



Connecticut Legislature

November 15, 2017

Hartford, CT



10/29/17 Major Storm Restoration

Joseph Thomas
Electric System Operations

Preparation

UConn Damage Prediction Model / Weather Services

Friday, 10/27/17 - Storm Preparations began

- Plan and Implement for a Level 5 Event
- Incident Management Team Lead meetings started

Sunday, 10/29/17

- 10:00 hrs.: Incident Management Team Lead call
- 14:00 hrs.: Forecast heavy rain, E/SW winds at 25- 35 MPH, wind gusts to 60 MPH
- 18:00 hrs.: UI opened the EOC
- Customer Impact Projection: 10,000 – 31,356



Overview – Storm Results

EOC Opened: 18:00 on 10/29/17

Storm Duration: 18:00 on 10/29/17 to 08:00 on 11/1/17

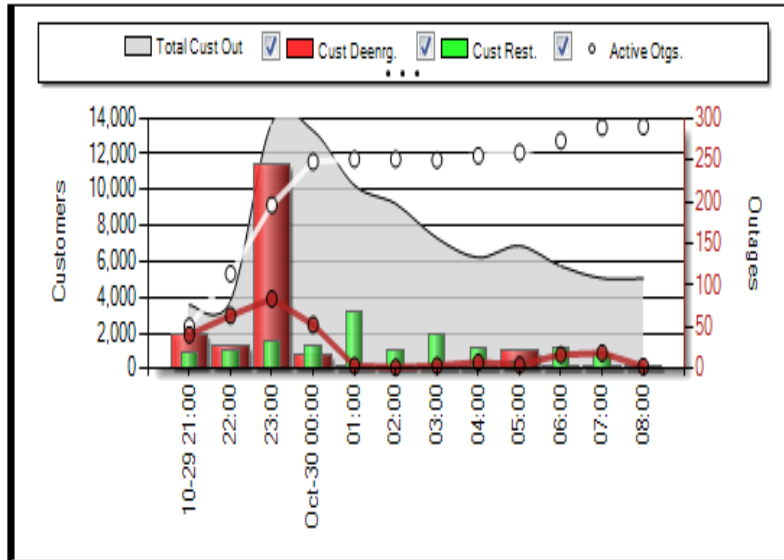
Peak Wind Gusts: 22:00 on 10/29/17 through 02:00 10/30/17

- 25,488 Customers Affected
- 14,412 Customers Affected at the peak of the storm, 23:00 on 10/29
- 6.4 hours - Customer Average Interruption Duration Index (CAIDI)
- 1 Transmission line trip with an automatic reclose
- 302 Outage Events, 9 Critical, 372 Medical
- 515 Tree Events (outages and trouble spots)
- 322 Wires Down Locations
- 283 Service Wire Events
- 9 Broken Poles, 17 Transformers replaced
- 5 Environmental issues remediated



Restoration

Time Line – to Peak Outages



- UI mobilized resources at 18:00 on 10/29/17 continuing through 08:00 11/1/17
- A contingent of EOC resources worked on 10/29/17 evening during the height of the storm.
- Restoration Support staff, Line Crews and Vegetation Crews were brought in at 06:00 on Monday to address restoration needs.
- Participated in 2 NAMAG calls
- No State or Municipal EOC were activated during the storm.
 - UI EOC Leadership and Municipal Liaisons on site, ready for deployment
 - Municipal alerts issued on 10/30 and 10/31

Post Restoration - Circuit Sweep Assessment

Post Storm System Inspection

- 274 feeders (2,889 Miles of overhead circuit lines) were patrolled to verify the integrity of the system
- 695 post restoration locations required follow-up repair – Projected completion 11/16/2017

Issues Found:	#	%
Broken Limb On Wire	327	47%
Wire Off Pin	112	16%
*Other	93	13%
Broken X-Arm	55	8%
Secondary Wire Down	53	8%
Leaning Pole	24	3%
Broken Pole	12	2%
Service wire down	10	1%
Primary wire down	9	1%
Total:	695	

**Note: The “Other” category includes issues such as foreign objects on primary, broken guy wires, UI fiber optic issues, and broken cutout brackets.*

Tree Caused Outages

Forensics – Utility Protection Zone (UPZ)

Outage Investigations for this Storm:

- 82% of the tree related outages were in areas not yet addressed by UPZ program
 - Of the 82% - 51% were caused by trees within the UPZ (8')
- 2% were caused by objection trees

Overall Tree Related Outage Investigations for 2014 – 2017 to date:

- 96% of the events came from areas where we have not yet performed UPZ
- Of the 96% - 66% of the events were caused by trees within the UPZ (8')

Results

Level 5 Event as Predicted

- Customers safely restored, no injuries occurred
 - 10,000 to 31,356 customer outages projected
 - 25,488 actual customer outages
- Emergency Response Plan executed as designed
- Leveraged technology for outage assessments, crew assignments and restoration completion
- Resources were staged and used effectively



Looking Ahead – UI's Ongoing Commitment

Continue with the Storm Resiliency Plan

- Continue to execute the UPZ where approved
 - UPZ Clearance will reduce the number and duration of outages
- Infrastructure resiliency
 - Replace aging infrastructure - poles & wires
 - Increase system back-up capability (Perimeter Feeder ties)
 - Flood mitigation
- Evaluate and Leverage new technology
 - Focal Point upgrade, Drones, Distr. Lidar, Grid Analytics, etc.

Questions

