

Major Events

RESPONSE REPORT



Issue: September 21th to September 26th, 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 severe thunderstorm, from September 21th to 26th, 2018, with heavy rain, high wind gusts between 80-100 km/h and tornados moved across the Eastern, Central and Southern Ontario, caused significant damages to both the Transmission and Distribution system. The hardest hit areas were in Ottawa, where several Tornados occurred and damaged our Marivale TS. This severe storm collectively impacted ~507,000 (or 37%) of Hydro One customers.

This is the 5th 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 the 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 for this 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?

Yes, twitter was used to let followers know that we were anticipating a storm and that they should prepare.

- 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, a total of thirteen LDC's and three contractors assisted via third party mutual assistance agreement: Kitchener Wilmont Hydro, Guelph Hydro, London Hydro, Oshawa Hydro, Peterborough Utilities, Kingston Utilities, Ottawa River Power Corp, Cornwall Electric/Fortis, North Bay Hydro, Espanola Hydro, Lakeland Power Greater Sudbury, Midland PUC, Orillia PUC Contractors - Valard Construction, K-Line, and Power Tell.

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 507,000 customers, or about 37 percent.

- 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 a Major Event 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:	2018-09-21 to 2018-09-26		
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.	149	37381	150764.3
1. Schedule Outage Customer interruptions due to the disconnection at a selected time for the purpose of construction or preventive maintenance.	86	17497	75343.8
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.	14	93863	670539.8
3. Tree Contacts	2238	248935	4221448.9

Customer interruptions caused by faults resulting 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	736	103138	1065413.7
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	0.0
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	1102	28365.9
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	7	12.6
Customer interruptions due to the interface of distributor staff with the distribution system.			
9. Foreign Interference	59	5468	15812.0
Customer interruptions beyond the control of the distributor, such as those caused by animals, vehicles, dig-ins, vandalism, sabotage, and foreign objects.			
Total	3290	507391	6227701.0

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?

A Level 2 emergency event for Distribution was declared. Emergency shelters and community information sessions were activated in Dunrobin area where a tornado touched down and devastated a community.

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

The level 1 emergency was declared at 1:04:33 PM on September 21, 2018.

The level 2 emergency was declared at 9:12:39 PM on September 21, 2018.

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

100% of on-call staff was available at the start of the event.

- 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 updates 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?

Friday Sept 21th, at 8:00PM.

- 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, we provided three daily updates that were aligned with H1's incident Command Centre, starting on Sept 22nd at 10am, 3pm and 8pm. Subsequently, it was on Sept 23rd, 24th, 25th and 26th, for a total of 15 updates.

- 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, IVR notification system advised interrupted customers of the outage areas and directed them to Hydro One's outage map website for up-to-date power interruption information of the [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, three press releases were sent and we participated in the City of Ottawa's media briefings. In addition, many interviews were done with media focusing both on the Ottawa recovery efforts and the entire province. In addition, we continue to provide Ottawa media with up-dates on the station repairs. A week post-event, we toured the media and local elected officials through the station in an effort to educate the public on the work required to rebuild the station.

Social media was also used –see appendix.

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

73.91% IVR, 26.09% 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 4 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 website was accessible during this period.

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

507,391 customers, representing ~37% 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 12:25PM on September 25th, after 108 hours and 25 minutes from the onset of the event, the feeder recloser on the Tillsonburg TS M2 feeder was restored, energizing 1,918 customers, bringing a total number of customers restored up to approximately 456,650, which represented the 90% threshold.

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: 2018-09-21 to 2018-09-26

PRIMARY CAUSE CODE

Number of Interruptions

Customer Interruptions

Customer Hours of Interruption

2. Loss of Supply

14

93863

670539.8

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 thirteen LCD's and three contractors who 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 contains the necessary information to align crews and resources to the expected impacted areas of a storm.

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.

Conference calls with key operations groups will continue to be held in advance to prepare for resources and equipment.

- 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 proactively prepare for each Major Event and implements 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?

Three press releases were sent and we participated in the City of Ottawa’s media briefings. In addition, many interviews were done with media focusing both on the Ottawa recovery efforts and the entire province. In addition, we continue to provide Ottawa media with up-dates on the station repairs. A week post-event, we toured the media and local elected officials through the station in an effort to educate the public on the work required to rebuild the station.

Social media was also used –see below.

Social media posts

Twitter		
<p>Sept 21</p> <p> Hydro One @HydroOne · Sep 21 We're heading into the final Friday of summer with a stormy afternoon ahead! Thunderstorms are expected across the province along with high wind gusts of up to 100 km per hour. Call us at 1-800-434-1235 to report outages and visit our map for updates: ow.ly/RK1I30IUlBp</p> 	<p>Sept 21</p> <p> Hydro One @HydroOne · Sep 21 Crews are responding to over 500 outages affecting more than 51,000 customers across Ontario. For the latest outage updates, visit our outage map: ow.ly/r0T430Veaq #ONstorm</p> 	<p>Sept 21</p> <p> Hydro One @HydroOne · Sep 21 Crews continue to respond to outages affecting over 167,000 customers. Check our map for updates: ow.ly/8bPz30Vjyk. Customers in the hardest hit areas may be without power overnight. Please call 911 to report downed power lines and hazards or call 1-800-434-1235. #ONstorm</p> 
<p>Sept 22</p> <p> Hydro One @HydroOne · Sep 22 Thunderstorms with high winds and a confirmed tornado in Eastern Ontario have caused significant damage to our Merivale Station. Crews are working on restoring power as quickly and safely as possible. Sign up for outage alerts and updates at: ow.ly/ajvc30VzHS</p> 	<p>Sept 22</p> <p> Hydro One @HydroOne · Sep 22 Hydro One crews are out in full force and have restored power to more than 278,000 customers affected by the storm, with 97,000 customers currently without power. To report an outage, call us at 1-800-434-1235 and visit our map for local updates: ow.ly/rCCR30VIXv #ONstorm</p> 	<p>Sept 22</p> <p> Hydro One @HydroOne · Sep 22 Crews spent the day restoring power to over 322,000 customers and continue to respond to outages affecting over 66,000 customers. Customers in the hardest hit areas may be without power overnight. Check our map for updates: ow.ly/aN3k30V0gK #ONstorm</p> 

Sept 23

Hydro One @HydroOne · Sep 23
Crews continue to respond to outages affecting over 55,000 customers. As power restoration work is completed in one area, associated crews are dispatched to new areas. Thank you to our customers for their patience and our neighbouring utilities for their support. #ONstorm



Sept 23

You Retweeted
Robert Fisher @politicsfisher · Sep 23
Nothing says wonderful more than orange @HydroOne helmets ... as a crew works to restore our power. These women & men are simply amazing. #power2thepeople



Sept 23

Hydro One @HydroOne · Sep 23
Crews have made incredible headway and restored power to over 360,000 customers. We have every available resource, including support from other utilities, helping get the power back on as quickly and safely as possible. Check our map for updates: ow.ly/NhFb30Vp4x #ONstorm



Sept 23

Hydro One @HydroOne · Sep 23
We appreciate your patience over the weekend as crews worked to restore power to over 370,000 customers & continue to respond to outages affecting over 26,000 customers. Some customers may be without power overnight. Please check map for updates: ow.ly/NhFb30Vp4x #ONstorm



Sept 23

Hydro One @HydroOne · Sep 23
We've successfully restored a small portion of Merivale Transmission Station and now supplying power to nearly all @HydroOttawa stations. Our crews will continue to work hard at repairing the rest of the station. Thank you to the people of Ottawa for your patience. #ONstorm



Sept 24

Hydro One @HydroOne · Sep 24
Friday's #ONstorm caused significant devastation and our thoughts go out to those affected, especially in the #Ottawa and surrounding areas. Crews are making progress with repairs, but the damage is widespread & they continue to clean up the hardest hit areas in cottage country.



Sept 24

Hydro One @HydroOne · Sep 24
Over 436,000 customers have been restored since the start of the #ONstorm. Crews are facing challenging terrain as they get the lights back on in the hardest hit areas. Customers currently without power may be out overnight. Visit our map for updates: ow.ly/NhFb30Vp4x



Sept 25

Hydro One @HydroOne · Sep 25
Important message from @homeandsafety! If your home or business experienced damage from the storm, make sure you hire a Licensed Electrical Contractor to safely complete any required electrical work. #Safety #ONstorm



ESA @homeandsafety
MEDIA RELEASE - ESA is working with @hydroottawa @HydroOne and Licensed Electrical Contractors to restore power safely and expedite inspections. Not hiring an LEC for repairs could delay power to your home. Learn...

Sept 26

Hydro One @HydroOne · Sep 26
Our security cameras caught the moment a tornado ripped through our Merivale Station during the #ONstorm. Our hearts are with those injured, displaced and still cleaning up from the powerful twister. #Ottnews



Facebook

Sept 21

Hydro One
Published by Hootsuite [?] · September 21 ·

Update: All available crews are responding to outages affecting over 168,000 customers across Ontario as quickly and safely as possible. Customers in the hardest hit areas of the province should be prepared to be without power overnight.

Visit our outage map for updates: <http://ow.ly/97bB30IVgMM>

Severe thunderstorms with high wind gusts of up to 100 km per hour are causing outages across the province. Crews are responding to approximately 640 outages affecting more than 77,000 customers across Ontario.

Call us at 1-800-434-1235 to report outages and visit our map for updates: <http://ow.ly/97bB30IVgMM>

We remind everyone to take extra precaution near fallen trees and power lines. Keep at least 10 meters away, even if a power line does not appear to be live.



Sept 22

Hydro One
Published by Hootsuite [?] · September 22 ·

Thunderstorms along with high winds and a confirmed tornado in Eastern Ontario have caused significant damage to our system, particularly in the Ottawa area. A province wide effort is underway to restore power as quickly and as safely possible to the affected areas following yesterday's significant weather event.

All available teams including lines, forestry, damage assessors and support staff continue to work hard as they restore power to over 144,000 customers and have already restored power to more than 130,000 customers.

Sign up for our customized outage alerts to receive text or email updates at: <http://ow.ly/ajvc30IVzHs>. Please report downed power lines or hazards, such as fallen trees, to our province-wide outage line at 1-800-434-1235.



Sept 22

Hydro One
Published by Madhu Rupasinghe [?] · September 22 ·

Hydro One crews are out in full force and have restored power to more than 278,000 customers affected by the storm, with another 97,000 customers currently without power.

The tornado has caused extensive damage to our transmission system and equipment in the Ottawa area, which is affecting Hydro Ottawa. This area is a major focus of the restoration effort, which is expected to take several days.

Elsewhere across Ontario, crews are assessing and restoring damages from downed power lines, trees and snapped poles.

We remind everyone to take extra precaution near fallen trees and power lines. Keep at least 10 meters away, even if a power line does not appear to be live.

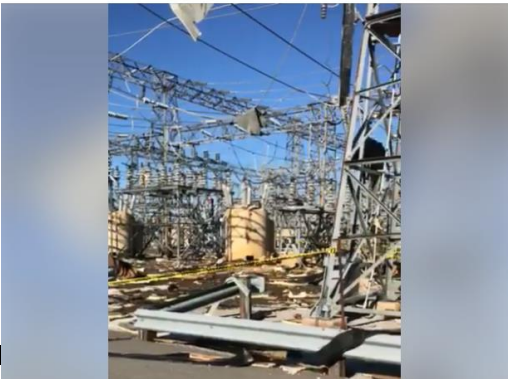
Call us at 1-800-434-1235 to report outages and visit our map for updates: <http://ow.ly/MJp430IVJ6s>



Sept 22

Hydro One
Published by Jay Armitage [?] · September 22 ·

We're on location at our Merivale Transmission Station in Nepean. There is extensive damage here caused by very high winds and debris. Our teams are working hard to reroute power and repair damaged equipment to restore electricity as quickly and safely as possible.



Sept 23

Hydro One was live.
Published by Jay Armitage [?] · September 23 ·

Live from the power restoration effort in Dunrobin.



Sept 24

Hydro One
Published by Hootsuite [?] · September 24 ·

Our thoughts go out to all of those affected by Friday's devastating storm, especially in the Ottawa and surrounding areas. Yesterday, we were able to restore a portion of our Merivale Transmission Station which is now supplying power to nearly all Hydro Ottawa stations. We continue to make repairs to the rest of the station.

Our crews worked around the clock this weekend and we are all hands on deck again today as we clean up damage in some of the hardest hit areas, including cottage country. Crews are making progress with restoring power to the remaining 20,000 customers without service, but they are up against tough conditions while trying to access certain areas, including wading through swamps and brush.

Thank you for your continued patience and support while we work to get the lights back on.

If you are without power, call us at 1-800-434-1235 to report it so that we can dispatch a crew. For outage updates, visit our map: <http://ow.ly/NhFb30IVp4x>



Instagram

Sept 22



 hydrooneofficial

hydrooneofficial Crews are working hard to restore power as quickly and as safely as possible following yesterday's storms across Ontario and a tornado in Eastern Ontario, which caused significant damage to our system. If you spot a downed power line, keep at least 10 metres away even if it doesn't appear to be live. Report hazards such as this and power outages to 1-800-434-1235. #ONstorm

hydrooneofficial .

#power #ONstorm #ontario
#hydroone #safety #restoration
#electricity #tracs #powerlines
#stormrelief #weather #tornado #wires
#utility #utilitywork #safetyfirst
mitchbradley9 @jessedelavalle

358 likes

SEPTEMBER 22

Sept 24



 hydrooneofficial

hydrooneofficial Our thoughts go out to all those affected by Friday's devastating storm, especially in the #Ottawa and surrounding areas. Crews are making progress with repairs, but the damage is widespread and they continue to clean up the hardest hit areas. We thank all of our customers for their continued patience, and our neighbouring utilities who answered our call for help.

View all 11 comments

hydrooneofficial @debnayr Hi Deb, thank you for your support for our crews. We will be sure to pass this along to them. Thank you!

pyatt16 @randy_hutton

bee_marshall Does hydro one directly hire CUA's or contract hire them?

drbtindall @bee_marshall

485 likes

SEPTEMBER 24