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July 30, 2010

Debra A. Howland
Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, New Hampshire 03301

Re: DE 10-001 Review of Unitil's December 2008 Ice Storm Response
Staff Report and Recommendations

Dear Ms. Howland:

Attached please find Staff's Report and Recommendations for filing in the above-captioned docket. Randy Knepper, Director of the Safety Division, and Tom Frantz, Director of the Electric Division, will be available at next week's hearing to present this report and respond to questions.

Thank you for your consideration of this matter. Please do not hesitate to contact me at 603.271.6030 if you should have any questions.

Sincerely,

Lynn Fabrizio

Lynn Fabrizio
Staff Attorney

cc: Service List

DOCKET NO. DE 10-001
UNITIL'S RESPONSE TO THE DECEMBER 2008 ICE STORM

STAFF REPORT AND RECOMMENDATIONS

I. PROCEDURAL BACKGROUND

In the aftermath of the highly destructive December 2008 ice storm, the Commission undertook an extensive review of New Hampshire utilities' emergency preparedness and response. The results of the review were described in the Commission's After Action Review dated December 3, 2009 (After Action Review) and an assessment report from the Commission's consultant, NEI Electric Power Engineering (NEI Report), dated October 28, 2009. One of the numerous action items set forth in the After Action Review was the commencement of an adjudicative proceeding to examine the reasonableness of the timing of Unitil Energy Systems Inc.'s (UES or the Company) response to the ice storm, the priorities of its restorations and the allocation of its resources in New Hampshire and Massachusetts.

On January 8, 2010, the Commission issued an order of notice commencing the adjudicative proceeding. The Commission stated that the proceeding would consider issues related to the reasonableness of UES's response, including the timing of its response, its restoration priorities and strategies, and the procurement and allocation of its resources in New Hampshire and Massachusetts. As UES is part of a holding company with electric utility operations in two states, the Commission recognized that the issues involve actions and decision-making by UES and by its parent, Unitil Corporation (Unitil), on a company-wide basis. The Commission further stated that exploration of the issues would involve inquiry into the emergency response resources available to UES and its Massachusetts affiliate, Fitchburg Gas

and Electric Light Company (Fitchburg), prior to the ice storm, the deployment of those resources on behalf of UES and Fitchburg, the responsibility for the deployment of those resources and the reasons therefor, the impacts of the deployment on UES's customers and what, if any, remedies are appropriate.

The Office of Consumer Advocate (OCA) filed a notice of participation in this docket on behalf of residential ratepayers on January 26, 2010. There were no other intervenors.

On January 29, 2010, pursuant to the order of notice and the approved procedural schedule, UES filed the testimony of Thomas P. Meissner, Raymond A. Letourneau, Jr., and Richard Francazio, personnel at Unitil with responsibilities that include storm response. Technical sessions for purposes of discovery were held on February 25 and March 22, 2010, and Staff issued several sets of data requests to the Company, to which the Company responded. Staff submits this report with recommendations as a means of resolving this docket without the necessity of Staff and intervenor testimony and rebuttal testimony by the Company. This report and the recommendations contained in it are based on the Company's testimony, its responses to the discovery conducted by Staff, and discussions among the Company, Staff and the OCA during technical sessions and several follow-up phone conference calls.

II. NEI REPORT AND NHPUC AFTER ACTION REVIEW

The NEI Report concluded that Unitil's restoration strategy during the ice storm was to attempt to get all customers restored at the same time.[1] *NEI Report at II-48.* NEI contrasted Unitil's strategy with that of the other electric utilities, where the goal was to try and restore

[1] NEI's statement was based on UES's response to Staff Ice Storm Review 1-47, discussed in more detail below.

service to the largest number of customers as rapidly as possible. *Id. at II-49.* According to NEI, Unitil's stated goal of accomplishing "full restoration to all customers at approximately the same time"[2] would mean that some customers who could be restored quickly with little effort might have to wait until available resources have also restored more heavily damaged customers. NEI concluded that Unitil's stated strategy was inappropriate, noting that customer restoration data for all the electric utilities, including UES, show a relatively steep exponential shape, suggesting that Unitil's philosophy was impractical and probably inappropriate. *NEI Report at II-49.*

NEI further suggested that, notwithstanding Unitil's stated strategic goal, the customer restoration graphs indicate Unitil's goal was not achieved and, in fact, UES's restoration efforts resulted in the restoration of many customers at the beginning of the response, similar to the results achieved by the other utilities. Nevertheless, NEI expressed concern that Unitil may have improperly allocated its resources, based on a table showing that Unitil's Massachusetts service territory received what appeared to be an inordinate number of crews relative to the number of customers without power. *Id.* NEI commented that since the damage in Massachusetts was known to be more severe, it would be expected that restoration efforts would be more effective and more of Unitil's customers would be restored at a faster rate by assigning resources to the New Hampshire service territories first, even though this would have delayed restoration in Massachusetts.

NEI recommended that Unitil adopt a storm restoration strategy that is based on achieving restoration for the largest number of customers in the least amount of time, similar to

[2] UES Data Response to Staff Ice Storm Review 1-47 (Feb. 27, 2009); *see* Exh. No. UES Panel-1, attached to UES Testimony (Jan. 29, 2010).

the approach of the other electric utilities. *NEI Report II-50.* In NEI's opinion, Unitil should allocate storm restoration resources among communities or circuits within the service territory or between non-contiguous parts of the service territory based on the number of customers without power. *Id.* NEI further stated that crews should not be assigned purely based on the extent of the damage but instead should be targeted at restoring service to large numbers of customers as expeditiously as possible. *Id.*

The Commission made some observations of its own in its After Action Review. The Commission stated that, according to the data, contractor line crews appeared to have been deployed away from Unitil's New Hampshire service territories to assist in the restoration of its Massachusetts service territory, possibly contributing to a longer overall restoration time for New Hampshire customers. *See After Action Review at 30-31.* According to the Commission, the data also indicated that more crews were deployed in Massachusetts at times when there were greater numbers of customers without power in New Hampshire. *Id. at 29.* Moreover, other data indicated that, compared to other New Hampshire electric utilities, UES had the lowest ratio of crews per customer without power between December 12 and December 15, the days immediately following the start of the ice storm on December 11. *Id. at 31.*

III. UNITIL TESTIMONY

In its pre-filed testimony, UES described two principal disagreements with the NEI Report as it relates to this proceeding. *See UES Testimony at 7-8.* First, it maintained that NEI wrongly concluded that Unitil's restoration strategy was to restore all customers at the same time and therefore concluded incorrectly that Unitil's restoration strategy was different than the other

New Hampshire electric utilities. Second, UES maintained that the summary data relied on by NEI did not reflect the underlying restoration activities of the Company and therefore are not an appropriate basis for judging the reasonableness of its storm restoration response.

UES distinguished between restoration priorities within a service territory and resource allocations among service territories. UES stated that priority within each service territory is given first to public safety (wires down), then to critical facilities, then to critical needs customers, and finally to restoration of customers as rapidly as possible (*i.e.*, outages are prioritized in order of the greatest number of customers impacted and speed of repair time). *UES Testimony at 9-10.*

Regarding resource allocations among service territories, UES stated that Unitil's goal is to accomplish full restoration to all customers as soon as possible under the circumstances.[3] *Id. at 12.* Its strategy for accomplishing this goal was to base resource allocation decisions on the results of damage assessments and estimates of when restoration would be complete,[4] thus matching resources to the amount and type of repairs required and assignment of crews to where they were most needed, which, according to UES, is standard utility practice. *Id. at 12.* It presented a graph plotting the percentages of customers without power against the time to restore

[3] UES claimed that this is the correct interpretation of the sentence in its response to Staff Ice Storm Review 1-47, which stated, in connection with Unitil's resource allocation decisions, "[t]he company's goal is to accomplish full service restoration to all customers at approximately the same time. Therefore, the operating center that has the most amount of damage is assigned the greatest amount of resources." UES's argument here is consistent with the Company's comments on the initial draft of the NEI Report, submitted to the Commission on October 15, 2009, prior to the NEI Report's release.

[4] According to UES, the factors contributing to allocation decisions throughout the restoration effort included public safety requirements, the number of crews available from mutual aid entities, travel time from home locations, estimates of the amount and type of damage to be repaired in each division, types of crews available, the prospect of anticipated new crews and crew types, the estimated time to restore power to all customers in each division, the number of customers without service and logistical support for crews. *UES Testimony at 19.*

power for all the New Hampshire electric utilities to show that the rate at which customers were restored was remarkably consistent across all the utilities, indicating, in the Company's view, not only that Unitil's restoration strategy was identical to the other utilities but also yielded similar results to the other utilities. *Id. at 15.*

UES disagreed with NEI's recommendation that resources should be allocated based on the number of customers experiencing outages, noting that "[r]estoring service to the largest number of customers as rapidly as possible relates to the order in which individual troubles (outages) are assigned. In other words, it is a prioritization decision related to which outages are more important, and which outage should be assigned next." *Id. at 16-17.* UES stated that it is conceivable both that a utility could experience an outage to thousands of customers due to a single problem and that the same number of customers could be interrupted due to hundreds of individual problems, each requiring extensive repairs. In UES's view, the appropriate goal is to assign the number and type of resources needed to restore service. *Id. at 17.* Assigning resources solely on the basis of the number of customers without power, according to UES, could result in the assignment of a disproportionate number of resources relative to the amount and type of repairs required, thus reducing the efficiency of the restoration effort and delaying restoration to all customers. *Id. at 17-18.*

The Unitil system began to experience outages in the late night hours of December 11 and into the early morning hours of December 12. *Id. at 19.* Fitchburg's entire system was out of service by the early morning hours of December 12. *Id. at 19-20.* According to UES, preliminary reports from Fitchburg's crews in Massachusetts suggested a significant number of

broken poles, an early indication of extensive damage. *Id. at 21.* The available overnight data indicated that Unitil did not have as many customers without service in New Hampshire and the number of broken poles was significantly less than that reported in Massachusetts, an indication to Unitil of less damage in New Hampshire. *Id.* In addition, weather reports predicted the potential for significant icing in the Fitchburg service territory while temperatures in UES's seacoast service territory were expected to rise above freezing during the overnight hours. *Id.*

By daybreak on December 12, UES's seacoast service territory began reporting tens of thousands of customers without power, primarily due to outages of subtransmission lines. *Id.* UES's capital service territory reported fewer problems and experienced a lower percentage of customers without power than in Unitil's other two service territories. *Id.* UES stated that prior to the ice storm, Unitil had 6 bucket crews in Massachusetts and 19 bucket crews in New Hampshire, including outside contractors. *Id. at 22.* According to UES, as a result of the initial reports, Unitil contacted one of its contractors during the overnight hours and requested that six crews that had been working on UES's seacoast service territory be sent to Fitchburg on the morning of December 12. *Id.* The contractor was further asked to transport off road equipment to Fitchburg in order to begin work on the transmission system. *Id.* UES stated that this allocation of resources was based on available information at the time regarding system damage, the type of damage, and the number of resources on the system. *Id.* Of the six bucket crews sent to Fitchburg, three were replaced the same day by the contractor and sent to UES's seacoast service territory. *Id.*

Unitil participated in conference calls of the Northeast Mutual Aid Group (NEMAG) on December 11 and 12. *See id. at 22-23.* By noon on December 12, the process of allocating mutual aid was essentially concluded. As a result of those calls, Unitil obtained commitments for 40 crews and expected those crews to arrive on December 13. Unitil also called contractors on December 12 in a continuing search for crews, but because of the very broad impact of the storm across the Northeast, virtually all the crews in the region were already committed to utilities. *Id. at 23.* Unitil stated that late in the day on December 12, it suffered a major set back when it learned that 14 of the contractor crews[5] from Ohio pledged to Unitil during the last NEMAG call would not be coming. *Id. at 25.* Ultimately, Unitil was able to secure 13 construction crews from Tennessee, representing 39 individual crews, which were expected to arrive in New Hampshire on December 15 but were delayed by a day due to difficult weather conditions along the route from Tennessee to New Hampshire.

UES stated that the process of performing damage assessments was hindered by the widespread damage, though the quality of damage information did improve with each day of the restoration effort. *Id. at 26-27.* However, ice laden trees and branches continued to fall onto Unitil's electric facilities well into December 13 and 14. *Id.* After the damage stabilized on December 14, the information available to Unitil to support crew allocation decisions improved. *Id.*

According to UES, even accepting that UES had the lowest ratio for crews per number of customers at the outset of the storm, the data in the Commission's final report indicates that this

[5] Each of these crews were configured as construction crews, comprised of 2 bucket trucks, a digger truck, and a foreman in a pickup truck.

ratio was materially different on only two days, December 12 and 13. *Id. at 29-33.* UES explained that December 12 was the first day of the restoration effort when information was limited, little damage assessment had been performed, field conditions were difficult, resources were focused on restoration of the subtransmission system and efforts were being made to recruit more crews. In addition, on the evening of December 12, Unitil learned that the 14 crews pledged from Ohio would not be arriving, leaving Unitil with minimal outside assistance until the crews from Tennessee arrived on December 16. *Id. at 25 and 29.*

UES stated that the data in the Commission's After Action Review and Electric Utility Self Assessments showed that by December 15, UES had restored service to over 70% of the customers who had lost power on December 12. *Id. at 30.* UES presented a graph to show that its speed of restoration was generally in line with other utilities despite the loss of crews expected through the mutual aid process. *Id. at 31.* In any event, UES stated that the number of crews per customers without power has little relevance as an evaluative metric because there is little correlation to the amount and type of damage and the efforts required to restore power. *Id.* In UES's view, this ratio is sensitive not only to the number of crews, but also to the speed at which customers are restored, which in turn depends on a myriad of factors. UES contested NEI's statement that UES's high restoration rate may be due to its service territories being more densely populated than those of the other New Hampshire utilities, asserting that NEI's statement is mere opinion not supported by facts. *Id. at 32.*

Regarding the data showing that outside contractor crews left New Hampshire for Fitchburg in the initial phase of the restoration plan, Unitil adjusted its crew assignments in the

early morning hours of December 12 in response to preliminary reports of damages. *Id. at 33.* Other than shifting the six contractor crews to Fitchburg, a system experiencing a complete blackout, there were no other decisions to shift resources out of New Hampshire until the completion of restoration activities in New Hampshire. *Id.*

IV. STAFF ANALYSIS

In accordance with the order of notice, Staff's discovery and analysis focused on the timing of UES's storm restoration response, its restoration priorities and strategies, and the procurement and allocation of company resources in and between Unitil's New Hampshire and Massachusetts service territories. As part of its review, Staff considered the emergency response resources available to UES and Fitchburg prior to the ice storm, the procurement and deployment of those resources on behalf of UES and Fitchburg, the management responsibility for resource deployment decisions and the reasons therefor, the qualitative impacts of resource deployment on UES's customers, and possible remedies, as may be warranted. Since UES is part of a holding company with electric utility operations in two states and is, together with Fitchburg, managed by personnel employed by an affiliated service company, Staff reviewed the actions and decision-making by UES on a company-wide basis.

At the outset, Staff sought to understand Unitil's ice storm response goals and strategies in a difficult situation where there was a shortage of resources available to Unitil for restoring service in two states[6] and where, especially at the beginning of the storm response, Unitil was operating with incomplete and uncertain information regarding the amount and type of damage

[6] Staff notes that Unitil was not the only electric utility in New Hampshire that experienced a resource shortfall at the beginning of the ice storm.

and the exact number of customers without power. Staff believes that UES's stated priorities for service restoration within a service territory were correct. Giving priority first to public safety (wires down), then to critical facilities, then to critical needs customers, and finally to restoration of customers as rapidly as possible, including, for example, restoration of substations that affect a large area, as Unitil did, is a common prioritization approach used by other electric providers operating in New Hampshire. Staff has no reason to believe that UES improperly implemented its prioritization strategies in New Hampshire.

Regarding the separate question of the allocation of resources between Unitil's service territories, Staff focused its review on Unitil's interstate allocation goals and decisions. Part of UES's response to Staff Ice Storm Review 1-47, which inquired about the process used to assign and deploy resources across state lines when handling simultaneous outages, stated, "[t]he company's [allocation] goal is to accomplish full service restoration to all customers at approximately the same time." *See Exhibit UES Panel-1.* In testimony in the current proceeding, UES stated that this sentence was wrongly interpreted by NEI and that Unitil's goal for allocating resources was to accomplish full restoration to all customers as soon as possible under the circumstances. *Ibid. at 12.* Further, in response to Staff 1-1 in this docket, UES stated that it targeted resources with the objective of restoring as many customers as possible as soon as possible, which was the same allocation goal espoused by NEI. Staff does not agree that the Company's response to Staff Ice Storm Review 1-47 was misinterpreted. Rather, in Staff's view, UES's testimony essentially disavows the statement made in its earlier data response regarding simultaneous restoration for all customers across state lines. In Staff's opinion,

Unitil's statement, as applied to the allocation of crews between New Hampshire and Massachusetts service territories, especially during the beginning stages of the storm, suggests that Unitil chose to allocate crews in a manner that aimed for simultaneous restoration to each territory, with resource allocation based on the perceived extent of physical damage. Staff would note that resource procurement and allocation are elements of overall restoration strategy, whereas the prioritization of restoration targets is a tactical element. In Staff's view, Unitil appears to equate the prioritization of restoration targets with overall restoration strategy.

In its response to Staff Ice Storm Review 1-47, UES explained its allocation strategy for achieving "full restoration to all customers at approximately the same time" by stating that "the operating center that [had] the most amount of damage [was] assigned the greatest amount of resources." *See Exhibit UES Panel-1.* In its testimony, UES argues that resource allocation should not be based solely on the number of customers experiencing outages and that a number of other factors should be, and were, taken into account, including but not limited to estimates of the amount and type of damage to be repaired in each service territory and the estimated time to restore power to all customers in each service territory. *Ibid. at 17-19 and 28.* UES asserts that its approach to crew deployment, which would include its strategy for allocating resources, is consistent with that of the other electric utilities and is typical within the industry. *Id. at 38.*

In general, Staff agrees that decisions to allocate resources should not necessarily be based on a single factor, such as number of customers without power in a service territory. By the same token, however, Staff does not believe that such decisions should automatically be based on the absolute amount of damage in a service territory. All else being equal, including

the amount of damage in different service territories, Staff believes that resources should initially be allocated to the service territory with the most customers without power. In the case of the December 2008 ice storm, as is typical in the most wide-scale, multi-state, and damaging storms, decisions on crew procurement and associated allocations are often made prior to refined damage assessments being completed from field personnel and without having all estimated times of restoration (ETRs) established, because initial reports are typically preliminary and incomplete, and include limited reliable verification and confirming sources. Most critical decisions regarding crew procurement and allocation are made during the earliest stages of a storm. It is logical to conclude that, if a service territory has both more customers without power and suffers wide-scale, heavy damage in multiple locations, then resources initially should be focused on that service territory until more refined assessments can be made.

UES provided information, set forth in the table below, about the extent of damage in UES's and Fitchburg's service territories. The data show that the overall extent of physical damage to Fitchburg's primary and secondary wires exceeded the amount of damage to UES's electric wires, providing an indication of the relative extent of damage in each territory. In other categories, including splices and fuse links, in particular, UES territories suffered greater damage.

Unitil Totals for All Distribution Operating Companies	
Unit of Issue / Description of Item	**Qty Issued 12/2008 Ice Storm**
Primary Wire (aluminum & copper) (feet)	185,630
Secondary and Service Wire (feet)	88,737
Fuse links	420
Crossarms	741
Assorted Poles 30-40ft Various Classes*	351
Splices	14,000

FG&E Totals	
Unit of Issue / Description of Item	**Qty Issued 12/2008 Ice Storm**
Primary Wire (aluminum & copper) (feet)	122,970
Secondary and Service Wire (feet)	56,107
Fuse links	240
Crossarms	383
Assorted Poles 30-40ft Various Classes*	267
Splices	6,000

UES Seacoast Totals	
Unit of Issue / Description of Item	**Qty Issued 12/2008 Ice Storm**
Primary Wire (aluminum & copper) (feet)	54,060
Secondary and Service Wire (feet)	31,267
Fuse links	1,100
Crossarms	328
Assorted Poles 30-40ft Various Classes*	76
Splices	4,000

UES Capital Totals	
Unit of Issue / Description of Item	**Qty Issued 12/2008 Ice Storm**
Primary Wire (aluminum & copper) (feet)	8,600
Secondary and Service Wire (feet)	1,363
Fuse links	1,100
Crossarms	29
Assorted Poles 30-40ft Various Classes*	8
Splices	4,000

*Does not include poles set by Verizon and/or FairPoint, therefore the number of pole sets are not a reliable indicator here of relative damage.

As reflected in the Commission's final report, the number of customers without power in UES's service territories during the first three days of the ice storm and response efforts (December 11-13)[7] significantly exceeded the number of customers without power in Fitchburg's service territory. Starting on December 14, the situation reversed, with the number of customers without power in Fitchburg's service territory exceeding the number of customers without power in UES's service territories. Although the data supporting the amount of damage and customers without power are now more fully developed, Staff appreciates that Unitil did not have precise or certain knowledge when it had to make its initial decisions regarding resource allocations.

During discovery, UES provided a revised and more accurate table, set forth below, that includes comparable data showing how Unitil allocated resources between the New Hampshire and Massachusetts service territories.[8]

[7] The ice storm hit New England in the late evening of December 11. Outage data began to arrive close to midnight on that date, but did not provide an accurate assessment of the extent of outages until the following day, December 12.

[8] This table utilizes the classification of crews found in the table on page 31 of the After Action Review for UES and shows the comparable data for Fitchburg. In addition, it includes comparable damage assessor data for UES and Fitchburg. It should be noted that the data for Fitchburg in this table does not match the data in the table on page 30 of the Commission's final report for Fitchburg because different data sets were used. This table also corrects for one error (UES/December 21/Other Outside Crews) in the table on page 31 of the Commission's final report for UES.

Unitil NH								
Date	Unitil Bucket Crews	Outside Bucket Crews	Tree Crews	Outside Digger Crews	Other Outside Crews	Damage Assessors	Total Crews***	Peak Customers Off
Dec. 11	11	8	4	0	0	0	23	5,450
Dec. 12	11	5	4	0	0	17	20	37,800
Dec. 13	11	6	5	2	0	20	24	27,000
Dec. 14	11	6	20	2	0	21	39	16,584
Dec. 15	11	7	20	1	0	21	39	10,754
Dec. 16	11	37	20	6	0	26	74	8,807
Dec. 17	11	37	20	6	0	30	74	4,952
Dec. 18	11	35	20	10	0	29	76	3,176
Dec. 19	11	35	20	10	0	19	76	1,250
Dec. 20	11	42	20	10	0	17	83	325
Dec. 21	11	44	15	10	2	0	82	36
Dec. 22	0	0	0	0	0	0	0	0
Dec. 23	0	0	0	0	0	0	0	0
Dec. 24	0	0	0	0	0	0	0	0

Unitil MA								
Date	Unitil Bucket Crews	Outside Bucket Crews	Tree Crews	Outside Digger Crews	Other Outside Crews	Damage Assessors	Total Crews***	Peak Customers Off
Dec. 11	3	3	2	0	0	0	8	1,368
Dec. 12	3	12	4	0	3*	19	22	25,484
Dec. 13	3	35	4	6	3	19	51	21,257
Dec. 14	4	34	12	6	3	19	59	17,402
Dec. 15	4	34	12	6	3	19	59	13,853
Dec. 16	4	34	12	7	3	19	60	11,356
Dec. 17	4	37	13	7	3	4	64	9,508
Dec. 18	4	45	14	7	3	4	73	5,741
Dec. 19	4	48	14	7	0	4	73	4,424
Dec. 20	5	82	14	7	49**	4	157	3,849
Dec. 21	5	115	52	23	49	28	244	2,538
Dec. 22	5	239	62	6	49	28	361	1,173
Dec. 23	5	237	50	6	49	0	347	433
Dec. 24	5	51	16	3	0	0	75	222

* Off Road Equipment (for transmission work)

** Transmission Line Personnel from National Grid

***Exclusive of Damage Assessment Personnel

Among other things, the data in this table show that Unitil's actual allocation of resources between the states was not as disproportionate relative to the extent of customer outages, as suggested by some of the data examined in the After Action Review, but nonetheless indicate a disproportionate number of crews in Fitchburg compared to the number in UES New Hampshire territories during the early stages of the storm (*i.e.*, from December 12 through December 15), given the customer outage figures for each territory. The data set forth in the table on page 30 of the After Action Review regarding the number of "field crews" for Unitil MA, for example, were drawn from a different data set than that used to compare field crews deployed in New Hampshire. Specifically, the Massachusetts field crew data included damage assessors deployed in the Fitchburg service territory, while the New Hampshire field crew data did not include damage assessors.

UES explained that the decrease in the number of outside bucket crews working in its service territories between December 11 and December 15 was the result of a decision by Unitil to adjust its crew assignments in the early morning hours of December 12 in response to preliminary reports of damages and, as noted above, a pledge of assistance through the NEMAG process from contractor crews based in Ohio. Unitil shifted six contractor crews from its New Hampshire service territory to its Massachusetts service territory on December 12, three of which were re-deployed back to New Hampshire later in the day when the Ohio crews informed Unitil that they would not be coming. Thus, in Staff's view, the new table indicates that the allocation of resources was not as disproportionate as suggested by the data considered in After Action

Review, but rather suggests that Unitil did not act unreasonably, given the specific circumstances of the storm and the resulting fast-paced changes in resource needs.

In its testimony, UES included a graph based on customer outage data compiled by NEI, showing the rate of customer restoration achieved by each New Hampshire electric utility. *See UES Testimony, Figure 1 at 15.* UES argues that this graph indicates that the rate of restoration was fairly consistent across the New Hampshire utilities, with Granite State Electric Company first to restore almost all of its customers, followed next by New Hampshire Electric Cooperative, subsequently by UES and then by Public Service Company of New Hampshire. UES further contends that the only logical conclusion that can be drawn is that restoration strategies were identical for all the electric providers within New Hampshire. Staff would note, however, that other inferences could be drawn from the graph. For example, Staff would have expected UES to fall between National Grid and the N.H. Electric Coop (Coop) in terms of restoration times, based on service territory size and characteristics – *i.e.*, that UES should have achieved quicker restoration than the Coop, given the Coop's larger, more rural and more heavily forested territory. However, Staff recognizes that even with such a result, the difference in UES's response time would not have been materially different from the response times achieved by the other New Hampshire electric utilities. In fact, Figure 1 on page 15 of UES's testimony indicates that the Company's UES's restoration strategy was similar to that of the other electric companies. While Staff believes that the rate of restoration and performance of restoration are not necessarily the result of "identical restoration strategies," it agrees, based on analysis conducted as part of the Commission's after action review of utility performance before, during

and after the 2008 ice storm, that Unitil's restoration performance, including its tactical prioritization of restoration targets, was consistent with that of other electric utilities. Moreover, given the extraordinary nature of the ice storm, even if Unitil had allocated more of its available resources to New Hampshire, it is hard to say with any certainty precisely how much faster service in UES service territories would have been restored.

In Staff's view, but for the failure of the Ohio crews to show up, UES would have achieved full restoration more quickly. The data concerning allocation of field crews between New Hampshire and Massachusetts service territories reveal the shortcomings of the NEMAG process in a widespread, multi-state emergency event such as the December 2008 ice storm more so than an inherent unreasonableness in UES's response to the storm. Such a conclusion is further substantiated by the information developed through discovery in this proceeding regarding mutual aid contracts. Based on its review of the mutual aid process, Staff concludes that the decision to request outside assistance and line up additional crews should be made as soon as certain pre-established benchmarks appear in forecasts, and when warnings are confirmed that a widespread, multi-state emergency event that could affect large numbers of customers is expected. The Northeast Mutual Aid (NEMAG) process results in resource availability and allocation only after an event has occurred, which means that companies should consider staffing up with available contract crews (*i.e.*, pre-staging resources) prior to major forecasted events. In Staff's view, the decisions made by an electric utility during the initial hours of an emergency event on the scale of the 2008 ice storm are critical. At that early stage of a major weather event, it can be difficult and dangerous to obtain accurate assessments of

restoration needs. If the safety factor precludes a utility from sending crews out immediately, it needs to be able to revise its damage assessment policy quickly. Sometimes this can be achieved by pre-positioning damage assessors in the field, as well as at emergency operations centers.

Based on its review of the data in this proceeding, Staff believes that Unitil's assessments in the early phases of the ice storm event underestimated the impact of the forecast and, as a result, efforts to ramp up resource procurement efforts were not timely or efficient. As a result, resources went to other companies seeking extra crews. As a smaller utility without the benefit of access to parent company and affiliate resources, Unitil should have started the emergency procurement process immediately. Staff further believes that Unitil should have considered acting early by pre-staging resources based on the forecast. That said, however, Staff does not conclude that Unitil acted beyond the range of reasonableness in its storm response. As noted, the Company's prioritization of restoration targets was similar to that followed by other electric utilities, and its achievement of full restoration was not materially different in timing from that of the other utilities. In Staff's view, Unitil's performance during the 2008 ice storm exposed a number of deficiencies in its storm planning and response. For example, a review of the company's Emergency Response Plan (ERP) in effect at that time revealed that the ERP did not follow the incident command structure in that roles for company staff and officials in an emergency response were not as defined as they should have been, and that there were no identified trigger points for resource procurement, no identified staging sites for emergency response efforts, and no clearly established contacts with other utilities or outside contractors beyond the contacts used in the normal course of business.

While Staff identified a number of areas requiring improvement based on the weaknesses and shortcomings exposed by the scale and nature of this historic storm event, the Company's restoration performance, in Staff's view, did not rise to a level of structural inadequacy. Unfortunate circumstances such as the failure of the Ohio crews to arrive and the shortcomings of the NEMAG process, especially for a smaller utility, revealed certain inadequacies in Unitil's emergency planning and response procedures. Staff concludes that those inadequacies – many of which have been subsequently addressed by extensive reforms in Company policy – should not be deemed unreasonable because, in Staff's view, UES's procurement and resource allocation actions with respect to its New Hampshire and Massachusetts territories were not as disproportionate as earlier data had suggested, the Company's restoration response was not materially different from that of other electric utilities, and there are no clear industry guidelines establishing an appropriate restoration strategy in an event such as the 2008 ice storm. Staff notes several steps that can be taken to improve Unitil's overall restoration strategy and performance structure, including the establishment of clear, Company-wide procedures in the event of a major emergency, the improvement of mutual aid agreements, including those with contractors, to ensure resources when needed, and the pre-positioning of resources to address New Hampshire customer requirements where key outage variables are not yet known.

V. STAFF CONCLUSIONS AND RECOMMENDATIONS

In this docket, Staff has been able to obtain a more thorough, specific understanding of the circumstances faced by Unitil in its response to the December 2008 ice storm. After careful review of the facts, Staff has reached the following conclusions.

A. Conclusions

First, the revised data regarding Unitil's allocation of resources to its New Hampshire and Massachusetts service territories indicate that the allocation was not as disproportionately favorable to the Fitchburg service territory as it initially appeared.

Second, as Unitil explained, it suffered a major set back on December 12 when it learned that the 14 contractor crews from Ohio pledged to Unitil in the NEMAG process would not be coming. In retrospect, it is apparent that mutual aid from other utilities is not a fully reliable means of obtaining immediate emergency assistance for a region-wide weather event. In addition, obtaining assistance from outside contractors involves competition among utilities for limited resources, a competition in which Unitil is significantly disadvantaged, due to its relatively small size and its lack of alternative resources from parent or affiliate companies. To address the shortcomings of the NEMAG process, Staff recommends that Unitil continue its current efforts to broaden its resource acquisition process by: (1) increasing its contractor pool, (2) working with local contractors already on property to agree to a right of first refusal that enhances its ability to procure appropriate resources on short notice for wide-scale, multi-state forecasted events, and (3) revising its procedures to reflect the mutual aid process as a post-event resource augmentation option.

Third, dividing crews from a single outside contractor between service territories in order to achieve a more proportionate allocation of crews based on service territory size and customer outage numbers, while not impossible, could bring a risk of inefficiencies and difficulties.

Lastly, although subsequent to the December 2008 ice storm and therefore not directly relevant to the question of reasonableness during the storm itself, Staff recognizes that Unitil has taken a number of steps to strengthen its emergency planning and response capabilities subsequent to the 2008 ice storm, including the hiring of a senior-level director dedicated to emergency response and preparation plans, more frequent drills with municipal officials, an extensive revision of the company's Emergency Response Plan, and the development of management-level guidelines and policy covering storm resource procurement and allocation among the company's service territories as well as between New Hampshire and Massachusetts, filed with the Commission in response to Action Item 5.4 of the PUC's After Action Review. Staff believes the last item needs further refinement to ensure that the Company's planning and response actions do not inappropriately divert resources to the detriment of New Hampshire customers, as set forth below.

B. Recommendations

Staff and Unitil agree that there are a number of additional steps the Company will take to further improve its emergency response policies and procedures. Accordingly:

(1) UES has agreed to work with Staff to provide a virtual network interface by which Staff could link to UES's emergency response computers in real time during emergencies. Staff recommends expedited implementation of such a network by December 31, 2010.

(2) Unitil will submit a report to the Commission within 30 days of the Commission's action on this report outlining improvements the Company has made and will make concerning resource procurement, including revised resource acquisition procedures that reflect a higher

level of availability assurance, including pre-staging,or other measures that address reliability issues and demonstrate that the Company is not as reliant on mutual aid agreements as a primary source of restoration resources. The report should demonstrate the certainty that appropriate resources will be available from the onset of a wide scale, multi-state outage.

(3) Unitil agrees to file within 30 days of the Commission's action on this report a revision to its Emergency Response Plan (ERP) that reflects recommendations Staff has provided in this proceeding, including clearly defined resource allocation procedures both before and after major storm events. Changes to the ERP will reflect the process by which resources are pre-staged at Regional Emergency Operations Centers prior to a wide-scale forecasted event that will affect all regions simultaneously. This process will afford weighting to the number of customers served and the infrastructure configuration in each service territory. Under such conditions, Unitil's field restoration crews generally will be pre-staged on a 65 to 35 percentage basis between its UES and Fitchburg affiliates, respectively.

Once an event that results in widespread service interruptions in more than one territory has occurred, resource allocations will be adjusted based on best available information. Initial resource allocations will be based primarily on the number of customers without service ("customers interrupted") in each territory until more detailed information is available from field damage assessment.

Unitil will define within its ERP the process by which resource acquisition and allocation will occur once damage assessment has been completed. The process will rely on information provided by the two-step damage assessment process Unitil filed with the Commission in

December 2009: the number of line hours needed to effect repairs at each instance of damage and the total crew hours required to restore damage by region, as determined through damage assessments, will support the decision to allocate any additional crews to distressed areas of the system. This process shall be incorporated into approximate estimated time of restoration (ETR) calculations, as well. Resources may be redirected to other regions of the system, if a surplus of crew hours exists for the estimated remaining hours of work within that region based on the communicated ETR.

Unitil also agrees that if it intends to move resources between its operating affiliates it will notify the Commission within two (2) hours of the reallocation decision.

In conclusion, and given the extraordinary circumstances of the 2008 ice storm, Staff believes that the steps outlined above will represent a satisfactory resolution of the issues raised in this docket.

Submitted on behalf of the Staff Team by:

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