



DE10-001

April 21, 2010

BY OVERNIGHT MAIL AND E-MAIL

Debra A. Howland, Executive Director and Secretary
New Hampshire Public Utilities Commission
21 S. Fruit Street, Suite 10
Concord, NH 03301-2429



RE: February 25, 2010 Wind Event Emergency Response Review

Dear Director Howland:

As required pursuant to Appendix A, Section 5.2 of the New Hampshire Public Utilities Commission's Ice Storm After Action Report, enclosed on behalf of Unitil Energy Systems, Inc., are an original and six copies of the Company's February 25, 2010 Wind Event Emergency Response Review.

Please do not hesitate to contact me if you have any questions concerning this filing.

Sincerely,

Gary Epler
Attorney for Unitil Energy Systems, Inc.

Enclosure

cc: Meredith Hatfield, Consumer Advocate

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Unitil Service Corp

Emergency Response Review:
February 25, 2010 Wind Event

Richard Francazio
Director, Emergency Management
March 18, 2010

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Attachment A [February 2010 Wind Storm Improvements Opportunities](#)

Executive Summary

On February 24th a snow storm struck Massachusetts, causing over a thousand of Unitil customers to lose power, 1,500 in Fitchburg alone. Then, on February 25th, a wind storm struck, affecting central and southern New Hampshire, where damage from hurricane force winds that exceeded 70 mph caused outages for more than 60,000 customers in Unitil's Seacoast and Capital regions, making it the second worst natural disaster in New Hampshire state history. Unitil's Emergency Response was rapid and effective restoring service to all customers in approximately four (4) days time.

The storm began on Wednesday, February 24, 2010 and continued through Friday, February the 26th. In preparing for the event Unitil:

- ❖ Monitored the weather and held preparatory system conference calls 36 hours in advance
- ❖ Opened the S-EOC and R-EOCs in anticipation of the event six (6) hours in advance
- ❖ Proactively acquired additional line and tree resources in advance of the event
- ❖ Alerted other resource entities that additional help may be needed
- ❖ Identified staging site locations for possible mobilizations
- ❖ Activated the Incident Command Structure and ERP
- ❖ Activated logistics procedure for storm support
- ❖ Activated the employee Storm Assignment Listing (SAL)
- ❖ Notified the Strategic Response Committee (SRC) of the pending impact and response
- ❖ Issues Public Service Advisories (PSA) prior to the event

The first storm dumped approximately 12-15 inches of snow in the Fitchburg region with minimal impact to central and southern New Hampshire. This event was immediately followed by a devastating wind event, with reported wind speeds of 68 mph in the Capital region, 70 mph in the Seacoast region, and moderate rainfall over an extended period of time.

This report documents the performance of Unitil's electrical distribution system and restoration effort during this rain/wind storm. The report also reviews outage and estimated cost data for this storm; improvements in the Company's ability to provide and maintain reliable service during adverse conditions, and also a brief comparison to the December 11th 2008 ice storm.

Storm Facts:

- ❖ Rain and high wind conditions, with recorded gusts over 70 mph, began during the early evening hours on Thursday, February 25, 2010 and continued throughout the early morning hours of Friday 26th, gradually decreasing throughout the day on Friday.
- ❖ The number of customers interrupted peaked at 12:30 a.m. in the early morning on February 26th at 61,602 customers in Unitil's New Hampshire service territory – 1,252 customers in the Massachusetts service territory...
- ❖ The total number of crews worked during the restoration effort was 254 with approximately 15,590 line hours worked.

- ❖ A total of 137 utility poles were set during the event with 101 poles in the Seacoast region (this includes poles set for Fairpoint) and 36 poles in the Capital region.
- ❖ A total of 67 transformers were replaced with 40 in Seacoast, 26 in the Capital, and one (1) in the Fitchburg region.
- ❖ A total of 325 cross-arms were replaced during the event with 210 in Seacoast and 115 in the Capital region.
- ❖ A total of 103,600 feet (19.6 miles) of primary and secondary wire were either reattached or replaced.

Affected Areas:

While most of New Hampshire experienced outages due to the high winds on February 25th, the southern and coastal areas of our Seacoast region experienced the majority of the outages with 91% of its customers interrupted at peak. Although the rain and wind had abated by the afternoon hours on February 26th, weakened trees and damaged limbs, along with continued breezy conditions, caused additional, non-storm attributed outages to occur into the morning hours of Friday, February 26th.

The Company's response to this severe storm demonstrated the effectiveness and flexibility of its emergency planning efforts. Also, preceding weather forecasts starting on February 23rd provided information regarding the severity of the wind, which allowed the Company to prepare in advance of the storm's initial impact. The Company committed eight (8) internal line crews, 5 foreign utility line crews, and 146 contractor line crews working in New Hampshire over the course of the restoration activities.

Specific planning in preparation for the February 25th wind storm included holding two Company-wide conference calls before the storm impacted the service territory; the storm progressed from the northeast toward the west and began at approximately 10:00 p.m. in the Seacoast region moving toward the Concord region. Regional storm plans were implemented and the respective storm rooms were opened by 6:00 p.m. on Thursday, February 25th in preparation for the event. The System Emergency Operation Center (S-EOC) also opened at 6:00 p.m. on February 25th to coordinate the movement of foreign utilities and contractor resources to the areas of need (i.e., Concord and Kensington)

The Company obtains information about upcoming weather from a variety of sources, however, relied heavily on Weather Services Inc. (WSI) its primary forecaster. Throughout the storm event, forecasts from our weather provider were mostly accurate with respect to the intensity of the event, as well as potential damage indices (PDIs) for New Hampshire. In some locations, though, observed wind speeds exceeded the modeled forecast by more than 10-15 mph.

The figures and tables on the following pages depict:

- ❖ Maximum wind gusts;
- ❖ Customer restoration progress and resources assigned per day;
- ❖ Peak percentage of outages for the wind storm;
- ❖ Storm Statistics;
- ❖ Estimated Costs; and
- ❖ Areas of improvement.

Figure E-1
 February 2010 Wind Event
 Wind Speeds and Directions
 Friday, February 26 at 12:12 a.m.

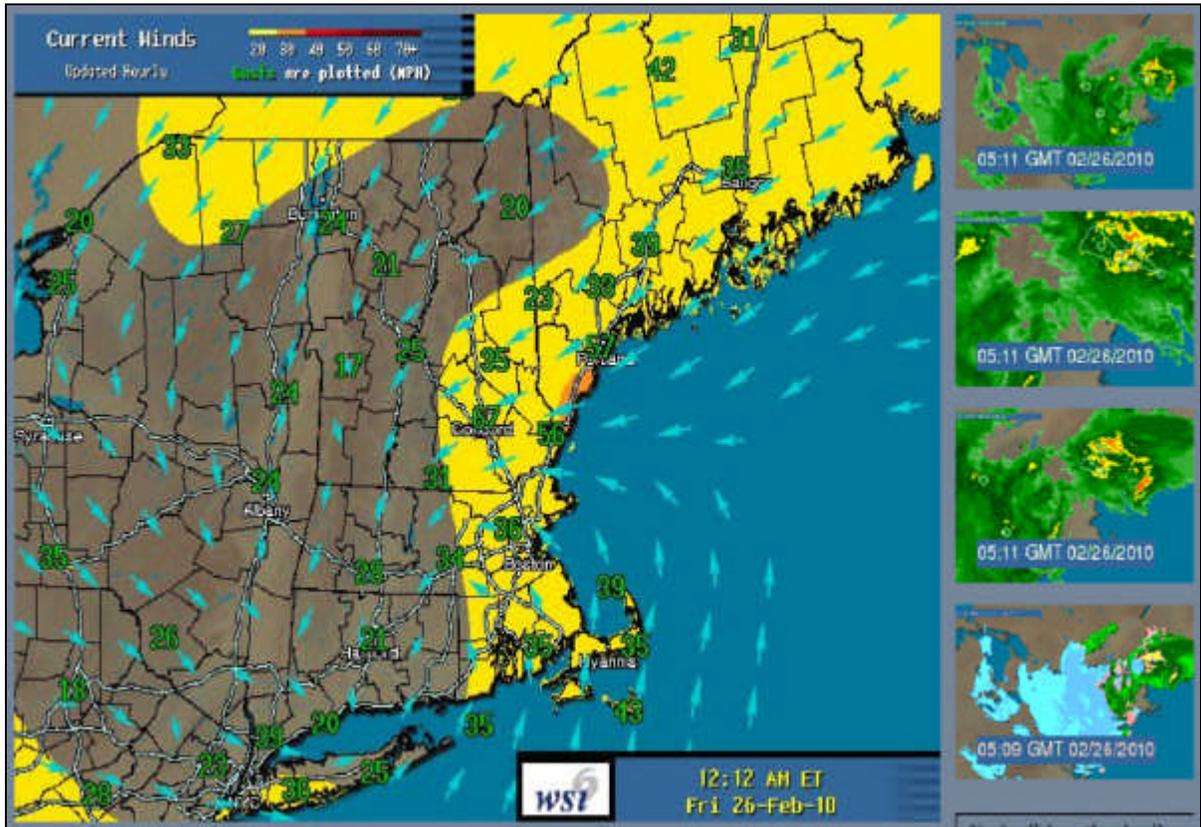


Figure E-2
 February 2010 Wind Event
 Maximum Wind Gusts

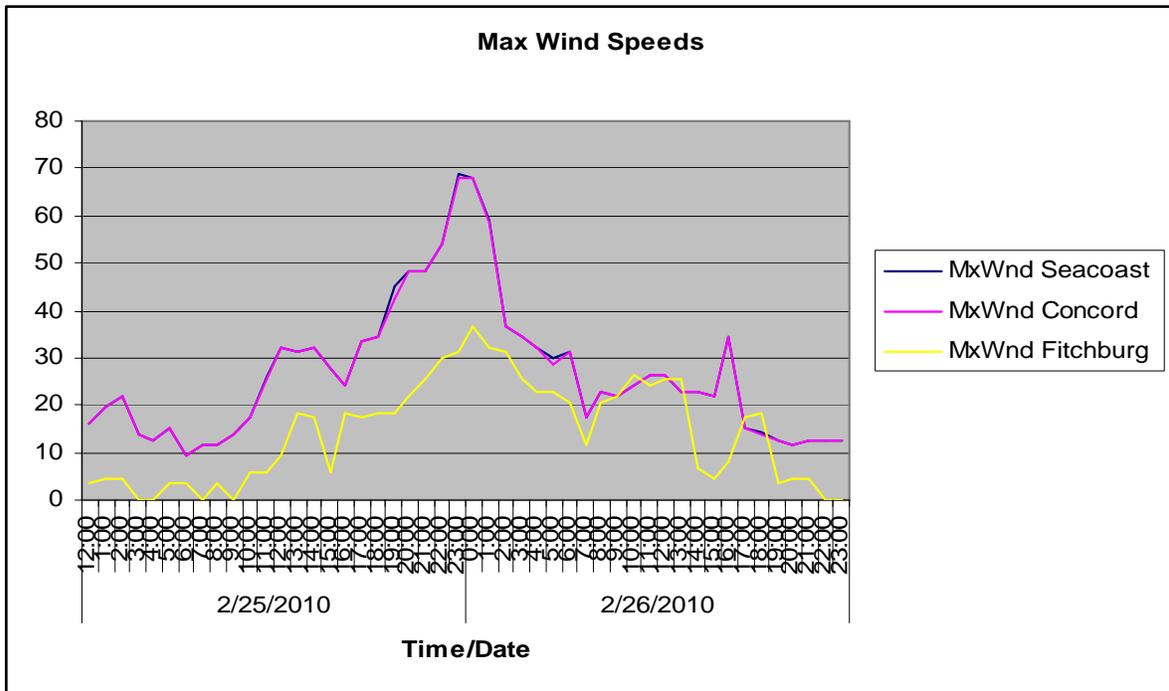


Figure E-3
February 2010 Wind Event
Restoration Progression

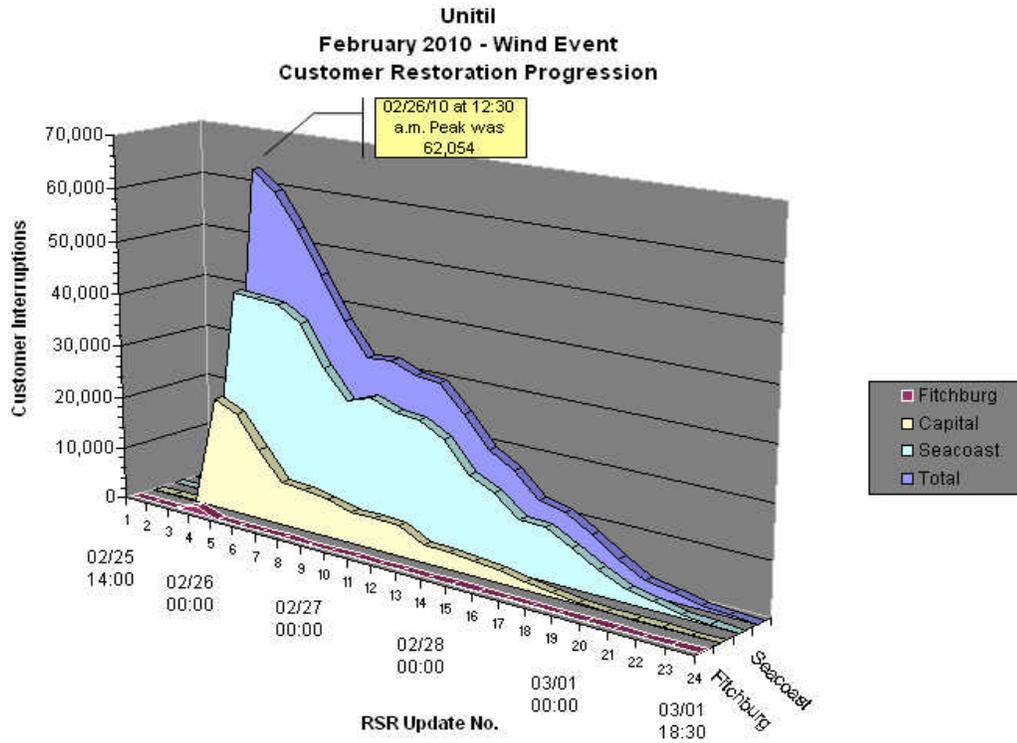


Figure E-4
February 2010 Wind Event Progression
Unitil NH Customer Restoration Progression vs. Crew Acquisition

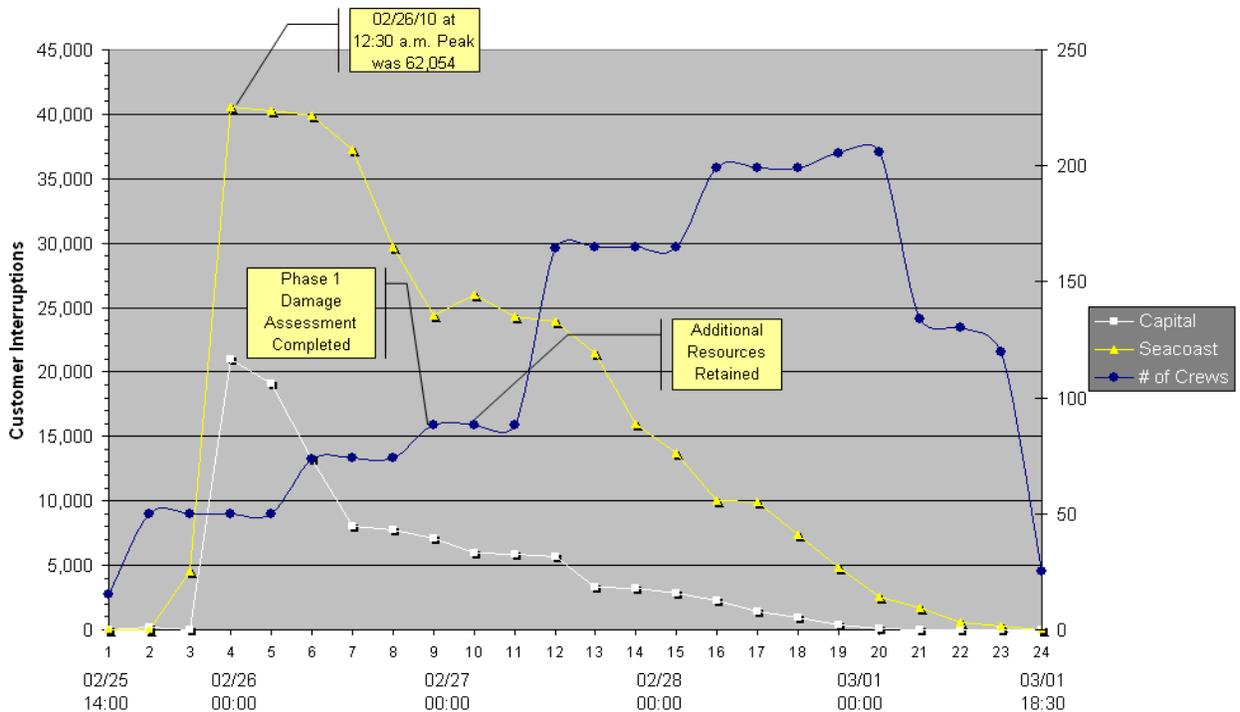


Table E-5
February 2010 Wind Event Statistics

Storm Statistics February 2010 Wind Event			
	Region		
	Capital	Seacoast	Fitchburg
Customers Out	21,000	40,602	1,521
Total	63,123		
Crews Worked	80	174	10
Total	254		
Wire Reattached or Replaced (ft)	38,850	64,750	300
Total	103,900		
Transformers Replaced	26	40	1
Total	67		
Poles Set	36	101	0
Total	137		
Cross-arms Replaced	115	210	0
Total	325		
Restoration Days	3	4	0.5

Estimated Costs:

Where ICS requires the finance section, Unital's revised ERP details a process for cost tracking during emergency incidents. One of the primary roles of the Administration/Finance Chief is to track the expenditure of funds and provide a daily "burn rate" - based on confirmed logistical commitments/invoices and "best" estimates.

The cost associated with the February 2010 Wind Event remain as estimates because continuing charges will be amassed for several months more. These charges address the "make normal" work to the system, environmental response, and remediation, and negotiated settlements to challenged invoices.

Table E-6
February 2010 Wind Event Cost Estimate

Preliminary Cost Estimates February 2010 Wind Event		
Internal Time		\$445,827
Outside Contractors		\$7,364,309
Materials		\$321,014
Staging, Hotel, Meals & Misc.		\$350,409
Total		\$8,481,559

Areas of Improvement:

Table E-3 on the following page summarizes the top six (6) opportunities for improvement that Emergency Management (EM) will focus on over the next, several months. To determine the appropriate “fix”, EM will work in collaboration with the primary stakeholder(s). With some improvements, the opportunity appears to be additional training, while with others it is resource management and/or process.

Table E-7
February 2010 Wind Event Improvement Areas

Improvement Opportunities February 2010 Wind Event	
Issue No.	Description/Opportunity
1	Enhance and further train on the Damage Assessment process to eliminate confusion post completion of the field inspection
2	The management of larger numbers of resources required the activation of a staging site. As a result, the process by which crews were managed, work delivered and daily assignments completed was unclear for some key positions.
3	Information provided to Customer Service needs to be customized, fresh and incorporate additional details.
4	RSR timing, which supports PSA development and release times, should be consistently delivered on time and align with competing information resource requirements.
5	Enhance the process of informing internal employees of their storm assignments and locations. The information should emanate from EM and Section Chiefs/Leads, including reporting requirements, formal EOC openings, activation of SAL personnel , etc.
6	Establish a more formal PO and data capturing process that would streamline purchases and improve bill processing.

Attachment A of this Emergency Response Review contains a more detailed description of the Issues/Opportunities for Improvement.

Introduction:

This report includes:

- ❖ An analysis of Unitil's electric distribution system performance preceding, during, and following the storm's impact.
- ❖ A review of the Wind Event.
- ❖ A review of outage data with emphasis on specific causes.
- ❖ A review of cost data with emphasis on historical comparison.
- ❖ Recommendations/conclusions resulting from an analysis of performance.
- ❖ Charts and tables documenting the results of the conducted analyses.

Event Overview

On Wednesday, February 24th, 2010 starting in the early morning hours and lasting throughout the day before abating in the late evening hours of the same day, Unitil experienced a heavy snow, rain and high wind event with wind gusts in excess of 65 mph. The event affected Unitil's Fitchburg area by dumping 12 to 5 inches of moderately wet snow across the region with lesser amounts in the Hew Hampshire regions. As a result approximately 3,500 Fitchburg customers were affected with 1,500 customer interruptions at peak. This same event in New Hampshire was relatively uneventful with mostly lighter snow weight and amounts.

However, as the evening of February 25th progressed, the winds picked up significantly in New Hampshire and affected the central and southern portions of the state. The highest number of customers affected at one time peaked (about 62,000) occurred between 11:00 p.m. and 1:00 a.m. Friday 26th. The number of customers impacted and trouble locations recorded exceeded the major storm exclusion threshold for Unitil in New Hampshire which is currently set at 15% of the customer base with 15 concurrent troubles by region or 22 concurrent troubles throughout the New Hampshire service territory. As a result, this wind event was declared a major storm.

Unitil's restoration effort took approximately four (4) days to complete, with more than 95 % restored within the first 72 hours following the storm's passage. The Company utilized 8 internal line crews, 5 foreign utility line crews, and 146 contractor crews over the course of the restoration. In addition, these resources were joined by 47 tree crews, 22 outside damage assessment crews, 39 wires down and crew guides and a number of employees mobilized from the Storm Assignment Listing (SAL). Table R-1 on the following page details the resources by name and location.

Table R-1
February 2010 Wind Event External Resources

External Resources	
Name	Location
Alfred Fry III, Inc.	902 Camaro Run West Chester, PA 19380
American Climbers LLC	#1 Tranjanowski Ave Northbridge, MA 01534
Asplundh Tree Expert	5154 NY Rt. 26 Whitney Point, NY
City Lights Electrical	290 Pine St Canton, MA 02021
ElecComm Corp.	785 Woburn St Wilmington, MA 01887
Gagnon Construction	10551 Route 144 Dsl De Saint-Andre E3Y 3H9 New Brunswick, Canada
Green Mountain Power (Mutual Aid)	163 Acorn Ln Colchester, VT 05446
Hi-Volt	135 Harriman Hill Rd Raymond, NH 03077
Hawkeye	170 Moore Rd Weymouth, MA 02186
IC Reed & Sons	3 Evans Dr Raymond, NH 03077
McDonough Electric Construction	10 Commercial Ave Bedford, MA 01730
Osrose Utility Services, Inc. Damage Assessment	980 Ellicott St Buffalo, NY 14209
Premier Utility Services Damage Assessment	100 Marcus Blvd Hauppauge, NY 11788
Thiro USA	127 Costello Rd Newington, CT 06111
Three Phase Line	91 Ridge Rd Farmington, NH 03835
Utility Service & Assistance	117 Londonderry Turnpike Hooksett, NH 03106
Xtreme Powerline Construction	922 7 th Street Port Huron, MI 48060

Wind Event:

Unitil began monitoring the storm system three days prior to the actual event with the evening forecast on February 22nd (see Table R-2). The forecast called for heavy, wet snow followed by a period of high winds throughout most of the Company’s service territory. The event began on the February 24th with relatively little impact to the Fitchburg area even though a significant snowfall occurred in the region.

Table R-2
February 22nd Pre-Wind Event WSI Forecast

WSI Forecast February 22, 2010 at 6:00 p.m.	
Discussion:	<p>EVENING UPDATE: Updated the forecast for tonight. Otherwise, no changes were made to the previous forecast.</p> <p>SYNOPSIS: Conditions will turn unsettled tomorrow and will remain so for the rest of the week as a deep upper level trough sinks into the eastern U.S. and focuses a series of storm systems over the Northeast. An area of low pressure will track towards southeastern MA Tuesday and Wednesday, bringing areas of rain and snow to New England. By Thursday, a coastal low will intensify off the Mid-Atlantic coast and move into southern New England. A second round of rain and snow will develop late Thursday and Friday.</p> <p>WIND IMPACT: Alert level winds are possible across NH and ME Thursday and Friday.</p> <p>PRECIPITATION IMPACT: Alert level snow possible in the Fitchburg and Concord areas Tuesday and Wednesday. Wet snowfall amounts of 4-8” possible. Snowfall totals elsewhere will be less than 4”.</p> <p>Additional heavy snowfall is possible in the Fitchburg and Concord areas late Thursday and Friday.</p> <p>-----</p> <p>TONIGHT: Snow developing over western New England before daybreak. Light snow may be around the Fitchburg and Concord areas by dawn. Lows in the upper 20s.</p> <p>TUESDAY-TUESDAY NIGHT: Snow during the morning, mixing with or changing to rain during the afternoon. Mixed rain and snow during the evening, changing to all snow, heavy at times, at night. Wet snowfall amounts of 4-8” across central MA and NH, 2-4” Seacoast NH, 1-2” coastal ME. Temps in the 30s.</p>
Extended Discussion:	<p>WEDNESDAY-THURSDAY: Rain and snow, heavy at times. Additional accumulation, especially over the interior. Highs in the 30s. Wind gusts to 40-mph possible at the coast late Thursday.</p> <p>FRIDAY: Mixed rain and snow, changing to mostly snow, moderate to heavy at times. Significant accumulations possible over the interior, likely in excess of 6”. Highs in the 30s. Wind gusts over 40-mph possible at the coast.</p>

As the snow transitioned into rain on February 25th, a significant wind storm struck the New Hampshire regions that evening and into the early morning hours of February 26th. The storm began with wind gusts in excess of what was forecasted (e.g., 68 mph instead of 55 mph) at approximately 10:00 p.m. and continued through 2:00 a.m. on the 25th and 26th. This wind was accompanied by over 2” of rainfall by the morning of February 26th (see Table R-3).

Table R-3
February 25th Wind Event WSI Forecast

WSI Forecast February 25, 2010 at 12:00 p.m.	
Discussion:	<p>CURRENT CONDITIONS: No areas currently in alert with rain falling over the Maine portion of the service area.</p> <p>SYNOPSIS: Low pressure off Cape Hatteras will race up the Coast today, then rapidly intensify as it moves into southern New England later this evening then parks itself over the region into the weekend. The storm begins to weaken Friday morning and continues to weaken through the weekend before finally moving eastward Sunday night. A trailing trough is left in its wake on Monday which moves south of the region on Tuesday.</p> <p>WIND IMPACT: Alert level winds developing later this afternoon and continuing through just after midnight Friday morning.</p> <p>PRECIPITATION IMPACT: Alert level wet snow possible northwest of a Lewiston to Gorham line in Maine where 6+” of wet snow is possible. No problems expected elsewhere.</p> <p>-----</p> <p>TODAY: A short period of rain and snow over Concord and Fitchburg during the morning with little to no accumulation, then quickly changing to rain. Rain elsewhere from the start. Moderate to heavy rain likely during the afternoon for all areas with 1-2” of rain. Winds increase after midday with winds 30-40 mph with gusts 40-55 mph, strongest along the coast. Highs in the upper 30s and low 40s.</p> <p>TONIGHT: Moderate to heavy rain in the evening. The rain tapers to light rain but also changes to snow across northern areas with some minor accumulations of a few inches possible by dawn Friday. Windy through midnight with winds 25-35 mph with gusts 40-55 mph, highest along the coast, diminishing after midnight. Lows in the low to mid 30s.</p> <p>FRIDAY: Light snow with 1-2” possible. Afternoon highs in the mid to upper 30s.</p> <p>FRIDAY NIGHT: Light snow with 1-2” possible. Overnight lows in upper 20s to low 30s.</p>
Extended Discussion:	<p>SATURDAY: Light snow and snow showers. It will be breezy. Afternoon highs in the upper 30s to low 40s. Overnight lows in the mid to upper 20s.</p> <p>SUNDAY: Snow showers. It will be breezy. Afternoon highs in upper 30s to low 40s. Overnight lows in the upper 20s.</p> <p>MONDAY: Snow showers. Dry overnight. Afternoon highs in mid to upper 30s. Overnight lows in the low to mid 20s.</p>

Although the severe winds began to diminish after 2:00 a.m., Unutil continued to experience 40 to 50 mph gusts for the remainder of February 26th. The now-saturated soil and sustained high winds were a damaging combination resulting in large trees being uprooted and tree tops/branches being sheared off. As a result the damage experienced included broken poles and sections of wire downed by limbs and trees.

Emergency Response and Structure

Unitil utilized the National Incident Management System (NIMS) to manage its emergency response to the February 2010 Wind Event. This was the first test of Unitil's revised ERP under live action conditions.

NIMS is a comprehensive and unified approach to incident management, applicable at all jurisdictional levels and across functional disciplines. Furthermore it improves the effectiveness of emergency response providers and incident management organizations across a full spectrum of potential incidents and hazard scenarios. NIMS relies on the Incident Command System (ICS) to coordinate and manage an organization's mobilization, response, and demobilization.

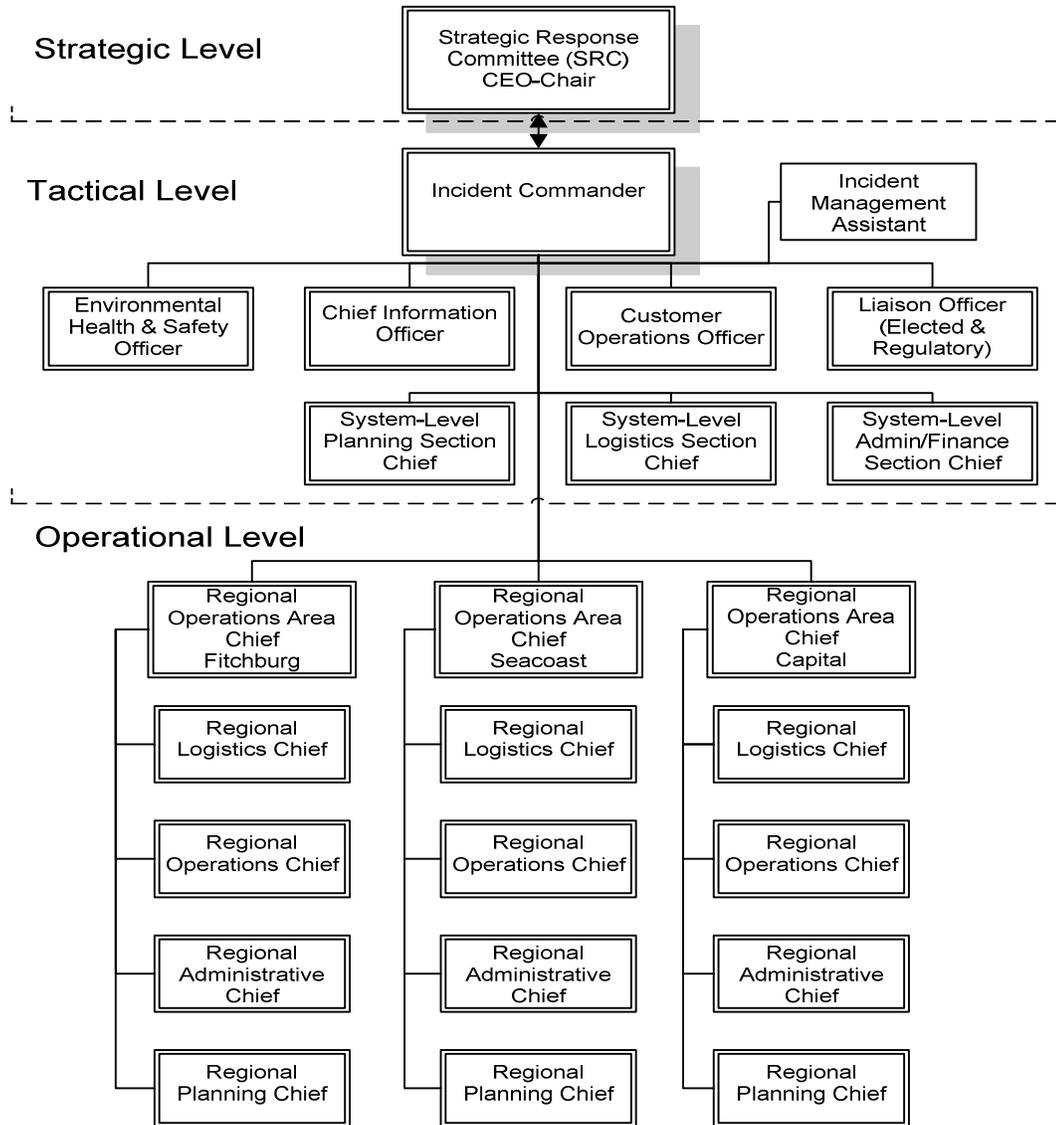
Unitil's ERP is used for a broad spectrum of emergencies, from small to complex incidents, both natural and manmade, including acts of catastrophic terrorism and major equipment failures. The Company's planning, as recommended in the ICS protocol, is organized around five, major functional areas: command staff, operations, planning, logistics, and administration/ finance.

The use of ICS improved Unitil's coordination and cooperation between public and private entities. To accomplish this use, Unitil shaped an internal response organization around ICS (see Figure R-1 on the following page). This organization is responsible for combining facilities, equipment, personnel, procedures, and communications under a unified and scalable response structure which is designed to specifically manage incidents and their activities.

One of the features of Unitil's Plan is that of scalability, which was demonstrated by the wind event. Many storms begin and end as a regional emergency; however, for those that escalate beyond a region's ability to respond effectively, a system emergency is often declared. Unitil's ERP accommodates single region, multi-region and system-wide events by ensuring the key elements of an ICS organization exist at each level and can be easily replicated elsewhere using common roles and responsibilities.

The February 2010 Wind Event significantly affected the whole of Unitil's New Hampshire service territory. Where the ERP incorporated ICS, this scalability was used to realign personnel from Unitil's Fitchburg region to similar roles in both the Capital and Seacoast regions in New Hampshire.

Figure R-1
February 2010 Wind Event
Unitil's Incident Command Structure



Emergency Planning

Preparation activities differ from response activities as planning differs from implementation. The best planning has no value if implemented poorly, just as the successful implementation of a poor plan can ultimately lead to failure.

Storm conference calls and e-mails were initiated more than 36 hours before the storm's arrival to alert Electric Operations and other functional areas of the adverse forecast. Based on the anticipated damage and effect of the storm, the regions conducted their own preparatory activities in accordance with the ERP.

Also SAL employees were alerted - informing related departments heads and personnel of the impending storm. This prompted employees to confirm their storm assignments and to check with

their section chief regarding staffing schedules. In advance of the storm, the System Level Incident Commander (IC) directed Logistics to acquire additional resources in the form of external line and forestry crews. Also, the IC preemptively ordered the opening and staffing of the three, Regional Emergency Operations Center (EOC), as well as the System–EOC in Hampton, New Hampshire, to occur several hours before the wind gusts were forecasted to peak.

The IC also mandated that critical care customers be contacted and public services announcements (PSAs) be issued in anticipation of a significant event.

Storm preparation can be characterized as taking place in two different time frames: long-term planning, which involves preparations made for all storms that may or may not occur; and short-term planning, which involves preparation for a specific forecasted event.

Significant aspects of the Company’s long-term emergency planning include:

- ❖ Annual revision of the Company’s Emergency Response Plan
- ❖ Annual storm dry-run exercise;
- ❖ Cross-functional storm assignment training for non-distribution and non-operations department personnel;
- ❖ Weather forecasting services;
- ❖ Participation in the Edison Electric Institute Mutual Assistance program;
- ❖ Participation in Northeast Mutual Assistance Group (NEMAG);
- ❖ Critique and follow-up from prior emergency events;
- ❖ Awareness training for municipal officials;
- ❖ Coordinated communications with the Massachusetts Emergency Management Agency (MEMA), New Hampshire Department of Homeland Security and Emergency Management (NH HSEM), New Hampshire Emergency Operations Center (NHEOC), local emergency service providers, and municipal officials; and
- ❖ Commitments from vendors for materials and services.
 - Review of type and quantities of emergency/storm materials; and
 - Investments in the most efficient and effective tools and equipment.

Perhaps the most crucial element of the Company’s ability to respond to major storms is the cumulative and collective knowledge of our employees who have successfully responded to emergencies of all types and sizes. Unital has enhanced there ability by performing annul exercises that support the execution of the ERP.

Short-term planning activities which are performed in anticipation of a particular storm and generally commence a few days prior to the onset of the storm will typically include, but are not limited to:

- ❖ Review of ERP;
- ❖ Implement the “checklists” detailed within the ERP;
- ❖ Review of current weather forecasts;
- ❖ Contact critical vendors and obtainment of resource commitments;

- ❖ Contact mutual assistance utilities and confirm resource availability;
- ❖ Review of on-hand quantities for all critical materials, such as line materials, fuel, poles, etc. and adjust local inventories for storm needs;
- ❖ Verify operation of critical outage management systems, telecommunications systems and backup systems;
- ❖ Contact MEMA and municipal officials and verify accuracy of the contacts;
- ❖ Instruct employees to prepare for possible upcoming emergency; and
- ❖ Notify employees to prepare for emergency assignments.

Due primarily to the effectiveness of the Company's long-and short-term emergency planning efforts, Unitil was well-prepared to respond to the customer interruptions attributed to the February 2010 Wind Event. Coupled with the enhanced lines of communication and management commitment, the restoration effort (for what was clearly a major and severe storm event) was limited to only four days

Incident Management

Unitil initiated its Crisis Response Plan (CRP) which can necessitate the meeting of Company's Strategic Response Committee (SRC) which is comprised of the senior executives of the Company. During this event, the SRC met daily throughout the event, which facilitated outstanding inter-organizational support throughout the restoration effort.

The New Hampshire R-EOCs indicated that they were experiencing significant damage prompting further requests for resources (i.e., line and tree crews). Also, additional damage assessors were deployed to the regions to provide feedback on some of the hardest hit areas.

Initial damage assessments, as well as the tabulation of customer outage magnitudes, prompted the IC to secure additional and a significant quantity of external resources using: (1) contractors retained by Unitil for scheduled work; (2) other contractors for whom the Company has established emergency agreements; and (3) other foreign utilities through established regional mutual assistance groups.

Two, daily conference calls were scheduled throughout the restoration effort with operations and support organizations, enabling the teams to remain closely aligned which facilitated the prompt deployment of required Logistics teams and the immediate correction of minor discrepancies throughout the entire event.

Safety and Environmental

Safety

Two safety incidents were reported for the duration of the restoration effort in New Hampshire. The first incident involved an OSHA recordable injury with lost time for a Unitil employee from the Capital region. During damage assessment work along a right-of-way, the line truck in which the employee was sitting as a passenger lurched forward into a ditch created by the collapse of a culvert, pitching the employee forward into the windshield. The employee returned to work four days later.

The second and more serious incident involved a contractor's employee (Xtreme Powerline Construction from Michigan) working in the Capital region. The individual received severe burns to both hands when he became part of an electric circuit while attempting to install a distribution cutout. The individual was transferred to Boston Medical Center for surgery and burn care where he lost two fingers on one hand but did make a full recovery.

Regarding motor vehicle accidents, the line truck working the Capital region detailed above sustained damage to the windshield, which was later replaced. Also, an unoccupied line truck was side-swiped in our Seacoast region by a passing motorist. Although insurance information was exchanged, it was later revealed that the motorist had proffered motor vehicle charges already against him. The line truck has since been repaired, although it is unlikely that any insurance money will be forthcoming from the motorist's carrier.

Environmental

Of the 67 transformers replaced, 20 were reported as leaking with eight (8) of those units resulting in releases to the environment. None of the releases, though, were in excess of the Reportable Quantity for oil (i.e., 25 gallons). Although all of the release sites have been remediated, additional restoration work is required at two locations due to the reseeding of lawns.

In addition, the failure of several structures along Line 3348 (sub-transmission) in Hampton Falls occurred within tidal wetlands. Due to the sensitive areas and receptors associated with tidal wetlands, a *Standard Dredge and Fill Permit* was required to affect these repairs. Both the New Hampshire Department of Environmental Services and U.S. Army Corps of Engineers have been involved with the permit's application. Work on completing this application is ongoing.

Logistics

Logistics was responsible for (1) acquiring external resources, (2) ensuring sufficient material flows, (3) arranging for the lodging and meals of storm response personnel and (3) establishing staging areas and sites to support the influx of external resources.

Given the geography impacted by the storm, the IC made a commitment to acquire additional resources proper to the storm's impact. Although the Northeast Mutual Assistance Group (NEMAG) assists in resource allocation, the majority of members would be impacted by the wind event, which required an earlier retention of resources than typical storm events.

The resources group was able to fulfill the initial request from the regions and create a system "reserve." Additionally, once the Phase I Damage Assessment was completed, the S-EOC determined that even more resources would be needed to ensure a timely restoration. Once again, the resources group was able to retain additional resources to meet this determination – even though they moved beyond the Northeast and into Michigan and Canada to obtain the needed personnel.

Management of over 500 additional resources was no small task. Unitil's logistics team quickly recognized the need for a staging site to support the crew management and established one of its pre-established locations at the Seabrook Race Track. With the help of its third party vendor Base Logistics Unitil was able to establish a staging site capable of feeding, supply materials, fueling and bussing crews to hotels in less than 24 hours.

And the restoration effort would have been more complicated had the support services coordinated through Logistics not been established as part of the ERP. Although the damage was spread across two regions in New Hampshire, material supply, as well lodging and meals, were able to provide uninterrupted services to the crews, ensuring a high level of productivity was possible. In addition, the staging site group established the first ever internally-staffed staging site at the Seabrook Racing Track. This was no small undertaking but was essential to streamlining the Seacoast region restoration effort and maintaining the desired productivity level.

Public Communications

In addition to routine critical care customer calls, Unifit initiated outbound calls to customers whose service had been reported as disrupted. These calls focused on service restoration messages and phone numbers to call to report if they had an outage or downed wires. Calls were also placed to a portion of the customers advising them of possible restoration dates, and during the later stages of restoration calls were placed to groups of customers recorded as having service restored to be certain that work had been accomplished.

Call management was much improved with the system enhancements made post the 2008 ice storm. Not only was the Company more effective in managing call volume but also was capable of providing value added information to the customers. The call statistics in Table R4 document the improvement.

Table R-4
February 2010 Wind Event Call Center Stats

Call Center Statistics								
December 2008 Ice Event								
Day	# Installed Circuits	Total # Calls in the IVR	# Reporting Outage (Porche)	% Answered in 20 Sec	# CSR Calls Received	# CSR Calls Answered	Avg Wait Time	% Answered in 20 Sec
Total	68	166,415	126,028	0.82	42,713	32,659	8:02	48%
Avg	68	10,401	7,877	0.81	2,670	2,041	6:29	48%
February 2010 Wind Event								
Day	# Installed Circuits	Total # Calls in the IVR	# Reporting Outage (Porche)	% Answered in 20 Sec	# CSR Calls Received	# CSR Calls Answered	Avg Wait Time	% Answered in 20 Sec
Total	114	56,647	41,575	0.96	14,345	13,411	0:24	85%
Avg	114	11,335	8,315	0.96	2,869	2,682	0:24	85%

Municipal Leader Calls (Muni-Calls) were implemented twice daily throughout the restoration effort. These calls brought together representatives from municipalities and local emergency management personnel to receive overall and specific storm recovery status information. Calls were coordinated by Business Services and information during the call was provided by the affected regions' Operations Managers who act as Regional Area Commanders under Unitil's ERP. Participants were provided an opportunity to ask questions. This provided an excellent venue for daily information sharing between Unitil and the municipalities.

The Company's newly established information Management process headed by the Company's Chief Information Officer provided great value in structuring the Company's messaging for the different channels: Customer, Media, Municipal Officials, Elected Officials and the Regulators. As result the Company conducted numerous media interviews during the four days of the restoration effort. The media relations team proactively called newspaper, radio and television stations several times daily with status updates detailing the ongoing restoration activities. Interviews with line crews and R-EOC personnel were made available for local media at staging and work sites.

Our Liaison Officer was assigned the role of communication with the New Hampshire Emergency Operation Centers to coordinate restoration with various responding government agencies, which enhanced communications and ultimately benefited the customers. And PSAs urging customers to follow proper safety procedures during the outage were issued multiple times daily to keep the communities and customers abreast of our restoration activities.

Innovative Restoration Techniques

The Company established different staging sites, assembly areas, and material lay-down areas to facilitate the influx and needs of the external resources. In many cases, sites were established strategically to place materials near the most severely damaged areas. In other cases, staging and assembly sites were established for crew and vehicle consolidation, work deployment and material pickup.

Unitil was capable of establishing a formal staging site at the Seabrook Race Track largely due to its pre-established contract with a third party vendor Base Logistics. As a result this team of experts has established a logistical network of resources that can be deployed within a matter of hours to erect a tent city in support of our restoration. This ability to quickly mobilize and set up a staging site allowed the Company to better manage resource productivity in the Seacoast region via a centralized approach. At full capacity, this staging site supported more than 100 crews.

Unitil also established a process of automated customer call back using its Interactive Voice Response unit to validate customer had received power. The task was to ensure when operation restored power to large areas that we had in deed picked up all customers by having the customer validate they had power.

Critical Challenges

Two key operational challenges for the overall restoration effort were (1) the execution of damage assessment and (2) the management of large numbers of resources including the activation of a formal staging site which were both challenging tasks for different reasons.

Firstly, because of the type and amount of damage sustained by the system, it became apparent early on that formal damage assessment (i.e., a planned Phase I and II approach) was going to have to be performed. Unitil had pre-staged a number of engineers in its New Hampshire R-EOCs; however, the physical number of employees available for roles in this area is limited and a constant shifting of these personnel based upon priorities was managed.

The IC directed the Logistics Chief to acquire 20 additional external damage assessment crews from retained contractors. Within four hours of the storm's passage, damage assessors began to arrive in numbers sufficient to commence the system's evaluation. The forms were distributed and Phase I executed.

The work packages were designed from data compiled during Phase I. Unfortunately, the damage assessment process degraded when the crews were not instructed to provide an update of completed or partially completed work packages at the end of the day – an action which would have closed the loop on damage assessment. This submittal would have “trued-up” the estimated remaining work hours and provided insight as to what was accomplished that day to a greater level of detail.

The damage assessment process to include the completing and closing out of work packages will be reviewed in detail and additional training will be provided, if warranted.

And secondly, this was the first time that the R-EOCs had received external resources in such increased quantities. As a result, logistics and efficient work delivery processes were “stress-tested” as they were implemented. To manage such numbers the ERP details the; who, what, how, when and where of establishing a formal staging site.

To effectively manage the large number of resources deployed out of the Seacoast region required the implementation of a staging site at the Seabrook Racing Track. The execution of the staging site procedure was effective and more than 100 crews were dispatched from this location. The difficulty that arose here was assigning work packages with geographic locations in close proximity to the staging site. The R-EOC planning staff and staging site coordinator required more detailed and frequent information exchanges.

To ensure minimal overlap of restoration activities and to maintain the highest confidence in the prioritization of work, enhanced communication protocols will be devised for the staging site, region and system (where applicable).

Historical Comparison

To evaluate the effectiveness of the newly-developed ERP, Unitil benchmarked its February 2010 Wind Event against the December 2008 Ice Storm (see Table R-5 on the following page for a side-by-side comparison). From all statistical indications, the Company reported a significantly-improved performance. From the aspect of total damage locations, the two storm events are comparable with the exception of the quantity of damage at each work location. In this regard, the ice storm felled more sections of wire and had many more additional crew hours assigned to each work package.

Table R-5
Storm Statistics December 2008 vs. February 2010

Storm Statistics						
December 2008 Ice Storm vs. February 2010 Wind Event						
	December Ice Storm			February Wind Storm		
	Capital	Seacoast	Fitchburg	Capital	Seacoast	Fitchburg
Customers Out	10,746	29,250	28,512	21,000	40,602	1,521
Total	68,508			63,123		
Crews Worked	20	64	319	80	174	10
Total	403			254		
Wire Reattached or Replaced (ft)	11,488	81,524	192,729	38,850	64,750	300
Total	285,741			103,900		
Transformers Replaced	21	50	170	26	40	1
Total	241			67		
Poles Set	15	52	212	36	101	0
Total	279			126		
Cross-arms Replaced	29	210	281	115	210	0
Total	520			325		
Restoration Days	9	12	14	3	4	0.5

Figure R-2
December 2008 Ice Storm Outages
Peak Percent of NH Unitil Customers without Power by Town
(Source: Yardley December 2008 Ice Storm)

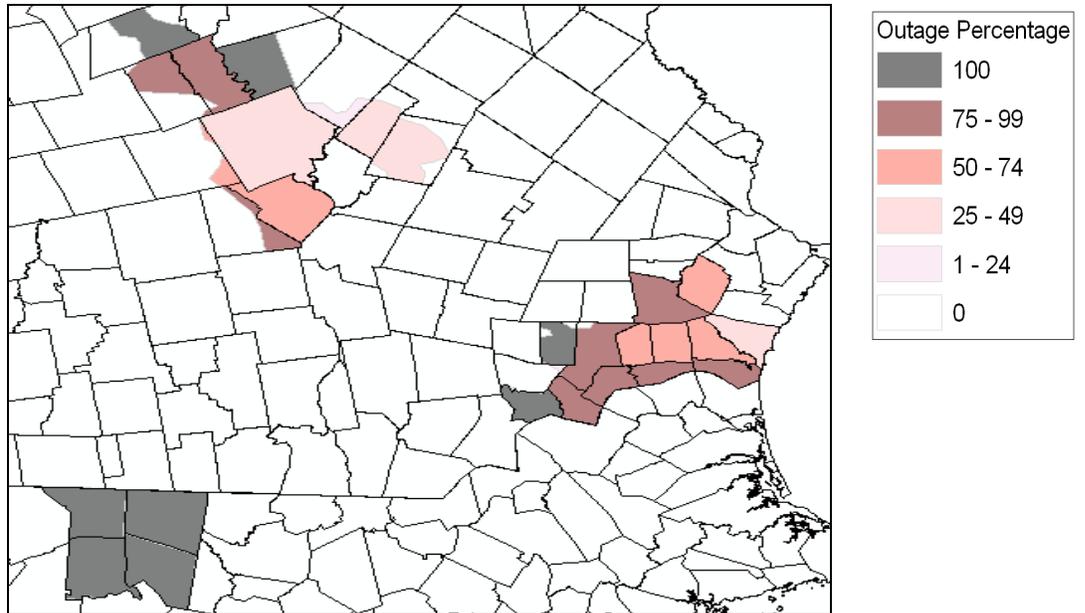
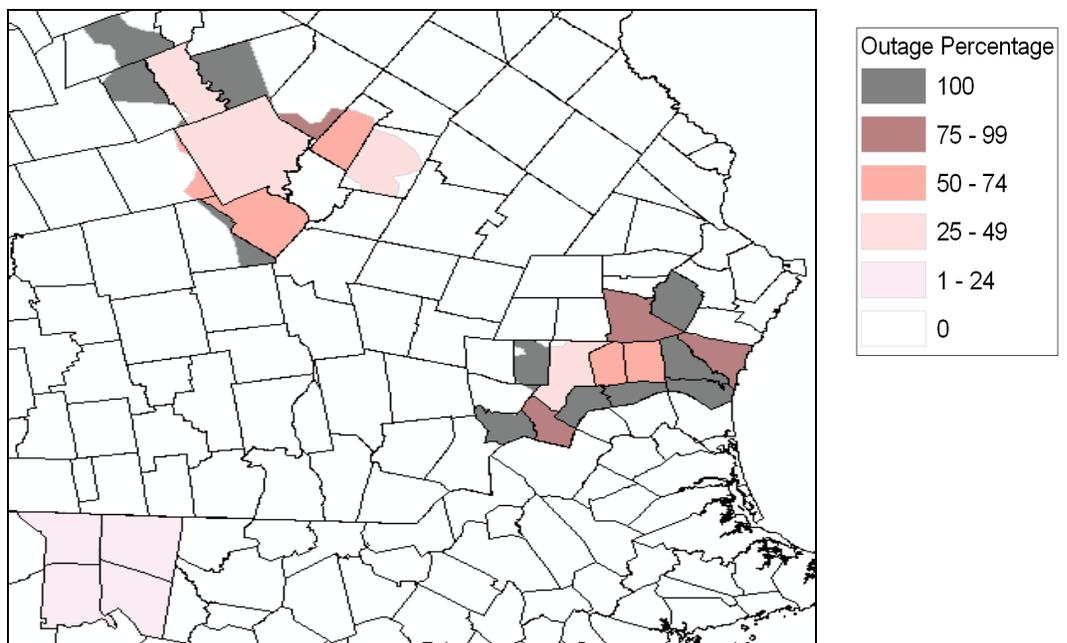


Figure R-3
February 2010 Wind Event Outages
Peak Percent of NH Unitil Customers without Power by Town
(Source: Regional Status Reports)



Conclusions

The wind storm of February 2010 was the second most devastating electrical event in the State of New Hampshire's history. As a result, about 62,000 or 83% of Unitil's customers were without power at some point attributable to the storm. Unitil restored nearly 100% of the impacted customers in a four day time period. This was a testament to the Company's ERP, corporate readiness, and execution. This was an excellent overall test of Unitil's revised ERP and given that Unitil was the first to restore all of its customers in both Massachusetts and New Hampshire the Company is confident that ERP effective during emergency events. Also, if not for the dedication and hard work of Unitil's employees and external resources, this wind event could realistically have extended beyond four days.

Unitil's restoration was a company wide effort that demonstrated an outstanding performance of all restoration and support personnel. It is a reflection of their dedication to the customers and communities/states in which they serve.

CRITIQUE MEETINGS & OBSERVATIONS

Attachment A

Issues/Opportunities for Improvement:

We continuously strive to identify better methods, systems, and processes to manage and respond to severe events. Following the restoration effort, regional storm critique meetings were conducted. Participants discussed activities and operations that went well. Additionally constructive feedback was received on five areas (i.e., systems, logistics, staffing, procedures, and communications) that require further refinement.

Shortly after the conclusion of restoration efforts an event critique was held at the Hampton facility on Tuesday, March 16th which included senior individuals from each area of the emergency response structure. Each section lead compiled event critiques from each subordinate who participated and was summarized by Emergency Management into 2 overall improvement opportunities for each function (Liaison, Information/Communications, Environmental Health & Safety, Customer Service, Planning, Logistics, Operations, and Admin/Finance).

**Improvement Opportunities
from February 2010 Wind Event Critiques**

Incident Command Summary

Overview: Overall the restoration went extremely well. The two primary areas that the IC recommends enhancements are :

1. Damage assessment
2. Crew Management

Both items remedies are defined below

Subject Area: Liaison Officer (included municipals)

NO	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	Confusion about the role of communications to PUC officials	Revise ERP to incorporate specific responsibilities of LO role	EM	5/1/10
2.	Municipal room contact, role, and communications	Create a "municipal room" handbook or manual clearly outlining aspects of role, setup, lines of communications etc.	EM & BS	9/5/10

Subject Area: Chief Information Officer (including Media, Communications)

NO.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	Ensuring PSA have most recent information and are released at appropriate timing for media and news	Firm RSR release times and information, PSA's should match the information shown on RSR's	EM	5/1/10
2.	Communications assignments – require personnel assigned to web communications.	Add a role defined to certain tasks such as updating web and public postings, writing PSA's, etc.	CIO	5/1/10

Subject Area: Environmental Health & Safety Officer

NO.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	Managing safety briefings to outside crews for multiple locations simultaneously.	Coordinate certain times for safety briefings and prepare a sheet of general safety rules to disseminate	Safety	9/5/10
2.	Many spill reports after the incident that were not reported	Finalize spill reporting policy and procedure and communicate to all employees and contractor crews	Environ. Safety	6/1/10

Subject Area: Customer Operations Officer

FEBRUARY 25 2010 WIND EVENT EMERGENCY RESPONSE REVIEW

NO.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	Better talking points and information to Customer Service Representatives	Disseminate information to CSR's on a regular basis including PSA's, general script and updated Q and A's. Also suggested that a CSR sits in on conference call.	EM/BS/CIO	9/5/10
2.	Crew locations and completed work orders. Tickets in PORCHE were not "cleared" and no way on knowing when an electrician has completed work on a service	Operation to develop a process to align tickets to restoration locations and then clear what is envisioned to be complete – explore ganging orders	EM/PC/AC	9/5/10

Subject Area: Planning Section Chief

NO.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	RSR release and conference call times may need to be reviewed to ensure they are not conflicting/interrupting restoration efforts	Fewer or more efficient conference call times and communication releases when information is most available	Team formation – EM to lead	9/5/10
2.	Staffing and expectations of storm roles during event	May need to re-issue the storm assignment policy and reiterate expectations for storm roles including shifts/schedules, responsibilities, and chain of command	EM	6/1/10

Subject Area: Logistics Section Chief

NO.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	Coordinating large numbers of crews between system and regions and managing crews including locations, reporting times, number of crews, tracking and shifts.	Consider using a tool similar to RoD (Resources On Demand) as a tool for tracking crew locations, type, and number. Re-enforcing the use of crew transfer sheet will also help.	EM & LC	9/1/10
2.	Regional/system logistics teams communications and information was always identical	Regularly scheduled conference calls between regional and system logistics team to updated crew information and accommodations etc.	EM Revise ERP	5/1/10

Subject Area: Operations Area Chief

NO.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	Communications were spotty with 3 rd party vendors and telecom companies regarding pole settings	Designate one person to communicate with telecom companies and track pole setting locations and responsibility	EM Revise ERP	5/1/10

FEBRUARY 25 2010 WIND EVENT EMERGENCY RESPONSE REVIEW

2.	Coordinating crews and communications between the staging site and DOC	Revise staging site procedure to incorporate many issues with staging site operations	EM\PC\LC\AC\S SC	9/5/10
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Subject Area: Admin/Finance Section Chief

NO.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
1.	Better preparation information to internal employees from EM and Section Chiefs/leads including reporting requirements, formal EOC opening, etc.	A formal notification of an EOC opening needs to be released to all employees and confirmed reporting times and shifts from Section lead to subordinates.	EM	6/1/10
2.	Materials/resources could not be quickly obtained because limited PO's were established and partial processes for invoicing were in place	Need to formalize policy/procedure for invoicing and company credit cards to ensure we can swiftly acquire materials/resources from outside vendors.	EM/AFC/LC	9/5/10

**Best Practice Opportunities
from February 2010 Wind Event Critiques**

NO.	Best Practice	Recommended Action	Assigned Responsibility	Schedule
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Subject Area: Staffing and Training

1.	Gas Personnel performing wires down	Continue to train gas personnel to perform this work	Safety	As time permits
2.	Use of third party vendors for Damage assessment	Continue to educate third party vendors in the DA process	Engineering & EM	As time permits

Subject Area: Logistics

3.	Establishing staging sites and have a third part manage the bulk of the activities	Continue to work with our contracted vendors to establish teams for fast deployment to staging sites	LC & EM	As time permits
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Subject Area: Communications

4.	Used the IVR to call back customers and verify they have service restored	Develop a process to call back customers in large areas once power is restored. Explore a third party process to accomplish this – Global Connect	COC & CS	As time permits
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Acknowledgements

Emergency Management respectfully thanks all employees involved in the restoration and subsequent critiques for their hard work and dedication to ensuring that the customer remains the priority alongside safety.