer delivery point level for the transmission system configurations; geographic area, load, and capacity levels; and
- defined triggers that would initiate technical and financial evaluations by the transmitter and its customers regarding performance standards at the customer delivery point level, exemptions from such standards, and study triggers and results.

The Customer Delivery Point Performance Standards and Triggers that are proposed for Networks' transmission system are shown in Table 1 below. Customer/Stakeholder feedback was solicited and their input incorporated, as appropriate, prior to finalizing these delivery point performance standards for submission to the OEB.

Performance Measure	Delivery Point Performance Standards *(Based on a Delivery Point's Total Average Station Load)*							
	0-15 MW		**15-40 MW**		**40-80 MW**		**>80 MW**	
	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance
DP Frequency of Interruptions (Outages/yr)	4.1	**9.0**	1.1	**3.5**	0.5	**1.5**	0.3	**1.0**
DP Interruption Duration (min/yr)	89	**360**	22	**140**	11	**55**	5	**25**

Table 1: Networks' Delivery Point Performance Standards

These delivery point performance standards are based on rigorous statistical analysis of the historical (1991-2000) performance as measured by the frequency and duration of outages that covers the impact of all momentary and sustained interruptions caused by forced outages, excluding force majeure events that are deemed appropriate to be excluded (e.g. 1998 Ice Storm, tornadoes, earthquakes, other acts of God and any other significant event having "excessive" impact on performance that is beyond the reasonable control of, and not a result of the fault or negligence of Networks).

The minimum standards of performance are to be used as triggers by Networks to initiate technical and financial evaluations with affected customers. These bands are to:

- accommodate normal year-to-year delivery point performance variations,
- limit the number of delivery points that are to be considered "outliers" to a manageable/affordable level,
- deliver a level of reliability that is commensurate with customer value,
- and direct/focus efforts for reliability improvements at the "worst" performing delivery points.

The proposed minimum performance standards correspond to a performance bandwidth designed to capture about 90% of all delivery point performance and leave about 10% of the delivery points to be classified as performance "outliers."

These performance standards will apply to all existing transmission load customers (including Customers that have signed a connection cost recovery agreement prior to market opening). For new or expanding customer loads, the delivery point performance requirements will be specified and paid for by the customer based on their connection needs and negotiated as part of the connection cost recovery agreement.

When the three year rolling average of delivery point performance falls below the minimum standard of performance or when delivery point customer(s) indicate that analysis is required, Networks will initiate technical and financial evaluations to assess remedies for improving reliability.

To encourage proceeding with only those reliability performance improvements that are technically and economically practical and to limit the subsidisation of reliability improvement costs by other pool customers, Networks' level of incremental investment for improving the performance of an "outlier" will be limited to the present value of three years worth of transformation and/or line connection revenue[1] associated with that delivery point. Any funding shortfalls for improving delivery point reliability performance will be made up by affected delivery point customers in the form of a financial/capital contribution. Cost responsibility for these investments is to be consistent with the new Market Rules and the Transmission System Code. Affected delivery point customer(s) will be responsible for all the costs associated with any new/modified facilities required on facilities (lines and stations) they own. The financial contribution requirements and cost sharing arrangement are to be detailed in a connection cost

[1] *In the special case where a delivery point pays only network tariffs, line connection tariffs are to be used as proxy in the revenue calculation.*

recovery agreement to be signed with the affected customer(s), before any work to improve delivery point outlier performance begins.

Networks will negotiate timing, solution, cost sharing arrangement, and any other related matters with each customer wanting to proceed with the delivery point reliability performance improvements. The timing/schedule will consider customer impacts, nature of the remedial measures, equipment deliveries, Networks resource capabilities, other investment priorities, and outage/resource availability.

In addition to addressing these delivery point performance standards, Networks is committed to maintaining transmission system-wide reliability levels and to meeting any system-wide service quality indicators approved by the OEB.

E-Mail Attachment 2:

Hydro One CDPPS Amendment Proposal
Power Point Presentation

Customer Delivery Point Performance Standards: Proposed Amendment

June 25, 2004

Purpose

- In response to customer feedback, Networks is proposing to amend existing Customer Delivery Point Performance Standards that have been filed with the OEB

- The Amendment addresses some customers' concerns that while addressing performance outliers, Networks might allow the delivery point performance of non-outliers to deteriorate

Background

Need

- Comply with Tx System Code (S 2.5) to Develop Tx Delivery Point (DP) Performance Standards

  - *Consistent with system standards*
  - *Reflect typical system configurations & historical development / performance*
  - *Provide Performance Bands or triggers to initiate studies with affected customers*

Background

Status

- Developed Standards & presented these to Stakeholders
  - *Accommodate normal performance variations*
  - *Limit No. of Outliers to manageable/affordable level (about 10%)*
  - *Deliver level of reliability commensurate with customer value (i.e. cost vs value)*
  - *Direct / focus efforts for reliability improvements at worst performing DPs*

- Filed Standards with OEB in May 2002

Existing Delivery Point Performance Standards

- Existing Delivery Point Performance Standards
  i.e. relates the level of reliability of supply to the size of load being served

- Provides Performance Bands or triggers to initiate studies with affected customers

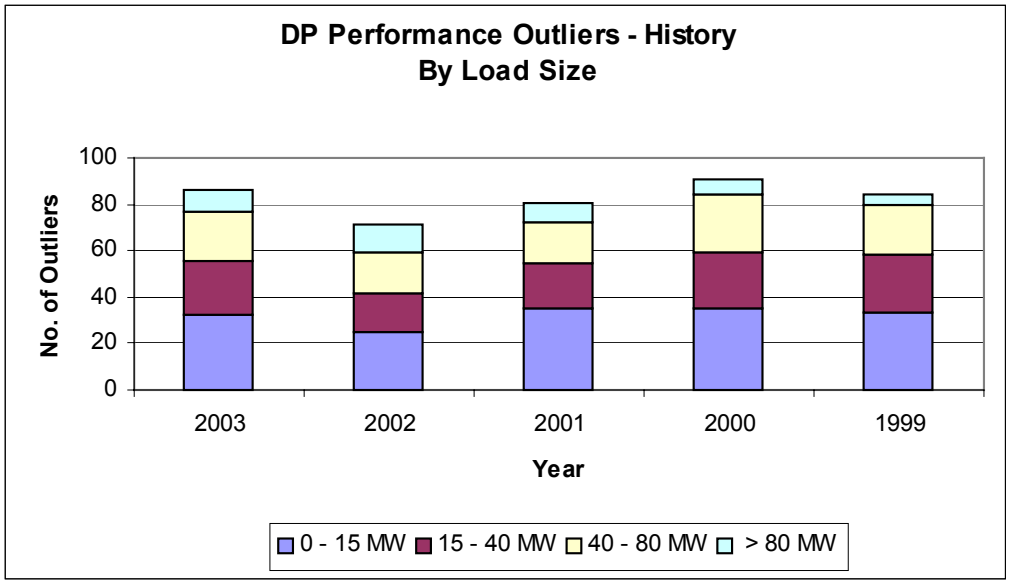
Performance Measure	Delivery Point Performance Standards *(Based on a Delivery Point's Total Average Station Load)*							
	0-15 MW		**15-40 MW**		**40-80 MW**		**>80 MW**	
	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance	Standard (Average Performance)	Minimum Standard of Performance
DP Frequency of Interruptions (Outages/yr)	4.1	**9.0**	1.1	**3.5**	0.5	**1.5**	0.3	**1.0**
DP Interruption Duration (min/yr)	89	**360**	22	**140**	11	**55**	5	**25**

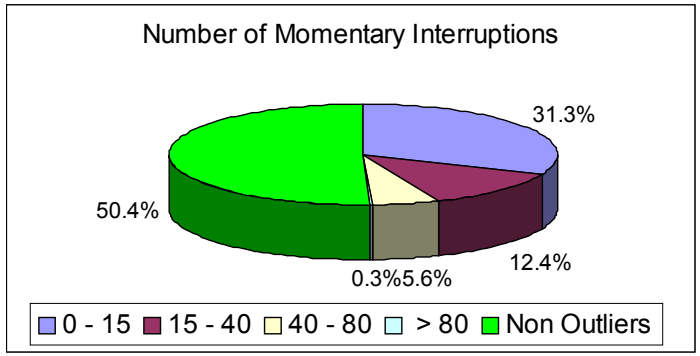
2003 DP Performance Program Highlights

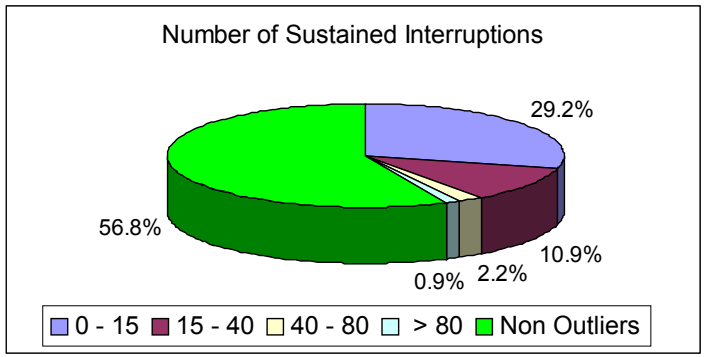
- 71 Performance Outliers in 2002 due to12 isolated incidents (*No Further Action Required)*
- 26 Outliers Addressed
- $6M - Program Expenditures in 2003
  - *$4M - Development*
  - *$2M - Sustainment*
- $88k - Customer Contributions

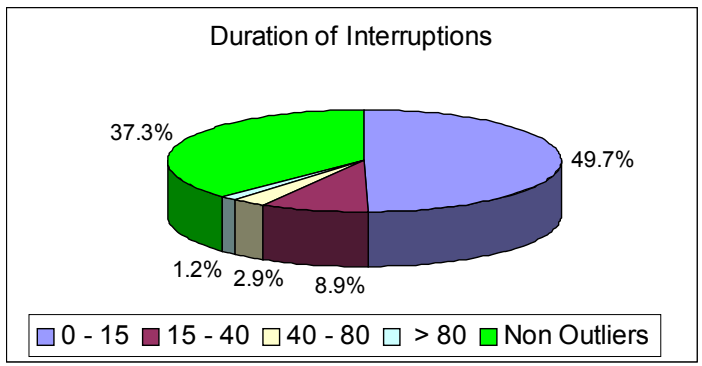
hydro one

2003 DP Performance Outliers







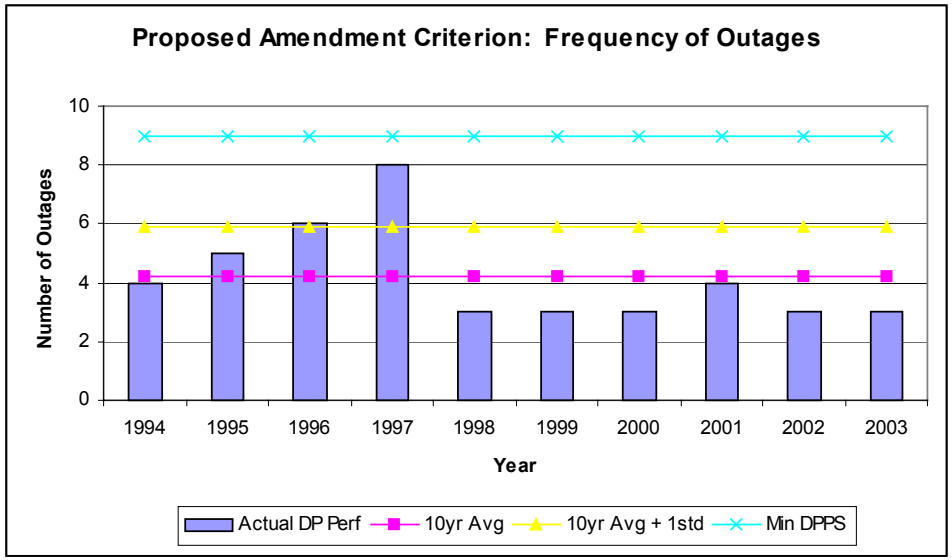


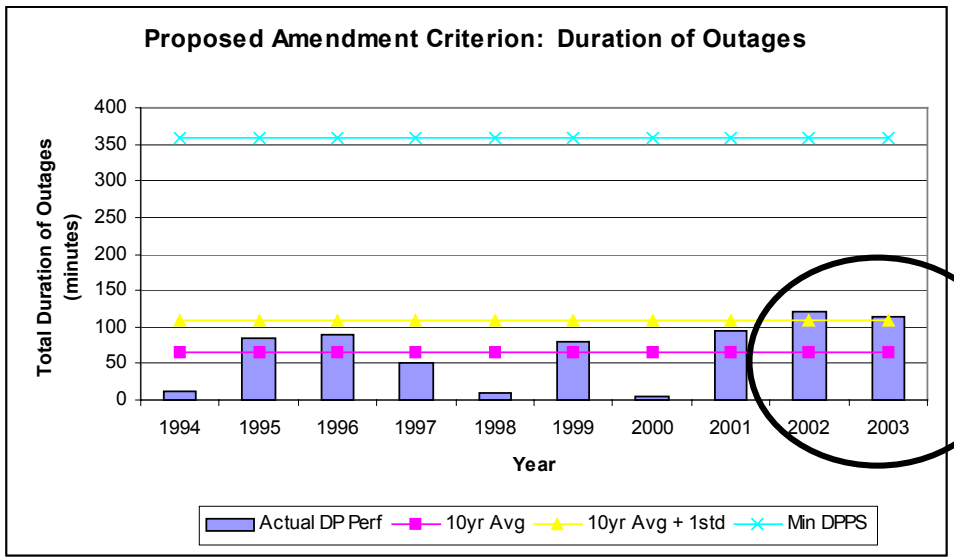
- *Existing DP Standards Consistently Identify about 10% of Delivery Points as "Outliers"*
- *This 10% contributes disproportionately to overall system unreliability.*

Proposed Amendment

- Append existing DPPS - Add new Performance Standard criterion
- Address customer concerns to maintain historical DP Performance by identifying DPs with deteriorating trends in reliability
- Initiate technical and financial evaluations with affected customers

Proposed New Criterion





- Use rolling 10-Yr Historical Performance of Frequency & Duration of Forced Outages at Each DP
- Establish Baseline = $\text{Average}_{10\text{-yr}} + 1\sigma$
- Performance that exceeds baseline in two consecutive years is identified as an Inlier for either Frequency or Duration

"DP Performance Inlier"

Expected Performance

- "Inliers" identify deteriorating inherent system reliability
- Hydro One spends approximately $700M/yr in OM&A and capital expenditures on the Tx system
- Hydro One commitment is to maintain Transmission reliability
- Therefore, do not expect many "Inliers."
  - *In 2003 there were 23 DP Inliers: 19 of these were also "outliers"; 3 already have improvement plans in place*

Remedial Measures Cost Responsibility

- Hydro One is committed to maintaining customer's historical level of DP performance. As such, Hydro One will cover all appropriate asset sustainment costs, including on-going maintenance and asset replacement, to restore/sustain the inherent reliability performance of the existing assets to what was designed originally.

- This does not include capital reliability improvements that significantly enhance the original system design.

Customer/Stakeholder Plan

	Action	Schedule
1.	Present to Customer Advisory Board (CAB)	Apr 14
2.	Present to AMPCO, Annual meeting	Apr 29
3.	Present to EDA Operations Council meeting	May 4
4.	Distribute Standards to Customers for comments	June 25
5.	First Customer Stakeholder web conference	July 6
6.	Second Customer Stakeholder web conference	July 13
7.	Customer feedback submission due date	July 20
8.	File revised CDPPS with OEB	Aug 13
9.	Notify Customers of changes	Aug 13

E-Mail Attachment 3:

Hydro One Feedback Form

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: _____

Company Name: _____

Contact Number: _____

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes/No**
2.	**Q: Are the proposed changes an improvement?**	**Yes/No**
3.	**Q: Do the proposed changes meet your needs?** **A:**	
4.	**Q: Do you have additional recommendations?** **A:**	

APPENDIX 3

NETWORKS

FIRST WEB CONFERENCE

PRESENTATION

&

CD RECORDING OF PROCEEDING

HYDRO ONE NETWORKS

CONFERENCE CALL FOR July 6, 2004 @1:00pm EST

CHAIR PERSON: Colleen Landgraff

E-MAILTO: colleen.landgraff@hydroone.com

THE FOLLOWING PARTICIPATED IN THE CONFERENCE:

Name	Arrived (EDT)	Duration	Company
[C] Colleen Landgraff colleen.landgraff@hydroone.com	7/6/2004 11:58	1:48:02	Hydro One
Chris Bazinet chris_bazinet@abitibiconsolidated.com	7/6/2004 12:47	0:49:54	Abitibi Consolidated Company
Chuck deJong chuck@penwest.on.ca	7/6/2004 13:13	0:32:27	Peninsula West Utilities
Guelph Hydro wschmidt@GUELPHHYDRO.COM	7/6/2004 12:56	0:43:05	Guelph Hydro
J. Taylor joe.taylor@hydroone.com	7/6/2004 13:04	0:32:51	Hydro One
Jim Cavers libunaog@nitrochemcorp.com	7/6/2004 13:05	0:17:45	nitrochem
Joe. Zimmer joezimmer@ckhydro.com	7/6/2004 13:03	0:42:58	Chatham-Kent Hydro
Mark Passi mpassi@sudbury.falconbridge.com	7/6/2004 13:36	0:03:04	Falconbridge
Phil Dubeski pdubes@torontohydro.com	7/6/2004 12:46	0:51:32	Toronto Hydro-Electric System Limited
Ted Petrus ted.petrus@domtar.com	7/6/2004 13:10	0:26:50	Domtar Inc.
Wayne Clark c.w.clark@sympatico.ca	7/6/2004 13:10	0:36:06	AMPCO

TOTAL NUMBER OF PARTICIPANTS: 11

APPENDIX 4

NETWORKS

SECOND WEB CONFERENCE

PRESENTATION

&

CD RECORDING OF PROCEEDING

HYDRO ONE NETWORKS

CONFERENCE CALL FOR July 13, 2004 @1:00pm EST

CHAIR PERSON: Colleen Landgraff

E-MAILTO: colleen.landgraff@hydroone.com

THE FOLLOWING PARTICIPATED IN THE CONFERENCE:

Name	Arrived (EDT)	Duration	Company
[C] Colleen Landgraff colleen.landgraff@hydroone.com	7/13/2004 13:18	0:38:22	Hydro One
bctlv darryl.pole@lanxess.com	7/13/2004 12:49	1:07:07	Lanxess Inc.
bernie Di luca bdiluca@enwin.com	7/13/2004 12:55	0:59:43	Enwin Powerlines
Bluewater Power tjanes@bluewaterpower.com	7/13/2004 12:45	1:10:35	Bluewater Power
Brian E brianearnshaw@hydroottawa.com	7/13/2004 13:03	0:53:20	Hydro Ottawa
Jeff Guilbeault jguilbeault@puc.org	7/13/2004 13:00	0:56:29	Peterborough Distribution Inc.
Mark Campbell mcampbell@utilitieskingston.com	7/13/2004 12:52	1:09:18	Utilities Kingston
Mihai Rotescu mrotescu@ca.ibm.com	7/13/2004 13:13	0:42:52	Trammell Crow (for IBM Canada)
Mike Scott mike.s.scott@esso.ca	7/13/2004 12:52	1:04:34	Imperial Oil
Milan Bolkovic mbolkovic@markhamhydro.com	7/13/2004 13:05	0:51:16	PowerStream
Nabih Mikhail nabih.mikhail@oeb.gov.on.ca	7/13/2004 12:58	0:57:54	Ontario Energy Board
Nicole C. Leduc NLeduc@ntl.sympatico.ca	7/13/2004 12:58	0:57:45	Hearst Power DistributionCompany Limited

TOTAL NUMBER OF PARTICIPANTS: 12

APPENDIX 5

CUSTOMERS'

WRITTEN FEEDBACK SUBMISSIONS

Hydro One's Customer Advisory Board

Summarized Feedback of "Customer Delivery Point Performance Standards: Proposed Amendment"

Presented On April 14, 2004

The question posed on the Feedback Form was "Did the discussion on "Delivery Point Performance for Non-Outliers" provide you with valuable information? If no, please comment why."

Summary: Yes = 9 No response = 2

Specific feedback included:

1. Need to set this in a context. On the funding issue take care that pool concept is not destroyed with direct charge.
2. Excellent topic - food for thought. Very pro-active.
3. Good to see that concern about possible worsening of performance for those delivery points within acceptable range.
4. Detection process for change needs fine tuning.
5. Very good.
6. This initiative will be pro-active to flag delivery points that are deteriorating.
7. Credibility that tracking data and performance - funding from maintenance.

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: Withheld

Company Name: Withheld

Contact Number: _____

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes**
2.	**Q: Are the proposed changes an improvement?**	**Yes**
3.	**Q: Do the proposed changes meet your needs?** **A: Yes I think that they do with respect to full outages. My only concern is that it does not address the issue of power quality which would not show up in your statistics at all as outages but I can tell you that power quality and especially sags can have just as disruptive effect on our facilities as a full outage.**	
4.	**Q: Do you have additional recommendations?** **A: I would like to see you group track power quality issues with the aim of ensuring the delivery of reliable quality power so as to limit any disruption to production facilities.**	

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: Withheld

Company Name: Withheld

Contact Number: _____

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes**
2.	**Q: Are the proposed changes an improvement?**	**Yes**
3.	**Q: Do the proposed changes meet your needs?** **A: Yes. While we are satisfied with our current reliability levels at the transmission level for the most part, there is a need to maintain or slightly improve delivery point reliability over time. I think the standards proposed are fair and reasonable.**	
4.	**Q: Do you have additional recommendations?** **A: We would like to see our updated delivery point information annually or have access to it.**	

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: **Withheld**

Company Name: **Withheld**

Contact Number:

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes/No** **Yes**
2.	**Q: Are the proposed changes an improvement?** **In some respects; ten year trending, trigger points for flagging reliability issues**	**Yes/No**
3.	**Q: Do the proposed changes meet your needs?** **A:** **No.** **There has been no appreciable change made to providing any improvement to our delivery point reliability. In fact, just as in the existing Standard, there is no meaningful measure of our reliability (from the point of view of a *customer*, not a *transmitter*).** **By both the present and proposed Standard, the frequency or duration measurements as presently defined, would effectively eliminate us as a possible reliability issue (or even approach "inlier" status) regardless of the magnitude of environmental and financial impacts suffered by both our company and our community.**	

4.	**Q: Do you have additional recommendations?** **A:** **The standard of measurement for what constitutes an interruption requires a significant change; the duration should be in cycles as opposed to minutes.** **For instance using the current measurement, a total loss of power to our facility (or for that matter multiple total losses), if less than a minute each, would not even count. Those same events, in reality, have caused significant equipment damage, production loss, health, safety and environmental impacts; not just to the facility, but as seen especially in environmental impacts, the surrounding community.** **No electrical reliability measure is adequate which does not take into account power quality. There should be a trigger point on disturbances that qualify as a DP performance event. For example, a system disturbance resulting in a sag be constituted an event.**

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: **Withheld**

Company Name: **Withheld**

Contact Number:

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes/No** ***Yes***
2.	**Q: Are the proposed changes an improvement?** ***A: The proposes changes are an improvement from the previous standard in that trending for 10 years is kept and that deteriorating performance is looked at, but there is still room for further improvement.***	**Yes/No** ***Yes .. but***
3.	**Q: Do the proposed changes meet your needs?** ***A: No.*** ***From "Company Name" perspective there are no changes or improvements to the delivery point standard that will in any way result in an improvement to our reliability. The proposed delivery point standard, while an improvement over the current standard, has defined frequency and duration parameters, which we have historically and probably never will approach. This effectively removes our site from ever being an "outlier" or even approaching "inlier" status. There is no metric associated with consequences of interruptions regardless of the duration or frequency. The "Company Name" Sarnia site along with the other Sarnia area industries have severe environmental and safety concerns when even a momentary interruption occurs. These issues affect not only on site personnel, but can have a severe impact on the surrounding and remote communities.***	

4.	**Q: Do you have additional recommendations?** ***A: From "Company Name" – Sarnia site's perspective, the duration and frequency criteria of the delivery point standard should be modified to take into account the impact of interruptions. The duration criteria should be in the order of cycles, not minutes.*** ***In addition, power quality should be considered in the delivery point standard as well, since disturbances can have the same impact to refineries and chemical plants as a complete outage.***

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: Withheld

Company Name: Withheld

Contact Number:

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**(Yes)/No**
2.	**Q: Are the proposed changes an improvement?**	**(Yes)/No**
3.	**Q: Do the proposed changes meet your needs?** **A:** The proposed changes are definitely an improvement over the original submission and go a long way of meeting the principle of maintaining the existing performance of Delivery Points.	
4.	**Q: Do you have additional recommendations?** **A:** Using a fixed 10 year historical average instead of a rolling 10 year average should be utilized. Using the rolling average would permit the performance to degrade slowly over time. Fixing the 10 year average would eliminate the possibility of this 'creep'. The fixed average methodology supports the principle of maintaining existing DP performance.	

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: Withheld

Company Name: Withheld

Contact Number: _____

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	Yes/No **Yes**
2.	**Q: Are the proposed changes an improvement?**	Yes/No **Yes**
3.	**Q: Do the proposed changes meet your needs?** **A: Partially, we also have two additional recommendations:** **1) where data is available for additional years (beyond the current proposed 10 years), this total data should be used to calculate the average number of outages and set the delivery point performance basis. We have 30 years of data available.** **2) We recommend that the two outages that occurred in the Sarnia Industrial area on Apr 14th and June 9th , 2003, should not be used in this calculation, since they significantly skew the data and represent an anomaly in the historical performance.**	

4.	**Q: Do you have additional recommendations?** **A: In addition to the recommendations above, since power quality incidents are not considered in the definition of an outage, there should be a separate power quality standard developed to set the minimum performance basis required for Hydro One and industry / other customers to design/operate/maintain their facilities. There are many situations where total power is not lost to our station however due to the power disturbance, many motors etc. are tripped off line, resulting in significant financial losses. Power quality standards should be set for a delivery point to ensure Hydro One and the Customer facility designs are aligned to the same delivery point performance level / expectation.**

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: Withheld

Company Name: Withheld

Contact Number:

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes/No**
2.	**Q: Are the proposed changes an improvement?**	**Yes/No**
3.	**Q: Do the proposed changes meet your needs?** **A: Yes**	
4.	**Q: Do you have additional recommendations?** **A: None**	

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: Withheld

Company Name: Withheld

Contact Number: _____

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes/No** Yes
2.	**Q: Are the proposed changes an improvement?**	**Yes/No** Yes
3.	**Q: Do the proposed changes meet your needs?** **A: Not entirely. I do not see a component that promotes continuous improvement. It simply maintains the status quo. Our industry is driven to continuously improve the quality of our products while reducing our cost structure.**	
4.	**Q: Do you have additional recommendations?** **A: We have had several outages due to parallel customer issues. How are these incidents accounted for?**	

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: **Withheld**

Company Name: Withheld

Contact Number:

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes**
2.	**Q: Are the proposed changes an improvement?**	**Yes**
3.	**Q: Do the proposed changes meet your needs?** **A: NO –your indices do not consider the reliability of the 44kV line from the Transformer Station to the Metering Point at our boundary points within the HON LDC. In our service territories the reliability or lack of reliability of the 44kV line and or breaker at the TS that is owned by HON and operated by HON has a much greater impact on the reliability on our load points than the reliability of the 115 kV & 230 kV lines.** **From our point of view it does not matter whether the problem is on the transmission lines or the 44kV. The outage is caused by a HON problem.**	
4.	**Q: Do you have additional recommendations?** **A: Include the reliability from the transformer station bus up to and including the 44kV feeders to the boundary (meter point/demarcation point) in the statistics and performance requirement.**	

Customer Delivery Point Performance Standards Amendment Proposal Feedback Form

Once you have reviewed the Customer Delivery Point Performance Standard Amendment Proposal material, please fill out the form below and e-mail to: colleen.landgraff@hydroone.com.

Name: **Withheld**

Company Name: Withheld

Contact Number: _____

1.	**Q: Did you agree the CDPPS should be revised to help ensure individual customer reliability levels are maintained?**	**Yes**
2.	**Q: Are the proposed changes an improvement?**	**Yes**
3.	**Q: Do the proposed changes meet your needs?** **A: Not really, our need is voltage control not outage control. Voltage control needs to be addressed.**	
4.	**Q: Do you have additional recommendations?** **A:**	

September 4, 2004

To: Stan Dafoe, HONI Senior Account Executive

From: Romano Sironi, Manager Strategy & Policy

Subject: Revised Amendments to the Delivery Point Performance Standards

This will confirm our meeting of August 24, 2004 concerning the revised amendments to the Delivery Point Performance Standards. This follows the original proposal that Hydro One Networks had filed with the OEB in May of 2002 in compliance with Section 2.5 of the Transmission System Code.

In short, I am pleased to confirm acceptance of the revised amendments to the Delivery Point Performance Standards with the following clarifications.

Customer Delivery Point Performance Standards

1. **The Proposed 10-Yr Historical Performance**

   I am pleased to note that the revised Performance Standards now include a reference to the ten-year average historical performance. As noted by Bruno Jesus, the ten-years (1994 – 2003) average performance will be used by Hydro One as the reference to determine "inliers" (i.e. Delivery Points exceeding the ten-year average value for two consecutive years). On this basis, I find the proposed standards to be acceptable.

   I have expressed in several occasions our concern with the worsening trend in the loss of supply experienced by our customers. To better recognize Toronto Hydro's effort to improve the reliability of its distribution system, I would recommend that the reliability performance be reported to the OEB with and without the loss of supply (i.e. including and excluding transmission outages that are beyond the control of Toronto Hydro).

2. **Delivery Point Definition**

   In my previous correspondence I had highlighted the need to better define the Delivery Points. I am pleased to note that on June 30, 2004 Hydro One provided a new set of tables using the average DESN or Station Loads. I am satisfied with the revised reference tables.

3. **High-Density Load Areas**

   While I understand that Hydro One will not establish new Delivery Point Performance Standards for high-density load areas such as the downtown area, I am pleased to note that Hydro One recognizes that continuity of supply is of critical importance for the commercial business in the City of Toronto and will undertake specific initiatives to maintain its performance. On this basis I find the proposed standards to be acceptable.

Regards,

Romano Sironi

cc: (Toronto Hydro) Joe Bailey and Ben LaPianta
(Hydro One Networks) Bruno Jesus

-----Original Message-----
From: Wayne Clark [mailto:c.w.clark@sympatico.ca]
Sent: Sunday, August 01, 2004 11:20 AM
To: Jim. Patterson
Cc: 'MaryEllen Richardson'
Subject: Customer Delivery Point Performance

Jim:

Without prejudice, here are AMPCO's suggestions for improving upon Network's proposal for the CDPPS regulation:

Inliers:
The baseline for performance comparison should be the last ten years's performance (1994-2003), rather than a rolling 10 yrs. Of course, new customers would need to develop a baseline, initially over 5 years and later on over ten. This change will avoid the possibility that performance could degrade slowly over time without triggering remediation.

Outliers:
There should be firm commitments in terms of executing the mitigation studies and the projects that follow. Also, the impacts of operations and maintenance on reliability needs to be considered in the mitigation process. Here is suggested wording:

Networks will complete the technical and financial evaluations for remediation of delivery point performance to outliers within 6 months of the end of each calendar year. The technical evaluations will be conducted in consultation with the affected customer (s) and will include consideration of changes to maintenance procedures or schedules as well as operating practices, which may remediate or partially remediate the performance problem.

Where increased maintenance (i.e., significantly in excess of standard practice or schedule) may present a partial solution to a customer reliability problem, Hydro One shall present this option to the customer, for consideration within a cost sharing arrangement similar in principle to that for solutions requiring capital investment.

There needs to be firmer wording in the regulation with respect to Networks' obligation to execute remedaition projects, to whit:

Where Networks cannot proceed expeditiously with the corrective project for reasons other than constraints imposed by the affected customer, Networks shall consult with the customer. If a mutually acceptable schedule cannot be agreed on, the customer or Networks may refer the matter to the OEB for a decision.

One key problem in the proposed regulation is that is does not contain a technical definition of transmission delivery point unreliability. In our membership survey, this was an obvious problem. We understand that this type of measure is also not well developed in other jurisdictions and so will need some work to establish. Also, our survey made it obvious that many events that do not meet the definition of an interruption can still cause loss of production and damage to customer equipment. AMPCO believes that we need to begin the process of understanding power quality issues better and start working towards the development of definitions and standards in this area. Here is suggested wording to get this process moving:

Networks is committed to provide to the OEB (by Sept 30,2005) definitions for suggested delivery point reliability and service quality measures that are customer-centric and measurable with currently installed technology.
It is not always necessary for an actual power interruption to occur in order for a customer to experience an outage. Momentary transients, voltage surges or sags and other events can result in disruption to customer operations and damage to customer equipment. Networks is committed to developing measures of these events in order that they can also be managed within the overall context of customer delivery point performance.

Jim, I trust this is sufficiently clear for you to proceed. If not, please let me know. I will be away August 3-6, but back thereafter.

Regards,
Wayne Clark
SanZoe Consulting, Inc
705.728.3284
c.w.clark@sympatico.ca