

Major Events

RESPONSE REPORT



Issue: April 14th to 17th, 2018 §2.1.4.2 Major Events Response Report

Date Issued: **Tuesday, August-21-2018**

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

Summary

A large freezing rain ice-storm, from April 14th to 17th, 2018, with 15-20mm of ice accretion, snow pellets and winds gusts from 80 to 85 km/h raked across the province from the West to the East, caused significant damage to the distribution system. Majority of the damages were broken poles, downed conductors and fallen trees. This huge ice storm impacted ~467,000 (or 34%) of Hydro One customers.

This is the second 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, a Significant Event Notification System (SENS) was sent out by the Distribution Operations Management Centre (DOMC) on Friday April 13rd, indicating a potential significant freezing rain.

- 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.

Yes, DOMC had arranged to have extra dispatchers as well as managers on shift for the duration of the storm, from April 14th to April 18th, to assist with the restoration efforts.

- 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, social media was used on the April 12th and 13th to provide warnings of potentially damaging weather. See appendix.

- 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.

All Distribution line workers attended and completed the annual "Mock Storm Emergency Response" training. The procedure of the training was implemented and posted at the Distribution Forward Command Centre.

- 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, Hydro One has Third Party Mutual Assistance Agreements in place and it was utilized during this event. They are:

London Hydro, Entegrus, Niagara Peninsula Energy Inc. & Centre, Wellington Hydro and Orangeville 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 467,000 customers (or about 34%) 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 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:	2018-04-14 to 2018-04-17		
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.	101	25235	120220.3
1. Schedule Outage Customer interruptions due to the disconnection at a selected time for the purpose of construction or preventive maintenance.	23	1768	6222.2
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.	16	158032	442652.5
3. Tree Contacts Customer interruptions caused by faults resulting from tree contact with energized circuits.	887	98290	960571.6
4. Lightning Customer interruptions due to lightning striking the distribution system, resulting in an insulation	0	0	0.0

breakdown and/or flash-overs.

5. Defective Equipment	1001	176338	1855394.1
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	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	5	3384	4374.5
Customer interruptions due to the interface of distributor staff with the distribution system.			
9. Foreign Interference	27	3782	9162.5
Customer interruptions beyond the control of the distributor, such as those caused by animals, vehicles, dig-ins, vandalism, sabotage, and foreign objects.			
Total	2060	466829	3398597.8

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 Distribution Event was declared along with a Level 1 for Transmission to activate our emergency response organization, including the establishment of the Incident Command Center.

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

The emergency was declared at 01:39:05 PM on April 14th, 2018.

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

Calling 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: "Media Notification", "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 Monday April 16th at 12:06 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, on Monday April 16th at 5:14 PM, Monday April 16th at 9:50 PM, Tuesday April 17th at 12:20 PM, Tuesday April 17th at 4:30 PM, and Tuesday April 17th at 9:05 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, the media notifications included the instruction below as well as a phone number for customers to contact 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 three press releases. It was sent on April 14th, April 15th and April 16th. There was also a post-storm wrap release sent on April 25th. Social media was also used. Details are listed 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?

74.47% IVR, 13.48% 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 6 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?

Yes, one of the three servers had a momentary slowness and timeout. The other two servers were performing as normal.

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

466,929 customers, representing ~34% 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 8:37 AM on April 17th, a line switch on the Ingersoll TS M50 feeder was restored, energizing 214 customers. This restoration was the 90% threshold, after 80 hours and 37 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: 2018-04-14 to 2018-04-17
PRIMARY CAUSE CODE

	Number of Interruptions	Customer Interruptions	Customer Hours of Interruption
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.	16	158032	442652.5

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

Yes, 5 LDCs assisted in this restoration effort.

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)?

A pilot project (TWC Outage Prediction) had begun in October 2017. This web-based application was 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 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?

Review key items at Lesson Learned meetings, make corrective improvements and implement best practice procedure are few of the examples.

- 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/2018-04-14-Hydro-One-is-mobilizing-crews-to-respond-to-the-storm>

<http://hydroone.mediaroom.com/2018-04-15-All-hands-on-deck-to-respond-to-the-storm>

<http://hydroone.mediaroom.com/2018-04-16-Hydro-One-restores-power-to-more-than-300-000-customers-82-000-currently-without-power-as-storm-moves-east>

<http://hydroone.mediaroom.com/2018-04-25-Hydro-One-crews-complete-restoration-in-record-time-for-nearly-500-000-customers-after-significant-damage-caused-by-the-April-storm>

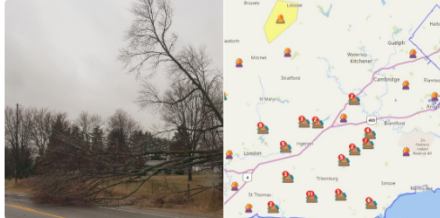
Social media

Twitter		
<p>April 12</p> <p> Hydro One @HydroOne</p> <p>Weather warning! Freezing rain followed by an ice storm with gusty winds is in the forecast for parts of Ontario this weekend. We're ready to respond 24/7. Be prepared in the event of a power outage: ow.ly/Hb4430jsmsV #ONstorm</p> <div> <p> The Weather Network @weathernetwork Challenging travel days in Ontario with a freezing rain threat this morning followed by a potent, high impact weekend storm. Risk of prolonged periods of ice combined with gusty winds could set the stage for widespread weekend outages. Details: ...</p> </div> <p>1:40 PM - 12 Apr 2018</p>	<p>April 13</p> <p> Hydro One @HydroOne</p> <p>Weather warning! Freezing rain, ice and winds up to 70 km/h are in the forecast for this weekend. Our crews are ready to respond 24/7 and we have additional resources on standby. Follow our emergency preparedness checklist: ow.ly/U4Ar30ju3LZ</p> <div>  <p>We've got last minute winter weather rolling in over the next few days across the southern part of the province.</p> </div> <p>4:42 PM - 13 Apr 2018</p>	<p>April 14</p> <p> Hydro One @HydroOne</p> <p>Freezing rain is starting to impact southern Ontario. Crews are responding to outages affecting over 7,000 customers across the province, and available staff are on standby. Visit our map for local updates: ow.ly/qPET30jjwEz</p> <div>  </div> <p>12:58 PM - 14 Apr 2018</p>

April 14



Crews are working to restore power after the damage caused by high winds & freezing rain. Additional crews are being mobilized to the harder hit areas. Customers experiencing outages in parts of southwestern Ontario should be prepared to be without power overnight. #ONstorm



8:29 PM - 14 Apr 2018

April 15



More than 15,000 customers are without power due to freezing rain and strong winds in parts of the province. As the weather intensifies throughout the day, all available crews are ready to respond. Visit our map for continued updates: ow.ly/qPET30jjwEz #ONstorm



7:51 AM - 15 Apr 2018

April 15



Thanks for sharing these safety & preparedness tips, @HastingsEM! Crews are responding to outages affecting over 26,000 customers mainly in southwestern Ontario, and more crews are on the move to assist the hardest hit areas. Call us at 1-800-434-1235 to report outages & hazards.

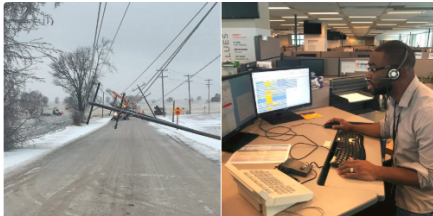


11:27 AM - 15 Apr 2018

April 15



Crews face hazardous conditions and significant damage such as broken poles, downed lines & trees as they work to restore power to over 42,000 customers. Teams from our contact centre to lines, forestry and damage assessors are coming together to help with relief efforts #ONstorm



5:04 PM - 15 Apr 2018

April 15



Over 91,000 customers have been restored since the beginning of the #ONstorm and steady progress continues. This is an active storm & outages are expected to rise over the coming days. Customers experiencing outages in parts of southwestern Ontario may be without power overnight.



9:34 PM - 15 Apr 2018

April 16



The #ONstorm continues to rage on and cause significant damage like these broken poles near Dundas, ON. Crews worked throughout the night and they're back at it again this morning to restore power to over 66,000 customers. Visit our map for updates: ow.ly/qPET30jjwEz

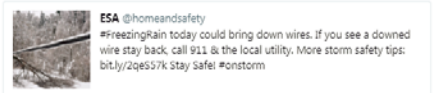


7:21 AM - 16 Apr 2018

April 16



We're continuing restoration and repair work as over 104,000 customers remain without power. The storm is now making its way east. Report hazards such as downed lines and outages by calling us at 1-800-434-1235. #ONstorm



2:46 PM - 16 Apr 2018

April 16



Crews have restored power to more than 300,000 customers since the start of the storm. Crews continue restoration efforts and we expect that customers in parts of the province will be without power into tomorrow. For the latest updates, visit: ow.ly/86jG30jww8s #ONstorm



9:40 PM - 16 Apr 2018

Facebook

April 13



Published by Taylor Jordan [?] · April 13 ·

Weather warning! Freezing rain, ice and winds up to 70 km/h are in the forecast for this weekend. Our crews are ready to respond 24/7 and we have additional resources on standby. Follow our emergency preparedness checklist: <http://ow.ly/U4Ar30ju3LZ>



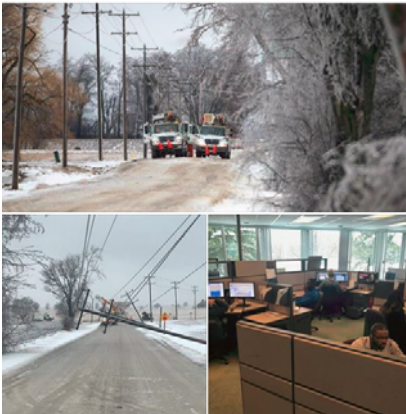
Emergency Preparedness
01:16

April 15



April 15 ·

Wind, freezing rain and ice pellets continue to wreak havoc on our electrical grid this weekend. Our crews are facing hazardous conditions as they work to get the lights back on for over 42,000 customers currently without power. Crews are making progress with more than 73,000 customers back on, but this is an active storm and the number of outages continues to rise, particularly in southwestern Ontario. From our contact centre employees to our lines and forestry crews, the Hydro One team is working together to help customers and restore power as quickly and safely as possible. Visit our outage map for continued updates: <http://ow.ly/qPEt30jwEz>. #ONstorm



Instagram

April 13



hydrooneofficial
hydrooneofficial It's not spring yet! #BF to 2013 when an ice storm left more than 120,000 customers without power. There is another ice storm in the forecast this weekend and our crews are ready to respond if needed. #FlashbackFriday
fr-hair Yup remember my hubby worked it!!!
hydrooneofficial .
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.
.
#FlashbackFriday #utilityworker #utilities #appreciation #borist #arbite #forester #linemanlife #linelife #linemanappreciation #powerline #power #electricity #storm #trades #apprenticeship #utility #ITS #behindthescenes #outdoors #heights #damage #storm #ONstorm #ice
274 likes
APR 13

April 16



hydrooneofficial
hydrooneofficial Hydro One crews are working to fix broken poles and downed lines caused by the ice storm. Our crews are facing hazardous conditions as they work around the clock to get the lights back on. They're making progress with repairs, but this is an active storm and the number of outages continues to rise, especially as the storm moves east. From our contact centre employees to our lines and forestry crews, the Hydro One team is working together to restore power as quickly and safely as possible.
hydrooneofficial .
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#icestorm2018 #winter #snow #freezingrain #storm #damage #springstorm #aprilstorm #emergency #trade #linelife #arbite #inthefield #treez
622 likes
APR 16