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**BY EMAIL AND RESS**

February 27, 2026

Mr. Ritchie Murray  
Acting Registrar  
Ontario Energy Board  
Suite 2700, 2300 Yonge Street  
P.O. Box 2319  
Toronto, ON M4P 1E4

Dear Mr. Murray,

**EB-2021-0307 - Changes to Improve the Transmission Framework for Reliability and Power Quality  
- Hydro One Sault Ste. Marie Limited Partnership Transmitter Standards Document**

In accordance with the Ontario Energy Board's (OEB) expectations outlined in the OEB's November 27, 2025 letter in this proceeding (the November 27 Letter), Hydro One Sault Ste. Marie Limited Partnership (HOSSM) is providing the OEB a revised Transmitter Standards Document that is consistent with the changes discussed in the November 27 Letter.

An electronic copy of these performance standards has been filed through the OEB's Regulatory Electronic Submission System.

Sincerely,



Pasquale Catalano



# **Customer Delivery Point Performance Standards (CDPPS) and Power Quality**

**Prepared by: Hydro One Sault Ste. Marie**

**Last Revised: February 27, 2026**

(Supersedes: Great Lakes Power Limited – Transmission Customer Delivery Point Performance Standards, December 2007)



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## 1.0 INTRODUCTION

The Transmission System Code (TSC) requires transmitters to develop Customer Delivery Point Performance (“CDPP”)<sup>1</sup> Standards at the customer delivery point level, consistent with system wide standards, that:

- reflect typical transmission system configurations that consider the historical development of the transmission system at the customer delivery point level;
- reflect historical performance at the customer delivery point level;
- establish acceptable bands of performance at the customer delivery point level for the transmission system configurations, geographic area, circuit length, etc.;
- establish a process to evaluate delivery point performance and triggers that would initiate technical evaluation by the transmitter and financial evaluation, where required, in consultation with customers, as well as the circumstances in which any such triggering event will not require the initiation of a technical or economic evaluation;
- establish the steps to be taken based on the results of any evaluation that has been triggered, as well as the circumstances in which such steps need not be taken;
- establish any circumstances in which the performance standards will not apply.

In 2021, the OEB initiated a Reliability and Power Quality Review (RPQR) consultation with stakeholders. In 2023, the OEB RPQR formed a Subgroup for Transmission (“the Subgroup”). One of the objectives of this group was to discuss potential changes to the current reliability framework for transmitters. The Subgroup recommended changes to the existing CDPP standards to the OEB, mainly to the Group Outlier standard (described in section 2.1 of this document), and adding a new section to this document related to Power Quality (described in section 3.0 of this document). The OEB approved these changes on November 27, 2025 (EB-2021-0307). To address the OEB’s direction, HOSSM confirms it is adopting Hydro One’s revised CDPP Standards, which was submitted to OEB for approval on February 27, 2026. HOSSM, as an applicable transmitter, is also filing this CDPP Standards and Power Quality document for the OEB’s approval.

The CDPP Standards apply to all transmission load customers (including customers that have signed a Connection Cost Recovery Agreement prior to May 1, 2002, market opening).

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<sup>1</sup> A Delivery Point is defined as a point of connection between a transmitter’s transmission facilities and a customer’s facilities.

## 2.0 DELIVERY POINT RELIABILITY STANDARDS

The approved CDPP Standards consist of two components: (1) Group CDPP Standards that relate the reliability of supply to the supply configuration (single circuit versus multi circuit) and supply circuit length for single circuits and (2) Individual CDPP Standards that maintain a customer’s individual historical delivery point performance. Triggers for each component are used to identify performance “outliers” to initiate technical and financial evaluations to determine the root cause of unsatisfactory performance and if remedial action is required to address the root cause. The CDPP Standards and triggers for each component are summarized below.

### 2.1 Group CDPP Standards: Performance Standards Based on Supply Configuration and Circuit Length

For this component, the CDPP Standards and the associated triggers are based on the predominant supply configuration (single circuit versus multi circuit) and circuit length for single supply circuits since delivery point (“DP”) performance is strongly correlated to these two factors. For single circuits, the CDPP Standards vary with the length of the supply circuit in ranges of 0 to 40 km, greater than 40 up to 90 km, greater than 90 up to 150 km, and greater than 150 km, as shown in Table 1 below.

**Table 1  
Customer Delivery Point Performance Group Standards Based on Supply Configuration and Circuit Length**

	Customer Delivery Point Performance Group Standards				
	Multi-Circuit Supplied DPs	Single Circuit Supplied DPs			
Supply Circuit Length (L in km)	N/A	L≤40 km	40<L≤90 km	90<L≤150 km	L>150 km
DP Frequency of Interruptions Threshold (# interruptions/DP/yr)	1	2	5	7	9
DP Interruption Duration Threshold (interruption minutes/DP/yr)	58	200	300	380	854

These CDPP Standards are based on historical 2013-2022 performance data as measured by the average frequency and duration of all forced (momentary and sustained) interruptions<sup>2</sup> plus one standard deviation, excluding outages resulting from extraordinary events that have had “excessive” impact on the transmission system and that, in Hydro One’s assessment, strongly skew the historical performance. To avoid this, such events are excluded from the calculation<sup>3</sup>.

For any new DP that is added to the system, the DP performance is assessed based on the corresponding band within the Group CDPP Standards that applies (i.e., corresponding threshold for multi or single circuit and appropriate length if single circuit). For new customers connecting to an existing DP, the existing Group CDPP Standards will apply immediately.

### **2.1.1 Criteria for Minimum Standard Performance to Identify Performance Outliers for Group CDPP Standards**

The minimum Group CDPP standards of performance (see Table 1), for both frequency and duration of interruptions, are to be used as triggers by HOSSM in identifying Group Outliers. The trigger occurs when the frequency and/or duration of interruptions at a DP exceeds its corresponding Group threshold in two consecutive years (and therefore is identified as a Group Outlier) or when a DP customer requests an analysis. When a Group outlier is identified, it is considered a candidate for remedial action. In such cases, HOSSM will initiate a technical evaluation to determine the root cause of the unsatisfactory performance and any remedial actions to address it. HOSSM will also initiate a financial evaluation for remedial actions, where required, in consultation with affected customers.

## **2.2 Individual CDPP Standards: Performance Standards to Maintain Historical Delivery Point Performance**

For this component, the CDPP Standards are intended to maintain the historical reliability performance levels at each customer DP. This is done by identifying customer DPs with deteriorating trends in reliability performance, irrespective of whether they are satisfactory performers under the Group CDPP Standards (Section 2.1 above). To identify customer

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<sup>2</sup> Momentary interruption is any forced interruption to a delivery point lasting less than 1 minute and a sustained interruption is any forced interruption to a delivery point lasting 1 minute or longer. A delivery point is interrupted whenever its requisite supply is interrupted as a result of a forced outage of one or more HOSSM’s components causing load loss. Interruptions caused by HOSSM’s customers are recorded but not charged against HOSSM’s reliability performance for the customer initiating the interruption but are charged against HOSSM’s reliability performance for other interrupted customers.

<sup>3</sup> Such as the 2013 GTA flood and 2018 Ottawa Area tornado.



DPs with deteriorating trends in reliability performance, a performance baseline trigger for the frequency and duration of forced (momentary and sustained) interruptions is established for each DP based on that DP's historical 2013-2022 average performance, plus one standard deviation (the "Historical Baseline"). The Historical Baseline excludes outages resulting from extraordinary events<sup>4</sup> that have had "excessive" impact on the transmission system and that, in Hydro One's assessment, skew the historical performance. To avoid this, such events are excluded from the calculation.

For any new DP that is added to the system, the DP performance is assessed based on the Group CDPP Standards for the first four calendar years after being placed in-service. Temporary Individual baselines are then created after the DP has been in-service for 5 calendar years and are finalized when it has been in-service for 10 years consistent with the method for the Historical Baseline. For new customers connecting to an existing DP, the existing Individual Historical Baseline for the DP will apply immediately.

Also, for DPs that have not experienced any interruptions, or zero interruption duration occurred during the 10-year period used for establishing a DP's Individual Historical Baseline, the corresponding frequency and/or duration baselines for the DP would be zero. In such cases, these DPs would be an Individual outlier if it experiences any number of interruptions for two consecutive years.

### **2.2.1 Criteria for Minimum Standard Performance to Identify Performance Outliers for Individual CDPP Standards**

The minimum Individual CDPP standards of performance, for both frequency and duration, are to be used as triggers by HOSSM in identifying Individual Outliers. The trigger occurs when the frequency and/or duration of interruptions exceeds the Historical Baseline in two consecutive years (and therefore is identified as an Individual Outlier). When an Individual outlier is identified, it is considered a candidate for remedial action. In such cases, HOSSM will initiate a technical evaluation to determine the root cause of the unsatisfactory performance and any remedial actions required to restore reliability to the Historical Baseline of the DP's performance. HOSSM will also initiate a financial evaluation for remedial actions, where required, in consultation with affected customers.

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<sup>4</sup> Such as the 2013 GTA flood and 2018 Ottawa Area tornado

## 2.3 Remedial Costs to Address Group and Individual Performance Outliers

For Group and Individual Performance Outliers, HOSSM will develop and undertake a feasible and cost-effective mitigation plan that is intended to improve the reliability performance of the existing assets as per its original design. For example, performance of DPs supplied by a single circuit will not be mitigated by planning a second circuit supply as that is highly cost prohibitive and a customer contribution would be required, consistent with the TSC. However, HOSSM continuously makes investments to maintain the transmission system and address reliability performance such as replacing aging infrastructure. These expenditures are made on an ongoing basis irrespective of whether a DP is an outlier or not which helps maintain or improve supply reliability.

Investments are reviewed as part of HOSSM's Outlier Assessment and Mitigation Process (refer to section 2.4). Many planned investments directly address the root cause of unsatisfactory DP performance and further action and incremental investment is typically not required. No customer contribution is required for these planned capital expenditures by HOSSM. For Individual Performance Outliers where investments are required beyond HOSSM's planned investments, HOSSM will develop an economically feasible mitigation plan to improve DP performance to its original design. HOSSM will undertake the costs associated with this remedial work but will not include capital reliability improvements that require significant change to the original supply configuration to improve DP performance. In some cases, mitigation measures are incremental to the original design because the DP supply characteristics have significantly changed over the years (e.g., new customer connections supplied by the DP). In these situations, a customer contribution may be required.

For Group Performance Outliers, HOSSM's level of incremental investment for improving the performance of an outlier beyond what was designed originally will be limited to the present value of three years' worth of combined transformation and transmission line connection revenue<sup>5</sup> associated with the DP. Any funding shortfalls for improving DP reliability performance will be made up by affected DP customers. In cases where specific transmission facilities are serving two or more customers in common with outlier performance, HOSSM will approach all affected customers to determine their willingness to contribute jointly to the reliability improvements.

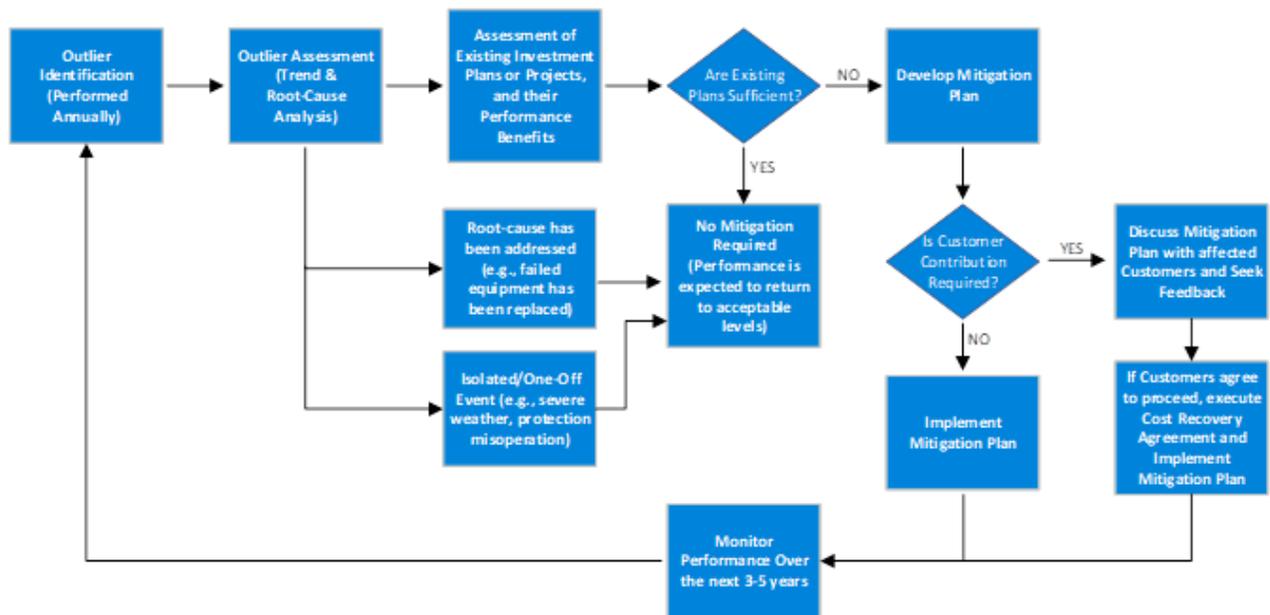
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<sup>5</sup> In the special case where a delivery point pays only network tariffs, transmission line connection tariffs are to be used as a proxy in the revenue calculation.

Cost responsibility for any investment is to be consistent with the TSC. Where a customer contribution is required as part of the mitigation plan to improve DP performance, HOSSM will consult with the customer on the solution and execute Cost Recovery Agreements as needed. In addition, affected DP customers are responsible for all the costs associated with any new or modified facilities they own to improve their reliability performance.

## 2.4 Outlier Assessment and Mitigation Process

The process and associated timelines that will be followed to address performance outliers – both for Group and Individual outliers – and determine the preferred course of action is provided below.



**Figure 1: Outlier Assessment and Mitigation Process**

1. HOSSM identifies DP performance “outliers” on an annual basis for both Group and Individual standards. The DP performance data lags one year because performance data for a subject year is made available the following year.
2. HOSSM will then undertake an assessment to determine the root cause of unsatisfactory performance associated with each performance outlier identified in (1).
3. HOSSM will develop mitigation options to address the root cause(s) of the outlier. Firstly, it is determined if the root cause has already been addressed (e.g., failed equipment has been replaced) or if it is related to an isolated event (e.g., severe

weather, protection misoperation, etc.). If so, then no further mitigation is required, and performance is expected to return to acceptable levels. If not, then HOSSM will review existing investment plans and projects to evaluate their performance benefits for each outlier and determine if they are sufficient to address the performance outlier. If they are deemed to be sufficient, then no further mitigation is required, and performance is expected to return to acceptable levels. If not, then HOSSM will develop an economically feasible mitigation plan to address performance outliers, including, (i) the work to improve and sustain the inherent reliability performance of the existing assets to what was designed originally; and (ii) for Group Performance Outliers, the additional capital improvements required to improve the performance of an outlier to within standard or beyond what was designed originally. HOSSM will discuss the proposed solutions with affected customers in cases where a capital contribution may be required. The overall outlier assessment and mitigation plan development process (steps 2 and 3) takes about 6-8 months to complete for all outliers.

4. HOSSM will determine the costs where customer capital contribution is required for a mitigation plan. HOSSM will present these costs to customers for their review and assessment to determine whether they want to proceed with implementation.
5. HOSSM and customers obtain the necessary approvals, including a signed Cost Recovery Agreement, to proceed with the mitigation plan to address performance outliers.
6. HOSSM will integrate the solutions into its work programs and implement them according to a mutually agreed schedule.
7. Hydro One develops an Annual Outlier Delivery Point report that summarizes the assessment results of all identified outliers. This report considers HOSSM DPs as well.

When HOSSM completes work to improve DP performance, it continues to monitor the DP as part of its Annual Outlier Assessment and Mitigation Process. If future performance suggests that the standard has not been met, then HOSSM will review the work that has taken place as well as any other causes and events that may have occurred causing the DP to remain below the standard and will identify corrective action as needed. HOSSM reviews and identifies CDPP annually, regardless of the investment history.

Hydro One also issues an annual “Large Customer Reliability Report” to our LDCs, Industrial, and Generation customers connected to the Transmission system (115kV and above) as well as embedded LDCs (44kV, 27.6kV, 13.8kV). In addition, customer briefing



reports regarding specific reliability or power quality disturbances are provided to customers, which summarize the investigation and analysis results as well as follow up actions to be undertaken. Customer briefing reports are also developed for HOSSM customers as needed.

Beyond the Annual Outlier Assessment and Mitigation Process, customers can also contact their Hydro One Account Executive representative to discuss any concerns they may have about CDPP (including HOSSM DPs) and request further analysis. This can be initiated by a customer(s) at any time (i.e., it does not have to coincide with the Annual Outlier Assessment and Mitigation Process shown in Figure 1) to allow for timely assessment and mitigation of specific CDPP concerns.

### **3.0 POWER QUALITY**

Power Quality is another important characteristic of electricity apart from reliability. The following sections discuss Power Quality (PQ) and causes for PQ issues, recommendations to mitigate PQ issues, and provide information on PQ requirements in Ontario, nationally, and internationally. It also discusses Hydro One's role (inclusive of HOSSM) in managing PQ.

#### **3.1 What is Power Quality?**

The term Power Quality (PQ) refers to characteristics of electricity at a given point on an electrical system, evaluated against a set of reference technical parameters. These characteristics are classified in terms of traits that reflect a departure in the quality of supply from its desired form, such as voltage sag, voltage swells, voltage unbalance, transient disturbances, harmonic distortions, flicker, etc.

In technical terms, voltage and current waveforms should ideally remain perfectly sinusoidal at a specified frequency everywhere in the network. For three-phase systems, it is also required that the magnitudes of three-phase quantities and the angular displacement between consecutive phases remain equal. Deviation from these norms is a departure from the ideal and termed a distortion. Under normal operating conditions, distortions will occur, even in the absence of any faults or disturbances related to switching operations. Some of the reasons for this are listed below:



- Loads continually changing in ways that cause current loading levels, and therefore also voltage levels, to differ among the three phases.
- Harmonic currents introduced by nonlinear loads such as single and three-phase rectifiers (as found in industrial loads), switch-mode supplies (as found in virtually all modern appliances including lighting controls), arc furnaces, static var compensators as well as conventional iron core devices such as motors and transformers.
- Inter-harmonic currents are produced by AC and DC arc furnaces and AC motor drives.
- Unbalance created by single-phase loads connected to three-phase systems.
- Flicker produced by fluctuating loads.

More severe distortions to the voltage waveform can also be introduced by unpredictable events causing faults on the system such as a lightning strike, animal or vegetation contact, vehicle accidents, and equipment failures. All such disturbances aggregate in a complicated manner over a widely distributed and topologically diverse electric supply transmission and distribution network. Differences in the density of loads and their variable contributions combine with differences in network impedances (i.e., short circuit levels) to yield varying distortion levels throughout the network.

It is also important to note that customer's equipment tolerance of power quality disturbances is controllable by design and therefore a customer's selection of equipment is a critical factor in sensitivity of their plants and processes to power quality disturbances. In some instances, customer-installed equipment can also be a source of power quality disturbances, affecting the customer's own equipment as well as other customers supplied from the same utility infrastructure. In recent years, some customer equipment in industrial processes have become extremely sensitive to *voltage sags (and swells)* due to their increased reliance on electronics and microprocessor controls.<sup>6</sup> While no consensus has emerged among industry standards organizations on assigning meaningful limits to such disturbances for power utilities, there is widespread recognition among industrial organizations and international standards organizations that a practical solution for managing disruptions due to voltage sags is to properly design industrial electrical equipment to be tolerant of the level and duration of sags commonly found to occur in electricity supply transmission and distribution systems. Given the diverse range of equipment sensitivities and the associated economic impacts for the processes involved, it is most effective and economical to implement corrective measures close to the customer's equipment that is experiencing disruptions. The International

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<sup>6</sup> Customers can experience both voltage sags and swells. Sag is a temporary reduction in the rms voltage below a threshold, whereas swell is a short-term increase in voltage above a certain threshold. This document refers to "voltage sag" because it is the common customer concern.



Electrotechnical Commission (“IEC”) and the Institute of Electrical and Electronics Engineers (“IEEE”) have developed standards defining the test setup, test methods, and measurement requirements for characterizing equipment tolerance of PQ disturbances (e.g., CAN/CSA-IEC 61000-4-30, IEC 61000-4-11, IEC 61000-4-34, IEEE 1668, etc.). In addition, industrial sectors, such as semiconductor industry have established performance requirements of equipment to specify equipment that is more sag-tolerant, based on the testing protocols and certifications in IEC and IEEE standards (e.g., SEMI F47, ITIC).

The IEC has also developed consumer equipment standards for vendors to reduce harmonic current emissions into electricity supply systems, which is mandatory in most parts of the world. Examples of these standards include:

- IEC 61000-3-2 Limits for harmonic current emissions (equipment input current less than or equal to 16A/phase)
- IEC 61000-3-12 Limits for harmonic current emissions produced by equipment connected to public low voltage system with input current >16A and less than or equal to 75A/phase)

Harmonics emissions can adversely impact both customer operations, and utility supply to other customers. The adoption of these standards in the European Union (“EU”) system has shown a significant reduction in harmonics in electricity supply systems over the last few years. In light of the increase in non-linear load and a race to net-zero, it is essential that harmonic emissions are minimized at the source to manage power quality for all customers. Hence, it is strongly recommended that vendors and consumers utilize equipment designed as per the above standards.

Customers should also contact Hydro One for advice before upgrading major systems, adding substantial equipment, or changing hours of operation. This will ensure customers are being provided with information that can help design their facilities to work reliably and efficiently, thereby minimizing the risk of PQ disturbances and avoiding any adverse impact. Joint co-operation between various stakeholders and Hydro One teams is important to address PQ incidents.

As of the date of this document, requirements in Ontario related to PQ can be found in the OEB’s TSC, including Appendix 2: “Transmission System Connection Point Performance Standards”.

## 3.2 Power Quality versus Reliability

It is important to distinguish between the terms “Reliability” and “Power Quality” which are often used interchangeably by customers. Power interruptions, categorized into sustained interruptions (lasting more than 1 minute) and momentary interruptions (lasting 1 minute or less) are considered reliability issues. Reliability refers to a loss of voltage at the DP (i.e., power is off). Some momentary interruptions, lasting only seconds, may be perceived as power quality issues, yet they are frequently initiated by the distributor's protective equipment operations, aimed at avoiding more prolonged interruptions. Voltage sag, for example, is associated with PQ because it refers to the Root Mean Square (“RMS”) voltage level dropping below 90% of the nominal value (i.e., power is on, but it does not conform to normal characteristics of supply, and this in turn may prove disruptive to some sensitive electronic equipment).

## 3.3 Power Quality Inquiry Response Process

Hydro One has processes in place to manage and address customer PQ issues. Our Power Quality Inquiry Response Process has been developed in order to respond to customer inquiries pertaining to power quality in a timely and consistent manner. There is a six-step process, as listed below:

### **Step 1: Gather PQ Inquiry Info**

This step is aimed at gathering information for investigating customers' PQ inquiries in a timely, consistent and cost-effective manner. To facilitate this step, customers should complete and submit an online [Power Quality Incident Form](#) to report a PQ incident.

### **Step 2: Quick Assessment**

A PQ inquiry received will be acknowledged within five working days. If the issue or inquiry is straightforward, a response will be provided to the customer within 10 working days. Otherwise, if the inquiry is complex, a detailed assessment will be undertaken in collaboration with the customer to assess and develop appropriate mitigation on the utility system and/or customer facility.

### **Step 3: Detailed Assessment & Solution Development**

Hydro One will establish scope and schedule for a detailed assessment of Hydro One's network performance and/or customer facility operation. Based on this detailed assessment, the root cause of the PQ issue will be identified, and possible remedial option(s) will be developed working in collaboration with the customer.

**Step 4: Finalize Solution with Customer**

Based on the assessment, mitigation may be required on the transmission or distribution system and/or the customer facility. If the customer(s) is required to make a capital contribution for any mitigation on the transmission or distribution system and/or implement mitigation within their own facility, implementation of the solution(s) will proceed with consent and approval of both parties. If no customer contribution is required, Hydro One will plan and schedule work according to its investment planning process.

**Step 5: Information Captured and Retained**

Customers may opt to take no action or defer implementation of a solution for a variety of reasons, including cost or impact on operations. Hydro One retains information on the PQ investigation for future use if required.

**Step 6: Implement Solution and Confirm Effectiveness**

This step ensures that the schedule in implementing the recommended solution is followed and implementation status is tracked. After the implementation of the plan, the customer is contacted to verify its effectiveness.

More information on this process can be found on Hydro One's webpage: [Power Quality Inquiry Response Process](#).

### 3.4 Power Quality Activities

Hydro One is undertaking various actions with respect to managing PQ disturbances, including (but not limited to) the following:

- Standing policy of installing PQ monitors, as part of station sustainment and development initiatives, in order to gain improved visibility of PQ performance at key points in the delivery network, including provision for doing the same at customer DPs.
- A standing offer to large industrial and commercial customers to participate in a co-funded "PQ audit," conducted by an external service provider, the Electric Power Research Institute ("EPRI"). This involves a detailed review of customer plant equipment and processes by PQ specialists, in order to identify potential vulnerabilities to common PQ disturbances, such as voltage sags. It also provides a range of options for reducing such vulnerabilities including a breakdown of their associated implementation cost.

- An ongoing process of updating design and operating practices, where opportunities arise, aimed at reducing PQ disturbances. An example includes recent adoption of a particular circuit switcher as our standard device for energizing capacitor banks (instead of conventional circuit breakers) in order to moderate switching transients that often disrupt industrial processes. Other examples include our various initiatives for improving vegetation management programs and ongoing deployment of improved animal contact prevention devices at stations.

More information on PQ can be found on Hydro One's webpage: [Power Quality](#)

### 3.5 Additional References to Power Quality Standards

For additional reference purposes, the detailed list below includes references to national and international standards as well as Codes in Ontario related to Power Quality:

- CAN/CSA-C61000-2-2: Environment - Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems
- CAN/CSA-C61000-3-2: Limits - Limits for harmonic current emissions (equipment input current  $\leq 16$  A per phase)
- CAN/CSA-C61000-3-3: Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations, and flicker in public low-voltage supply systems, for equipment with rated current  $\leq 16$  A per phase and not subject to conditional connection
- CAN/CSA-IEC/TS 61000-3-5: Electromagnetic compatibility (EMC) - Part 3-5: Limits - Limitation of voltage fluctuations and flicker in low-voltage power supply systems for equipment with rated current greater than 75 A
- CAN/CSA -C61000-3-6: Limits - Assessment of Emission levels for the connection of distorting installations to MV, HV, and EHV power systems
- CAN/CSA -C61000-3-7: Limits - Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems
- CSA C61000-3-14: Electromagnetic compatibility (EMC) - Part 3-14: Assessment of emission limits for harmonics, interharmonics, voltage fluctuations and unbalance for the connection of disturbing installations to LV power systems

- CAN/CSA-IEC 61000-4-30 - Testing and measurement techniques - Power quality measurement methods
- CSA C235:19 - Preferred voltage levels for AC systems up to 50 000 V
- IEC 61000-3-12: Limits for harmonic current emissions produced by equipment connected to public low voltage system with input current >16A and less than or equal to 75A/phase)
- IEC 61000-4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase
- IEC 61000-4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current more than 16 A per phase
- IEEE Std 1668: IEEE Recommended Practice for Voltage Sag and Short Interruption Ride-Through Testing for End-Use Electrical Equipment Rated Less than 1000 V
- SEMI F47-0706: Specification for Semiconductor Processing Equipment Voltage Sag Immunity
- SEMI F-42-0699: Test Method for Voltage Sag Susceptibility of Semiconductor Processing Equipment
- Information Technology Industry Council (ITIC) Curve
- Ontario Energy Board (OEB), Distribution System Code
- Ontario Energy Board (OEB), Transmission System Code