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SENT VIA UPS OVERNIGHT DELIVERY

March 19, 2009

Ms. Lynn Fabrizio
Staff Attorney/Hearings Examiner
N. H. Public Utilities Commission
21 S. Fruit Street, Suite 10
Concord, NH 03301-2429

Re: NHPUC December 2008 Ice Storm Review – Information Requests

Dear Lynn:

Attached please find Pennichuck Corporations responses to the NHPUC information requests regarding the December 2008 Ice Storm Review. The Corporation's responses are for all three of its regulated utilities, Pennichuck Water Works, Pennichuck East Utility and the Pittsfield Aqueduct Company.

If you have any questions regarding the attached responses please do not hesitate to contact me at 913-2330.

Very truly yours,

A handwritten signature in cursive script that reads 'Donald L. Ware'.

Donald L. Ware
President Regulated Utilities

Enclosures

cc: Bonalyn J. Hartley, Pennichuck w/enclosures
Tara King, Pennichuck w/enclosures

F:\DON\NHPUC\Dec 2008 Ice storm response cover letter.doc

Date Request Received: 2/27/2009
Request No. Staff 1-1

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe the impacts of the storm generally on your water system or systems.

RESPONSE: Pennichuck Corporation owns and operates 68 EPA water systems in 28 communities providing service to over 33,300 customers throughout New Hampshire. In order to provide water service to these 68 EAP water systems Pennichuck operates and maintains 90 water systems/booster stations (locations) that require power to deliver water to its customers at an acceptable pressure on a continuous basis. During the ice storm of December 2008, 84 of the above referenced 90 locations, serving a total of about 31,600 customers, lost power for between 1 and 7 days. Of the 84 locations that lost power a total of 55 locations, providing service to total of about 29,600 customers, continued to provide water service due to the existence of gravity storage and/or on site emergency generators. In addition to the 55 locations above, Pennichuck provided water on sporadic basis through the use of portable generators to an additional 14 locations, providing service to about 630 customers. Water service was sporadic as the Company was shuttling 4 portable generators around between those 14 locations in order to provide some level of water service for part of each day during the power outage. The 30 (including the 14 that were provided sporadic water service) locations that lost power and did not have either gravity storage or on site emergency generators lost the ability to provide water to a total of 1,999 of our customers. The duration of the water outages is as noted on the attached spreadsheet. Additionally, the Company's main headquarters, located in Merrimack, New Hampshire, lost power and communications for a period of 3 days.

Date Request Received: 2/27/2009
Request No. Staff 1-2

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please indicate the following for each facility that lost external power as a result of the storm:

- a) Name of system
- b) Name of facility
- c) Name of electric provider
- d) When power was lost
- e) Reason for power loss
- f) Resulting impacts to water system (loss of water to entire system, to portions of system, loss of pressure, etc.)
- g) How you learned of the power loss
- h) The length of time from loss of power to when you first learned of it.
- i) The extent of alarms or SCADA monitoring at the facility, including where output is directed;
- j) When external power was restored.

RESPONSE:

- a) Please see the attached spread sheets for the requested information on a Utility basis.
- b) The location and name of each facility by Utility is noted on the attached spreadsheets.
- c) The electric provider for each facility is noted on the attached spreadsheets.
- d) The attached spreadsheet notes by location the day that power was lost and the day that power was restored. The Company did not keep a record of the time of day the power was lost or restored.
- e) The reason for power loss was the same for all facilities, the ice storm.
- f) The impact of the power loss on each of the Company's locations is noted on the attached spreadsheet. The impact was one of three, a total loss of water service, water service continued but at reduced pressures or there was no loss in water service.
- g) The Company did not maintain a record of how it learned of the power loss at each of its locations. The Company became aware of the loss of power in one of three ways, via SCADA notification, via a call from customers or via a site visit.
- h) The Company did not keep a record of an exact time when the power was lost or the particular method of how the Company learned that power had been lost.

NHPUC December 2008 Ice Storm Review
Pennichuck Corporation – Set #1
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Date Request Received: 2/27/2009
Request No. Staff 1-2

Date of Response: 3/19/2009
Witness: Donald L. Ware

- i) The attached spreadsheet notes whether SCADA existed at each of the locations. If the facility is noted as having SCADA it means that the facility has local SCADA control and communicates via radio, telephone or cable connection to the Company's water treatment plant located at 200 Concord Street in Nashua, NH. Please note that there are locations noted as "no" in the SCADA column that have local SCADA control but do not communicate with the Company's water treatment plant.
- j) The attached spreadsheet notes the day that power was restored to each location that lost power.

Date Request Received: 2/27/2009
Request No. Staff 1-3

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please indicate the following for each facility above regarding backup power capability, even if your systems did not lose power during the December ice storm:

- a) What provisions existed for backup power when the storm began, or exist now for any future events (permanent generator, wired for portable generation, etc.)
- b) What efforts were made to provide alternate power during the event, or would be made in the event of future outages (purchase or rental of generator, use of company portable generator, installation of wiring or transfer switch, etc.)
- c) What portion of the period of external power loss the facility was kept in power (or would be kept in power in the future) as a result of a) and b) above
- d) Any difficulties encountered in backup power performance or operation in the December storm (generator wouldn't start, ran out of fuel, etc.)

RESPONSE: a) Please see the attached spread sheet in regards to the back up power capability at each of the Company's water systems when the storm began, and the Company's plans for each location in the future.

b) The Company provided alternate power during the event via on site generators and portable generators. In order to use the portable generators at certain sites (sites without manual transfer switches) the Company used a licensed electrician to directly wire the portable generator into the station. Please see the attached spread sheet for capital improvements that the Company plans to make over the next three years to enhance its response capabilities to a statewide power outage. The spread sheet notes for each location whether the location will have back up power provided via an on site generator, a portable generator or via flow from a gravity storage tank. If flow is from a gravity storage tank the filling of the storage tank is provided a booster station with back up power capabilities.

c) Please see the attached spread sheet for the amount of time a facility was kept in power during the external power loss. Please note that for those locations provided with power via portable generators that the Company did not maintain records to this effect during the response to the power outage. For those locations with on site generators or that receive water via gravity storage the water service was continuous through out the power loss.

d) No, except access to certain of our stations with our portable generators was blocked by downed trees.

NHPUC December 2008 Ice Storm Review
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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-4

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe your generator maintenance program, including the nature and frequency.

RESPONSE: All generators are serviced by Cummins Northeast generator maintenance services on an annual basis. Basic service is performed by Pennichuck staff on an as needed basis. Generators are test run on a monthly basis.

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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-5

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: For each of the company-owned generator that failed to start or run during the event, please indicate:

- a) When the generator was last inspected prior to the event.
- b) When the generator was last serviced prior to the event.
- c) When the generator was last operated during the event.

RESPONSE: All of the Company's generators started and ran properly during the duration of the power outage.

Date Request Received: 2/27/2009
Request No. Staff 1-6

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Did you contact your electric provider during or immediately after loss of power in the December storm? Is so, please indicate:

- a) When and how often?
- b) Any difficulties in doing so?
- c) The provider's response.
- d) Whether you were given priority as a water provider, and if so:
- e) Whether it was because of a previous prioritization or in response to contacts during this event:

RESPONSE: a) Contact with our electric service provider was made as soon as we were made aware of the loss of power. Frequent contacts were made, too numerous to count, until all power to our facilities was restored on 12/19

- b) No
- c) The provider's response was very good. The Company was kept well informed by its electric account representative.
- d) The Company was provided priority status when possible because of the nature of our facilities and the vital services they provide.
- e) The Company's smaller facilities prior to this storm were not identified by the electric suppliers as "critical facilities". However, during the outage, special notes were placed on the Company's trouble tickets describing the nature of the facility. According to the Company's account representative, special attention was given if possible to those accounts.

Date Request Received: 2/27/2009
Request No. Staff 1-7

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Did you lose any communications as a result of the storm? If so, please indicate:

- a) Type (landline, cell, mobile radio, pager, internet, alarms, SCADA, etc.):
- b) Communications provider.
- c) Length of time lost (when lost, when restored).
- d) Extent of contact with provider.
- e) Provider's response.
- f) Whether you were given priority as a water provider, and if so:
- g) Whether it was because of a previous prioritization or in response to contacts during this event.

RESPONSE: The Company is responding to this question in regards to communications between its remote pumping stations and its water treatment plant in Nashua. Issues of communications internally, between employees and externally, between the Company and its customers and regulators are addressed in later questions.

- a) The Company's SCADA communications occur via radio, landlines and internet connections. Radio communications from remote locations to the Nashua Water Treatment plant occur directly, radio to radio or via repeater towers where the Company rents space. The radios and SCADA equipment at each of the remote locations are supported with Uninterruptible Power Supplies that provide about 15 minutes of power after a power loss. The remote locations that communicate directly with the Nashua Water Treatment plant would communicate a power failure at the remote location. Those locations that communicate with the Nashua Water Treatment plant through a repeater may or may not communicate the occurrence of a power outage to the Nashua Water Treatment plant depending upon whether the repeater site loses power or not and whether the repeater location has a generator or any sort of back up power. A schematic of the communications path from each of the Company's remote locations to the Nashua Water Treatment plant is attached for information purposes. Please note that the Company's Locke Lake water treatment plant, Pittsfield Water treatment plant and Daniels Lake CWS communicate with the Nashua water treatment plant via the internet.

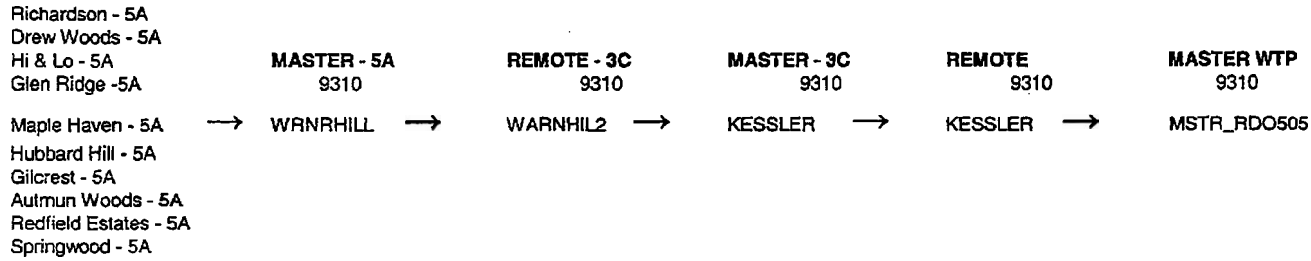
Date Request Received: 2/27/2009
Request No. Staff 1-7

Date of Response: 3/19/2009
Witness: Donald L. Ware

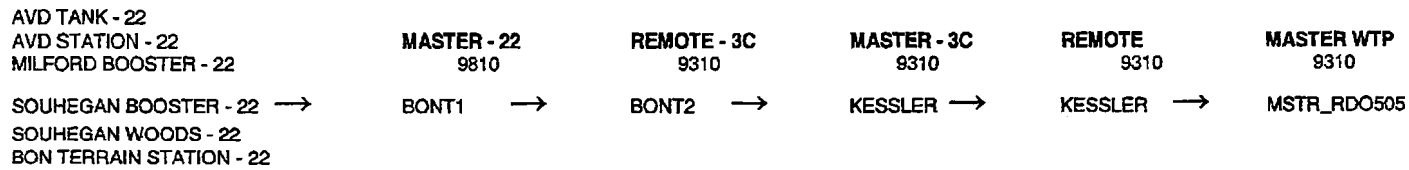
- b) Operational communications occur primarily via spread spectrum radio from the Company's remote locations to the Company's Nashua Water Treatment plant through various repeater towers. The Company rents space on the repeater Towers. None of the repeater towers currently have provisions for back up power so when power was lost at each of the repeater towers that the Company rents space on the Company lost communications with all of its remote locations. The Company never lost its internet connections.
- c) The Company did not maintain a record of when each one of the repeater locations lost power and when they regained power. d) Since the owners of the repeater towers did not control the loss of power no communications were carried out with the owners of the repeater towers. Instead the Company maintained it's communications with the power provider's of the repeater towers to let them know that these facilities were without power and the Company's ability to remotely monitor and control its remote locations was compromised.
- e) As stated previously, the electric providers were as responsive to our calls as they could be under the circumstances.
- f) Yes
- g) The prioritization of the power to the repeater tower locations resulted from this storm event.

SPREAD SPECTRUM TOPOLOGY

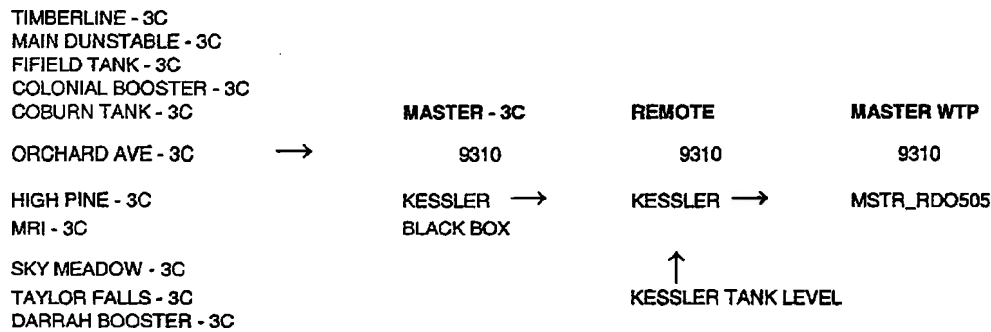
REMOTE 9310



REMOTE 9810

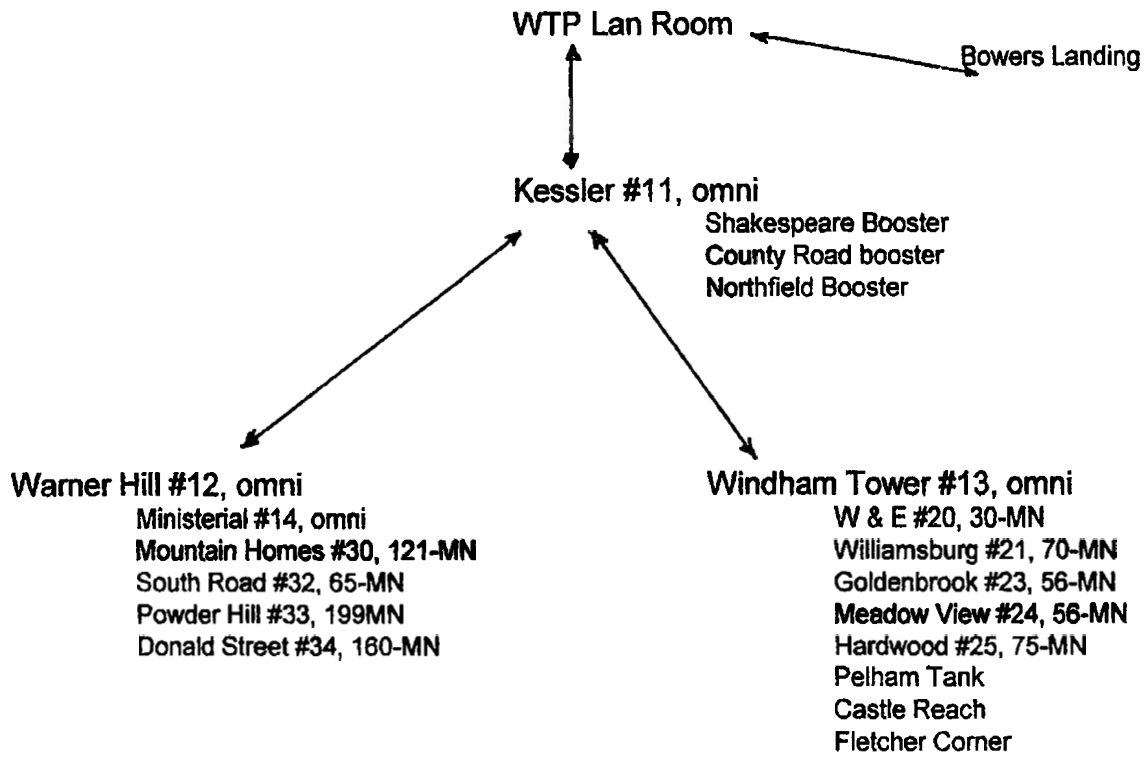


REMOTE 9310



Revised 4/2/2008

Esteem Radio Topology



Date Request Received: 2/27/2009
Request No. Staff 1-8

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: For water systems that experienced loss of water or pressure as a result of the storm please indicate:

- a) Nature of impact
- b) Duration of impact, including approximate start and end times
- c) Cause of impact
- d) Number of customers affected
- e) How you first learned of the impact
- f) The amount of time from the onset of the impact to when you first learned of it.
- g) Whether the impact to your system affected any neighboring or connected water systems.

REPSONSE: a) Please see the attached spreadsheet. The Company categorized the impact from a power outage as one of three types: no water service, water service available but at a reduced pressure, water service available at normal pressure.

b) The duration of the impact is defined by the amount of time each of the systems on the attached spreadsheet were without power. The duration is noted as the day the power outage started and the day the power outage ended. The Company did not maintain a record of the times in each day when the power was lost and when the power was restored.

c) The cause of the impact is listed on the attached spread sheet. The cause of the impact was either a power loss or lack of supply from a water system that the Company was purchasing its water supply from that was impacted by a loss of power.

d) The number of customers impacted with a total loss of water is listed on the attached spreadsheet.

e) The Company learned of the impact on its various service locations via SCADA communications, customer calls and site visits. The Company did not maintain a record of how it learned of the impact on each system.

Date Request Received: 2/27/2009
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Date of Response: 3/19/2009
Witness: Donald L. Ware

- f) In impacted systems with SCADA control and direct communications with the Nashua Water Treatment plant the amount of time between the power failure and the knowledge of that failure was an average of about 5 minutes. In systems with SCADA control that communicate with the Nashua Water Treatment plant through a repeater station the knowledge as to the time of the failure is a function of whether the repeater station lost power before the remote location. For the locations that do not have SCADA systems and communications with the Nashua Water Treatment plant the Company generally became aware of water outages when customers called to report them or based on employee site visits to each remote location. In the customer contact or employee station visit circumstances the Company has no record of when the power outage began and how soon after the power outage the water outage began.
- g) The Company is not aware of any impact that a power outage in one of its systems had on a neighboring or connected water system. The Company experienced a water outage at its' Cabot Preserve Water system in Bedford as a result of the Merrimack Village District inability to produce water during the power outage. The Cabot Preserve Water system receives 100 percent of its water supply from the Merrimack Village District.

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Date Request Received: 2/27/2009
Request No. Staff 1-9

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please indicate any other direct or corollary damages or impacts from the storm not described above (main breaks, frozen company or customer lines, inability to obtain or deliver material or equipment, etc.)

RESPONSE: The primary impact on the Company beyond loss of power was getting access to the Company's remote locations due to downed trees and power wires.

NHPUC December 2008 Ice Storm Review
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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-10

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe the extent of your interactions with outside agencies (emergency officials, NHDES, municipal officials, fire departments or others) during the event.

RESPONSE: The Company was in contact with the State's emergency response team that had been established in Concord. The Company was in contact with State team at least on a daily basis until all power was restored at all of the impacted locations on the 12/19.

NHPUC December 2008 Ice Storm Review
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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-11

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe any efforts to secure alternate water supplies (trucked or bottled water, opening of system interconnections, etc.) as a result of the storm.

RESPONSE: No efforts were made to truck water since having the ability to fill an the atmospheric tanks would not have any benefit if power was not available to run the booster pumps necessary to produce water pressure in the system. All of the Company's interconnections with other communities are either on line at all times or set up with automatic valves that allow water to flow from the interconnection during a power outage automatically. The automatic valves all worked correctly.

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Date Request Received: 2/27/2009

Date of Response: 3/19/2009

Request No. Staff 1-12

Witness: Donald L. Ware

REQUEST: Were any water use restrictions or boil orders issued as a result of the storm?

RESPONSE: No. Bacteria samples were taken at all locations that lost water pressure during the power outage and with the exception of one system, Section S in Barnstead, all the bacteria samples came back clean. The initial bacteria sample for Section S indicated the presence of coliform bacteria. The system was flushed and resampled and the resample was bacteria free.

NHPUC December 2008 Ice Storm Review
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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-13

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please indicate any difficulties obtaining needed fuel for vehicles, generators or other equipment.

RESPONSE: The Company did not experience any difficulties.

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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-14

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe any difficulty in contacting or obtaining needed assistance from contractors, vendors or others.

RESPONSE: The Company did not experience any difficulties.

NHPUC December 2008 Ice Storm Review
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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-15

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please indicate the extent to which you sought or obtained equipment, personnel or services from or through company affiliates or related entities, and any difficulties encountered.

RESPONSE: No help was sought from Company affiliates or related entities.

Date Request Received: 2/27/2009
Request No. Staff 1-16

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please indicate the extent to which you sought or obtained equipment, personnel or services through formal or informal mutual aid agreements, and any difficulties encounters.

RESPONSE: No help was sought through either formal or informal mutual aid agreements. The Company has been working with the NHDES and other water purveyors to establish a State WARN, a water and wastewater area response network with a formal mutual aid system. The State has decided to use the New Hampshire Public Works mutual aid system rather than form an independent WARN. This approach presents a problem to privately owned water/waste water companies since only municipal entities can belong to the New Hampshire Public Works mutual aid system. The NHDES is working with the State Attorney General's office to see if legislation can be introduced that will allow private companies to belong to the New Hampshire Public Works mutual aid system.

Date Request Received: 2/27/2009
Request No. Staff 1-17

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please indicate the extent of competition for personnel, crews, equipment or services from affiliated or related entities during the event, including any impacts on the regulated utilities.

RESPONSE: The only competition that evolved during the December ice storm was for the Company's portable, gas fire pump which is used to pump around a failed pumping station in order to provide water. The Company has a single, 1,000 gallon per minute pump with a variable speed engine that was needed at three locations, the Company's Coburn Woods booster station to pump water from the suction side of the station to the discharge side of the station to fill the 300,000 gallon Coburn Woods tank, the Company's Darrah pumping station to pump water from the suction side of the station to the discharge side of the station to fill the 940,000 gallon Litchfield tank and the Town of Hudson's March Road Booster Station to pump water from the suction side of the station to the discharge side of the station to maintain pressure to this system (this is a constant pressure system, if no pump is running the system is without water). Initially, the pump was placed in service at the Marsh Road Booster Station as the Coburn Tank and Litchfield Tanks were full of water and could supply several days of water supply without the Coburn and Darrah booster stations being in service. After several days the water levels in the Coburn and Litchfield tanks became critically low and the Company had to move its emergency pump from the Marsh Road system in Hudson in order to pump both these tanks up. During the 6 to 8 hours it took to refill both tanks to adequate levels the Marsh Road system in Hudson was without water.

NHPUC December 2008 Ice Storm Review
Pennichuck Corporation – Set #1
Bonalyne Hartley
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-18

Date of Response: 3/19/2009
Witness: Bonalyne Hartley

REQUEST: Please indicate the extent to which you used any internal prioritization in your restoration efforts, such as those based on known medical or other needs (individuals, hospitals, nursing homes, etc.).

REPOSENSE: There was no prioritization based on medical needs for this outage as we were not aware of any such needs in the systems without water due to the ice storm.

Date Request Received: 2/27/2009
Request No. Staff 1-19

Date of Response: 3/19/2009
Witness: Bonaly Hartley

REQUEST: Please provide the process used to disseminate information to utility call center staff and any other utility staff responsible for responding to customer inquiries during an outage. Please include the frequency of the information updates and the age of the information provided in the updates.

RESPONSE: Updated information from management and key personnel through out the entire event was passed along to staff members on the phones (primarily cell phones) as changes occurred. Normally email is used to communicate system outages. Since the main office was without power the first three days after the storm we were not able to communicate through email or our office phone system and therefore the communications were all centralized at the treatment plant which became our command center. The staff members on the phones were updated as the information became available through updates from the treatment plant staff in person or via the one phone line or cell phone. Once the main office had power restored (Monday morning) we were able to resume communications through email and online spreadsheets that were updated as information was available.

Date Request Received: 2/27/2009
Request No. Staff 1-20

Date of Response: 3/19/2009
Witness: Bonalyne Hartley

REQUEST: Please provide the trunking capacity of the call center or centers that handle customer calls. What level of staffing is normally maintained at those call centers and what level was maintained during the December 2008 ice storm? What call volume do these levels of staffing correspond to? What was the daily call volume for the period December 11 – December 31, 2008? How does that compare to normal call volumes?

RESPONSE: Pennichuck telephone system has 20 incoming lines through a T-1 connection available and 8 additional copper lines for fail over of the T-1. Typically 3 to 4 call center staff are on the phones throughout the day. There are also 9 other staff members that will take calls during high call volumes. During the three days that the office was without power due to the ice storm, the main telephone number was rerouted to a single analog line to the Company's Nashua water treatment plant resulting in only one incoming line for our customers to contact the Company. From Friday, December 12th through Sunday, December 14th at night this one line had a steady flow of calls from about 7 am to 9 pm each day. We did maintain a log of calls during this time however in an effort to give the best possible customer assistance some notes and calls may not have been recorded as we needed to answer the next call. Once the office had the power restored (Monday) we were able to resume our normal call center. From Friday, December 12th through Thursday, December 18th the telephones were staffed with customer service representative between 7 am to 11 pm and by the Company's third shift water treatment plant operator between 11 pm to 7 am. The call volume during this week was higher than normal averaging about 235 calls from 7:30 am to 5 pm each day where our normal call volume is about 198 calls per day. We had anywhere from 5-10 representatives taking calls during business hours and 1 representative on the phones after hours. The estimated number of calls taken from Friday, December 12th through Sunday, December 14th was about 350 to 400 calls per day. As of Friday, December 19th water had been restored to all systems. The daily call volumes estimated above are from December 12th through December 19th not through December 31st as requested since the impact of the storm was not felt by any of the Company's customers (from a loss of water service perspective) after December 19th.

Date Request Received: 2/27/2009
Request No. Staff 1-21

Date of Response: 3/19/2009
Witness: Bonalyne Hartley

REQUEST: How is automation used in your call answering system to provide information to customers during an outage? What percentage of customers selected the menu option of speaking to a representative during the December 2008 ice storm? How does that percentage compare to the percentage of customers selecting the option of speaking to a representative under business as usual conditions?

RESPONSE: During the first three days of the storm there was no automation used for answering calls due to the fact that the Company's automated phone system was not functional due to the lack of power at the Company's main office. As of Monday, December 15th, our automated phone system was restored at the main office and our office phone systems were back to normal operations. During normal business hours our customer call routing only has automation set-up to report a payment or a property transfer unless all the Company's customer service representatives are busy and then a customer can leave a voice mail. Most customers who call during normal business hours speak directly with a customer service representative. From Monday, December 15th through December 19th during regular business hours the majority of customers spoke directly to a customer service representative. After normal business hours (nights and weekends), a customer who calls the office has the option of leaving a message for the next business day via automated scripts for payment and property transfers, or they can leave a general message for the next business day or the customer can select to talk directly with a Company Representative in case of an emergency.

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Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-22

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe the process for identifying and prioritizing service restoration to medical emergency customers as defined in PUC 1202.12.

RESPONSE: The Company maintains a list of critical customer accounts in the emergency action plans (EAP) for each of its water systems. The Company is not aware of any system where a medical emergency customer existed that was without water. At present, the Company EAP's identify critical customer accounts and these accounts would be the ones the Company would target to restore water service to in the event it was necessary to prioritize restoration of water service within each EAP or across EAP's.

Date Request Received: 2/27/2009
Request No. Staff 1-23

Date of Response: 3/19/2009
Witness: Bonalyne Hartley

REQUEST: Please identify all customer outreach and customer communications utilized during an outage to provide timely and responsive information to customers regarding the outage and projected restoration times.

RESPONSE: Customers would typically be notified of outage information via door to door communication (verbal, if home or written notice left in door) or via automated telephone message.

During the December ice storm neither of these methods was used due to the severity of the situation. The automated telephone message was not used because our main office was without power and therefore our phone system and computers were not available. The door to door communication was not possible due to the fact that so many systems were without water and there was not enough manpower to accommodate this option.

Due to the nature and extent of this event the Company will be installing a generator at our main office so that in the future the Company will be better prepared to handle this type of event. With a functioning automated phone system The Company will be able to contact customers with updates via the automated telephone message. Please note however, that even with the restoration of The Company's telephone system we may have had difficulty reaching customers this way since so many customers were without telephone service at their homes. The Company plans to ask customers to voluntarily provide cell phone numbers and email addresses so that we have multiple ways to contact the customers electronically during an emergency. The Company will send messages to all contact information available on the account during an emergency.

The Company also plans to send information to the radio stations in the area in hopes that this will reach any customer that we have not been able to contact through other methods. There was not a lot of information being broadcasted on the radio for the first three or four days of this event, so the people without power were not getting any updated information.

NHPUC December 2008 Ice Storm Review
Pennichuck Corporation – Set #1
Bonalyne Hartley
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-24

Date of Response: 3/19/2009
Witness: Bonalyne Hartley

REQUEST: Please describe generally the nature and extent of contacts initiated by customers, including:

- a) Number of event-related contacts each day;
- b) Any problems encountered (difficulties with phone lines, shortage of personnel to handle calls, etc.).

RESPONSE: Although the Company had the staff to handle the calls due to the lack of power to the Company's main office, the phones were rerouted to an analog line at the treatment plant which limited incoming calls to one in coming line. It is estimated that we handled about 235 calls per day during regular business hours from December 15th through December 19th. The number of calls handled while running on one incoming line from December 12th to December 14th is approximately 350 to 400 calls per day.

Date Request Received: 2/27/2009
Request No. Staff 1-25

Date of Response: 3/19/2009
Witness: Bonaly Hartley

REQUEST: Please describe the nature and extent of storm-related customer contacts initiated by you, including:

- a) Frequency;
- b) Any problems encountered;
- c) Copies of any emails, notices or correspondence sent to all or groups of customers.

RESPONSE: Due to events of this storm and the fact that the Company's main office was without power for the first three days of the event there was no outreach from the Company to its impacted customers. The Company responded to customers calling in with any update on the status of restoring their water service. No emails, notices or correspondence was sent to our customers during the storm.

Date Request Received: 2/27/2009
Request No. Staff 1-26

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe the nature and extent of any contacts with the media, including:

- a) Nature, type and frequency.
- b) Whether initiated by the media or you.
- c) Copies of any press releases or other media communications issued by you.

RESPONSE: a) The Company did not initiate any communications with the media during the ice storm. The Company was contacted several times after the ice storm for an update on availability of water in the greater Nashua area.

- b) All contacts were initiated by the media.
- c) No press releases were issued by the Company.

Date Request Received: 2/27/2009
Request No. Staff 1-27

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Do you have an emergency plan as required by NHDES (rule Env-Ws 360.15)? If so:

- a) When and by whom had it last been reviewed prior to the storm?
- b) When and by whom had it last been updated prior to the storm?
- c) How many pages is it?

RESPONSE: a) The Company's EAP's are reviewed and updated annually to insure that the contact information within the EAP's is current. The EAP contact list had last been updated in the spring of 2008 by the Engineering Administrative Assistant.

b) Please see answer above.

c) The number of pages in the Company's EAP's varies by system. There are between 25 and 145 pages (including appendices) in the various EAP's. The lesson learned from the EAP's is that they are each written with the concept that the emergency is isolated to a particular system. The EAP's do not relate to the Company having to respond to a statewide emergency that impacted multiple systems and how the Company would respond to a statewide emergency. The Company's ability to respond to a statewide power outage is entirely different than its ability to respond to a smaller regional outage. The Company is reviewing its' response capability on a state wide basis with a goal that no water system would be out of water from more than an 8 hour time frame during any sort of state wide power outage.

In the event of a limited outage the Company should be in a position, after the planned capital improvements over the next several years, to respond to a power outage within a two hour time frame and to provide continuous water service during the duration of the power outage for each of its service locations.

Date Request Received: 2/27/2009
Request No. Staff 1-28

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: To what extent did the emergency plan benefit your response to the storm?

- a) Securing equipment, supplies or resources.
- b) Communications with customers
- c) Communications with outside agencies and personnel
- d) Communications with media
- e) Other recovery efforts

RESPONSE: a) None for the reason stated in response to e) below.

- b) None.
- c) Having all the contact numbers for outside agencies and key personnel in one location was helpful.
- d) None.
- e) The Company's emergency plans did not benefit its' response to the December ice storm other than as stated in c) above. As stated above the Company's EAP's are on a system by system basis and work fine at that level. The EAP's currently do not create a response framework for a state wide emergency that impacts the majority of our water systems simultaneously.

NHPUC December 2008 Ice Storm Review
Pennichuck Corporation – Set #1
Donald L. Ware
3/19/2009

Date Request Received: 2/27/2009
Request No. Staff 1-29

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: To what extent were any shortcomings of the plan a detriment to your response to the storm?

RESPONSE: The shortcoming of the plans being based on a system by system basis and not detailing a response to a state wide emergency resulted in the Company having insufficient equipment or access to equipment to meet it's goal of not having a system out of water during a State wide power outage for more than 8 hours. The Company will be developing amendments to its EAP's and acquiring/installing the necessary equipment at its water systems over the next 18 months to allow it to meet the Company's service goal as stated above.

Date Request Received: 2/27/2009
Request No. Staff 1-30

Date of Response: 3/19/2009
Witness: Donald L. Ware

- REQUEST: Regarding SCADA (Supervisory Control and Data Acquisition) systems, please indicate:
- a) The extent of such systems at your facilities:
 - b) Their impact on your response to the storm:
 - c) The extent to which the performance of such systems was impacted by the storm:
 - d) The extent to which additional SCADA monitoring would have assisted recovery efforts.
- RESPONSE:
- a) See the attached spreadsheet for a listing of which facilities have SCADA. When a location is listed as having SCADA it means that it has local SCADA control and continuous communications with the Company's Nashua water treatment plant.
 - b) Where the communication path was not compromised by the power outage the remote locations with SCADA communicated with the Nashua water treatment plant and gave the Company immediate knowledge that the power outage had occurred. In those locations with on site generator's the SCADA communications provided the Company with the knowledge that the generator had started and was running properly. This knowledge allowed the Company to concentrate its' response efforts on other locations.
 - c) If there was no on site generator and power was lost the SCADA systems function only for between 15 and 30 minutes until the UPS at the system is drained of power.
 - d) Additional SCADA monitoring would have been helpful as long as the communications path from the remote locations remained functional. The Company is evaluating the addition of standby power at the radio tower repeater locations that its communications take place through between the remote locations and the Nashua water treatment plant. Having standby power at the radio tower repeater locations would have allowed the Company to identify where locations had lost power (where there was a remote, communicating SCADA system) and if a generator was present at the remote location whether it had started and was operating properly. SCADA monitoring that was fully backed with a UPS system and that could communicate through a repeater radio with back up power would have allowed the Company to have immediate knowledge of the occurrence of a power outage and would have provided the Company with operating information that would have allowed for a better response.

Date Request Received: 2/27/2009
Request No. Staff 1-31

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please describe any recovery efforts or activities still underway, including anticipated time frame for completion.

RESPONSE: There are no on going recovery efforts. The Company's equipment did not suffer damage from the ice storm. The Company is currently reviewing its response to the storm and evaluating what it needs to do to enhance its' response capabilities in terms of communications with customers, communications among employees and availability of equipment to respond to such an emergency. The Company hopes to develop a revised response plan, including additional equipment acquisition and installation (where appropriate) over the four to six months. As stated above this plan will require an investment in additional equipment to ensure a reasoned response to a state wide power outage. The Company will be assessing the time from over which it makes the necessary capital improvements to improve its response capabilities to the appropriate levels.

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Date Request Received: 2/27/2009
Request No. Staff 1-32

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please provide copies of any internal summaries or reports generated in relation to the storm and recovery efforts.

RESPONSE: The attached spread sheet was developed during the storm and HAS been further developed in order to provide an overview of the Company's facilities and the Company's response capabilities. The Company's Customer Service and Information Systems departments are reviewing the Company's phone system and its performance during the storm and will be developing a plan to enhance this system so that it will be better equipped to deal with an emergency such as the December ice storm.

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Date Request Received: 2/27/2009
Request No. Staff 1-33

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Did you experience any significant safety-related mishaps during or as a result of the event?

RESPONSE: No.

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Date Request Received: 2/27/2009
Request No. Staff 1-34

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please comment generally on the impacts of this storm in relation to other storms or events of the last ten years.

RESPONSE: This is the first storm/event of this magnitude since the 1998 ice storm. The impact of this storm was more wide spread then any previous storm and is defined as detailed in the impact summary provided in response to question 1 above.

Date Request Received: 2/27/2009
Request No. Staff 1-35

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please comment generally on your overall level of preparedness for an event of this size, including any lessons learned or areas for improvement being considered.

RESPONSE: The Company learned that its' communications link to its customers via its main office is inadequate during a power outage that impacts its' main office. The Company will be responding by installing an emergency generator at its main office to keep this communications system up and running. The Company also learned that access to the office and the communications system is critical and that during poor driving conditions the ability of customer service representatives reach the main office may be limited. The Company is evaluating methods of transferring phone calls to alternate locations, including employee's home or cell phones during weather emergencies, to insure that our customers have responsive access to the Company. The Company is also looking at how it would set up an alternate customer response system at a remote location in the event of an emergency that compromised or destroyed the office communications system.

Additionally, the Company is evaluating its ability to provide emergency power to its water systems during a state wide power outage. The Company will be evaluating the mix of on site and portable generators so that none of its' water systems will go without water for more than 8 consecutive hours.

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Date Request Received: 2/27/2009
Request No. Staff 1-36

Date of Response: 3/19/2009
Witness: Donald L. Ware

REQUEST: Please provide an estimate of the overall cost impact of the storm to your company, to the extent one has been made.

RESPONSE: The cost of the storm was primarily in the area of a significant amount of overtime for employees to move and operate portable emergency generators and to evaluate systems as they were brought back on line after the power outage. The Company has not made an effort to quantify the cost of this response. The Company is currently attempting to assess where and what type of equipment should be added to its operations to provide its customers with better communications and to provide power and hence water service at each of its water systems during a major power outage in the future.