



OLR RESEARCH REPORT

December 9, 2011

2011-R-0458

WITT ASSOCIATES REPORT ON UTILITY OUTAGE RESTORATION

By: Kevin E. McCarthy, Principal Analyst

You asked for a summary of the "[Connecticut October 2011 Snowstorm Restoration Report](#)" prepared by Witt Associates.

SUMMARY

The Witt Associates report assesses the preparedness, response, and restoration efforts of the electric companies, primarily Connecticut Light & Power (CL&P), in connection with the October 2011 snowstorm. It provides a brief summary of the snowstorm, describes how Witt Associates developed the report, and presents findings and recommendations for improving power restoration response. The report states that it is intended to provide a basis for further examination of key issues and improvement planning by the state, municipalities, and utilities.

Among the report's key findings are:

1. the level of preparedness, including planning, training, and exercises, for a widespread power outage or events that damage infrastructure is inadequate across all sectors;
2. in particular, CL&P was not prepared for an outage of this size;

3. the company's public commitments to restore power by specific times, which had not been verified internally, unnecessarily contributed to customer frustration and challenges for municipalities;
4. CL&P's Town Liaison Program, while a good concept, had not been fully developed at the time of the snowstorm and was not consistently effective; and
5. the use of external mutual assistance and contract crews, while needed to restore power, presented communication, reporting, and tracking challenges because they often did not have the same communications or field reporting technology as local crews.

On the other hand, the restoration effort was accomplished without any deaths or serious injuries.

The report makes 27 recommendations. In general terms, it recommends that CL&P:

1. improve its planning, procedures, training, and pre-staging practices to adequately prepare its crews and resources for the scale of incidents it and its customers potentially face by significantly increasing the scale of planning scenarios;
2. develop an ability to manage large-scale incidents by implementing an Incident Command System (ICS) structure that expands with the requirements of the incident;
3. improve its processes for (a) information management, including message verification and communication; (b) coordination with local governments; and (c) dissemination of public information to its customers, external partners, stakeholders, and the media; and
4. more closely coordinate and integrate preparedness activities with state and local governments to include ongoing planning, training, and exercise for utility disruption.

Similarly, the report also recommends that state and local government planning and preparedness address major power disruption more comprehensively and inclusively, including coordinating with utilities and developing procedures for damage assessment teams.

WITT ASSOCIATES REPORT

Background

The Northeast was struck by an unusual early snowstorm on October 29, 2011. The wet snow, in some cases more than 12 inches, stuck to trees that still had their leaves. It brought down branches and in some cases entire trees. Fallen trees blocked roads and caused substantial damage to power lines, including some transmission lines. The snowstorm resulted in 809,097 CL&P customers being without power at some time during the outage, many of whom suffered multiple outages. At the peak of the outage 807,228 customers were without power, some of whom remained out for a week to 11 days.

United Illuminating's (UI) outages were smaller in number and as a proportion of its total customers. A total of 52,000 of UI's 350,000 customers were affected at some time during the outage, with 19,000 without power at the peak of the outage. After the snowstorm, power was restored for all UI customers Wednesday night, November 2. UI serves the greater Bridgeport and New Haven regions, which received substantially less snow than CL&P's service territory.

The state retained Witt Associates to assess the preparedness, response, and restoration efforts associated with the snowstorm. The report focused on the performance of utility companies and local and state public sector entities responsible for (1) restoration of electric transmission and distribution and (2) emergency preparedness and response related to widespread outages. Witt Associates issued its report on December 1, 2011.

Report Development

Between November 7 and December 1, Witt Associates:

1. collected data and analyzed relevant documents;
2. interviewed local elected, public safety, emergency management, public works, and transportation officials and state agency personnel; and
3. interviewed utility and labor officials.

Among the documents Witt Associates analyzed were:

1. utility and government emergency response plans,

2. snowstorm event summaries and response timelines,
3. CL&P and UI presentations to the State Team Organized for the Review of Management of Irene (STORM) Panel and the subsequent Two STORM Panel,
4. outage maps, and
5. utility company mutual aid agreements.

The Witt staff conducted more than 65 interviews with local and state government representatives and CL&P and UI executives and staff. The interviewers asked standardized questions to focus on factors related to power restoration and emergency response and to provide consistency across interviewers and participants. They also asked open-ended questions to discuss the issues and recommendations most relevant or important to the interviewee's jurisdiction or organization.

Findings

The report's principal findings include the following:

1. The level of preparedness for a widespread power outage or events that damage infrastructure was inadequate across all sectors.
2. CL&P was not prepared for an event of this size. Its emergency response plan did not have specific provisions for outages involving more than 100,000 customers (the worst case scenario was an outage affecting 100,000 or more customers); as noted above more than 800,000 CL&P customers lost power. In contrast, UI's plan contemplated 250,000 of its 350,000 customers losing power.
3. CL&P did not pre-stage adequate resources to restore power in advance of the snowstorm and this delayed the recovery effort in the first days.
4. Like most electric utilities, CL&P depends on contractors and mutual aid from other utilities to address large-scale outages. Several factors contributed to initial delays in bringing in this staff, although the company did almost fully restore power by November 9 by bringing in thousands of crews.

5. CL&P developed an internal goal to restore power to 99% of all customers by Sunday, November 6, without verifying the date internally. The company's public commitment to this date and subsequent commitment to restore 99% of all customers in each municipality it serves by November 6 unnecessarily contributed to customer frustration and challenges for municipal governments.
6. Northeast Utilities (NU - CL&P's parent company), did not provide sufficient executive leadership during the restoration effort, allowing one individual to oversee the restoration effort, serve as the primary liaison at the state Emergency Operations Center, and be its public spokesperson.
7. When power was restored for individual customers, CL&P's awareness of the situation and its ability to communicate restoration status to customers was delayed by up to 12 hours because data was not updated in the system until crews returned from their shifts. This hampered coordinated decision-making and accurate communication regarding power restoration activities.
8. CL&P's Town Liaison Program, while a good concept, had not been fully developed at the time of the snowstorm and was not consistently effective in conveying accurate information between the company and municipalities and thus undermined the company's credibility with local officials in some cases.
9. CL&P crews and the public sector response and emergency management entities generally used radio systems in the field that were not compatible with each other.
10. While needed to restore power, using external mutual assistance and contract crews presented communication, reporting, and tracking challenges because they often did not have the same communications or field reporting technology as local crews.
11. The state's Natural Disaster Plan and the State Response Framework do not specifically assign responsibilities after a power outage or establish specific procedures for such outages.

The report notes that, despite the length and extent of the outage and its effect on customers, there were successes in CL&P's power restoration effort. The company's internal forecast model accurately predicted power would be fully restored by November 9, although it took "an unprecedented army" of mutual aid workers from other utilities to do so. No serious injuries or deaths were reported associated with the

restoration effort. Municipalities reported that power restoration crews, once they arrived in their communities, generally functioned well and efficiently. Stakeholders also praised the assistance from customer service representatives in answering phone lines in a timely fashion, with an average wait time of less than 45 seconds.

Recommendations

Planning and Preparation. The report recommends that CL&P:

1. revise its Emergency Response Plan to realistically address small, medium, and large-scale outages that could affect the state, including outages involving more than half of its customers;
2. revise the plan and CL&P procedures to clarify when and what resources should be considered for pre-staging;
3. develop and exercise pre-staging procedures and related logistics;
4. improve procedures and capabilities to scale up its management and coordination capabilities to deal with field staffing levels at seven to 10 times the company's normal field staffing;
5. review and revise the ability of its plans and procedures to support scalable incident management during an event and exercise management scalability as part of its preparedness program;
6. implement an ICS training protocol for its staff and incorporate ICS principles and implementation into drills;
7. participate in multi-agency and multi-jurisdictional exercises using ICS;
8. review and adjust plans, procedures, and training to ensure that a single person is not responsible for corporate-level command, public information, and liaison roles in a large-scale restoration effort;
9. create and maintain a robust training, exercise, and corrective action program so that items for improvement are identified in real-world events and training exercises, assigned as responsibilities, and monitored for resolution or further action; and

10. implement systems and processes to improve real-time awareness of the status of trouble spots, crew locations, assignments completed, and related information to provide its emergency operations center with timely information.

Communications. The report recommends that CL&P:

1. develop and implement a policy for appropriate use and public release of internal restoration projections and targets, which should (a) distinguish between internal operational targets and external communications and (b) require that projections for public release be based on proven models and be validated;
2. develop written procedures and protocols for checking and verifying the accuracy and reality of projections and operational details before they are released to the public, with policies and training to identify and correct rumors, misinformation, and its own misstatements in order to maintain credibility with customers, public sector partners, and the media;
3. designate qualified and trained individuals, who do not have other immediate operational roles, to serve as public spokespersons for the company in power restoration and other emergencies; and
4. establish a methodology and tools for municipalities to conduct damage assessments and provide the results to CL&P in a way that it can easily assimilate into its damage assessment process.

The report also recommended that CL&P and other utilities implement procedures and technology, as needed, to better integrate status reporting by mutual assistance crews into CL&P's operations reporting and restoration tracking processes. In addition, outage and restoration maps made available to the public should explain any delays that impact the timeliness of information displayed on the maps and notation of any data analysis changes that impact the display.

Town Liaison Program. The report recommends that:

1. CL&P review the program, identify the appropriate reporting structure for liaisons, and integrate liaisons into CL&P's procedures and practices for restoration decision-making and activities so that they can be trusted conduits of information between CL&P and municipalities;

2. CL&P review its policies and staffing with municipalities to determine if there are workable ways to effectively share liaisons among municipalities (potentially organized by CL&P's electric circuits, state regions, or regional planning organizations);
3. CL&P implement, with input from municipalities, a comprehensive training program for staff who may be asked to serve as a town liaison;
4. town liaisons be able to communicate clearly, understand circuit maps, terminology, and basic power restoration practices, and access power company dispatch systems; and
5. town liaisons participate in municipal and regional exercises that address power restoration as part of emergency response, to review and practice restoration responsibilities, and to develop understanding of municipalities' and CL&P's restoration priorities and operational capabilities and practices.

Other Recommendations. The report also includes the following recommendations:

1. CL&P and NU should establish robust, integrated emergency management leadership capabilities at the executive level. An emergency preparedness and response steering committee or similar body composed of representatives of various components of CL&P and NU should meet regularly to review CL&P's emergency preparedness program and related activities, provide input, and facilitate involvement throughout the company.
2. CL&P and municipal governments should establish a regular schedule and process for municipalities to provide and update their restoration priority lists. CL&P should update and validate municipal priorities on a regular basis.
3. Municipalities should address major power disruption in their emergency plans and procedures, designate a point of contact to provide clear lines of communication and coordinate with utilities, and establish procedures for damage assessment teams in utility outages.
4. CL&P should maintain a list of all municipal points of contact and validate this list annually.

5. State and local government planning and preparedness efforts should address major power disruption more comprehensively and inclusively. These efforts should include coordination with utilities and procedures for damage assessment teams in power and utility outages. Electric utilities and the public sector should work together to establish policies and exercise practices regarding damage assessment, cutting and clearing fallen trees and making roads safe, and debris removal.
6. The Department of Emergency Services and Public Protection (DESPP) should review and improve state planning for outages and play a stronger role in guiding and reviewing municipal plans and procedures for response to outages, including responsibilities, capability needs, coordination, situational awareness, damage assessment, and debris clearing and removal. The state should add an energy component into its emergency plan to provide a structure for ongoing multi-agency communication, coordination, and preparedness for outages.
7. DESPP should work with CL&P and other utilities to identify and recommend steps to improve communications interoperability across radio systems used by agencies and field crews that will be involved in power restoration operations.
8. Electric utilities should regularly train municipal public works personnel, damage assessment teams, and local fire and public safety personnel on utility line identification, live wire identification, and electricity infrastructure and system basics.

The report finally recommends further review of a number of topics that it gave limited attention, including utility system design, hardening of utility infrastructure, vegetation management, and utility regulation.

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