

# LESSONS LEARNED IN AN ICE STORM<sup>1</sup>

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I recall watching the late news on Sunday night, December 16, 1973, and learning that a storm of moderate intensity was entering the Connecticut area. It was expected that some degree of icing conditions would exist as heavy rains were to fall over the next 24 hours. Monday morning when I looked out of the window, it was apparent that the situation was becoming severe. My roadway which is lined with large, heavy trees was heavily iced, the trees were weighted down, and the rain was continuing in a moderate fashion. By 7:00 a.m., I found it difficult to get out to the road since numerous tree branches had already snapped off and fallen onto the highway. Assuming that the situation was statewide, I telephoned the East Hampton office of the Connecticut Light and Power Company. It was then that I realized what we were in for. The East Hampton office told me that conditions were worsening and asked me to come to the office for storm duty assignment.

The Connecticut Light & Power Company, Hartford Electric Light Company, and Western Massachusetts Electric Companies began to group their forces to deal with what appeared to be a serious and severe storm building over Sunday evening and intensifying Monday morning, when it was at its peak. The emergency headquarters for the Connecticut Light & Power Company was established at the Berlin headquarters at 8:00 a.m. on Monday morning. A state of disaster was declared by the systems three operating companies at 1:30 p.m. At this time the Northeast Utilities Service Company (NUSCO) established an operating headquarters to coordinate the efforts of the three operating companies in bringing in necessary help from the outside to deal with the emergency. The NUSCO operating coordination group dealt with the three operating companies own emergency headquarters and equitably assigned crews that were called in from other states and surrounding areas.

The storm intensified throughout Monday morning and afternoon. It was widely scattered throughout Connecticut and the southern portion of Western Massachusetts. The rains continued to fall in moderate to heavy fashion and the icing conditions became extremely severe. The ice thickness varied from one to two radial inches on many trees throughout the state. The weight of the ice showed its toll by early Monday when thousands upon thousands of tree branches snapped under the weight and crashed onto lawns and roadways.

The Connecticut Light & Power Company outages by 4:00 p.m. Monday affected 156,625 customers. The statistics were staggering for just this one Connecticut company. The Hartford Electric Light Company and the United Illuminating Company, the other large investor-owned companies in the state, were also in the midst of similar problems. In our territory there were 3,500 separate locations where trees were down and affecting supply lines. Eighty poles were snapped or broken by trees or extreme loading conditions. There were 10,000 locations where wires were down or broken. There were 10,000 individual services in need of repair.

This information was placed at the finger tips of NUSCO and the operating company emergency headquarters, so that they could order the required number of outside crews to undertake the immense repair work. Contract line crews, and tree crews came to us from as far away as Michigan and Delaware. By 4:00 p.m. Thursday the contract forces dealing with the storm consisted of 298 line crews and 199 tree crews. Man power was 1,573 men. The Connecticut Light & Power Company had 4,657 people in all working toward restoration. Of this group there were 510 men involved in tree crew work. These men were supplied by 53 different contractors.

Support personnel involved in storm duties included such operations as the Purchasing Department. This department did an outstanding

<sup>1</sup>Presented to the International Shade Tree Conference, New England Chapter, December 11, 1974, in Danvers, Massachusetts.

job in keeping up with the supplies necessary in such an emergency.

I would like to personalize this discussion by relating my own involvement in the storm. This will serve two purposes. One, to describe how the individual small operations fit together to make the whole and, two, to acquaint you with some of the problems we dealt with after the storm was over.

After arriving at East Hampton I spent a part of Monday assisting in the operations office compiling the damage reports as they came to us from the field. I was then assigned to the Glastonbury office and was instructed to take charge of that operation to control the general Glastonbury area, a town consisting of approximately 20,000 people and spread in a rural setting over a considerable number of square miles. The town is located near the Connecticut River. The Connecticut River Valley was the most extremely iced area in the state. We were soon to discover that the Glastonbury area was indeed one of the worst. We began our clean-up operations as soon as crews arrived Monday afternoon.

Our own crews were spread so thin that I ended up with 50 outside line crews and 25 outside tree crews under my command. Only two Connecticut Light & Power crews were involved in the Glastonbury operation. We worked the outside crews for a 16-hour day and then allowed them to rest while the company crews worked the night shift handling emergency hot-wire type calls. In Glastonbury the damage was unbelievable. The area has heavy tree cover. There are large state forests with many evergreen varieties. To get into a substation, which was surrounded by closely-spaced 70-foot pines, we literally had to cut our way in. Every one of these trees in an area of four or five acres was either broken in half or bent almost completely to the ground.

The restoration in the Glastonbury area was well underway by Wednesday. We had restored most of the primary circuitry in the town which, of course, was the area we attacked first. We had not yet begun to tackle the service restorations. We then were beset with a major setback. Thursday, another storm produced heavy rains

and winds in the state. The temperature began to rise and the ice began falling from the trees. Unfortunately, due to the winds involved there was a snapping action as the trees lost their heavy ice load and many additional branches snapped from this action and crashed to the ground. It was estimated that on Thursday we lost something in the order of 15 hours in our efforts to complete restoration.

Cooperation from the town, local, and state agencies was good. Town officials were understanding and cooperative. Town officials came to the local office and every four hours we updated their information regarding the storm and our restoration procedures. We provided them colored maps showing the streets that had been restored and those which soon would be restored with an estimate of the time remaining. By late Thursday afternoon we reached a milestone; we had completed the restoration of most of the primary circuits in the area. We then began restoring individual services. In Glastonbury alone over 700 services needed repair. By late Saturday afternoon only a few customers remained out of power.

This was a miserable week for many people. Temperatures were very cold, dropping into the 20's and teens by mid-week. Many water systems were ruined; many heating systems were destroyed from frozen plumbing. Overall, the public reaction was generally one of admiration and favor as we went about the task of restoring power.

Reflecting on the storm, what did we do and what did we learn? One week after the storm, Mr. E. L. Johnson, Vice President of Operations for the Connecticut Light & Power Company, called together a task force which inventoried each of the individual operations throughout the Company. This storm review concentrated on summarizing the problem areas and relating these problems to corrective action. General conclusions reached after these individual sessions were as follows:

1. Any shortcomings in the public relations area appeared to be based on lack of communication. It was recommended that the areas communicate to the town officials in such a direct

way as I have explained in the Glastonbury situation. Town officials were to be given maps showing the area circuits and hot-line telephones were to be established on request using unlisted numbers, so that the towns could have access to the operations office for information and updates.

2. Increased and repeated training was recommended to all personnel who have storm duties. The Company has established a once-a-year review of all nonoperating staff personnel who would be normally assigned to districts during storm trouble. These people will visit the district of their assignment each year for procedural reviews on storm restoration.

Logistics were carefully reviewed and it was recommended that staging areas be established where crews coming from outside areas could report. At that point the crews would be assigned lodging, restaurant facilities and other logistical matters taken care of before the crew reported to the operations headquarters, keeping such details away from the operations completely.

Other minor recommendations followed. A Public Utility Commission investigation was made into the general performance of the utilities during the ice storm. They concluded that the Company should trim on a three-year cycle. The present trimming cycle was slightly in excess of four years. In the author's opinion the damage done during the ice storm had very little to do with the trimming cycle. The type of damage rendered from the ice-laden trees was primarily top damage, tops snapping out of trees as well as large healthy branches. Unless we trim an entire clear path where our lines traverse there is little we can do in an overhead system to greatly minimize damage from a similar storm situation. I am certain that the State of Connecticut in its general concern for maintaining the beauty of its tree cover would not permit the severe trimming

necessary to protect it entirely from a repeat storm of this magnitude.

Another recommendation by the PUC was that the Company continue to install more tree wire and aerial type conductors. This author believes that this is one proven way to reduce the problems that would occur in future storms. Provided the strength of the conductors will take the initial shock of falling branches, as is the case in the newer steel and heavier reinforced aluminum conductors, such covered wires provide great added protection to tree contact.

During investigations of the storm there were those who recommended that the facilities of the utilities be placed underground. I believe that reason will prevail in these decisions and that the tremendous sums of money necessary to provide all underground electric facilities will best be spent on other more serious problems in our society.

### **Conclusions**

The utility companies in Connecticut and Western Massachusetts demonstrated their ability to deal with this severe storm in a reasonable and efficient manner. Statistically the storm was the most severe to hit the area in 100 years. For companies to expend the necessary monies to avoid all damage during infrequent situations as this, which was a strong recommendation by some, would be a financial burden on society. However, there is little doubt that the industry must be prepared and trained to accept the challenge of such occasions. Certainly, during the weeks following the ice storm, a great majority of our customers had a honest and deep appreciation for the service and the product called electricity.

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