

Major Events

RESPONSE REPORT



Issue: April 27th to 29th, 2017 §2.1.4.2 Major Events Response Report

Date Issued: April 18th, 2018

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Summary

Heavy thunderstorms, from April 27th to 29th, hit the Province with wind gusts between 60-80km/h in the South and freezing rain in the North. These events impacted ~138,000 (or about 10%) of Hydro One's customers.

This is the 4th Major Event in 2017.

1. Prior to the Major Event

- 1) Did the distributor have any prior warning that the Major Event would occur?

Weather warnings were started on April 25th to advise of possible strong winds, thunderstorms and freezing rain across the majority of the Province.

- 2) If the distributor did have prior warning, did the distributor arrange to have extra employees on duty or on standby prior to the Major Event beginning? If so, please give a brief description of arrangements.

No extra employees were called into the Distribution Operations Management Centre (DOMC) prior to this event.

- 3) If the distributor did have prior warning, did the distributor issue any media announcements to the public warning of possible outages resulting from the pending Major Event? If so, through what channels?

An internal notification of this impending weather was sent out to staff. To enhance Hydro One's Storm Centre Outage website map, a new initiative enabling high-level real-time information for Major Events was implemented in late 2017.

- 4) Did the distributor train its staff on the response plans for a Major Event? If so, please give a brief description of the training process.

Hydro One's Storm team (crews and support staff) was formed, in addition to the participation of the Company's Provincial Lines and Distribution Operations Management Centre. This Storm team provided annual field training to prepare for Major Events.

- 5) Did the distributor have third party mutual assistance agreements in place prior to the Major Event? If so, who were the third parties (i.e., other distributors, private contractors)?

Hydro One’s response to the Major Event consisted of regular staff and staff from Hydro One’s Hiring Hall. Although the Company has mutual assistance agreements with other local distribution companies (LDCs) and contractors throughout the Province, those other parties were not called upon.

2. During the Major Event

- 1) Please explain why this event was considered by the distributor to be a Major Event.

Hydro One categorizes a Major Event as one that impacts 10 per cent or more of its customers. This event impacted approximately 138,000 (or about 10%) of Hydro One’s customers.

- 2) Was the IEEE Standard 1366 used to identify the scope of the Major Event? If not, why not?

No. Hydro One used the fixed percentage method to identify the scope of a Major Event. Hydro One categorizes Major Events as one that impacts 10 per cent or more of its customers. The OEB provides guidance to utilities with three different methods to identifying a Major Event. The fixed percentage method is the one that Hydro One has selected. Hydro One does not use the IEEE1366 method because Hydro One’s interruption data does not follow log-normal distribution as required by the IEEE1366 method.

- 3) Please identify the Cause of Interruption for the Major Event as per the table in section 2.1.4.2.5.

| Date Range: | 2017-03-08 to 2017-03-09 | | |
|---|--------------------------|------------------------|--------------------------------|
| PRIMARY CAUSE CODE | Number of Interruptions | Customer Interruptions | Customer Hours of Interruption |
| 0. Unknown/Other Customer interruptions with no apparent cause that contributed to the outage. | 57 | 1267 | 16840.4 |
| 1. Schedule Outage Customer interruptions due to the disconnection at a selected time for the purpose of construction or preventive maintenance. | 17 | 5742 | 3349.4 |
| 2. Loss of Supply Customer interruptions due to problems associated with assets owned and/or operated by another party, and/or in the bulk electricity supply system. For this purpose, the bulk electricity supply system is distinguished from the distributor’s system based on ownership demarcation. | 5 | 31556 | 183504.7 |
| 3. Tree Contacts Customer interruptions caused by faults resulting from tree contact with energized circuits. | 273 | 36914 | 227532.0 |
| 4. Lightning Customer interruptions due to lightning striking the distribution system, resulting in an insulation breakdown and/or flash-overs. | 0 | 0 | 0.0 |
| 5. Defective Equipment Customer interruptions resulting from distributor equipment failures due to deterioration from age, incorrect maintenance, or imminent failures detected | 250 | 60590 | 337616.1 |

by maintenance.

| | | | |
|---|------------|---------------|-----------------|
| 6. Adverse Weather | 0 | 0 | 0.0 |
| Customer interruptions resulting from rain, ice storms, snow, winds, extreme temperatures, freezing rain, frost, or other extreme weather conditions (exclusive of Code 3 and Code 4 events). | | | |
| 7. Adverse Environment | 0 | 0 | 0.0 |
| Customer interruptions due to distributor equipment being subject to abnormal environments, such as salt spray, industrial contamination, humidity, corrosion, vibration, fire, or flowing. | | | |
| 8. Human Element | 1 | 20 | 52.0 |
| Customer interruptions due to the interface of distributor staff with the distribution system. | | | |
| 9. Foreign Interference | 32 | 2095 | 5384.4 |
| Customer interruptions beyond the control of the distributor, such as those caused by animals, vehicles, dig-ins, vandalism, sabotage, and foreign objects. | | | |
| Total | 635 | 138184 | 774279.0 |

- 4) Were there any declarations by government authorities, regulators or the grid operator of an emergency state of operation in relation to the Major Event?

No.

- 5) When did the Major Event begin (date and time)?

The Level 1 emergency was declared at 7:12am on April 27th, 2017.

- 6) What percentage of on-call distributor staff was available at the start of the Major Event and utilized during the Major Event?

All Provincial Lines on-call staff was utilized along with regular staff stationed outside of the impacted areas.

- 7) Did the distributor issue any estimated times of restoration (ETR) to the public during the Major Event? If so, through what channels?

Yes. ETR notifications were issued to the public through updates via Significant Event Notification System, Proactive Automated ETR notification and social media channels. ETRs were also issued through an auto-dialer, on the Company's Storm Centre Outage website map, phone application and media outlets.

- 8) If the distributor did issue ETRs, at what date and time did the distributor issue its first ETR to the public?

On April 27th at 6:57 pm, the first ETR was issued to the public through media notification.

- 9) Did the distributor issue any updated ETRs to the public? If so, how many and at what dates and times were they issued?

The ETRs were updated throughout the storm. The Automated ETR systems (iNotify and SENS) updated the ETRs as event status changes.

- 10) Did the distributor inform customers about the options for contacting the distributor to receive more details about outage/restoration efforts? If so, please describe how this was achieved.

Yes, the media notifications included the instruction below as well as a phone number for customers to call into Hydro One's Customer Care Centre.

For up-to-date power interruption information related to [Hydro One's Distribution System](#), please click on the following link, [Power Outage Viewer](#), or download the HydroOne Mobile App.

- 11) Did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? If so, how many times did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? What was the general content of this information?

Media announcements were made through the Hydro One's "Media Notifications" and social media was also used to update followers with restoration efforts regularly, along with safety tips.

- 12) What percentage of customer calls were dealt with by the distributor's IVR system (if available) versus a live representative?

47.2% IVR and 23.7% CSR

- 13) Did the distributor provide information about the Major Event on its website? If so, how many times during the Major Event was the website updated?

Power outage updates were provided every 15 minutes on the Company's Storm Centre Outage website map.

- 14) Was there any point in time when the website was inaccessible? If so, what percentage of the total outage time was the website inaccessible?

No.

- 15) How many customers were interrupted during the Major Event? What percentage of the distributor's total customer base did the interrupted customers represent?

138,184 customers, representing about 10% of Hydro One's total customer base, were interrupted during the Major Event.

- 16) How many hours did it take to restore 90% of the customers who were interrupted?

At 10:04 am on April 29th, the Clarabelle TS M7 was restored, energizing 6,963 customers. This restoration was the 90% threshold, after 58 hours and 4 minutes from the onset of the event.

- 17) Was any distributed generation used to supply load during the Major Event?

No.

18) Were there any outages associated with Loss of Supply during the Major Event? If so, please report on the duration and frequency of Loss of Supply outages.

Date Range: 2016-07-08 to 2016-07-09

| PRIMARY CAUSE CODE | Number of Interruptions | Customer Interruptions | Customer Hours of Interruption |
|---------------------------|--------------------------------|-------------------------------|---------------------------------------|
| 2. Loss of Supply | 5 | 31556 | 183504.7 |

Customer interruptions due to problems associated with assets owned and/or operated by another party, and/or in the bulk electricity supply system. For this purpose, the bulk electricity supply system is distinguished from the distributor's system based on ownership demarcation.

19) In responding to the Major Event, did the distributor utilize assistance through a third party mutual assistance agreement?

No.

20) Did the distributor run out of any needed equipment or materials during the Major Event? If so, please describe the shortages.

No.

3. After the Major Event

1) What steps, if any, are being taken to be prepared for or mitigate such Major Events in the future (i.e., staff training, process improvements, system upgrades)?

A pilot project (TWC Outage Prediction) will start in October. This web-based application will be used to forecast weather and predict potential impact on the distribution system.

Hydro one has also implemented a banner on the external Outage Map to provide customers with a high level overview of the major event that is taking place and up-to-date information.

2) What lessons did the distributor learn in responding to the Major Event that will be useful in responding to the next Major Event?

Hydro One continues to develop better early response by field forces, which will utilize weather models and outage prediction tools, so that we can provide better staff planning. Hydro One is also committed to improving ETR outage communications through the use of our Mobile Technology. In addition, we have piloted a project, which will utilize forestry crews from those who have completed switching and grounding qualification on single-phase conductors, to safely and efficiently deal with tree impacts to the distribution system.

- 3) Did the distributor survey its customers after the Major Event to determine the customers' opinions of how effective the distributor was in responding?

Yes, Hydro One surveys customers twice a year for Major Events.







APPENDIX

During the Major Event - Supporting Information

- 11) Did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? If so, how many times did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? What was the general content of this information?

Media announcements were made through Hydro One's "Media Notifications" and social media was also used to update followers with restoration efforts regularly along with safety tips.



-  **Hydro One** @HydroOne · Apr 28
Sudbury update cont': much more work to be done to replace broken poles but crews are working as quickly as possible @SudburyHydro
🗨️ 5 ❤️ 12 📊
-  **Hydro One** @HydroOne · Apr 28
Sudbury up-date: staged restoration underway as crews make repairs to a broken skywire caused by yesterday's storm. @SudburyHydro 1 of 2
🗨️ 2 🔄 1 ❤️ 3 📊
-  **Hydro One** @HydroOne · Apr 27
ETRs are up-dated as we get information from crews. Visit our map or app for the latest info or call 1-800-434-1235. Stay safe!
🗨️ 3 ❤️ 📊
-  **Hydro One** @HydroOne · Apr 27
In the dark? Be sure to report your outage so we know to dispatch a crew. Call 1-800-434-1235.
🗨️ 7 ❤️ 2 📊
-  **Hydro One** @HydroOne · Apr 27
Violent thunderstorms have caused 119 outages affecting over 48,000 customers. Crews are working where safe. Visit app or map for ETRs.
🗨️ 12 ❤️ 5 📊
-  **Hydro One** @HydroOne · Apr 27
Thunderstorms are causing outages across the province. Crews are working to restore power where safe. Visit our app for latest ETRs.
🗨️ 4 ❤️ 2 📊