

CHAPTER III

Emergency Planning and Preparedness

Chapter Structure

Chapter III	III-1
Chapter Structure	III-1
A. Background	III-1
Introduction.....	III-1
Emergency Preparedness	III-1
Challenges Faced by the New Hampshire Electric Utilities.....	III-2
Storm Preparation	III-5
B. Evaluative Criteria.....	III-6
C. Tasks.....	III-13
D. Findings and Conclusions	III-13

A. BACKGROUND

Introduction

The purpose of this chapter is to provide an assessment of the New Hampshire electric utilities' emergency planning and preparedness. The primary goal of this review is to determine the actions, processes, and procedures that could be instituted by the utilities to improve emergency response during future widespread electric system disruptions. This would include interruptions that exceed 48 hours in length and require the use of crews from outside the normal area of operations. As part of this process, the utilities' plans and procedures were reviewed to ensure they are adequate and that they properly prioritize the items needed to facilitate restoration efforts. As a result of the review, areas for improvement are identified and recommendations are provided.

Emergency Preparedness

Emergency preparedness is one critical factor determining if a utility can respond quickly and safely to a storm or other emergency. It includes having in place the processes, tools, and procedures needed to implement a utility's emergency plan. Unless a utility has both a complete plan in place prior to an event and the tools needed to implement the plan, its effort to restore service may become an uncoordinated exercise. This lack of structure may leave it without an accurate way of assessing damage or estimating restoration dates. Once an event occurs, it is too late to put these procedures into place. The utility is then forced to resort to ad hoc methods to try to complete the restoration. This is especially true of large, multi-day events which require a fundamentally different management approach than smaller storms.

The electric utilities in New Hampshire suffered massive infrastructure damage in the December 2008 ice storm. The perception of their ability to handle major events also suffered in the eyes of regulators and the public.¹ Each of the utilities is aware of these public perception issues and has made efforts to improve them.

Challenges Faced by the New Hampshire Electric Utilities

New Hampshire utilities face two types of unique challenges. The first is due to New Hampshire's geography and the second is due to the structure of local governments within the state. The utilities must make adjustments to meet these challenges when planning for emergencies.

Geographic Challenges

Each New Hampshire utility faces unique resource procurement problems because of the state's geography. Since the geography obviously cannot be changed, it must be considered by the companies when planning for emergencies.

In widespread outages, utilities rely on resources from other utilities and outside contractors. These resources come in a myriad of forms, such as crews employed by other utilities and contractor crews, neither of which may ever have worked in New Hampshire before. Larger utilities, such as National Grid and PSNH, can supply resources from affiliates within the same region. Even so, during the 2008 ice storm restoration process, all of the utilities brought crews into their New Hampshire service areas from outside the state. Some crews came from outside the New England region.²

New Hampshire must look primarily south and west to obtain resources during a major outage. Since Maine and the Canadian Maritimes Provinces do not have the population base typically needed to support having large utility resources on hand, any resources that can be drawn from those areas will be minimal at best. Crews from Canadian utilities such as Hydro-Quebec are considered throughout the industry to be excellent, but they still have limitations such as:

- Potential delays associated with border crossings
- Equipment restrictions such as heavily equipped trucks designed for the rigors common in Canada but not always applicable to New Hampshire land areas³
- Language barriers due to some crewmembers not speaking English

The weather conditions and population density in the northeast United States also combine to hamper resource procurement for the New England utilities. Figure III-1 shows the flow of resources into New Hampshire following the ice storm.

¹ New Hampshire Public Utilities Commission. "December 2008 Ice Storm." (2009).

<http://www.puc.state.nh.us/2008IceStorm/December2008IceStorm.htm> (Accessed August 24, 2009).

² Hybsch, R. Director of Customer Operations, PSNH. Interviewed by Fowler, M. June 4, 2009.

³ Hydro-Quebec crews operate very large four wheel drive bucket trucks.

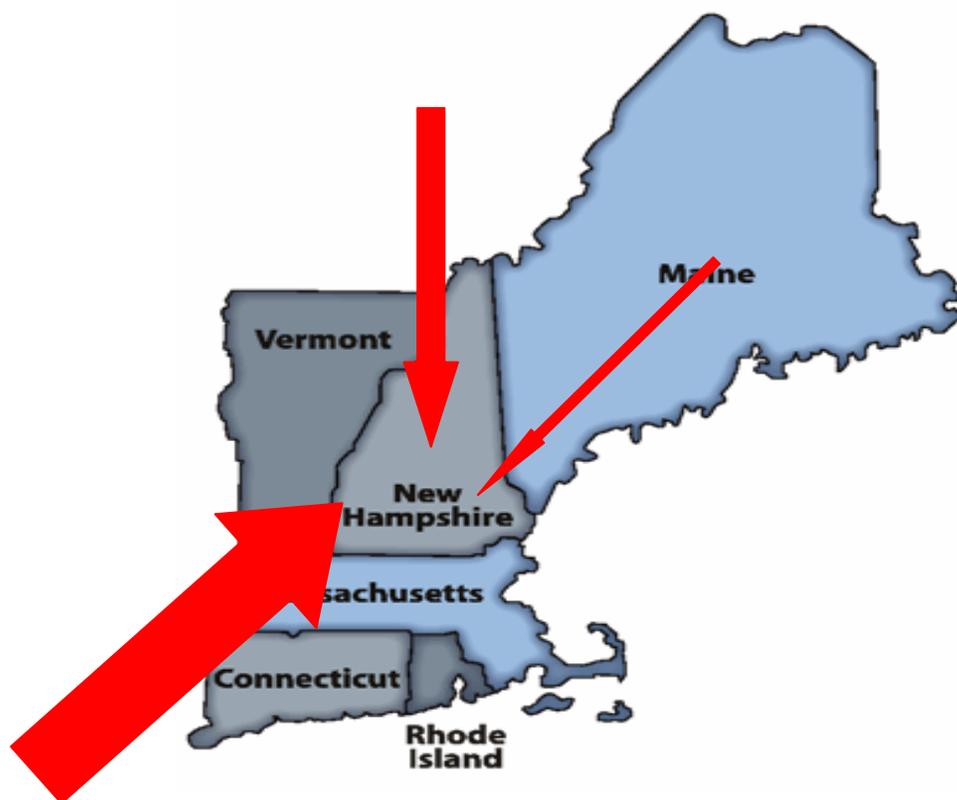


Figure III-1 - December 2008 ice storm resource flow map.
(Arrow thickness reflects the quantity of resource potentially available.)

Unlike many past ice storms where the damage tended to be localized, recent ice storms causing significant damage in New Hampshire have been widespread and have affected large areas.^{4 5 6 7}

^{8 9} The damage from the December 2008 ice storm, for example, extended from New York through New Hampshire and south into Massachusetts. The utilities in these more populated states, with relatively larger numbers of crews available, were themselves significantly impacted by the storm. Not only did the December 2008 ice storm require these utilities to retain their crews and contractors, but also put them in direct competition for obtaining crews from outside the New England and Mid-Atlantic areas.

Efficient response to a disaster would prohibit crews from traveling through and past areas of damage to get to damaged areas farther away. The most efficient method would be for them to restore the closest damage first and then move on to more distant areas. Similarly, efficiency would dictate that areas with the largest numbers of impacted customers should be addressed

⁴ Hybsch, R. Director of Customer Operations, PSNH. Interviewed by Fowler, M. June 4, 2009.

⁵ Lynch, H. Disaster Recovery Executive, NHEC. Interviewed by Fowler, M. June 17, 2009.

⁶ Letourneau, R. Director Electric and Gas Operations, Unutil. Interviewed by Fowler, M. May 1, 2009.

⁷ Kearns, R. Director Emergency Planning, National Grid. Interviewed by Fowler, M. June 9, 2009.

⁸ Demmer, K. Manager Electric Distribution National Grid. Interviewed by Fowler, M. June 9, 2009.

⁹ Francazio, R. Director of Emergency Planning, Unutil. Interviewed by Fowler, M. May 20, 2009.

first. Both of these factors place New Hampshire at a disadvantage following a large scale storm since crews coming from the south and west would likely be called upon to assist in restoration efforts in New York and Pennsylvania before arriving in New Hampshire.

Challenges of New Hampshire’s Local Government Structure

New Hampshire’s local governmental structure also presents a challenge to the utilities. New Hampshire has 234 incorporated cities and towns, most with some form of emergency management. The size, professionalism, and sophistication of the emergency management personnel, and the resources each town has at its disposal, vary tremendously. Figure III-2 illustrates the variation in population among the 234 municipalities as reported by the New Hampshire Office of Energy and Planning. New Hampshire communities vary in size from Manchester, with a population of more than 100,000, to towns that are home to only 32 people. Of the 234 municipalities, 47 had a 2007 population of less than 1,000 residents.

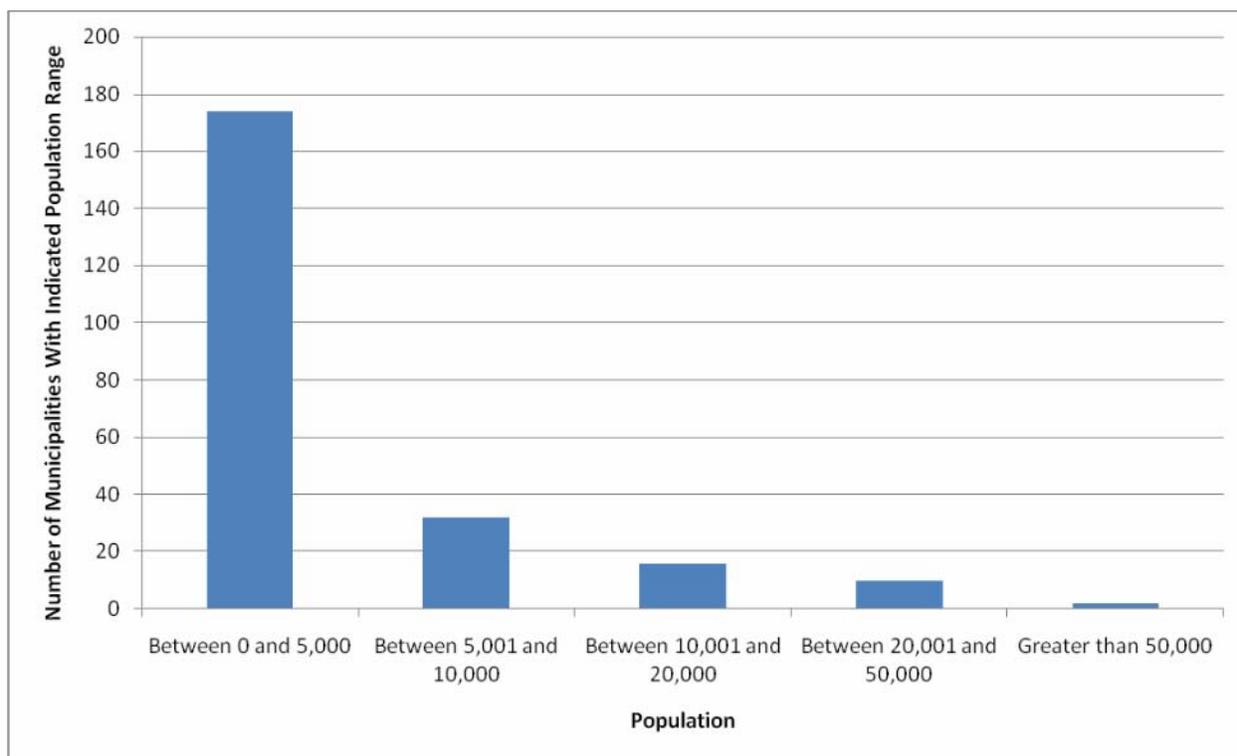


Figure III-2: Number of municipalities in New Hampshire with populations ranging as shown.¹⁰

Since the utilities must interact with each town affected by an emergency, their emergency plans must be designed to handle the tremendous variation that exists within their respective service

¹⁰ New Hampshire Office of Energy and Planning State Data Center Library. “Population Estimates.” (n.d). http://www.nh.gov/oep/programs/DataCenter/Population/documents/ranking_population_by_municipality_2007_estimates.xls (Accessed August 24, 2009).

territories. The methods each utility may need to coordinate with such a diverse range of municipalities must be reflected in their plans. A “one size fits all” approach will not work for the New Hampshire electric utilities.

The four New Hampshire electric utilities are also vastly different from each other in terms of service territory, organizational structure, and numbers of customers served in New Hampshire. A description of the electric utilities, along with a map showing the territories they each serve in New Hampshire, may be found in Chapter I of this report.

Emergency Plans

Emergency planning forms the basic underpinning of any company’s ultimate performance during an emergency. Without a workable emergency plan, a company simply cannot perform during a storm in other than a disorganized, reactive manner. A plan must be more than a document that occupies shelf space; it must be workable and well distributed throughout the organization, and it must use past storm experiences to ensure it realistically represents actual storm restoration conditions.

Increasingly, utilities are finding that emergency response requires a dedicated and well trained staff to put their emergency plans into practice. The utility must have facilities specifically designed for housing the emergency management operation. Emergency response is becoming a dedicated professional aspect of electric utility operations.

Storm Preparation

Storm preparation includes the actions a utility takes to be ready for an imminent storm. This generally means the activation and staffing of the utility’s Emergency Operations Center (EOC). In New Hampshire, PSNH and NHEC both have statewide emergency operations centers. Until uses its corporate EOC due to the relatively small geographic area of its operations. National Grid does not have a statewide EOC in New Hampshire since it serves only a small number of customers in the state. National Grid activates its emergency response at the local level in New Hampshire, and large outages are managed at the corporate level EOC in Northborough, MA.

Communications

There were many communications problems following the December 2008 ice storm, including failure to properly communicate with the public, local officials, and other utilities.¹¹ Company self-assessments, comments collected from customers, and interviews with state and local officials all point to communications as the number one area needing improvement. Additionally, comments from hundreds of citizens were solicited by the NHPUC after the storm

¹¹ New Hampshire Public Utilities Commission. “December 2008 Ice Storm.” (2009).
<http://www.puc.state.nh.us/2008IceStorm/December2008IceStorm.htm> (Accessed August 24, 2009).

at a series of ten town hall meetings and on the NHPUC web site to gather input from the public.¹² Those comments point repeatedly to communication failures.

Communicating with state regulators is also important for the utilities. Utilities are accustomed to working with regulators in a structured, paced environment, and the need to provide real-time information is somewhat new. The New Hampshire utilities have all begun efforts to enhance their communications with state agencies during emergencies,¹³ but additional reporting efforts will be needed. The communication enhancements planned include standardizing the following:

- Terminology used
- Frequency of communications
- Communications methods used
- Content of the communications to be delivered.

B. EVALUATIVE CRITERIA

Four criteria were chosen to evaluate the utilities. These are:

1. Content of the emergency plan
2. Emergency preparedness
3. Emergency organization and facilities
4. Communications

1. Each utility should have an emergency plan.

- Each utility should have an up-to-date plan that reflects what experience shows actually happens during a storm or other emergency.
- Each utility should maintain and modify their plans as needed.
- Each electric utility should include the following in their plan:
 - Weather monitoring and alert procedures
 - Storm damage classifications
 - Duty supervisor coverage
 - Resource procurement, mutual aid, and contractors
 - Safety protocols
 - Emergency operating center locations, technology standards, and facilities
 - Facility contingency plans
 - Activation checklists
 - Call-out and hold-over procedures

¹² New Hampshire Public Utilities Commission. "December 2008 Ice Storm." (2009).

<http://www.puc.state.nh.us/2008IceStorm/December2008IceStorm.htm> (Accessed August 24, 2009).

¹³ The utilities and representatives of the New Hampshire EOC are meeting monthly to develop procedures for communicating information.

- Process for transitioning trouble-men from dispatch control to emergency control
- Ramp-up and ramp-down protocols
- Damage assessment and restoration time procedures
- Electric system information and the process for distribution information
- Emergency first responder contact information and responsibility for coordination
- Public safety personnel procedures (wire watchers)
- Cut in clear and make safe procedures
- Critical infrastructure, hospitals, nursing homes, etc.
- Fleet operations, fueling, permitting, security
- Logistics procedures, sanitation, food, lodging, clean-up, lighting, laundry
- Staging areas
- Outage management system procedures
- Coordination with forestry and external crews
- Information on responding to multiple and simultaneous large-scale outages, including a prioritization procedure
- Plans for communicating with local officials, state agencies, and the public.
- Clear trigger points at which it is activated
- An escalation process that will take place as additional trigger points are reached.
- A clear management strategy for storm restoration (For example, the strategy might require all necessary resources be deployed for customers to be restored within seven days of a major storm.)
- A clear definition of roles and responsibilities for all participants during an emergency
- Procedures for obtaining adequate personnel, equipment, and facilities for storm response
- Procedures for deploying and managing outside resources
- Procedures for assessing the accuracy of collected outage data
- Procedures for assessing damage and developing service restoration estimates
- Procedures for responding to multiple simultaneous large-scale outages in different operating areas

- 2. Each utility should prepare for the emergency using drills, training, and post-drill critiques.**
 - A formal schedule of training and drills should exist at each utility; the drills should be fully described as to the scenario and realism.
 - Post-event critiques of the training efforts should be performed.
- 3. Each utility should have the proper emergency organization and facilities in place.**
 - The utility should have a dedicated facility for emergency response operations.
 - The facility should be maintained in a mode to allow prompt activation.
 - The Incident Command System (now Incident Management System) should be in place.
 - Employees should be trained and familiar with the organization being used.
- 4. Each utility should have policies in place to ensure effective communications during emergency events.**
 - The utility should have procedures that include communications on every level, including communications with state and local officials and the media.
 - The utility's procedures should ensure that the content of all communication is reliable and consistent.
 - The utility should have procedures to ensure that information is passed to customer service personnel who interface directly with customers.
 - The utility should have procedures in place to ensure that first responders always have a means for contacting utility officials.
 - All of the utilities should work with the state to develop communication protocols prior to an emergency.
 - All of the utilities and the state EOC should have single points of contact for use during an emergency.

The following tables indicate the extent to which each of the utilities met the evaluative criteria. These tables were not prepared to compare one utility with another. The four electric utilities are very different, face different problems, and experienced different amounts of damage to their systems due to the storm. These tables were prepared to show where each utility may improve its performance in preparation for the next storm or other disaster. A further explanation for the improvements that are recommended to each of the utilities may be found in the findings and conclusions section of this report. The meanings of the symbols used in the tables are as follows:

- Improvement is needed as stated in the report
- ◐ Adequate with minor improvements suggested as stated in the report
- Effective with no improvements noted.

Table III-1 – PSNH Emergency planning and response evaluation matrix.

1) CONTENT OF THE EMERGENCY PLAN	
The utility has an up-to-date plan that reflects what experience shows actually happens during an emergency.	◐
The utility maintains and modifies the plan as needed.	●
The plan includes trigger points for when it is activated and when it escalates.	●
The plan includes a clear management strategy for storm restoration.	○
The plan defines roles and responsibilities for all participants.	◐
The plan includes each of the items suggested in the report.	◐
The plan includes procedures for obtaining adequate personnel, equipment, and facilities for storm response.	◐
The plan includes procedures for deploying and managing outside resources.	◐
The plan includes procedures for assessing the accuracy of collected outage data.	○
The plan includes procedures for assessing damage and developing restoration estimates.	○
The plan includes procedures for responding to multiple simultaneous large-scale outages in different operating regions.	●
2) EMERGENCY PREPAREDNESS	
The emergency plan is actually used to manage emergency events.	●
The utility has a formal schedule of training and drills.	◐
The utility does post event critiques of training events.	●
3) EMERGENCY ORGANIZATION & FACILITIES	
The utility has a dedicated facility for emergency response operations.	◐
The emergency response facility is maintained in a mode to allow prompt activation.	○
The utility has an Incident Command System.	◐
Personnel are trained in the organization being used.	◐
4) COMMUNICATIONS	
The utility has procedures that include communication to state and local officials and the media.	◐
The utility has a procedure to ensure that the content of all communication is reliable and consistent.	◐
The utility has procedures to ensure that information is passed to customer relations personnel.	◐
The utility has procedures to ensure that first responders have means for contacting the utility.	◐
The utility works with the state to develop communications protocols for use during an emergency.	●
The utility and the state EOC have single points of contact during and emergency.	●

Table III-2 – Unutil emergency planning and response evaluation matrix.¹⁴

1) CONTENT OF THE EMERGENCY PLAN	
The utility has an up-to-date plan that reflects what experience shows actually happens during an emergency.	<input type="radio"/>
The utility maintains and modifies the plan as needed.	<input type="radio"/>
The plan includes trigger points for when it is activated and when it escalates.	<input type="radio"/>
The plan includes a clear management strategy for storm restoration.	<input type="radio"/>
The plan defines roles and responsibilities for all participants.	<input type="radio"/>
The plan includes each of the items suggested in the report.	<input type="radio"/>
The plan includes procedures for obtaining adequate personnel, equipment, and facilities for storm response.	<input type="radio"/>
The plan includes procedures for deploying and managing outside resources.	<input type="radio"/>
The plan includes procedures for assessing the accuracy of collected outage data.	<input type="radio"/>
The plan includes procedures for assessing damage and developing restoration estimates.	<input type="radio"/>
The plan includes procedures for responding to multiple simultaneous large-scale outages in different operating regions.	<input type="radio"/>
2) EMERGENCY PREPAREDNESS	
The emergency plan is actually used to manage emergency events.	<input type="radio"/>
The utility has a formal schedule of training and drills.	<input type="radio"/>
The utility does post event critiques of training events.	<input type="radio"/>
3) EMERGENCY ORGANIZATION & FACILITIES	
The utility has a dedicated facility for emergency response operations.	<input type="radio"/>
The emergency response facility is maintained in a mode to allow prompt activation.	<input type="radio"/>
The utility has an Incident Command System.	<input type="radio"/>
Personnel are trained in the organization being used.	<input type="radio"/>
4) COMMUNICATIONS	
The utility has procedures that include communication to state and local officials and the media.	<input type="radio"/>
The utility has a procedure to ensure that the content of all communication is reliable and consistent.	<input type="radio"/>
The utility has procedures to ensure that information is passed to customer relations personnel.	<input type="radio"/>
The utility has procedures to ensure that first responders have means for contacting the utility.	<input type="radio"/>
The utility works with the state to develop communications protocols for use during an emergency.	<input type="radio"/>
The utility and the state EOC have single points of contact during and emergency.	<input type="radio"/>

¹⁴ Unutil has made significant changes to its plan since the audit and has indicated to NEI that all evaluative criteria items are now included in the plan. The NEI matrix addresses the plan at the time of the audit.

Table III-3 – National Grid emergency planning and response evaluation matrix.

1) CONTENT OF THE EMERGENCY PLAN	
The utility has an up-to-date plan that reflects what experience shows actually happens during an emergency.	●
The utility maintains and modifies the plan as needed.	●
The plan includes trigger points for when it is activated and when it escalates.	●
The plan includes a clear management strategy for storm restoration.	●
The plan defines roles and responsibilities for all participants.	●
The plan includes each of the items suggested in the report.	●
The plan includes procedures for obtaining adequate personnel, equipment, and facilities for storm response.	●
The plan includes procedures for deploying and managing outside resources.	●
The plan includes procedures for assessing the accuracy of collected outage data.	●
The plan includes procedures for assessing damage and developing restoration estimates.	●
The plan includes procedures for responding to multiple simultaneous large-scale outages in different operating regions.	●
2) EMERGENCY PREPAREDNESS	
The emergency plan is actually used to manage emergency events.	●
The utility has a formal schedule of training and drills.	●
The utility does post event critiques of training events.	◐
3) EMERGENCY ORGANIZATION & FACILITIES	
The utility has a dedicated facility for emergency response operations.	●
The emergency response facility is maintained in a mode to allow prompt activation.	●
The utility has an Incident Command System.	●
Personnel are trained in the organization being used.	●
4) COMMUNICATIONS	
The utility has procedures that include communication to state and local officials and the media.	◐
The utility has a procedure to ensure that the content of all communication is reliable and consistent.	◐
The utility has procedures to ensure that information is passed to customer relations personnel.	◐
The utility has procedures to ensure that first responders have means for contacting the utility.	◐
The utility works with the state to develop communications protocols for use during an emergency.	◐
The utility and the state EOC have single points of contact during and emergency.	◐

Table III-4 – NHEC emergency planning and response evaluation matrix.

1) CONTENT OF THE EMERGENCY PLAN	
The utility has an up-to-date plan that reflects what experience shows actually happens during an emergency.	◐
The utility maintains and modifies the plan as needed.	◐
The plan includes trigger points for when it is activated and when it escalates.	●
The plan includes a clear management strategy for storm restoration.	○
The plan defines roles and responsibilities for all participants.	◐
The plan includes each of the items suggested in the report.	◐
The plan includes procedures for obtaining adequate personnel, equipment, and facilities for storm response.	◐
The plan includes procedures for deploying and managing outside resources.	◐
The plan includes procedures for assessing the accuracy of collected outage data.	●
The plan includes procedures for assessing damage and developing restoration estimates.	●
The plan includes procedures for responding to multiple simultaneous large-scale outages in different operating regions.	◐
2) EMERGENCY PREPAREDNESS	
The emergency plan is actually used to manage emergency events.	●
The utility has a formal schedule of training and drills.	○
The utility does post event critiques of training events.	◐
3) EMERGENCY ORGANIZATION & FACILITIES	
The utility has a dedicated facility for emergency response operations.	◐
The emergency response facility is maintained in a mode to allow prompt activation.	○
The utility has an Incident Command System.	○
Personnel are trained in the organization being used.	◐
4) COMMUNICATIONS	
The utility has procedures that include communication to state and local officials and the media.	●
The utility has a procedure to ensure that the content of all communication is reliable and consistent.	●
The utility has procedures to ensure that information is passed to customer relations personnel.	●
The utility has procedures to ensure that first responders have means for contacting the utility.	◐
The utility works with the state to develop communications protocols for use during an emergency.	◐
The utility and the state EOC have single points of contact during and emergency.	◐

C. TASKS

In assessing emergency planning and preparedness, various employees and managers of the four electric utilities were interviewed. A number of data requests were submitted and the responses were analyzed. During this analysis, focus was placed on the plan each electric utility had in place and how each plan was executed following the storm. The response of the public to the preparedness of the utilities was examined and the recommendations given here should serve to improve the planning and preparedness of the four electric utilities for the next storm.

Some significant modifications are already being made by the electric utilities. This is especially true with Unitil, which experienced some of the most negative public and regulatory scrutiny following the storm. Some of the recommendations that follow may already have been implemented by the time this report is published.

D. FINDINGS AND CONCLUSIONS

Conclusion: Both PSNH and National Grid had thorough Emergency Operations Plans and organizations during the ice storm but Unitil and NHEC did not.¹⁵

PSNH manages storms operationally on a state-wide basis with a corporate organization at Northeast Utilities (NU) providing logistics and support. All Emergency Operations Centers (EOCs) personnel for New Hampshire reside within the state and report to the PSNH EOC during an event. All administration, drills, training, and other functions pertaining to emergency preparedness are handled within the New Hampshire organization. The other two Northeast Utilities electric companies, Western Massachusetts Electric Company and Connecticut Light and Power, operate their own EOCs using NU in the same support role.

Unitil had a plan in place prior to the December 2008 ice storm; however, the plan proved inadequate for the severity of the storm and the amount of damage that was experienced. Unitil is a relatively small utility in terms of customer base, geographic coverage, and staffing. The staffing element in particular put Unitil at a significant disadvantage. Its resources were stretched during the prolonged outage caused by the storm and it did not have the manpower to adequately manage a large inflow of external resources.

In March of 2009, Unitil published the results of a comprehensive self-assessment.¹⁶ The self-assessment document included 28 recommendations, many with multiple components. Unitil is currently acting upon these recommendations. Unitil also hired the person who managed National Grid's deployment to Unitil's service territory during the 2008 storm as its new Director of Business Continuity and Emergency Planning. He also has experience with Florida Power and Light, which is considered an industry leader in emergency restoration. His

¹⁵ Unitil. (February 27, 2009). Data Response STAFF 1-1. NHPUC.

¹⁶ Unitil. (March 25, 2009). Unitil's Response to the 2008 Ice Storm, Self-Assessment Report.

responsibilities include developing the new Emergency Plan and organization for Unitil which was underway at the time of the audit.

National Grid uses a different organizational approach than the other utilities. All emergency plan administration, exercise development, training, and administration are handled at the corporate level in a support organization. All emergency operations functions are handled in a separate operations organization.

NHEC does not have a formal emergency plan.¹⁷ Despite the lack of a formal plan, NHEC performed well during the December 2008 ice storm and even provided crews to assist other utilities in the restoration effort. This was the result of several factors. NHEC was fortunate that much of the severe damage occurred outside of its service territory. It is also staffed with very experienced people who are thoroughly familiar with their jobs. Nonetheless, the lack of a thorough plan places too much responsibility on the few employees it has to draw upon in an emergency. This poses a significant risk for NHEC's business continuity during an emergency.

Conclusion: The utilities conduct post-storm reviews but these are not part of the emergency plans.

All four New Hampshire electric utilities performed self-assessments using various degrees of formality following the storm. Those post storm self-assessment procedures are not presently part of any of the utilities' Emergency Operations Plan.

Recommendation No. 1: Each electric utility should include post-storm critiques and lessons learned should be included in their Emergency Operations Plan.

- Each electric utility should include a procedure for post-storm self-assessments in its Emergency Operations Plan.
- Each electric utility should include in its plan the requirement that self-assessments should be performed after any event that results in customers being without power for 72 hours or more.
- Each electric utility should include in its plan the requirement that the self-assessment should include:
 - Accuracy of weather predictions if weather was involved
 - Customers restored per crew day
 - Actual restoration times versus projections
 - A critique of contract or foreign crews that participated in the outage
 - Suggestions from all involved as to needed improvements
 - Identification of things that were done well

¹⁷ NHEC. (March 24, 2009). Data Response STAFF 1-1. NHPUC.

Conclusion: The utilities have business continuity plans but they are not integrated with storm plans.

At times the worst case scenario may occur. To prepare for such eventualities, the utilities have developed business continuity plans that address pandemics such as the flu and other issues beyond simple utility operation following a storm. As is customary, these plans are separate from the emergency operations plans.

Recommendation No. 2: Each electric utility should include a contingency for coincidental emergencies in their Emergency Operations Plan.

- Each electric utility should include in its emergency plan procedures for responding to a major outage coincident with an epidemic flu outbreak or other widespread health emergency which could reduce the size of the available work force.
- Each electric utility should include its business continuity plans in its Emergency Operations Plan.

Conclusion: Critical customer lists are not being consistently updated and coordinated with local cities and towns.

Critical customers are those who have been identified by local towns and cities as having a high priority for restoration. These include facilities that support first responders and provide essential community services such as police and fire facilities, hospitals, water and wastewater facilities, and buildings that may be used as shelters. Establishing communications between the utilities and the emergency directors of each town to obtain and update these lists can be useful for future cooperation during an emergency.

Recommendation No. 3: Each electric utility should have its representatives make contact in person with the emergency directors of each of the towns in its service territory to gather information on critical customers within those towns. Where practical, this should be done within 60 days after the publication of this report.

- The utility representative making contact with the town should be the actual person who would serve as primary contact for the local emergency operations center.
- The utility representative should use this visit for planning and information gathering.
- Both the utility representative and the town representative should confirm the points of contact and name alternates in each organization.
- The utility's representative and the town's representative should prepare an accurate list of critical customers.
- The utility's representative and the town's representative should agree on a process for updating the critical customers list and arrange for future periodic contact.
- The great variation in New Hampshire municipalities and towns may require that the smallest population centers be contacted after 60 days.

Conclusion; None of the utilities' emergency plans include procedures for communications with telephone and cable companies.^{18 19 20 21}

Historically, telecommunications restoration has been conducted after all electric restoration has been completed. The purpose of this timing has been to ensure that damaged areas are safe for telecommunications workers to enter prior to performing their repairs. Following the 2008 ice storm, this approach hampered the use of tools that rely on the telephone system to function. These tools could have helped the electric utilities understand the amount of damage they were facing and where the damage was occurring if loss of the telecommunications system had not prevented them from operating.

In the case of Unitil, the damage to the telephone infrastructure prevented communications to its substations. This rendered much of its electric system intelligence gathering technology useless since the data it collects is carried over telephone lines. As the utilities install more sophisticated smart metering in the future, and use it in conjunction with their outage management systems (OMS), communications will become even more vital. Any disruption to the communications system may result in sophisticated technology becoming useless during the restoration effort.

Recommendation No. 4: Each electric utility should expand its emergency response plans to include procedures for communicating with telephone and cable companies so vital telecommunications can be restored as quickly as possible.

- Each electric utility should provide restoration time estimates to the telecommunications companies so they can coordinate their own efforts in providing emergency generators for cell sites and other critical installations.
- The electric utilities and the telephone companies should coordinate their efforts so that telecommunications, especially to substations and other supervisory control and data acquisitions (SCADA) terminals, can be restored as soon as it is safe to do so.
- Each electric utility should include the cable providers in this effort to the extent that they provide communications that could be of aid to the electric utilities during their restoration efforts.

Conclusion: Security was inadequate during the December 2008 ice storm.

The day-to-day security provided by many utilities for their critical facilities is normally quite extensive. During large and prolonged outages additional staging areas are needed to accommodate the large influx of outside personnel and equipment. These staging areas are not normally included in the electric utility's operational infrastructure and may include facilities

¹⁸ Unitil. (February 27, 2009). Data Response STAFF 1-1. NHPUC.

¹⁹ PSNH. (February 2, 2009). Data Response STAFF 1-1. NHPUC.

²⁰ National Grid. (February 27, 2009). Data Response STAFF 1-1. NHPUC.

²¹ NHEC. (February 19, 2009). Data Response STAFF 1-1. NHPUC.

such as malls, dormitories, and schools. These facilities may not have sufficient security in place to protect electric utility equipment and restoration materials around the clock.

Security is important not only for preventing theft of the electric utility's equipment and material, but also for protection of the customers. During prolonged outages customers' frustration sometimes leads them to enter marshalling areas. People have also been known to attempt to enter headquarters and other facilities, which is disruptive and potentially dangerous to the electric utility's operations and personnel.

Recommendation No. 5: Each electric utility should arrange for security services as part of its emergency plan.

- Each electric utility should identify security services and secure contracts to provide for patrols of offsite staging areas, fueling depots, EOC's, and other facilities
- Each electric utility should arrange to provide standby security services and place them on alert prior to storms in the same way and at the same time that other elements used for emergency response are placed on standby.
- Each electric utility should make one person responsible for activation of the security contact and deployment of the resources.
- Each electric utility should coordinate with its EOC logistics staff to ensure that the security forces have food and lodging.
- Each electric utility should identify secure operational staging areas in all service territories using the response to the December 2008 storm as a guide.
- Each electric utility should list the staging areas within its emergency response plan including contacts for the area, maps, GPS coordinates, description of the facilities, and any limitations such as truck restrictions, weight limits, or fueling difficulties.

Conclusion: The New Hampshire electric utilities perform very little forensic analysis of storm damage, do not document major weather events, and do not use a predictive damage model.

None of the four utilities makes an organized effort to collect information on the damage that occurs during storms or the exact causes of that damage. The utilities also do not attempt to determine the extent of damage that will be incurred in future storms based upon weather predictions.^{22 23 24 25}

²² Hybsch, R. Director of Customer Operations, PSNH. Interviewed by Fowler, M. June 4, 2009.

²³ Lynch, H. Disaster Recovery Executive, NHEC. Interviewed by Fowler, M. June 17, 2009.

²⁴ Demmer, K. Manager Electric Distribution, National Grid. Interviewed by Fowler, M. June 9, 2009.

²⁵ Letourneau, R. Director Electric and Gas Operations, Unitil. Interviewed by Fowler, M. May 1, 2009.

Stories and anecdotes abound about the weather conditions and the amount of damage seen during the December 2008 ice storm, but the utilities gathered virtually no evidence concerning the actual amount of ice that accumulated or the exact type of damage that occurred. It would be useful to try to correlate the storm prediction, the actual storm results, and the amount and types of damage resulting from the storm. This could aid in planning for storm damage when the next storm threatens. In order to develop a damage prediction model, the utilities would need to collect data on actual weather events, along with directly associated damage to their facilities. None of the utilities in New Hampshire is presently collecting this information.

Recommendation No. 6: Each electric utility should develop a method for collecting and archiving data following emergency events and use this data to develop a predictive damage model for use in future storm planning.

- Each electric utility should develop as part of their emergency response plans document retention policies regarding:
 - Weather alerts and communication with weather services
 - Measurements of the amount of ice, wind, or other phenomena experienced
 - Estimated restoration time provided to all parties
 - Crew requests
 - Mutual aid calls
 - Conference call notes
 - Activation time of the state EOC
 - Any internal crew hold-overs
 - The number of crews, their locations, and any overtime worked
 - Any calls made to mutual aid, contractors, and other external resources
 - All weather information gathered, including forecast and actual experience
 - External personnel and crews used and the time required to obtain these crews
 - Estimated and actual restoration times
 - Call center statistics including average speed of answer, staffing per shift or hour, and blocked calls
 - The amount of equipment replaced.
- Each electric utility should retain this information for all storms lasting more than one day.
- Each electric utility should include the methods for recording and retaining this data in their Emergency Operations Plan.
- Each utility should make use of the Cold Regions Research and Engineering Laboratory (CRREL) to determine exact storm precipitation and wind values. This information should be used to develop construction requirements that are more suitable for conditions

found in New Hampshire than the general methods contained in the National Electrical Safety Code (NESC).

Conclusion: The utilities' current storm drill does not include participation by state and local governments, mutual aid, first responders, telecommunication companies, or other utilities.

Drills are an integral part of storm preparations and allow utilities to find and correct weaknesses in a test environment. All of the utilities conduct drills but these include only electric utility personnel and do not include any of the interactions that should occur with outside entities. As seen during the December 2008 ice storm, the complications resulting from large-scale storm response came mainly from outside the company. The complications result from the increased need for communication and coordination with entities beyond the channels normally used for communication within the company. Communication channels to diverse groups such as police and fire officials, regulators, the media, other utilities, contractors (both line and forestry) and customers become vital during an emergency.

Recommendation No. 7: Each electric utility should expand emergency readiness drills beyond the individual companies.

- Each electric utility should conduct at least a bi-annual drill that is coordinated with the New Hampshire electric and telecommunications utilities, mutual aid organizations, cities and towns, and the state Homeland Security and Emergency Management organization.

Conclusion: All of the New Hampshire utilities except NHEC use professional weather services, but none maintain in-house meteorologists.

Each of the four electric utilities generally does a good job of monitoring the weather and activating its EOC when threatening weather approaches. Three of the electric utilities utilize professional weather services on a contract basis to provide weather advisories, warnings and alerts. In addition to storm preparation, each electric utility continually monitors weather conditions to prepare for temperature and weather associated load changes. Each of the utilities also monitors publicly available data provided by television, radio weather stations, and internet weather sites.

NHEC is the only one of the four electric utilities in the state that does not subscribe to a professional weather service. NHEC's position is that it can obtain adequate information at no cost from the media and other public services. Further, it makes use of weather data that is available through the Federal Aviation Administration (FAA) and the National Oceanic and Atmospheric Administration (NOAA). Lack of advance warning concerning the ice storm did not appear to be an issue in delaying response to the storm for any of the utilities. This fact, along with NHEC's excellent response to the December 2008 ice storm, makes its position appear reasonable.

Conclusion: The New Hampshire utilities have not totally implemented the Incident Command System.

The Incident Command System (ICS) is a concept for managing emergencies that has been adopted throughout the U.S. and other parts of the world. ICS, which is now integrated under the National Incident Management System (NIMS), is universally used by federal, state, and local agencies. Its use is required in order for these agencies to receive federal funding. Utilities across the U.S. and Canada are adopting ICS in at least a modified version.

The ICS has a number of attributes that make it attractive to utilities. It is a scalable and flexible management structure that allows for expansion and contraction of the organization as required. Under the ICS, all entities speak a common language and chains of command and communication are clearly defined. This could have been helpful during the December 2008 ice storm restoration effort since communication was a principal failing of all of the utilities.

PSNH operates under a NIMS structure, but only at the PSNH Area Commander level.²⁶ PSNH decentralizes the actual management of the storm restoration to the three Division Incident Commanders and the Area Work Center (AWC) Incident Commanders within each Division. The Divisions do not replicate the Area Commander's organization. Those departments reporting directly to the Area Commander include:

- Administrative Support
- Division Incident Commanders (Operations)
- Planning
- Logistics
- Safety and Environmental
- Communications
- Customer Service
- Control Center
- Central Warehouse
- Automotive Maintenance
- Information Technology

Those reporting directly to the Division Incident Commander include:

- Administrative Support
- AWC Incident Commanders (operations)
- Resource Planning

²⁶ Hybsch, R. Director of Customer Operations, PSNH. Interviewed by Fowler, M. June 4, 2009.

Under a fully implemented NIMS organization, most of the Area Commander functions would have complimentary functions under the Divisions and in some cases the Area Work Centers.

The previous Unutil plans were ill suited to large scale emergencies. They were also inconsistent among its three divisions. These are all problems that an IMS structure is designed to resolve. The Unutil Emergency Management structure is presently being developed and implemented. It will likely resemble an ICS structure when completed. There is also a wealth of training readily available, and the structure being developed will mean Unutil would be using the same terminology and organization as the community first responders and the state EOC.

National Grid's emergency management structure most closely aligns with the modified ICS structure used by many utilities. It includes tiered roll-ups in responsibility from Division to Region to System.

NHEC has an emergency management structure in place which performed very well during the storm. However, its emergency structure is not well developed.

Recommendation No. 8: Each electric utility should fully implement the Incident Command System (ICS) concept and Unutil should adopt the IMS as its new structure for emergency management.

- Unutil, National Grid, and NHEC need to take major steps toward implementing the ICS concept.
- PSNH should expand its IMS approach further into the organization and better align Division and Area Work Center organizations with the EOC functions.
- PSNH should continue to expand the IMS approach into its field organizations.
- PSNH should implement those recommendations noted in its "Incident Management System (IMS) Review."
- PSNH should add a planning chief to the Division.
- PSNH should add communications personnel to Divisions and Area work centers.
- PSNH should evaluate other IMS functions and add or remove Divisions and Area work Center functional components as needed.
- Unutil should continue to modify its Emergency Operations Plan and adopt the IMS as its structure for emergency management.

Conclusion: Of the four New Hampshire electric utilities, only National Grid operates a dedicated Emergency Operations Center (EOC).

Emergency Operations Centers are the control hub of the restoration effort. They tend to vary widely in makeup from one utility to another. Many utilities continue to use facilities normally used for other purposes, as their EOCs during emergency conditions. The trend in the industry appears to be constructing a facility dedicated only to emergency response.

PSNH has an area of its headquarters facility that it uses for an EOC but has no dedicated facility set aside for use as an operations center.²⁷ At present, the PSNH EOC is a series of tables, cubicles, and a conference room. This is insufficient to manage the normal chaos of a major restoration event. The facility should at a minimum be secure, have a back-up power supply, and have pre-existing dedicated phone lines, radio communications, extra computer terminals, and television monitors for weather and news coverage. PSNH does have remote emergency command posts.

Unitil had no dedicated facility for an EOC, but is in the process of establishing one for the future.²⁸ As of July 2009, floor plans were under review for the facility that will be located in North Hampton, New Hampshire.

NHEC utilizes a conference room that has no pre-existing emergency facilities other than tables, chairs, and some telephones. NHEC has obtained an OMS, a GIS, and they are attempting to expedite the deployment of an AMI system. These are excellent tools during a widespread outage. The implementation of these tools would only leave the absence of a dedicated EOC as a weak point in their emergency response plan.

Only National grid operates a dedicated EOC.

Recommendation No. 9: PSNH should dedicate an emergency response area solely for the purpose of managing outage events; Unitil should continue with their plans for a dedicated EOC; NHEC should explore options for building a dedicated EOC or obtaining a mobile command center.

- PSNH should develop a dedicated area for a state emergency operations center and should revise its emergency response plan to include the specifics needed for an EOC.
- Unitil should continue with its goal to have a fully functional EOC in place by November 2009.
- NHEC should explore options of building a dedicated EOC or obtaining a mobile command center.

Conclusion: Neither PSNH nor Unitil operated an outage management system (OMS) during the December ice storm.

Outage management systems and their functions are often misunderstood. This is due in part to the fact that the term OMS has historically been used to refer to a variety of systems providing different functions. Some utilities internally develop their own systems while others purchase either stand-alone systems or systems that are part of a suite of applications.

²⁷ Hybsch, R. Director of Customer Operations, PSNH. Interviewed by Fowler, M. June 4, 2009.

²⁸ Francazio, R. Director of Emergency Planning, Unitil. Interviewed by Fowler, M. May 20, 2009.

An OMS is a set of algorithms that attempt to calculate the extent of an outage based upon criteria either entered into the system or measured by associated systems, such as automatic metering systems, AMI or SCADA systems. Both Unitil and PSNH perform the functions of outage management by having employees manually perform the calculations and analysis otherwise performed by a computer running OMS software. While handling outage management in this manner is possible, it is very labor intensive and delays receiving results. It is also subject to human errors and can become exhausting for employees during a long outage. A more in-depth discussion of OMS is found in Appendix G.

One misconception about OMS is that its use can result in drastic improvements in restoration times. An OMS can allow a utility to significantly improve outage awareness and focus restoration efforts during smaller scale outages. A trained operator can quickly ascertain the extent of a problem and dispatch resources accordingly. This is especially true if a utility complements the OMS with AMI, SCADA, or other remote monitoring devices.

When the whole distribution system is affected, as it was during the 2008 ice storm, the useful information provided by the OMS is limited. The utility must still perform damage assessment as if the OMS did not exist in order to understand the exact level of damage sustained by the system. Notwithstanding this limitation, the OMS can help operators determine the parts of the system that are undamaged, and will definitely reduce restoration times toward the end of the outage as major systems are restored. As circuits are restored, the OMS can help identify the customers who remain without power and the extent of remaining damage. During the final stages of restoration, the OMS becomes an invaluable tool that enables utilities to obtain a quick picture of the number of customers remaining without power. This can improve the utility's ability to restore customers quickly near the end of the restoration. The automatic systems included in the OMS also allow valuable personnel to be assigned to other duties rather than performing the manual outage analysis steps.

While neither PSNH nor Unitil had an OMS in place during the storm, Unitil has recently purchased an OMS and has plans to install it by the end of 2009. This leaves PSNH as the only New Hampshire electric utility without an OMS or plans for implementing one.

PSNH is including one building block of an OMS in an upcoming rate case, a geographic information system (GIS).²⁹ A GIS is a critical component of an effective automated OMS. PSNH's plan to purchase a GIS will be one step in the process of developing a complete OMS.

²⁹ Hybsch, R. Director of Customer Operations, PSNH. Interviewed by Fowler, M. June 4, 2009.

Recommendation No. 10: PSNH should purchase an Outage Management System and deploy the system within 12 months of acquiring and implementing a GIS, and Unitil should continue with its present plans for installing an OMS.

- PSNH should replace the manual system it is presently using with a dedicated modern OMS. An OMS can be installed in coordination with the GIS system PSNH is presently planning to purchase. PSNH should make future integration and compatibility with an OMS system an important requirement in selecting a GIS system.
- Unitil should continue with its plan to implement an OMS.

Conclusion: The electric utilities did not have enough damage assessment personnel available immediately following the storm. This hindered their ability to provide restoration times.

To effectively manage the work of line and tree trimming crews, damage assessments must be conducted as early as possible following a storm. Following the December 2008 ice storm, it took the utilities many days to provide initial damage assessments. Even considering the extensive tree damage that made access to some areas difficult due to blocked roads, the length of time to perform the damage assessments indicates the utilities did not have a sufficient number of trained damage assessors available to respond to a storm of this magnitude.

Recommendation No. 11: Each electric utility should identify and train additional damage assessment personnel and have them activated prior to the storm.

- Each electric utility should use the December 2008 ice storm as a model and determine the number of damage assessors that would be required to perform a detailed damage assessment within 24 hours.
- Each electric utility should determine the shortage of assessors and plan to eliminate the gap between the number of assessors needed and the number available.
- Each electric utility should cross train existing employees to be used as assessors.
- Each electric utility should evaluate the possibility of using contracted assessors.
- Each electric utility should evaluate the possibility of using fire personnel from the communities as assessors.
- Each electric utility should expand mutual aid agreements to include damage assessors.
- Each electric utility should evaluate using formerly employed retirees as assessors.
- Each electric utility should develop procedures to activate the needed assessors before a storm event occurs.

Conclusion: None of the electric utilities had a mechanism for providing global estimated restoration times to customers and government entities.

A global estimated restoration time is an initial, broad estimate of the magnitude of damage to an electric system and a “worst case” estimate for service restoration. The estimate is usually provided within hours of the end of a storm and is meant to provide a totally different level of detail than is gathered from detailed damage assessments done later in the storm response process. The purpose of a global estimated restoration time is to provide customers and communities with the information necessary to make decisions such as:

- Should customers consider moving to hotels or other temporary lodging?
- Do public officials need to open emergency shelters?
- Should first responders be called in from off duty?
- Should extra fuel be procured for generators?
- Should provisions be made for critical care customers?
- Do public officials need to implement plans to distribute water and food?

None of the utilities provided global estimated restoration times. Each waited until it completed detailed damage assessments before providing estimated restoration times. In some cases, those assessments were not completed until several days after the storm concluded.

During many emergency events, especially ice storms and wind storms, travel is difficult due to the numbers of roads blocked with downed trees. It is impossible in many cases to drive down roads to get an estimate of the overall extent of the damage. Use of rotor and fixed wing aircraft is a partial solution to this problem. The utilities should contract with charter services for aircraft and pilots to provide reconnaissance flights as soon after storms as is safe.

Recommendation No. 12: Each electric utility should develop a mechanism for quickly assessing global damage and providing restoration times in order to allow customers and government to take prompt appropriate action.

- Each electric utility should develop a process by which they quickly determine the overall extent of damage.
- Each electric utility should make a global estimate of the amount of time required to restore service and publish this estimate within 24 to 48 hours after the end of a storm.
- Each electric utility could state their global restoration time using the following categories:
 - Less than 24 hours
 - Between 24 and 72 hours
 - Between 72 hours and one week
 - Greater than one week

- Each electric utility should contract with helicopter or fixed wing aircraft charter services to assist in initial global damage estimates. This will require the training, allocation, and assignment of utility personnel.

Conclusion: All of the utilities did a good job of utilizing “nontraditional” resources, but those efforts were not sufficient during the December 2008 ice storm.

All of the New Hampshire utilities have done a good job of identifying and training resources from outside traditional operations roles for storm restoration duty. Nontraditional resources are those utility employees who do not normally play a role in operations or direct support. Using nontraditional resources can mean that every person in the organization is used in some capacity during the restoration effort. The tasks performed by these types of resources might include anything from wire watchers, crew guides, and stock helpers, to people doing laundry and delivering lunches to crews. While the effort to use nontraditional resources is commendable, it still leaves companies vulnerable to personnel shortfalls, especially during large and prolonged outages.

Recommendation No. 13: Each electric utility should expand its available resource pool to reach across the boundaries between cooperative and investor owned utilities (IOU), and consider using resources from other sources.

- Each electric utility should expand its available resource pool by determining the resources that might be available from all sources, not just their traditional organizations.
- The electric utilities should continue the discussions they have already initiated with other utilities with the objective of producing a plan for better sharing of resources during an emergency.
- Each electric utility should identify other utilities using the same OMS and explore the availability of obtaining experienced personnel during an emergency.
- Each electric utility should aggressively solicit retirees who can be used during an emergency.
- Each electric utility should make use of the capabilities of first responders who may know if areas are without power and can provide global damage reports.
- Each electric utility should consider the use of contractors for support personnel including damage assessment, wire watchers, and logistics roles.
- Each electric utility should evaluate the use of contract services for food catering and tent services.

Conclusion: The utilities need to improve communication with first responders.

The utilities have special telephone lines established for use by first responders to request immediate assistance. However, the methods established for their use during an emergency have displayed weaknesses in practice. For example: Calls to National Grid’s emergency line go to a central call center, not to a local office. This may result in life threatening emergencies being

misunderstood. Since the personnel in the central call center may not realize the severity of local conditions, they may incorrectly classify the priority of a call. At least one example of this occurred during the December 2008 ice storm. A vehicle struck a pole, resulting in live wires laying across a vehicle and denying emergency personnel access to the victim. When the call came to the utility it was categorized as a simple “wires down” call with no other information given. As a result the utility’s response was delayed since the call was not given the correct priority.

Another problem experienced by the employees taking these calls during an emergency is that much of the information delivered is redundant. If an entire circuit is without power, then reporting numerous wires down does not add much useful information. The process used during the December 2008 ice storm needs additional modification before the next major event occurs.

In a major emergency, first responders need a means of reporting wires down without overwhelming the utility desks taking emergency calls. A simple and very effective method employed in at least one of New Hampshire's fire departments is to collect all “wires down” reports into one batch and send it to the utility via email every 30 to 60 minutes during a major emergency. This frees up the telephone lines for true emergency calls.

Recommendation No. 14: Each electric utility should work with the community first responders to develop a process for “batching” wires down calls during a major emergency.

- Each electric utility should arrange with community first responders to collect simple “wires down” reports into batches and then e-mail these to the utilities every 30 to 60 minutes during an emergency.
- Each electric utility should ensure that dedicated telephone lines are used for handling emergency calls only, and communicate to first responders the method they must use to notify the utility of life-threatening conditions.
- Each electric utility should define and communicate to first responders the events during an emergency that would activate this reporting process and cause normal operations to be superseded.
- Each electric utility should make the methods used consistent with all first responders in its service territory.
- Each electric utility should define primary and backup communication schemes (e-mail, faxes, web posting, etc.).

Conclusion; Customers lack an understanding of how the utility restoration process works.

The utilities have made efforts to educate the public about the power restoration process. However, a review of the public comments provided after the storm indicates that there is still considerable misunderstanding about what utilities do to restore power after a storm.

One of the more frequent comments was that utility trucks were seen in an area and then left prior to restoration being completed.³⁰ There are many logical reasons for this, but the general public only knows that they are without power and the utility vehicle is leaving. Customers are also confused about where the utility's responsibility for repair stops and the customer's responsibility begin. To make matters worse, these responsibilities vary among the four utilities. PSNH owns and maintains the electrical facilities up to the meter on a customer's house. The other three utilities only own and maintain facilities up to the point where the wires connect to the house, which is usually high in the air on a structure called a weather-head.

Customers were also angered by the fact that once service had been restored to the neighborhood, they were still left without power if there was damage to the electric facilities at their property. They then had to obtain the services of an electrician for repairs, and in some cases, have the repairs inspected and approved by local building officials. PSNH minimized this problem during the December 2008 ice storm by hiring electricians to help in the restoration effort. Unfortunately, this simple and effective solution would not work as well for the other three utilities whose ownership stops earlier, at the point where wires attach to the house.

Recommendation No. 15: Each electric utility needs to expand its communications program to better educate their customers about the restoration process.

- The electric utilities need to expand even further their efforts to educate their customers on the restoration process.
- The electric utilities might use the following suggested methods to communicate with customers:
 - Interviews on radio and television
 - Public service announcements
 - The utilities' web sites
 - Communication with local officials
 - Bill inserts
 - Attendance and presentations at local meetings

Conclusion: The utilities should develop better communication with municipal and other governmental entities.

Customers, regulators, and the utilities all agreed that there were severe breakdowns in communications following the December 2008 ice storm. In some cases, municipal organizations indicated they had no communications with the utilities for days following the storm.

The utilities were not the only ones suffering communications problems. Governmental channels of communication also failed. For example, one municipality carelessly placed a non-

³⁰ New Hampshire Public Utilities Commission. "December 2008 Ice Storm." (2009).
<http://www.puc.state.nh.us/2008IceStorm/December2008IceStorm.htm> (Accessed August 24, 2009).

public utility emergency response number on a portable electronic billboard. This is equivalent to giving out the personal cell phone numbers of police and fire personnel to use for 911 calls. The result of this action undermined utility response efforts.

Another issue that hindered communications was that many towns seemingly ignored their own emergency protocols. Effective protocol, and especially incident management, requires a single point of communication between utilities and towns in their service territories. Yet utilities received calls from multiple persons within the same towns asking for identical information. Public officials routinely attempted, using any means at their disposal, to secure information for their cities and towns. Officials called upon any utility contacts they had in an effort to get information. This attempt at information gathering quickly overwhelmed the utilities' resources, distracted employees from the restoration effort, and resulted in the spread of misinformation.

New Hampshire Homeland Security and Emergency Management has already made strides in attempting to identify and correct the communications lapses witnessed between the utilities and the state during the ice storm. State officials have had and continue to have a series of meetings and discussions with the four electric utilities that have resulted in an initial framework for communications improvements. The meetings have defined information that the utilities will provide to the state, how frequently that information will be provided, and how communications will flow.

Recommendation No. 16: Each electric utility should better define the methods it uses for communications with government officials during emergencies.

- Each electric utility should report to the state the number of line and tree crews and other personnel working on storm restoration.
- State officials should clearly communicate to each electric utility what facilities, equipment, and functions (such as emergency fueling, marshalling equipment, temporary lodging or road closures) it can provide.
- Each electric utility should include the procedures for communications with state and local governmental officials in its emergency plans.
- Each electric utility should clearly define the information channels available for use by public officials and provide those officials with the training needed to use them effectively.
- Each electric utility should rigidly enforce the planned use of its communications channels and decline to give out information through any means other than the proper channels defined by the emergency management structure.
- Each electric utility should each maintain toll-free numbers for first responders and these numbers should be kept secure.
- Each electric utility should prepare for any potential compromise of the main emergency telephone numbers by maintaining secure backup numbers that can be utilized immediately by first responders.

Conclusion: Prior to the storm, the Public Utilities Commission (PUC) and the New Hampshire State EOC had limited knowledge of each utility's Emergency Operating Plans. Additionally, there are no clear guidelines for when utilities should report that an emergency situation exists.

In New Hampshire, utilities are not required to file their Emergency Operating Plans with the PUC or any other organization. Each of the utilities maintains some formal documentation about emergency procedures, but those plans were not on file with the state. It is important that the commission be familiar with company plans and procedures prior to an actual emergency event.

The utilities also have no clear guidance about when to contact the state during an emergency event or, for that matter, even what constitutes an emergency event. A call is usually placed to the PUC's Director of Safety or the Director of the Electric Division when each utility feels it has an emergency, but the threshold for this notification, as well as the information that is provided, is not well defined and varies between the utilities.

Recommendation No. 17: Each electric utility should file their Emergency Operating Plans with the State Homeland Security and Emergency Management Office (state EOC) and work with the state to define thresholds which would trigger communications with the EOC.

- Each electric utility should increase its communication with the Homeland Security and Emergency Management Office.
- Each electric utility should file its Emergency Response Plans with the state EOC and NHPUC.
- Each electric utility should notify the EOC and NHPUC annually about changes to its plan.
- The NHPUC should reserve the right to request that a utility re-file its complete plan if the NHPUC determines that the changes made during the year constitute a major revision.
- Each electric utility should collaborate with the NHPUC to define exactly what conditions will require notification to the Commission and the EOC that an emergency has occurred, and then determine a workable process for this notification.
- Each electric utility should report all major events to the NHPUC as a matter of routine. This report should include a synopsis of the event and the actions taken by the utility involved.
- Each electric utility and the NHPUC should meet to define the content of the reports that will be filed after an event, and agree upon the criteria for determining when reports are required.