

Major Events

RESPONSE REPORT



Issue: May 4th to 9th, 2018 §2.1.4.2 Major Events Response Report

Date Issued:

Prepared for: Publication and Electronic Filing with the Ontario Energy Board (OEB)

Summary

The storm system, from May 4th to 9th, 2018, with high wind gusts upwards of 110 km/h hit the province, caused significant damage to both Hydro One's Transmission and Distribution systems as it moved through the areas. This event impacted ~620,000 (or about 45%) of Hydro One customers.

This is the Third Major Event in 2018.

1. Prior to the Major Event

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

Yes, prior warning was issued by weather provider of possible strong thunderstorms in Southern, Central and Eastern Ontario with widespread gusts of 80 – 90kph and marginal conditions of tornado activity especially along the Georgian Bay.

- 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.

Additional staff was scheduled by Distribution Operations Management Centre (DOMC) in preparation of the potential high incident 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?

No media announcement was issued, nor was social media used. However, notifications of a pending significant weather were posted and updated regularly on the Customer Outage map, which began on Friday May 4th, 2018.

- 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.

Yes, specific response plan for a Major Event is reviewed once a year with the Distribution dispatchers. The work instruction for storm management is posted on the DOMC internal website for quick reference during storm events. In addition, a Storm Team visits various operation centers throughout the year to go over response plan for major events, simulate past major events to gain experience and implement best practices.

- 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)?

Yes, twenty other LDC's assisted via our third party mutual assistance agreement: Festival Hydro, Center Wellington Hydro, Orangeville Hydro, Erie Thames Powerlines, Goderich Hydro, Niagara Peninsula Energy Inc., Westario Power Inc., Waterloo North, Veridian Connections, Enwin, E.L.K. Energy, London Hydro, Halton Hills Hydro, Welland Hydro Electric System Corp. Peterborough Utilities, Ottawa River Power, Kingston Utilities, Entegrus Powerline, Blue Water Power Distribution, Guelph Hydro.

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 620,000 customers or about 45 per cent of Hydro One's total customer base.

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

No. 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. 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 categorizes a Major Event as one that impacts 10 per cent or more of its customers.

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

Date Range:	2018-05-04 to 2018-05-09		
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.	298	25568	221372.7
1. Schedule Outage Customer interruptions due to the disconnection at a selected time for the purpose of construction or preventive maintenance.	79	16046	183156.5
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.	7	45396	230232.7
3. Tree Contacts Customer interruptions caused by faults resulting	2162	293216	5297171.1

from tree contact with energized circuits.

4. Lightning	0	0	0.0
Customer interruptions due to lightning striking the distribution system, resulting in an insulation breakdown and/or flash-overs.			
5. Defective Equipment	1450	232714	3189976.0
Customer interruptions resulting from distributor equipment failures due to deterioration from age, incorrect maintenance, or imminent failures detected by maintenance.			
6. Adverse Weather	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	2	10	365.5
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	6	5895	44407.3
Customer interruptions due to the interface of distributor staff with the distribution system.			
9. Foreign Interference	73	1710	13427.4
Customer interruptions beyond the control of the distributor, such as those caused by animals, vehicles, dig-ins, vandalism, sabotage, and foreign objects.			
Total	4077	620555	9180109.2

Note: Majority of the interruptions from this Major Event are due to the huge impact of this large storm. The usage of the above cause codes add the level of granularity needed for Hydro One to take corresponding actions only.

- 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?

The level 2 emergency event for Distribution was declared to activate the emergency response organization, including the establishment of the Incident Command Center.

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

Level 1 emergency was declared at 2:30:19 PM on Friday May 4th, 2018.

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

Phone calls for additional staff were made in advance for the distribution regions. However, the actual number of staff available during the Major Event was not recorded.

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

Yes, Hydro One provided ETR through the following channels: "Auto Dialer Notification" tool, "Outage Website" map, App and "Outage Alerts" for those customers who had signed up for the notification.

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

On Friday May 4th at 4:16 PM.

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

Yes, there were total of five updates: Saturday May 5th at 4:17 PM, Sunday May 6th at 3:41 PM, Monday May 7th at 4:17 PM, Tuesday May 8th at 4:39PM and the final one was on Wednesday May 9th at 8:38 PM.

- 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, media notifications were issued to include the instruction below as well as phone number for customers to call Hydro One's Customer Care Centre. In addition, contact information was also included on the Hydro One's outage map website, media releases and social media posts.

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?

Yes, there were two press releases. One was sent on May 4th and the other was sent on May 5th. Social media was also used. Details are available in the appendix below.

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

65.18% IVR, 19.91% 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?

Yes, the website was updated in total of 8 times.

- 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. the servers had a momentary slowness due to extreme traffics. Upon both IT/MS support increased the disk size, the performance improved.

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

620,555 customers, representing ~45% 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 8:25 PM on May 7th, 558,509 customers had been restored, which represented the 90% threshold, after 76 hours and 10 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: 2018-05-04 to 2018-05-09

PRIMARY CAUSE CODE	Number of Interruptions	Customer Interruptions	Customer Hours of Interruption
2. Loss of Supply	6	44017	222099.2

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?

Yes, there were Twenty LCD’s assisted via third party mutual assistance agreement.

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

No equipment or materials ran out during the event.

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)?

TWC Outage Prediction pilot program that was initiated in October 2017 has tested successful. Hydro One has decided to purchase this tool and is now customizing features to enhance our demographic. This web-based application provides ability to forecast weather and predict potential impact on the distribution system, which provides the necessary information to enact a more proactive approach to align crews and resources to areas expected to be impacted by storms.

Hydro One has continued to broadcast customer facing banner messaging on the external Outage Map to provide customers with high level overview of a major event that is taking place and the 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 continue to proactively prepare for each Major Event and implement lessons learned from post event learning/discussion sessions, specifically concerning to what we had done well and areas that needed improvements.

- 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 four times a year for Major Event.

APPENDIX

During the Major Event - Supporting Information




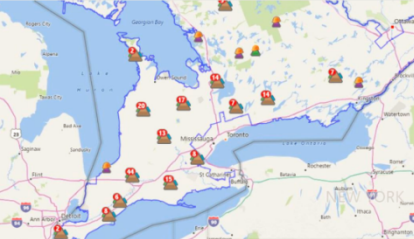







11) Did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? If so, how many times did the distributor issue press releases, hold press conferences or send information to customers through social media notifications? What was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

Links to press releases:

<http://hydroone.mediaroom.com/2018-05-04-Wind-storm-caused-outages-to-more-than-180-000-Hydro-One-customers>

<http://hydroone.mediaroom.com/2018-05-05-Hydro-One-restores-power-to-70-per-cent-of-customers-affected-by-the-wind-storm>

Social media

Twitter		
<p>May 4</p>  <p>High winds are causing outages across parts of Ontario. Visit our outage map map for the latest updates: ow.ly/qnbG30jQeyV #ONstorm</p>  <p>3:15 PM - 4 May 2018</p>	<p>May 5</p>  <p>High winds and thunderstorms are causing power outages for over 126,000 customers throughout Ontario. All available crews are responding to outages as quickly and safely as possible and additional crews are being mobilized to the hardest hit areas. #ONstorm</p>  <p>5:35 PM - 4 May 2018</p>	<p>May 5</p>  <p>Crews are investigating a loss of supply to @alectranews and @NTPowerNews. Currently 74 MW is affected. #ONstorm</p> <p>6:24 PM - 4 May 2018</p>
<p>May 4</p>  <p>We are currently experiencing technical difficulties with our outage map. We apologize for the inconvenience. Our crews are working to restore power. Thank you for your patience.</p>  <p>7:01 PM - 4 May 2018</p>	<p>May 4</p>  <p>We are experiencing a high volume of calls and would like to thank everyone for their patience as our crews work hard to restore power to customers across the province.</p>  <p>9:02 PM - 4 May 2018</p>	<p>May 5</p>  <p>The high winds that swept through Ontario yesterday caused outages for nearly 371,000 Hydro One customers. Our crews are working hard and have restored power to more than 165,000 customers. We continue assessing and repairing damages for the customers that remain without power.</p>  <p>7:54 AM - 5 May 2018</p>

May 5



Tim, a Hydro One supervisor, is on site with crews at Hwy 48 in Aurora. We are seeing this type of damage across the province. More than 350 poles were broken during yesterday's wind storm.



2:51 PM - 5 May 2018

May 5



Our employees, including line maintainers, foresters and technicians have been out in full force and have restored power to 70% of our customers affected by the storm. Currently there are 140,000 customers without power and some will remain out overnight and into Sunday.



7:58 PM - 5 May 2018

May 6



As we continue working to restore power to our customers we understand that you may be wondering why this work is taking several days. Below we have information on what is involved with repairing the magnitude of damage caused by this weekend's wind storm.

Why is my power still off?

We recognize that some of our customers are frustrated that their power is still off. The high winds on Friday caused outages for more than half a million of our customers. We want to assure you that Hydro One has fully mobilized and is doing everything possible to bring power back on as quickly and as safely as possible. Since the storm hit our crews have restored power to over 433,000 Ontarians and we will not stop until everyone's lights are back on.

As crews repair damage to sections of our lines there are times when we may have to turn the power off to people in nearby areas to allow for safe work conditions. This may mean that your power may come on then go out again. Estimated Time of Restoration (ETR) will continue to be assessed and updated by our crews as they understand the impact of all of the damages in the surrounding areas. We understand that having the most accurate information is important to the public and will continue working to ensure we can provide this.

Utilities throughout the province are coming to our aid and helping us work through the damage done to the system.

Nothing is more important to us than the safety of our employees and our customers and we thank you for your patience.



May 7



Crews worked around the clock this weekend to restore power to over 530,000 customers. We continue our restoration efforts with all available staff, including additional utilities, mobilized to the hardest hit areas. We expect to have most customers restored tonight. #ONstorm



11:09 AM - 7 May 2018

May 9



The lights are back on after a third storm in six weeks swept through Ontario, leaving significant damage and hundreds of thousands of people without power in its wake. Crews continue to make repairs to our equipment. If you are without power, report it to us at 1-800-434-1235.



4:39 PM - 9 May 2018

May 10



The past few weeks have shown us that a storm can strike at any time. Follow this checklist to build or replenish your family's emergency kit: ow.ly/gROg30jmnhM #EPWeek



1:23 PM - 10 May 2018

Facebook

May 4



A windstorm that started this afternoon has caused power outages to more than 180,000 Hydro One customers. It is expected that this weather will continue throughout the evening, potentially causing further damage. Hydro One is mobilizing crews and where safe, assessing damage and restoring power to customers.



May 5



Published by Nancy Clark [?] · May 5 ·

Ferio Pugliese is on location at our customer contact centre in Markham to give an update on power restoration. All available crews are working to restore power. We anticipate some customers will be without power overnight.



May 5



We continue to repair damage across Ontario caused by yesterday's storm. The high winds uprooted trees and broke more than 420 of our poles. Crews have restored power to 70% of our customers and we have every available line maintainer, forester and technician working to repair our system. Some customers will remain without power overnight.



May 6



As we continue working to restore power we understand that some people are wondering why this is taking several days.

The high winds on Friday caused outages for more than half a million of our customers. We want to assure you that Hydro One has fully mobilized and is doing everything possible to bring power back on as quickly and as safely as possible.

Since the storm hit our crews have restored power to over 433,000 Ontarians and we will not stop until everyone's lights a... See More



May 9



Published by Social On-Call Team [?] · May 9 · 🌐

The power is back on after a third storm in the last six weeks swept through Ontario that left significant damage and hundreds of thousands of people without electricity in its wake. Last weekend's high winds caused downed lines, snapped poles, broken cross arms, and more. Our crews are still out dealing with the wreckage. We send thanks to the whole team for their exceptional efforts to get the lights back, including the other utilities that lent their support. #ONstorm



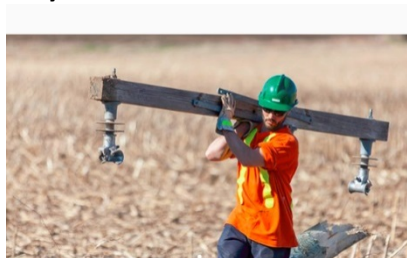
Instagram

May 5



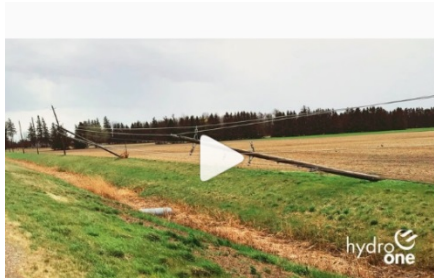
hydrooneofficial
 hydrooneofficial High winds left nearly 371,000 of our customers without power. Our crews continue working hard and have restored power to more than 165,000 customers. Visit our outage map for the latest updates in your area. #ONstorm
 hydrooneofficial .
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 #utilityworker #utilities #arbappreciation #arborist #arblife #forester #linemanlife #linelife #linemanappreciation #powerline #power #electricity #storm #trades #utility #BTS #behindthescenes #outdoors #damage #storm #ONstorm #springstorm #skilledtrades #fieldwork #machines #BTS
 mariana.nov ❤️

May 6



hydrooneofficial
 hydrooneofficial We are currently all hands on deck repairing damage caused by Friday's wind storm that left over half a million of our customers without power. Our crews have restored power to over 433,000 customers so far. Thank you for your support and patience as we continue working to bring the lights back on.
 hydrooneofficial #ONstorm #ontario #utility #stormrepair #springstorm #linemen #skilledtrades #hydroone #arbourist
 ❤️ 🗨️
 405 likes

May 7



hydrooneofficial
 hydrooneofficial The power is back on after a third storm in the last six weeks swept through Ontario that left significant damage and hundreds of thousands of people without electricity in its wake. Last weekend's high winds caused downed lines, broken poles or cross arms, and more. Our crews are still out dealing with the wreckage. We send thanks to the whole team for their exceptional efforts to get the lights back, including the other utilities that lent their support.
 ❤️ 🗨️
 2,202 views
 MAY 9