

Major Events RESPONSE REPORT



Issue: February 24th to February 25th, 2019 §2.1.4.2 Major Events Response Report

Date Issued:

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Summary:

A severe winter storm passed through Ontario from February 24th to 25th, 2019, with blowing snow and strong wind gusts up to 90 km/h. The storm moved from Western and Central Ontario to Eastern Ontario. Many areas started with heavy rains and hail but later changed to snow as temperatures dropped. This storm event caused significant damage to Ontario's distribution system and impacted approximately 190,000 (or 14%) of Hydro One Networks' customers.

This is the 1st Major Event in 2019.

A. Prior to the Major Event

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

Yes. We began monitoring the weather event on February 21st through our weather service provider, Environment Canada and other weather forecasters. The IBM Outage Prediction Tool suggested more than 1,200 weather impacted incidents within the 72 hour period and continued to climb to a peak of just under 1,900 on February 24th.

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 the 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, Hydro One used various channels to simultaneously provide public warning of possible outages from the pending storm. They are as follows:

- *Hydro One's media relations team sent out a press release to advise the public of the impending storm as well as to pitch top media outlets to increase public awareness,*
- *Hydro One's digital team posted a homepage banner on the HydroOne.com website to advise all readers,*
- *Hydro One's marketing team sent out a Storm Alert email to over 337,000 customers prior to the storm on Saturday. This email alert generated above record performance on key metrics such as: Open Rate at 56% (exceed previous record of 44%), Click Rate at 19% (previous record 10%), and Click-through Rate at 11% (previous record 5%), and,*
- *Hydro One's social media team also took a proactive approach by sharing an update of this impending storm with followers on February 22nd.*

- 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 plans for a Major Event are 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 plans 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, third party mutual assistance agreements were in place prior to the Major Event. One LDC (Niagara Peninsula Energy) provided mutual assistance during the storm.

B. 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 190,000 customers, or about 14 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. 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: 2019-02-24 to 2019-02-25

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.	35	2,946	10,338.9
1. Schedule Outage			
Customer interruptions due to the disconnection at a selected time for the purpose of construction or preventive maintenance.	10	561	1,911.3
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.	3	24,142	4,477.2
3. Tree Contacts			
Customer interruptions caused by faults resulting from tree contact with energized circuits.	432	75,395	400,087.2
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 by maintenance.	571	80,060	362,232.6
6. Adverse Weather			
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).	0	0	0.0

Date Range: 2019-02-24 to 2019-02-25

PRIMARY CAUSE CODE	Number of Interruptions	Customer Interruptions	Customer Hours of Interruption
7. Adverse Environment Customer interruptions due to distributor equipment being subject to abnormal environments, such as salt spray, industrial contamination, humidity, corrosion, vibration, fire, or flowing.	0	0	0.0
8. Human Element Customer interruptions due to the interface of distributor staff with the distribution system.	6	6,440	4,014.8
9. Foreign Interference Customer interruptions beyond the control of the distributor, such as those caused by animals, vehicles, dig-ins, vandalism, sabotage, and foreign objects.	7	411	2,385.4
Total	1,064	189,955	785,447.2

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 adds 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.

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

A level 1 emergency was declared at 13:07:31 PM on February 24th, 2018.

A level 2 emergency was declared at 08:00:05 AM on February 25th, 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?

Sunday, February 24th at 4:00AM.

- 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, Hydro One provided three daily updates, which were aligned with Hydro One's incident Command Centre, started on February 25th at 10AM, 3PM and 8PM when the weather condition entered the Level 2 Emergency posture. Additionally, regular ETR updates were also provided to customers during the event as the ETRs changed via Proactive ETR messaging, Auto Dialer Notifications and Outage Map.

- 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 Hydro One 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?

Two press releases were sent out as well as numerous followed-up calls to media outlets. This effort generated many interviews from various news outlets as well as 400 pieces of media coverage, including an in-studio interview with CP24 and an on-camera interview with CTV. Social media was also used to up-date customers across Twitter, Facebook and Instagram reaching over 160,000 users – see Appendix.

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

74.3% IVR, 25.7% 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?

Yes, the website was updated 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?

189,955 customers, representing ~14% 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 11:35 AM on February 25th, a total of 35 hours and 35 minutes after the onset of the event, a switch on the Thunder Beach DS F1 feeder was restored, energizing 570 customers. This restoration brought the total number of customers restored up to 171,243, 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: 2019-02-24 to 2019-02-25

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.	10	561	1,911.3

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

Yes, One LDC (Niagara Peninsula Energy) provided mutual assistance during the storm.

- 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.

C. 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 to enhance the demographic features. This web-based application provides the 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 a 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 by conducting lessons learned sessions. These sessions provide valuable insight in what specific tactics can be developed to address areas of improvement.

- 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 is currently completing a post storm survey from those customers who were affected by the 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?

Two press releases were sent out as well as numerous followed-up calls to media outlets. This effort generated many interviews from various news outlets as well as 400 pieces of media coverage, including an in-studio interview with CP24 and on-camera interview with CTV. Social media was also used to up-date customers across Twitter, Facebook and Instagram reaching over 160,000 users. Below are updates that were shared on Twitter.

Twitter	
<p>February 22</p> <p> Hydro One @HydroOne</p> <p>It looks like a gusty weekend ahead with a forecast of high winds on Sunday. Our new outage map has features like a weather radar overlay & updates every 10 minutes, so that you can get the most current information if the power goes out. Visit ow.ly/agBU30nNww. #ONstorm</p>  <p>0:05 7,160 views</p> <p>2:51 PM - 22 Feb 2019</p>	<p>February 24</p> <p> Hydro One @HydroOne</p> <p>Crews are working to restore power to over 27,000 customers across Ontario. Blizzard conditions have made driving unsafe for crews in #Kapuskasing & they need to wait for roads to reopen to continue restoration efforts. Visit ow.ly/agBU30nNww for updates #ONstorm</p>  <p>3:29 PM - 24 Feb 2019</p>

February 24



We appreciate your patience as our crews work in tough winter conditions to restore power. Customers in the hardest hits areas may be without power overnight. We expect storm activity to continue into tomorrow morning and crews will respond to emergencies overnight. #ONstorm



9:28 PM - 24 Feb 2019

February 25



Crews continue to work safely to restore power and have been able to turn the lights back on for 150,000 customers since the storm started. We are expecting additional outages to occur while high winds continue through the province. For updates: ow.ly/nEyl30nnpVM #ONstorm



11:52 AM - 25 Feb 2019

February 25



Thank you for your patience and kind words while our crews faced difficult conditions to restore power to 180,000 customers since Sunday morning. We expect less than 1500 customers will be without power until tomorrow. Crews will be responding to emergencies overnight. #ONstorm

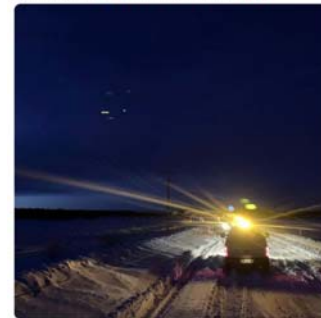


8:56 PM - 25 Feb 2019

February 26



Our crews worked throughout the night and today to get the lights back on for our remaining customers. We thank you for your patience and support during this restoration. Learn more about being prepared in the case of a storm at hydroone.com/outages



3:30 PM - 26 Feb 2019

February 27



High winds caused destruction and power outages across Ontario. Our crews dealt with road closures and faced treacherous conditions to get the lights back on for our customers. Have a look to learn more.



1:36 PM - 27 Feb 2019