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STATE OF CONNECTICUT  
**GOVERNOR DANIEL P. MALLOY**

**The Two Storm Panel  
Special Meeting Minutes  
Wednesday, November 9, 2011  
Room 2E, Legislative Office Building – 9:30a.m.**

**Members Present:** (Co-Chair) Joe McGee, (Co-Chair) Major General James Skiff, Peter Carozza, Terry Edelstein, Lee Hoffman, Scott Jackson, Robert McGrath, and Cathy Osten

**Members Absent:** None

- 1. Call to Order:** Major General James Skiff called meeting to order at 9:40 a.m.
- 2. Expansion of Charge by Governor Malloy:** Governor Daniel P. Malloy said that he was formally requesting that this working group broaden its scope to review the preparedness, response and recovery efforts of the state and its partners related to last week's unprecedented October nor'easter in addition to Tropical Storm Irene. He said that in reviewing these two storms, it is imperative that we have a broad, objective evaluation reviewing how both of these storms were handled – both in the preparation before the storms, and in the recovery afterwards. The Governor said that previously, he asked the panel to formulate an objective evaluation of how Irene was handled, identify areas that can be approved upon and – most importantly – make recommendations for future disaster preparedness and response. This overall task remains the same, but in the days since the October snowstorm hit, the panel now has another model that can be viewed as they formulate their recommendations.

He stated that in the days since the October snowstorm, a fair number of proposals have been offered up in good faith by various state and elected officials in terms of what can be done to improve emergency response and other related issues. The Governor is expecting this panel to also bring its own proposals to the table as well. He said that whatever changes we make as a state – whether it's through legislation, regulation, changes in best practices, or other issues – we must ensure those changes are ones that will actually work when put into practice, as opposed to them being quick fixes that might look good on paper but won't result in actual improvements in future emergency events.

The Governor said that initially, he asked if the panel could submit their recommendations to the Administration during the month of December, especially keeping in mind that winter is quickly approaching. He recognize that broadening the scope of this group to the recent storm brings additional work to their table, and that they are all also generously volunteering their time to be members of this panel, but we are still hopeful that the group can bring forward these recommendations by the first week in January.

He stated that we are not looking for a giant volume of information, but a concise summary and the panel's recommendations for the state. He also wanted to remind the panel that this panel was formed not just to look at the utility companies, but at the state's, municipalities' and non-profits' overall disaster preparedness and response. The apparently impact of the recent snowstorm was obviously felt most through the power outages that hundreds of thousands in our state experienced. He said that he is asking the panel to look at that issue, but also remind them that we are also looking at the overall response in the state to natural disasters as a whole as well.

The Governor noted that members of the panel may have heard that a consulting firm led by former FEMA Director James Lee Witt has offered to conduct an independent review of both CL&P and UI and their handling of the recent winter storm on behalf of the State of Connecticut. That review is strictly looking at the electric utilities and their response to that particular storm. The panel will also be reviewing this as well, but the scope this panel is charged with has a much broader concept than the Witt analysis.

The Governor again thanked the members of the panel for agreeing to give their time and work on this important panel.

**3. PURA Presentation:** Steve Cadwallader, PU Chief of Utility Regulation, presented to the panel members (see attachment A).

Joe McGee asked for clarification on page 3 of the presentation with respect to the jump in scheduled maintenance and reasons for the shift.

The PURA team responded that in 2001-2003 the program was starting up. In order to ramp up the tree trimming, it required a start up cost. Even though 2001 had a large miles of trimmed, there was a dip in the miles trimmed in the years leading up to 2009, 2010, and 2011. They try to look at how the company has been on reliability in the preceding years, and how to keep the rates affordable for customers.

Joe McGee asked them to explain the standard of reliability that they use and to explain the department standard.

The PURA team responded that there isn't a particular standard that is hard-wired. They look at improvements over the course of the year. One piece is a system average - which measures how long people have an outage on average for a year. The other is the frequency of outages. Excluding major storms, it is about 40 minutes on average.

Joe McGee asked if there is a best practice in terms of how much we should trim our trees and at what level. He asked if this is determined by the utility or is there a national standard.

The PURA team responded that the utility company has the primary responsibility to create a plan for responsible and reliable service. PURA then reviews and ensures that they meet requirements. They are not aware of any standard. They stated that in general, every year they take in information on electric company reliability. A component of that reporting is how many tree contacts occur in a utility system (tree hitting and resulting in an outage). Looking at that over the course of years, they look at whether reliability is declining, if there is a need for tree

trimming, which is a decision made over years after analyzing trends. As regulators, they like to see that companies are moving forward on their own.

Joe McGee asked that in terms of tree contact, how do we determine the acceptability of that reliability standard?

The PURA team said that they were not aware of a national standard. They said that there are benchmarks that determine how often a utility should cycle through and trim their trees and that information could be found in their supplied materials. They look at utilities in the northeast and around the country and look at reliability.

Joe McGee requested those standards in layman's language; specifically how on a manager level they determine these standards.

Lee Hoffman said that he would also like information on how the authority works to get this kind of information from the utilities.

Lee Hoffman said that he understood that the authority also reviews data including and excluding major storm events.

The PURA team confirmed that was correct.

Lee Hoffman asked if it makes sense now to give more emphasis on the outages including major storms.

The PURA team said that yes, it does make sense to look at what causes those major outages and whether tree trimming plays a role.

Cathy Osten asked for clarification on the definition of tree trimming - does that mean taking trees down or just slight trimmming?

The PURA team said that it can mean both - trimming trees within 10 feet of lines, nothing over lines by 15 feet, and that all data was included in their submitted materials. If there is a tree that can't be sufficiently trimmed and kept healthy, it will come down. Also, if it is diseased, it would come down.

Cathy Osten said that if they aren't cut every five years, it seems that within five years the trees will impact the lines again.

The PURA team said that the utilities need to be sure that when they trim, the tree would not impact the line again in a specific amount of time.

Cathy Osten referenced page 2 of 5 in their materials regarding permission of joint property owners and rights of way. She asked if this gives the utility company the authority to keep the rights of way clear.

The PURA team responded that the right of way gives the company the authority to keep vegetation clear in the right of way.

Cathy Osten asked that in terms of the rights or way, do they get reports from utilities on the rights of way and are they enforcing them.

The PURA team said that in terms of tree trimming, it is their understanding that they are.

Cathy Osten referenced page 4 of 5 on the budget for tree trimming and whether it is the minimum, and if so could they spend more.

The PURA team said yes, and that they expect them to spend whatever it takes to keep safe and reliable service.

Cathy Osten asked if there are any reports on what they are spending on invasive plants and their removal.

The PURA team responded there were not to their knowledge.

Cathy Osten noted that if you drive along roadways, you will see that invasive species are impacting the health and growing on the lines.

The PURA team responded that the species she is talking about are primarily vines. Over the past 15 years, the utilities have expanded their programs which are broken out separately. It would be a separate component of their overall vegetation management budget.

Cathy Osten requested that information be provided.

The PURA team said they would provide it.

Scott Jackson asked that in terms of the minimum schedule maintenance in 2011, is the enhanced maintenance trimming a mandatory minimum.

The PURA team responded that they believe that has the same status as the regular maintenance trimming.

Scott Jackson asked what sort of auditing verification they have and what are the penalties for spending less.

The PURA team said that to the extent they are spending less money, PURA has the opportunity to ask why and request that they spend more in the following year.

Major General James Skiff asked if all of their data was from the utility companies or whether they get any data from the customers.

The PURA team responded that it was generally from the utilities. Customers are able to submit feedback to them in terms of the rate levels. They also noted that they have a great consumer assistance unit that takes customer complaints in for service reliability. They work with the utilities on those issues, and when they find a valid concern, they work with the utility to make sure the customer's issue is addressed.

Lee Hoffman noted that his experience with rate cases shows that the utility comes in with a budget and that many parties involved tend to whittle away at those proposed budgets during a rate proceeding. He requested a little more detail on how the reduction came about.

The PURA team said that it was an unprecedented event. They found some money in CL&P revenues that were decided to be reallocated to tree trimming. At that time, Chairman DelGobbo came to the staff and asked what was a worthwhile expenditure in context of the rate



case. It was discussed that we could always do more tree trimming. As a result of those discussions, he immediately took up that recommendation and furthered the money towards tree trimming.

Joe McGee asked if there is any consideration with tree trimming being done by town departments.

The PURA team said that they expect the utilities would take it into account when creating their budgets.

Cathy Osten asked that when you look at poles with just telephone or cable - no electric - do you look at what tree trimming there is for those companies as well.

The PURA team said that they didn't think they did. They noted that they specifically are involved in electric matters and don't know that they are qualified to respond to that.

#### **4. Panel 1 - Tree Management:**

##### **a. Ken Placko, Tree Warden, Town of Fairfield:**

Ken Placko described his town as small with rural areas to have about 50,000 - 75,000 trees. He noted that in parks and open space there are over 100,000 trees. Irene was more difficult for them as they got the surge, wind, and water with heavy rains. At that time, close to 600 trees had to be partly or entirely removed. They were out cleaning roads for five to six weeks. The latest storm was minor compared to that with about 300 trees impacted, most in terms of broken limbs.

Joe McGee asked about their cycle of trimming.

Ken Placko noted that most of their work was resident complaint based and eyes on the road. About 60% of those trees that they trim come from resident complaints. They are trimming about 5,000 trees per year and taking down about 500 to 600. Their budget fluctuates around about \$750,000 annually through public works. He noted that they have two crews made up of two people each and hire contractors as well. Over the last five years, the tree trimming budget has been about the same. If they aren't doing the storm related work, they are doing regular maintenance.

Joe McGee asked about the nature of the relationship between Ken Placko and the town with the utility.

Ken Placko said that he can't comment on what UI does specifically, but that he does have a good working relationship with them.

Joe McGee asked if his team trimmed around the wires.

Ken Placko said that they refer calls for that to UI.

Joe McGee asked if there were any differences in how his team cuts trees versus the utilities.

Ken Placko said that they look at it in terms of restoration and the shape of the tree. His team tries to approach planting the right tree in the right area.

Joe McGee asked about who makes the decision to take trees down in a town near the right-of-way.

Ken Placko said that a tree warden does based on the health of the tree. If it is problematic for safety near the wires, he would request for UI to remove the tree.

**b. Karl Reichle, Tree Warden, Town of South Windsor:**

Karl Reichle said that he has a budget of \$40,000 to maintain the trees in South Windsor. He does not know how many trees there are, but that he has 140 miles of roadways to maintain. In some areas, the town owns up to the pavement and in other areas it can own as far as 99 feet from the roadway. He said that he has been tree warden since 1985 and that he has worked with arborists from NU since 1985. Generally, if they come in to cut a tree they show him a plan, they agree, and NU does what they agreed to do. If they get a resident's permission to trim a tree, then they must get his permission. They don't always agree, but NU always has qualified arborists to work with.

Karl Reichle said that the last ten days had been interesting. He has worked with some outstanding people from NU and CLP who have worked night and day to try to get power back. He said they had great liaisons to work with after this storm. His goal is to get roads open so they can get emergency vehicles down the roads.

He said that it would be good if they can work towards giving some authority to utilities and towns to trim resident owned trees that can be hazardous. Not all tree wardens will give utilities permission to do the work they would like to perform.

Karl Reichle noted that one of the things he hears from NU is how much they spend on traffic control. That's money that could be put into tree maintenance. They hire police officers instead of certified traffic people. Some communities require police officers to do the traffic control. Tree Wardens get appointed by municipal authority. He has had some situations where he has had to remove trees and post that tree for removal and all of a sudden someone is calling their councilman urging them not to take that tree down. There is fear that if you take that tree down you won't be the tree warden. It would be nice if an independent panel were able to make decisions on what trees should come down.

Major General James Skiff asked that if residents have dead trees and they won't let him take them down, whether he can take them down any other way.

Karl Reichle noted that yes, if he sees a tree that is a hazard, he can send them a letter noting that the tree is a hazard to the public. He said that about 60% respond and take care of it, and the other 40% will not respond.

Joe McGee asked if Karl has the sole authority to approve the utility plan to trim trees in his town.

Karl Reichle said that yes, the tree warden has authority of the public controlled trees. NU has been great in town, but he doesn't hear from the other utilities in town.

Joe McGee asked if there is a standard that the tree wardens abide by.

Karl Reichle said no, that he reviews the plans presented and approves them.

Joe McGee asked what happens if the tree warden rejects the plan.

Karl Reichle said that they can present their plan to the DPUC, who can override the tree warden's decision.

Scott Jackson asked if he had any sense on how much downtime their crews had after the storms.

Karl Reichle said that he doesn't have a tree crew. They have contractors that come in, and their public works and parks crews work together, but that they do not have crews or bucket trucks.

Ken Placko said that they had plenty of regular clearing to do so they got right to work.

Scott Jackson asked how they would rate the utility coordination with their crews during the storms.

Ken Placko said it was good in his experiences.

Karl Reichle said that they worked very well with the utility company. If they have a lineman, they can work very well. The problems they had was when they would get them one day for four or five hours then not see them for a day or two.

Cathy Osten asked if tree warden was his full time job.

Karl Reichle said no, that he was superintendant for roads, which was his fulltime position.

Ken Placko said that his fulltime job was tree warden.

Cathy Osten noted that in her town the tree warden is paid a small stipend and that their budget for it has not gone up in four years.

Ken Placko said that is the sense he has for many towns across the state.

Cathy Osten asked Karl Reichle to clarify what he meant by utility companies and whether he was including phone or cable companies.

Karl Reichle said that those companies don't work with you. They ignore it and think the power company will take care of it. As far as tree work, he would rate them at the low end of the scale.

Ken Placko noted that they have a bucket truck which costs between \$100,000 and \$125,000. The training is on the job. Usually the company that sells them have to provide training for the operation of the truck.

Cathy Osten asked if his people would do some trimming around electrical wires.

Ken Placko noted that his people are certified to work around the wires and would get the panel copies of the training materials and costs. If the operator doesn't feel comfortable with the situation, they contact the utilities. He said that in Fairfield, almost 75% of the area they work with includes wires. They would be putting a huge burden on UI if his people didn't work in that area as well.

Joe McGee asked if the Fairfield budget is unusually high.

Ken Placko said that it varies from town to town. Greenwich has a \$1.5 million budget. Norwalk and Stamford have crews and full time tree wardens.

Lee Hoffman asked if they had gone back and taken a look at where their hazardous trees are and whether they were a problem in the wake of the storm.

Karl Reichle said no and that he had no plans to do that.

Ken Placko noted that they have some ordinances that established the tree warden position and one that allows the public works director to send a letter to a homeowner and they have taken advantage of that in the past.

**c. Eric Hammerling, Executive Director, Connecticut Forest and Parks Association:** Eric Hammerling presented to the panel (see attachment B).

Joe McGee asked if the management of Connecticut forest can be profitable.

Eric Hammerling responded that it could if it was done well. The price of wood is relatively low, but in better times its even more profitable business.

Joe McGee asked if better management of the forests could bring more revenue and could be shared with towns to trim trees.

Eric Hammerling said that it was possible as DEEP would manage the forest and sell the wood and that money then goes into the general fund. He noted a good study in 2008 that suggested that the management could be tripled and done sustainably and would triple the revenues brought to the state.

Joe McGee asked if his organization had a standard for tree trimming.

Eric Hammerling said that there are national standards which are standards for pruning as well as integrated vegetation management. There are good guides put out by the US Forest Service which he believes the tree wardens could have read.

Cathy Osten asked if they had heard from utilities on how much it would cost to put electric lines underground.

Eric Hammerling said that they had not done that assessment. In terms of cost they have relied on what CL&P has said it would cost.

Cathy Osten asked Eric Hammerling if they had looked at invasive species.

Eric Hammerling said that as you look around the landscape and look at the health of trees along the streetscapes, they are a huge problem. If that criteria were used for what trees would stay and go, it would be helpful if invasives were looked at.

**d. Archie McCullough and Ken Bullard, UI:** Archie McCullough and Ken Bullard presented to the panel members (see attachment C)

Joe McGee asked for clarification on the term "single line".

The UI team said that the three phase lines can be seen along the top cross pole. Typically it would be a three phase portion out a few miles from a substation. As you run out, you will find three phase or single phase depending on factors like load distribution.

Joe McGee asked what type of tree trimming program would be required in order to eliminate the risk of lines being damaged by trees.

The UI team said that all 300,000 trees that they currently maintain could be candidates for removal.

Joe McGee asked that in 17 towns, the UI team had identified 300,000 trees, the optimum is to remove them all, but that is probably not realistic.

The UI team said that any option that a good rough estimate in terms of cost would be to add three zeros to the 300,000 trees. So, assume a per-tree removal cost of \$1k per tree. In terms of undergrounding lines, that price can range between \$1-2 million per mile. That puts the starting point between \$3-6 billion, which is a good number. They have looked at an overhead system that could withstand the damage but are not convinced that such a system could be built that could withstand 80ft trees falling on it. They have seen other states implement the hardening of their systems which could be a combination of these strategies. Working with municipalities to ensure that critical facilities could be operational immediately following such an event would be prudent.

Joe McGee asked that assuming we get hit by a CAT 3 storm, what happens to your poles.

The UI team said that some poles would withstand the winds, some would fail. Engineers look at the loads that would be imposed on them, including the vertical weight as well as heavy loading for ice buildup per the national electric safety code. The standard is to withstand 50mph winds.

Joe McGee asked if it was possible then that a CAT3 storm with winds could eliminate their infrastructure.

The UI team said that when lines are designed, you look at the loading with the wind component. There are safety margins that are built into that. Depending on how extreme winds get the safety margins are there to allow for degradation of the equipment over time. The safety factors would allow them to survive greater than 50mph winds in some cases.

Joe McGee said that he understands that something needs to be done with trees. It's important for the panel to assess what the appropriate tree trimming measure would be and is that acceptable to the public and is there an alternative to high levels of tree trimming. People care about their trees and they have great value.

The UI team noted that they care about trees, but that they don't see a practical alternative. We have trees that are located almost immediately beneath the lines. Those would be the first consideration.

Lee Hoffman asked if they had any outages on their transmission system.

The UI team said that they don't believe they had any in the October storm, but they did have some in Irene.

Terry Edelstein noted that the panel should give consideration for the environmental impact of tree removal and ensure that they keep a broad perspective.

**Joe McGee called a brief recess at 11:57 a.m.**

**Joe McGee reconvened the meeting at 12:09 p.m.**

- 5. Video Conference:** The Public Utility Research Center, University of Florida, Mark Jamison, PURC Director, and Ted Kury, PURC Director of Energy Studies presented to the panel via video conference.

The PURC team introduced themselves and the PURC history of establishment.

Joe McGee asked how they are funded and to explain their budget.

The PURC team said that various utilities in the state agreed to an annual contribution as well as the Florida Public Services Commission (PSC). They also operate as a commercial entity and charge for courses they put on or get funding for their research. The current work on hurricane hardening was funding by utilities. The total budget is \$2 million. Less than \$300,000 is made up of contributions from utilities and regulators.

Joe McGee asked about the structure of their organization within the university.

The PURC team said that they are within the college of business and specifically in the Economics department. They work across all disciplines though as well as with universities all over the world.

Joe McGee asked if the hurricane project was funding just by the utilities and through their rate base.

The PURC team said that yes, it was funding by just the utilities and that the customers ultimately end up paying those expenses.

The PURC team explained that in 2004 and 2005 there were a number of hurricanes that went through Florida. Each time there were a lot of outages and questions about preparedness. The Florida Public Service Commission discovered that while each utility performed research, there was no coordination among them. They identified information gaps, including priorities for best practices with vegetation management, and discussed how the electrical infrastructure should be prepared.

The PURC team further stated that now, before every storm season, the PSC holds a hearing for a day where all the utilities appear before them to talk about their storm preparedness plans for the coming year and review actions from previous year to compare any differences in performance.

They assessed a model to see how system is impacted for underground lines. It was found that they had a good understanding of the costs that are required. A rule of thumb is roughly \$1million a mile. A study showed that this would mean a 125% rate increase for all lines to be moved underground in North Carolina.

In terms of undergrounding, they found that they had less understanding of the benefits. Moving lines underground removes risk of lines getting hit, but you still have a risk of getting outages due to flooding or storm surge.

The PURC team noted that they found that there hadn't been a lot of work done for the costs and benefits of putting lines underground. Therefore they developed a model which simulates hurricane damage to infrastructure. This model simulates a large number of hurricane years. So, they can simulate impact to a project area with existing infrastructure. Then, they can simulate hardening and repeat the simulation to determine change in damage. The model doesn't tell anyone what to do, but rather quantify the relative benefits versus the relative costs.

Joe McGee asked how they make it available to anyone, specifically municipalities.

The PURC team said that they make it available to anyone who asks.

Joe McGee said that they have been told that the electrical infrastructure in CT can withstand up to 50mph winds. He asked what their research tells them in terms of wind hardening for utilities.

The PURC team said that in strategic locations the utility has replaced wooden poles with composite poles or hardened with hard wires in some locations. The model relies mostly on damage curves supplied by manufacturers. A comprehensive storm damage database has come out of this which is populated by field data. Their hope is to overlay that database with wind monitoring data from stations around Florida which would give them a better idea what the empirical damage curves would be for the poles.

The PURC team noted that since they put the database up they haven't had a storm, so as of yet it remains unpopulated. Once it is populated they will be able to refine the damage curves with this data.

From the 2004-2005 hurricane seasons, higher standards were put in place by the PSC for poles. There were also higher standards instituted for frequency of inspections on the poles.

Joe McGee asked if they had any experience with hardening overhead power systems.

The PURC team said that they had and sometimes it was in lieu of putting the wires underground.

Major General James Skiff asked if they had a number that equates to the wind standard.

The PURC team said that they would check on the number.

Joe McGee asked if the municipalities in Florida had a role in tree trimming.

The PURC team said that it is the responsibility of the utilities, but since they have municipal utilities, it would be a responsibility in those municipalities.

The PURC team also noted that they know that a number of municipalities have changed laws to allow utilities greater access to power lines on private property.

The PURC team said that the three major pieces of their project were vegetation workshops, cost management of relocation of power lines, and comprehensive storm damage database creation.

Major General James Skiff asked if this model had been used to plan any undergrounding and hardening. Jim: Following this model has there been any plan on undergrounding and hardening?

The PURC team said that the model was used by a municipality in the panhandle. The results were that there was a slight insurance model benefit to relocate the lines. The municipality went ahead with undergrounding the lines because of a high value on aesthetics.

The process in Florida really is case by case and involves a process with the Florida Public Services Commission. The model has value in determining what cost impact and savings there might be for such an initiative.

Storm hardening hasn't been adapted as a national standard and the model suggests that it ought not to be. In Gainesville, most lines are underground, but it does not get storm surge and is not at risk to flooding, so undergrounding is a good idea. Some modeling done for coastal communities shows that undergrounding might actually cost more because you are more susceptible to storm surge. It really does depend on the area you are considering.

Joe McGee asked what they would recommend to the panel in terms of improving reliability and hardening the utilities.

The PURC team said that it is important to remember that there is no one best solution. It depends on a lot of factors. The strategic hardening of particularly vulnerable points that feed into a large number of homes and your high value areas, are probably the best place to start. Coming up with a blanket policy is almost surely the wrong answer. The strategic application of the technology and a partnership between the government, utility, and the regulator and understanding of what insurance you are buying and whether that is in the public interest is important. It truly takes an understanding between all three on what level of protection is required and what is acceptable to pay for such protection needs to be agreed on.

Joe McGee asked if they had real time exercises and how those were funded.

The PURC team said that yes, it is realtime. A policy decision has been made that the cost would provide a value to consumers. Florida used to not do this, but once the 2003 season started, that changed quickly.

Joe McGee asked if in Florida, storm damage is passed on to the ratepayer.

The PURC team confirmed that it is. There is a distinct charge for a storm damage reserve fund. The customers pay into that fund every month through the utilities, who pay into that fund and report on its status to the PSC and use that fund to recover from the storm.

Joe McGee asked if the utilities are required to put shareholder dollars into the reserve fund.

The PURC team noted that it has been a while in the state of Florida since they have resolved a rate case with money. They have been resolved over the last ten years through collective bargaining, so it is difficult to make that distinction. They don't have a line item that says you are



allowed to recover “x” costs for this and “x” costs for that. They said they could put the panel members in touch with people who would have more information.

Cathy Osten asked if they could speak about pole inspection – specifically if they have a lifespan of a pole depending on its material composition.

The PURC team said that they do not know what the numbers are, but the life of the pole depends on where it is located. In Florida you don't have to dig too far down before you hit water. It's difficult to say a pole needs to last x number of years because it's location and load will affect the life of it.

Cathy Osten asked if they kept a list of poles with ages that includes replacement dates and who would track that.

The PURC team said that they didn't know that the utilities could tell you exactly when or how old a given pole is. Over the last couple of years, some utilities have changed over in software for maintenance and tracking. If anyone has that information, it would be the utility.

Joe McGee asked whose initiative started the development of their project after the hurricane heavy season.

The PURC team said that it was both the DPUC and their legislature. The legislature passed some laws that enabled the different forms of rate making that would have allowed the PSC to have new standards, but the PSC were also very active in what those new standards would be.

Joe McGee asked how the collaboration between PURC, the utilities, and the municipalities and the state governments work.

The PURC team said that the PSC learned that the utilities didn't share information on what they knew on how to deal with storms. They directed the establishment of a collaboration research project and that was left to the utilities on how exactly to do that. They came to the University of Florida to setup the initiative. They have a steering committee that is made up of all the utilities in the state, investor owned or municipality owned. The University of Florida will go before the commission to report on whether goals are being met. Each utility has to provide the PSC a report on their hardening for the past year and the plan for the future. As a part of that report, UF provides an additional section that talks about the collaborative effort and that is attached to the report. These reports are public information.

The PURC team concluded that they were happy to be of further assistance and help however they could.

**6. Break:** Joe McGee called for a recess at 1:16 p.m.

Major General James Skiff reconvened the meeting at 1:50 p.m.

**7. Community Provider Issues Identification:** CEOs of nonprofit community provider agencies will discuss the steps that they took to assure the safety of the individuals they serve, issues raised during the two storms and recommendations for potential action steps.

- a. **Overview/ Introduction:** Terry Edelstein, President/CEO, Connecticut Community Providers Association (CCPA) introduced this section of the meeting to the panel members (see attachment D).
  - b. **Impact on Individuals with Intellectual Disabilities:** Patrick Johnson, Jr., ACSW, President, Oak Hill presented to the panel members (see attachment E).
  - c. **Impact on Individuals with Behavioral Health Issues:** Barry M. Simon, Chief Executive Officer, Gilead Community Services, Inc. presented to the panel members (see attachment F).
  - d. **Impact on Children and Families:** Gary M. Steck, LMFT, Chief Executive Officer, Wellmore Behavioral Health presented to the panel members (see attachment G).
8. **Perspectives Relating to Individuals with Disabilities:** The presenters will focus on emergency planning including training for preparedness planners and analysis of preparedness planning needs for people with disabilities.
- a. **James D. McGaughey, Executive Director, Office of Protection and Advocacy for Persons with Disabilities:** James McGaughey presented to the panel members (attachment H).
  - b. **Nanfi Lubogo, Resident of Cromwell, Parent of a child who relies on technology:** Nanfi Lubogo spoke to the panel members regarding her experiences with helping parents who have special needs. She said that she lives in Cromwell with her daughter, 12, who needs to use a machine every night and must have refrigerated medication. They lost power during Irene for 18 hours, but left their home and went to a relative's home during that time.

It was more challenging during the October storm since everyone they knew did not have power. They could not use her machine at night and had difficulty communicating. They had a lot of trouble getting through on 211 and experienced challenges due to lower battery power on her cell phone. On day 3, they put her medication in insulation in the deep freezer, but that was frozen and damaged upon their return. It was damaged, and resulted in thousands of dollars in medication lost. In this situation, she noted that it appeared easier to stay home since everything you need is there and would have to be moved. She learned that there was a shelter available, but didn't know what she would face there so decided to stick it out where they were.

She noted that there was some confusion as to who to call in this kind of situation - the local health department or fire department. She recommended efforts be undertaken to provide better communication on how people find out who to call in their town and how local organizations put together plans on what to consider during these events.

Joe McGee said that his impression of James McGaughey's remarks was that things did not go very well.

James McGaughey said that some things went well, and some did not. But, in some situations during the October storm, communities had to operate shelters for longer periods of time. There were significant efforts made to accommodate people with disabilities who showed up at

the shelters. People did pull together and they tried hard. He heard of one family who had a child with complex medical needs who had a wonderful experience with emergency services during Irene.

Joe McGee said that his impression was that the issue here is a more comprehensive analysis in terms of shelters and what they are capable of dealing with. For example, the shelters in Florida noted they would accept dogs or pets.

James McGaughey said that shelters should be able to accommodate service animals. There is some obvious concern about the feasibility of every shelter having every possible support available.

Joe McGee asked if he had ever made a recommendation for a recommendation for a regional-wide shelter system.

James McGaughey said that he has been sitting on a task force to develop a statewide shelter plan, but it is slow moving.

Joe McGee said that the state has a plan for emergencies at the level of a category 3 hurricane, which he understands to include planning on the local level.

James McGaughey said that depending on the nature of the need or the event, one agency or another would be lead in the event. That is replicated on the local level as well.

Joe McGee asked for feedback from the panel members who were municipal officials.

Cathy Osten said that her town has a population of about 3,000 people. There are ten people who work in the town government as employees. After the Irene storm, she sat down with her team and identified who had special needs and they developed a communications plan to check on them throughout the event. Some of them did not have the resources to hold onto for three to five days, so it was a complicated problem. In the region they tried to work together. Several residents reached out to her who had motorized wheelchairs with concerns about charging batteries for mobility.

Robert McGrath said that each town is supposed to have an emergency plan and file it with the state. It sounds like communication failed. It would take a few days for them to respond and it sounds like something on the local level may have failed.

James McGaughey said that yes, each town and city would have a director for emergencies, but the budget would vary depending on the size of the town. There are also Regional Emergency Planning Teams (REPTs). He noted that much of their efforts have been put towards coming up with MOU's and doing collaborative grant applications, and not exercises.

- c. **Therese Nadeau, Resident of Glastonbury, Advocate:** Therese Nadeau presented to the panel members (see attachment I).

9. **Hospital Perspectives:** The hospital representatives will focus their remarks on how they prepared, responded, and recovered from the two storms. They will focus on how hospitals have prepared for disasters, how hospitals have prepared and handled increased patient loads, and discharge issues.

- a. **Brian Cournoyer, Manager Government Relations, Connecticut Hospital Association:** Brian Cournoyer presented to the panel members (see attachment J).
- b. **James Paturas, CEM, CBCP, FACCP, Director, Yale New Haven Health - Center for Excellence for Emergency Preparedness and Disaster Response:** James Paturas presented to the panel members (see attachment K).
- c. **Beth Lawlor RN, BSN, MS, CCM, CPUM, CNA-BC, Director Case Coordination, Hartford Hospital:** Beth Lawlor presented to the panel members (see attachment L).
- d. **Roseann Williams, Director, Environment of Care, Manchester Memorial Hospital:** Roseann Williams presented to the panel members (see attachment M).

Joe McGee asked if there were any problems with generator power.

The hospital panel responded that in one of their cases, they were on backup power for well over 24 hours. There was frustration, as they could not get an estimate on power restoration.

Major General James Skiff said that it was his understanding that no hospital exceeded surge capacity in either event, so hospitals were able to handle all of their patient care needs, though through extraordinary efforts.

The hospital panel responded that was true.

Joe McGee said that the previous presenters were talking about shelters and he was wondering what the coordination was between hospitals and shelters.

A member of the hospital panel said that the shelters for Manchester and Vernon worked very well with them with good communication. They just started the process of creating a hierarchy of facilities with their capabilities for care.

Further, each situation was unique in terms of what individuals presented to emergency providers. Patients were screened into a bed into an emergency department, and if they were not able to get them to a nursing facility quickly, they would put the patient in bed upstairs which would mean no reimbursement.

- 10. Perspectives from the Homecare Field:** Home care agencies serve over 14,000 individuals a day. The recent storms have highlighted how valuable home care workers are to the state's healthcare system. Challenged by power outages in 50% of the state, phone and internet interruption, and limited gasoline access especially in rural areas, home health workers struggled to reach their isolated clients in need of care.

- a. **Deborah R. Hoyt, President & CEO, CT Association for Home Care & Hospice (CAHCH):** Deborah Hoyt said that every day there are 14,000 workers in her industry that drive their own personal cars to serve people with everything from multiple chronic care conditions to behavioral health conditions who are living independently in the community. She asked for feedback on what she should report.

Often times these workers are not highly paid and might be side by side with their patients in shelters. The lack of gasoline access was a large challenge. Starting Monday

afternoon she received communications where the workers were stuck on the road and need to get to their six clients per day. She contacted the Governor's Office and also contacted Jewel Mullen's office and received a response quickly stating that the workers need to contact their local municipalities for open gas stations. She did learn that 211 had a list of gas stations, but lack of power prevented workers from accessing that service.

She noted that it would be beneficial if there was a uniform way for home health aids to get a badge and to have access to gasoline so they could visit patients.

- b. Kathy Roby, Manger of Quality Consulting Services for Home Health, Qualidigm:** Kathy Roby presented to the panel members (see attachment N).

Major General James Skiff asked where Kathy worked as it appeared she had a good shelter.

Kathy Roby said that she was in Windsor and it was very well run. She thought they did great considering their circumstances.

Joe McGee asked if her shelter had any problem in terms of power outages.

Kathy Roby said that she believed that it was operating on a generator for a short period of time, but eventually got its power festored on the third or fourth night. All seemed to operate smoothly in terms of having a power source. Sunday evening into Monday they saw a parade of motorized wheelchairs and people with special treatment needs such as breathing machines.

Joe McGee asked about security, as they planned for 92 people and had 400.

Kathy Roby said that they were very fortunate. In the daytime they had one or two police officers ciruculating. The explorers were circulating as well.

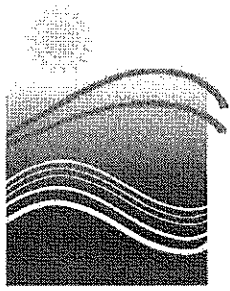
- 11. Approval of the September 28, 2011 Special Meeting Minutes:** Cathy Osten moved to approve the September 28, 2011 special meeting minutes, seconded by Terry Edelstein. All members present voted in favor. The motion carried.
- 12. Approval of the October 25, 2011 Special Meeting Minutes:** Peter Carozza moved to approve the October 25, 2011 special meeting minutes, seconded by Major General James Skiff. All members present voted in favor. The motion carried.
- 13. Adjournment:** Peter Carozza moved to adjourn the meeting at \*\*4:25 p.m., seconded by Major General James Skiff. All members present voted in favor. The motion carried.

### Attachments

- A. Comments of Steve Cadwallader, Chief of Utility Regulation, Public Utilities Regulatory Authority (PURA) – Department of Energy and Environmental Protection

- a. Line Clearance and Vegetation Management Specification, the United Illuminating Company, Revised January, 2008
  - b. Northeast Utilities System, Specification for Local Distribution Line Clearance Tree Work and Brush Control
  - c. OLR Research Report, September 21, 2011, Tree Trimming Laws and Programs
  - d. State of Connecticut, Department of Public utility Control, Docket No. 11-04-11, DPUC 2011 Annual Report to the General Assembly on electric Distribution Company System Reliability, June 8, 2011
  - e. Utility Vegetation Management and Bulk Electric Reliability Report from the Federal energy Regulatory Commission, September 7, 2004
  - f. The United Illuminating Company Response to request from John Buckingham
- B. Two Storm Panel Testimony (11/9/2011), Eric Hammerling, Executive Director, Connecticut Forest & Park Association
  - C. The United Illuminating Company, STORM Panel Meeting, November 9, 2011, Hartford, CT
  - D. November 9, 2011, Community Provider Presentation – Two Storm Panel, Impact of the Storms on Health & Human Services, Terry Edelstein
  - E. Remarks, November 9, 2011, Patrick J. Johnson Jr., President, Oak Hill
  - F. Community Provider Presentation – Two Storm Panel, Barry M. Simon, Chief Executive Officer, November 9, 2011
  - G. November 9, 2011, Comments of Gary Steck, Chief Executive Officer, Wellmore Behavioral Health
  - H. State of Connecticut, Office of Protection and Advocacy for Person with Disabilities, Recommendations of the Office of Protection and Advocacy for Person s with Disabilities for Improving Emergency Preparedness and Responses for People with Disabilities, James D. McGaughey, November 9, 2011
  - I. Two Storm Panel – Health & Human Services, November 9, 2011, Theresa Nadeau comments
  - J. November 9, 2011, Brian Cournoyer comments
  - K. State of Connecticut Two STORM Assessment Team, Acute Care Hospital Storm Preparations, James L. Paturas
  - L. Hartford Hospital, Hospital Panel: Governor Malloy’s Two Storm Assessment
  - M. Testimony of Roseann Williams, RN, Director of Environment of Care, Safety & Security, Eastern Connecticut Health Network (ECHN), November 9, 2011
  - N. Governor Malloy’s Legislative Storm Panel, Introductory Statement, November 9, 2011

Submitted by:  
Mike Caplet



Special Meeting – November 9, 2011

Governor Malloy's State Team Organized for the Review of Management (STORM) of Irene and Alfred

Joe McGee (Co-Chair): Vice President, Business Council of Fairfield County

Major General James Skiff (Co-Chair): U.S. Air Force, Retired<sup>1</sup>

Comments of Steve Cadwallader, Chief of Utility Regulation, Public Utilities Regulatory Authority (PURA) - Department of Energy and Environmental Protection

**Comments concerning tree trimming practices and the regulatory requirements imposed by the Public Utilities Regulatory Authority (PURA)**

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Thank you for the opportunity to present comments regarding tree trimming practices and the regulatory requirements imposed by the Public Utilities Regulatory Authority (PURA). We have been asked to focus our comments on how budgets for tree trimming are developed and to provide an overview of the standards used for tree trimming in the vicinity of electrical power distribution lines.

For background and perspective, there are over 20,000 miles of distribution lines, 700,000 utility poles, 250,000 transformers and 200 substations in Connecticut. Distribution lines are regulated differently than transmission lines. In broad terms, transmission lines bring high voltage power from power plants and other generating facilities to the regional electric grid and substations. Distribution lines generally operate at lower voltages, and bring power from the local substations to homes, businesses, and other end-users of electric power.

**Regulatory Jurisdiction**

In Connecticut, and across the nation, the owner and operator of an electric distribution system is charged with the responsibility for keeping its system in proper operation. The "Regulatory Compact"<sup>2</sup> is such that the electric distribution companies provide for the distribution of electricity as a public service. In return, the government must allow that entity to recover its operating costs to be able to maintain its financial integrity. The electric distribution company must perform its public responsibilities with economy, efficiency and care for public safety and energy security. The government entity, in turn, must allow the company to generate revenues sufficient, but not more than sufficient, for it to perform these public responsibilities. Conn. Gen. Stat. §16-19e(a)(4).

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<sup>1</sup> Other Members: Peter Carozza: President, Uniformed Professional Fire Fighters  
Terry Edelstein: President, Connecticut Community Providers Association  
Lee Hoffman: Attorney, Pullman & Comley Environmental Law and Energy and Utility Matters  
Scott Jackson: Mayor, Hamden  
Robert McGrath: Former Fire Chief, Stamford  
Cathy Osten: First Selectman, Sprague

<sup>2</sup> Munn v. Illinois, 94 US 113 (1877) ("When private property is devoted to public use, it is subject to public regulation.")

Section 16-32g of the Connecticut General Statutes provides the underlying statutory authority for electric wire maintenance plans:

Each electric or electric distribution company shall submit to the Public Utilities Regulatory Authority a plan for the maintenance of poles, wires, conduits or other fixtures, along public highways or streets for the transmission or distribution of electric current, owned, operated, managed or controlled by such company, in such format as the authority shall prescribe. Such plan shall include a summary of appropriate staffing levels necessary for the maintenance of said fixtures and a program for the trimming of tree branches and limbs located in close proximity to overhead electric wires where such branches and limbs may cause damage to such electric wires.

This statutory requirement for wire maintenance plans covers electric distribution facilities. Wire maintenance for electric transmission facilities, in contrast, is primarily regulated by the Federal Energy Regulatory Commission (FERC).

PURA's regulations that implement Conn. Gen. Stat. 16-32g, and govern electric distribution wire maintenance, require the following:

The authority may, by its order, authorize such cutting and trimming and the keeping trimmed of any brush or trees or other elements of such plan the authority finds necessary for the convenience of the public and the reliability of electric services. Authorization under this subsection shall be granted only after due notice and public hearing thereof, and such authorization shall be subject to the provisions of sections 16-234 and 16-235 of the Connecticut General Statutes [which require permission of adjoining property owners].

Each year, UI and CL&P file their tree trimming standards with the Authority. The standards include specifications for removal of limbs and branches around distribution power lines, as well as historic and forecasted budget information. Generally, the budgets are developed by the electric distribution companies based on the portions of the system that are due for trimming during the upcoming year, and the cost based on that expected level of trimming. (We have included a copy of these filings in the appendix.)

There have been a number of changes over the years in tree trimming programs. In recent years, both UI and CL&P have used tree trimming programs that are performance based. In essence, wires that serve more customers or that have a poorer history of reliability performance are trimmed more frequently, and wires that serve fewer customers or have a good history of reliability are trimmed less frequently. As a consequence both UI and CL&P develop budgets that project a certain level of expenditure for Scheduled Maintenance as well as what they term Enhanced Tree Trimming

#### **Tree Trimming Expenditures**

PURA authorized CL&P to spend \$21.5 million annually for tree trimming expenses in CL&P's 2010 rate case proceeding. In that case, PURA actually authorized an amount that was 6.7% greater than CL&P had requested in an attempt to further reduce CL&P tree trimming cycle below 5 years. Historically, the authorized expenses have increased from \$14.2 million prior to CL&P's 2007 rate case, to \$19.6 million in 2009, to the currently authorized amount of \$21.5 million.



PURA authorized UI to spend \$3.1 million in 2009 and \$3.2 million in 2010 for tree trimming as a result of UI's 2009 rate case. This represented an increase from \$2.88 million in 2008. UI's performance based program schedules trimming every 4 years for 3 phase sections of line, and every 8 years for single phase sections. However, the time interval is reduced for any section of single phase line that experiences two or more tree contact outages in a 36 month period.

The following charts summarize the tree trimming budgets that have been authorized for CL&P and UI.

### CL&P Tree Trimming Budgets and Expenditures (thousands of \$)

Year	Budget	Budget	Budget	Actual	Actual	Actual	TOTAL
	Scheduled Maintenance Trimming	Enhanced Tree Trimming	Total	Scheduled Maintenance Trimming	Enhanced Tree Trimming	Total	MILES TRIMMED
2001	\$9,942	\$13,000	\$22,942	\$9,582	\$13,008	\$22,590	3,532
2002	\$6,600	\$14,800	\$21,400	\$6,177	\$11,306	\$17,483	2,644
2003	\$8,168	\$13,848	\$22,016	\$7,806	\$13,444	\$21,250	2,960
2004	\$10,671	\$3,000	\$13,671	\$10,461	\$2,897	\$13,358	2,384
2005	\$11,194	\$3,000	\$14,194	\$10,147	\$2,940	\$13,087	2,372
2006	\$12,500	\$2,700	\$15,200	\$12,547	\$2,748	\$15,275	2,453
2007	\$14,200	\$9,340	\$23,540	\$14,219	\$9,462	\$23,681	2,647
2008	\$19,051	\$8,616	\$27,666	\$19,024	\$8,374	\$27,398	3,209
2009	\$19,600	\$4,490	\$24,090	\$19,555	\$4,546	\$24,101	3,260
2010	\$19,600	\$3,000	\$22,600	\$20,600	\$4,484	\$25,084	3,304
2011	\$21,500	\$3,125	\$24,625				

### UI Tree Trimming Budgets and Expenditures (\$)

Year	Distribution Budget	Transmission ROW Budget	Total Budget	Actual
2001	\$1,200,000	\$ 100,000	\$1,300,000	\$1,283,593
2002	\$1,400,000	\$ 100,000	\$1,500,000	\$1,600,000
2003	\$1,400,000	\$ 100,000	\$1,500,000	\$1,380,000
2004	\$1,600,000	\$ 200,000	\$1,800,000	\$1,457,677
2005	\$1,456,000	\$ 300,000	\$1,756,000	\$2,515,000
2006	\$2,523,392	\$ 380,000	\$2,903,392	\$3,434,809
2007	\$2,872,980	\$ 386,000	\$3,258,980	\$3,151,356
2008	\$3,486,993	\$ 421,558	\$3,908,551	\$3,229,003
2009	\$3,099,032	\$ 400,464	\$3,499,496	\$3,550,211
2010	\$3,043,259	\$ 566,000	\$3,609,259	\$4,116,011
2011	\$3,096,671	\$ 322,212	\$3,418,883	

Electric distribution companies recover their tree trimming expenditures in rate proceedings. (Other expenses besides tree trimming are considered in a rate case, and the PURA process for review of expenses is similar.) In these proceedings, each company provides "pre-filed" testimony by specific experts. After the pre-filed testimony is filed in the rate case, each expert is called to testify about their area of expertise. PURA staff may then cross-examine each witness to create a record upon which a rate decision can be made. Other parties to the rate proceeding (such as the Office of Consumer Counsel or the Office of the Attorney General) also cross-examine the company expert witnesses, or present their own witnesses.

Following such cross examination additional information is often requested by parties to the rate case, and filed by the company (known as late filed exhibits). PURA utilizes the information in the record and the prior experience of staff in similar proceedings to evaluate the case. In order to evaluate tree trimming expenditures, PURA may also rely on other information such as PURA's annual report to the General Assembly on electric reliability statistics. (A copy of this report, Docket No. 11-04-11 is included in the appendix.)

After consideration of all the elements noted above, PURA creates a draft decision, which is distributed to the parties, and ultimately acted upon by the PURA directors.

Thank you for the opportunity to present comment on these issues. If you should require any additional information, please contact the Department Energy & Environmental Protection's legislative liaison, Robert LaFrance, at 860.424.3401.

## List of Documents for the Appendix

1. January 2008, UI – Line Clearance & Vegetation Management Specification
2. NU – Specification for Local Distribution Line Clearance, Tree Work and Brush Control (undated)
3. September 2011 – OLR Report – Tree Trimming Laws and Programs
4. June 2011 - Docket 11-04-11 – DPUC 2011 Annual Report to the General Assembly on Electric Distribution Company System Reliability
5. September 2004 – Utility Vegetation Management and Bulk Electric Reliability Report from the Federal Energy Regulatory Commission (FERC)
6. UI – Response to Request from John Buckingham re: Distribution Tree Trimming Program (undated)

Below are links to the most recent CL&P and UI Line Maintenance Plans, which are filed each year pursuant to CGS 16-32g. Among other things, the plans include specifications for tree trimming.

The most recent plans are filed in DN 10-12-15.

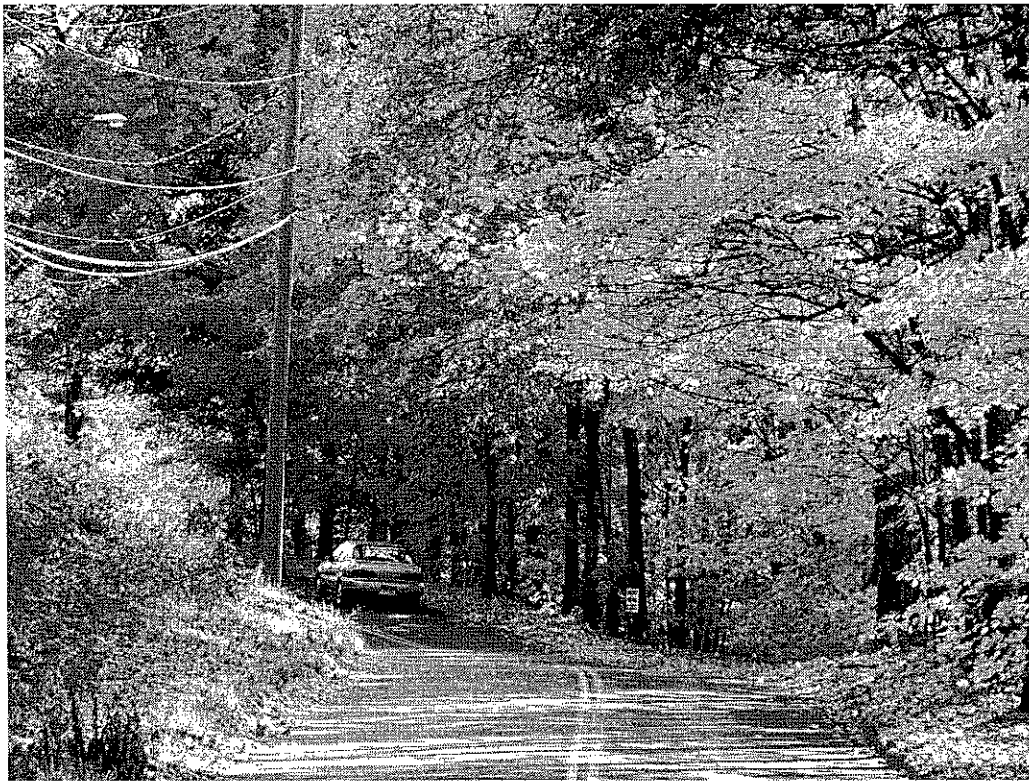
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[http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/533ce0513e1a191485257808006a06d4/\\$FILE/2011%20Line%20Maintenance%20Plan.pdf](http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/533ce0513e1a191485257808006a06d4/$FILE/2011%20Line%20Maintenance%20Plan.pdf)

Aa.

ATTACHMENT B

# Line Clearance & Vegetation Management Specification



*The United Illuminating Company*

*Revised January, 2008*

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## **Introduction**

The United Illuminating Company (UI Co.) maintains its electrical system in accordance with the National Electric Safety Code. Pursuant to that code, UI is obligated to maintain adequate line clearance between trees and its conductors. UI's program meets these requirements and those of the State of Connecticut Department of Public Utility Control to ensure safe and reliable electric service to its customers.

## **Scope**

The scope of this specification is to provide requirements and guidelines for line clearance pruning and the removing of trees, brush and other vegetation in close proximity to overhead electric distribution facilities located on public and/or private rights-of-way.

## **Regulations**

All work practices and definitions, except as otherwise specified herein, shall be in accordance with all applicable Industry, Federal, State and Local laws and regulations, approved standards and safety practices.

These include, but are not limited to:

- OSHA 29CFR 1910.269 Electric Power Generation, Transmission & Distribution
- ANSI A300 "Standard Practices for Trees, Shrubs and Other Woody Plant Maintenance"
- ANSI Z133.1 "Pruning, Trimming, Repairing, Maintaining and Removing Trees, and Cutting Brush – Safety Requirements"

- NESC
- Connecticut General Statutes
- Department of Transportation
- Local Ordinances
- “Pruning Trees Near Electric Utility Lines” by Dr. Alex L. Shigo
- “Trenching & Tunneling Near Trees” by Dr. James R. Fazio, National Arbor Day Foundation
- ISO New England ROW Vegetation Management Standard OP-3 Appendix C.
- NERC Vegetation Management Standard FAC-003-1

## Clearance Requirements

### A. Distribution Clearance Requirements

#### I. Standard Clearances

In general, the recommended tree to primary wire clearances is, where possible:

- a. a minimum of six (6) feet side clearance,
- b. twelve (12) to fifteen (15) feet clearance from overhanging limbs,
- c. Five (5) to eight (8) feet under-clearance.
- d. Six (6) to ten (10) feet around poles.

The drawings on the following pages illustrate these general guidelines.

#### II. Evaluation

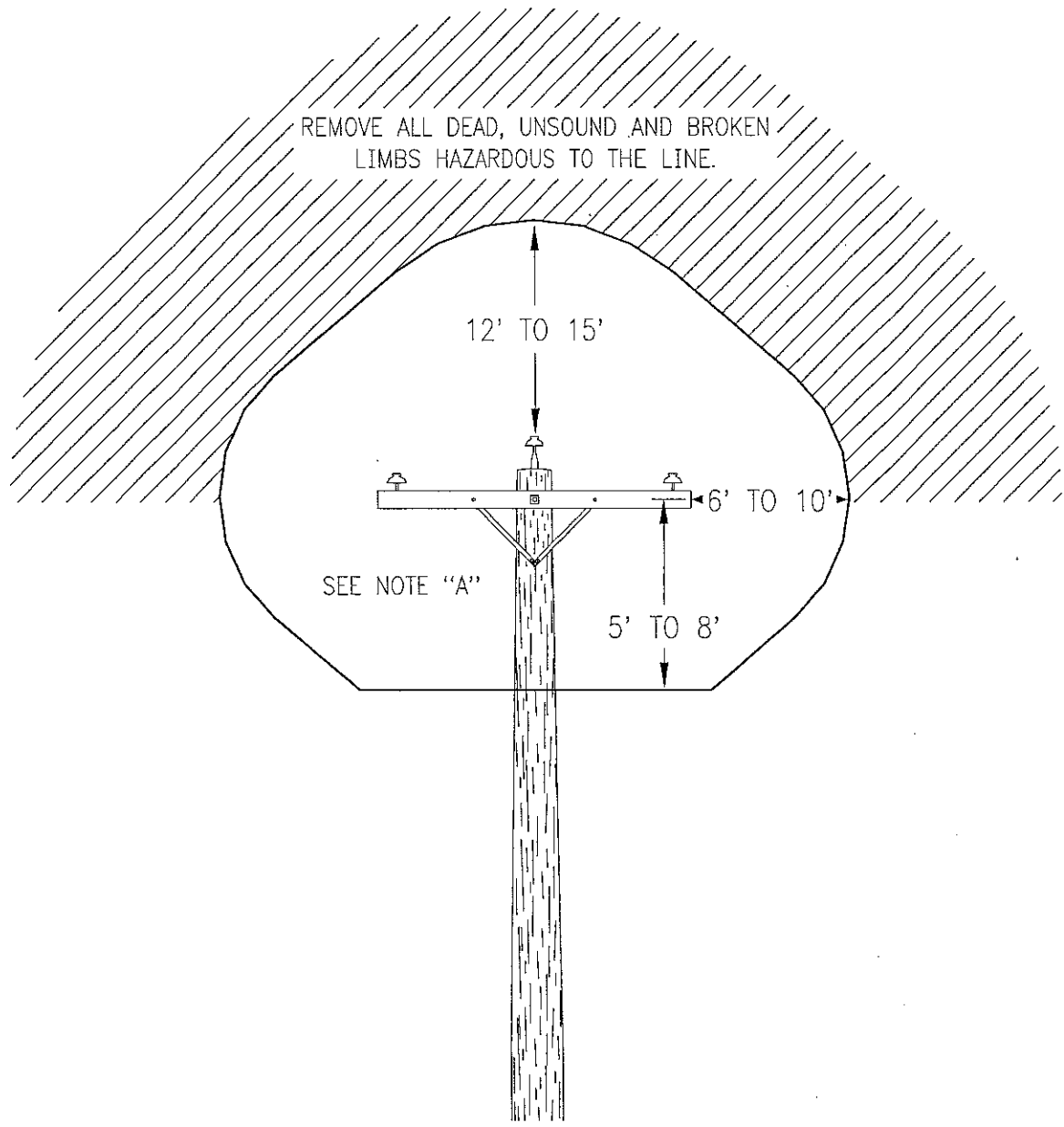
Because trees and vegetation respond directly to influences of nature and environmental conditions, the clearance requirements will vary. Each tree must be evaluated individually at the time it is trimmed.

This evaluation should include:

- a. Voltage, construction and importance of the line.
- b. Pruning cycle.
- c. Growth rate, species, shape, condition and location of the tree.

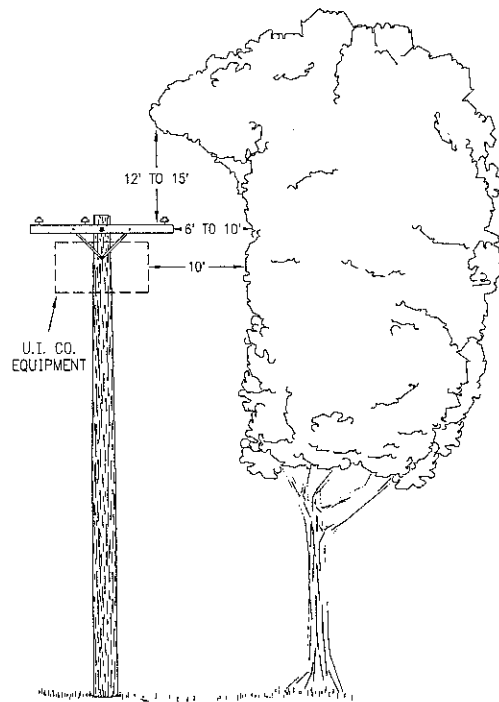
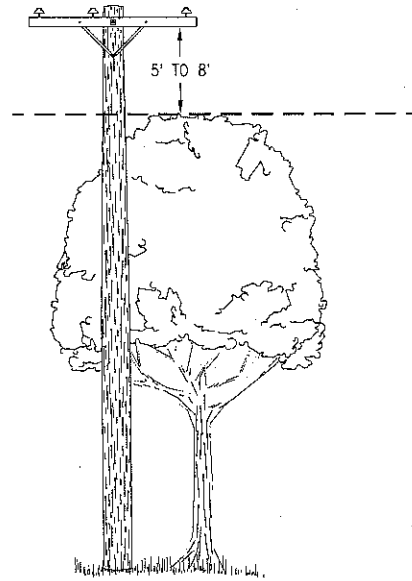


GENERAL RECOMMENDED CLEARANCES



NOTE "A"

CERTAIN MAIN BRANCHES ON OLDER TREES CAN REMAIN INSIDE OF THE MINIMUM CLEARANCE, BUT THIS DEPENDS ON THE HEALTH OF THE TREE, RATE AND DIRECTION OF GROWTH, AND SAFETY IN REACHING WIRES.



TYPICAL DIMENSIONAL CLEARANCES

Often times, the best or only suitable lateral that a branch can be pruned to is within or well outside of the standard clearance area. Exceptions are allowed, where judgment prevails that the removal of major limbs would drastically alter the shape of the tree. Such exceptions shall not result in unsafe conditions or interfere with the safe operation and maintenance of the line.

Consideration must also be given to the movement of branches and wires resulting in a change of clearance, due to storm and wind conditions.

### III. Special Notes

Trees or limbs hazardous to the operation of the line shall be patrolled for and every effort made to remove them.

Pole mounted electrical equipment such as transformers, capacitors, switches, etc. should be provided at least ten (10) feet of clearance.

Secondary and service cables should be cleared such that tree limbs do not rub on cables or entangle the wire.

Vines shall be removed from down guys and poles. If vines are in contact with energized wires, the worker while in a bucket shall cut out a section of the vine stem measuring approximately one (1) foot in length starting at a point approximately 30 inches below the lowest electric wire. Then, the worker shall cut the vine at ground level. Report the location to UI's Line Clearance supervisor for further action by UI's crew.

Street Lights – The local municipality is responsible to perform routine maintenance trimming to maintain street light patterns on sidewalks and roadways. Conflicts with energized lines shall be referred to UI.

Private Area Lights – During routine maintenance, pruning should clear any vegetation on the pole which is obstructing the pole-mounted fixture.

## B. Substation Clearance Requirements

Seasonal (usually May – October) grass cutting and shrub pruning are outlined in the contract/specification with UI's landscaper. Year-round maintenance work of the substation yard and its perimeter fence addresses security and safety concerns.

Trap rock within the fenced-in, energized areas must always be kept free of vegetation.

Maintaining a vegetation-free, substation ground surface reduces ground potential to workers in the substation yard. It also eliminates tripping hazards. Manual, mechanical, and chemical means are all used to maintain a bare ground.

Outermost perimeter fences must be kept clear of all vegetation on both inside and outside. Also, to assure proper operation and avoid false alarms, perimeter alarm pedestals are to be kept free of vegetation.

Property boundaries and terrain permitting, a minimum of 10 feet outside of perimeter fences is to be kept clear of all tall-growing vegetation including no overhanging of the fence from abutting trees. Any potential climbing access to the substation yard is to be eliminated. For erosion control, grasses, ferns and other low-growing species are allowed in the 10 foot perimeter fence buffer zone. This buffer zone area is maintained once annually.

### **C. Transmission Right-of-Way Clearance Requirements**

ROW clearing shall be performed in accordance with, NERC Vegetation Management standard FAC-003-1, and with ISO New England ROW Vegetation Management Standard OP3 Appendix C.

All Rights-of-Way will be cleared of tall-growing and invasive species; leaving low-growing shrubs, ferns, forbs and grasses.

To provide for inspection of facilities, where terrain permits, vegetation will be cleared to allow for foot and/or vehicle access.

All encroaching side vegetation will be pruned back in accordance with ISO New England OP-3 clearance guidelines and ANSI A300 pruning standards.

While performing rights-of-way floor maintenance, and where possible, off right-of-way trees are to be inspected for their potential hazard to the conductors, towers, and facilities. The UI Line Clearance Arborist is to be notified for follow-up inspection, immediately after a potentially hazardous tree is located.

Site conditions dictate the best and most efficient method to clear utility rights-of-way. No right-of-way terrain is level for its entire length. Additionally, UI rights-of-way traverse a variety of field conditions including grades greater than 45 degrees, wetlands, and swamps, landscaped private property, and areas inaccessible by any vehicle. Consequently, the use of manual, mechanical, chemical, or other vegetation control methods will be implemented where most practical.

The Line Clearance contractor working on the United Illuminating's Rights-of-Way is to adhere to all applicable federal, state and local laws and ordinances. The rights of abutting property owners are also respected and a "good neighbor" policy adhered to.

### **Methods/Practices**

## **I. General**

Directional pruning shall be used to guide tree growth away from wires. As a general rule, cuts shall not be treated with "Tree Paint".

The line clearance workers are to use their professional judgment and knowledge to obtain the necessary clearances based upon the planned Program Trim Cycle for the area they are working in.

Climbing irons or "hooks" should not be used except in cases involving tree removal work or where field conditions make vehicular access impossible.

The completed job shall result in satisfactory operation of the Overhead Distribution System during normal inclement conditions.

## **II. Tree Removal**

Consistent with satisfactory line clearance, public relations and appearance, it is desirable to remove trees under certain conditions rather than proceed with trimming. These conditions include:

- a. Trees which remain unsightly due to excessive pruning.
- b. Badly deceased, dead or dying trees.
- c. High maintenance trees.

Removals must be coordinated by the Line Clearance Supervisor with the local municipal tree warden and/or property owner. Trees shall be removed in a manner causing no damage to adjoining public or private property.

DO NOT undertake any work involving a severe hazard to overhead line operation without first contacting the UI Line Clearance Supervisor or representative.

## **III. Tree Stump Removal**

Tree stump removal is normally the jurisdiction of the local municipality or private property owner.

Stumps on private R.O.W.'s shall be cut low enough to permit unhindered travel of motorized equipment.

## **IV. Brush**

A woody plant with a stem measuring less than five (5) inches DBH is considered a brush. Brush shall be cut to the ground line where topography and obstructions will permit.

## V. Clean up & Disposal

All brush and debris resulting from normal work shall be completely removed from the work area (e.g. fine twigs and litter removed from lawns, the street, sidewalks and driveways).

Brush or wood shall not be allowed to remain on public thoroughfares or on private property overnight unless arrangements have been made by the contractor's crew leader or UI Supervisor with the authorities or property owner.

All line clearance by-products (e.g. brush, wood chips, logs, wood, etc.) must be disposed of at approved sites and in the most economical way. Brush or wood shall not be burned.

**NOTE:** *The removal of brush and debris resulting from a storm is normally not the utility contractor's responsibility, unless otherwise authorized by UI.*

## Right of Way Clearance

### I. General

Distribution rights-of-ways (R.O.W.) are to be maintained clear of trees to permit access for line maintenance and provide for safe operation. Such land strips are usually occupied and maintained under long term easements. When any doubt exists as to tree rights on a private R.O.W., contact the Line Clearance Supervisor.

### II. Maintenance

All trees and saplings shall be removed as close to the ground as practical and to a suitable distance back on both sides of the line, to provide necessary ground to sky clearance.

Vines on poles, towers and fixtures shall be cut.

Brush shall be handled in such a manner as to avoid obstructing roadways, pathways, and waterways or leaving a distinct fire hazard.

Potential problem trees outside an established R.O.W. shall be removed as directed by UI's Line Clearance Supervisor or crew foreman after the customer's permission has been obtained.

## Contractor Responsibilities

### I. General

The Contractor is responsible to provide the Company with workers that are properly trained to perform their work competently and deal with the public with professional courtesy at all times.

All work shall be in accordance with recognized and approved arboricultural standards and perform in accordance with all Federal OSHA, ANSI, State and Local requirements appropriate for such work. The contractor will also comply with the Contract terms, rules and specifications established by United Illuminating for such work.

Contractor is to obtain all permits and licenses imposed by law, pay all charges and fees, and give notices necessary and incidental to the due and lawful prosecution of the work and include costs incurred on monthly billing.

Contractor is to provide certified copies of liability insurance coverage for public and private liabilities which may arise in connection with their work.

Contractor is to provide all labor, tools, equipment, transportation and materials to perform line clearance work. Apparatus shall be in proper operating condition and adequately maintained.

Contractor shall provide employees with suitable foul weather gear and other apparatus necessary to perform night emergency work. The contractor's equipment shall be neat appearing. Appropriate first-aid supplies, as required by OSHA, shall be a part of the standard equipment on all vehicles.

Adequate spare equipment and tools shall be readily available to insure that workers are not delayed in performing the required work. The billing rate for equipment shall be all-inclusive including, but not limited to: fuels, lubricants and maintenance, hand and power tools.

Each crew is to have a copy of these standards and specifications and Dr. Shigo booklets ("Pruning Trees Near Electric Utility Lines) on each crew truck/work location.

### II. Safety

The contractor shall take the necessary precautions to prevent personal injury or damage to property and shall conduct operations with a minimum of interference to traffic or inconvenience to the public.

In this area of safety and health, the contractor shall:

- a. Observe the contractor's safety rules at all times.

- b. Treat every circuit and/or line as energized.

If in the judgment of the contractor's foreman, it is hazardous to perform the assigned work with the circuit energized, UI supervision shall be contacted. The necessary protective line hardware or de-energized circuit(s) will be provided by UI.

### **III. Damage Notification**

The contractor foreman is to notify the UI Supervisor or representative, as soon as possible, of all defects, damage, etc., observed on UI overhead facilities (e.g. wire off, pole top pin, broken basket, etc.). Dangerous conditions should be reported immediately.

### **IV. Work Assignments**

Line clearance work addresses three major categories: Program Maintenance, New Construction and Customer Requests. In general, since the integrity of the mainline affects more customers, distribution trimming should start from the substation out in order to clear the three phases mainline before the side taps.

Each morning the crew foreman is to report to the UI Line Clearance Supervisor his progress from the previous day and obtain his daily work assignment. Any changes made in the assignment during the day shall be immediately reported.

UI will provide necessary maps and reports forms to the contractor indicating the planned work area.

UI Supervision reserves the right to re-assign a crew(s) from their normal work area to a temporary work area as conditions warrant.

### **V. Traffic Control**

The Contractor will be responsible for coordinating and scheduling of traffic control for program work and spot work.

### **VI. Reports**

The foremen of each crew shall record necessary information on UI's contractor daily time sheet and the contractor's weekly Operation Report indicating the nature and extent of work performed. These forms are to be provided to the Area Line Clearance Supervisor at the end of each working week. In addition, the contractor is to provide UI a monthly summary report of their performance as required by UI.



## VII. Public Contact

### *A. Permissions*

#### 1. New Construction

Permission is usually obtained by the UI Customer Engineering Department Representative as part of the planned development. This representative is to advise the customer that they are responsible for site preparation work (e.g. vegetation clearance) before a new pole line is installed.

#### 2. Maintenance

The contractor, as an agent for UI, is to request permission from the adjoining property owner to trim trees around electric conductors on public or private property. In the interest of public relations, it is the Contractor's responsibility to advise the owners that they will be in a given area performing line clearance work. Realize that we must return to this location in the future, so it is imperative that the customer is satisfied with our workmanship. Therefore:

- a. Confirm that the person you are speaking to is the property owner.
- b. Clearly identify exactly what needs to be trimmed to maintain safe, reliable electric service.
- c. Once an agreement has been reached, repeat and confirm the plan.
- d. If the property owner is not home, leave an approval request card on the door. Refer to UI's "Customer Approval Procedure" for more detailed information.

Contractor is not to obligate UI to make any payments to another party, nor make any promises or representations of any nature to another party for, or in behalf of UI, without prior approval of UI.

#### 3. State Highway

Crew must have a copy of the State Tree Trimming Permit with Permit Number when doing work on a State Highway.

### *B. Complaints*

In handling any complaints, the contractor shall use its best efforts to maintained and promote good public relations. The contractor shall not make payment to local inspectors, property owners or any other persons for any right to trim or remove trees.

The contractor shall immediately inform the Line Clearance Supervisor of any damage complaints from a customer, regardless of the cause or extent of damage and of all resolutions and settlements.

The contractor shall give immediate attention to, and shall use its best efforts to promptly, courteously and equitably respond to, adjust and/or settle, without obligation to the UI, all complaints received by the contractor from third parties arising out of, or in connection with, performance of their work.

*C. Customer Relations*

Contractor crew members are UI representatives to our customers. Consequently, each person is expected and required to treat the customer in a professional and courteous manner.

Numerous contacts with local municipalities and customers provide an excellent opportunity to make a positive impression. A worker's appearance, attitude and methods of approach must reflect creditably upon the Company. They must possess a good knowledge of human nature, arboriculture and have the ability to quickly evaluate situations to secure tree work permissions and, at the same time, establish friendly relations.

## *Glossary*

<b>Brush</b>	A woody plant less than 5 inches in diameter at DBH
<b>Clearance</b>	The distance from the conductor to the part of the tree that will interfere with or grow in to the conductor first.
<b>Crew Foreman</b>	The tree contractor's crew leader (male or female) working with and supervising the line clearance crews.
<b>Diameter Breast Height (DBH)</b>	Diameter of tree or brush at a point 4 ½ feet above the ground. Also know as Diameter Chest Height (DCH)
<b>Drop-Crotching</b>	See "Natural Trimming"
<b>General Foreman</b>	Supervisory personnel (male or female) working for the contractor who has responsibility for work performed by that particular contractor's tree crews.
<b>Ground-line Cutting Hotspotting</b>	Completely removing trees or brush at the ground line. Assigning tree trimming crews in a manner that does not involve systematic, scheduled program maintenance work.
<b>Line Clearance</b>	Controlling vegetation to maintain proper clearance from conductors. Synonymous with tree clearing, tree trimming or vegetation management.
<b>Natural Trimming</b>	Trimming to reduce the height and/or spread of a tree, while attempting to maintain the tree's natural form, by cutting branches back to a lateral limb, towards the center of the crown.  A method by which branches are cut to the branch collar at a suitable parent limb back toward the center of the tree. This method of trimming is sometimes called "drop-crotching" or "lateral, trimming". Natural trimming is also directional trimming, since it tends to guide tree growth away from wires.
<b>Overhanging Limbs</b>	Tree limbs extending over the top of conductors.
<b>Pruning</b>	The removal in a scientific manner of dead, dying, diseased, interfering, objectionable, and/or weak branches.
<b>Removal</b>	Completely removing an entire tree to ground level; required when a tree is described as danger tree or when a tree should be removed for other reasons.

<b>Removal Zone</b>	An area on the right-of-way, below and extending beyond the conductors, where tree removal and brush clearance are recommended.
<b>Rounding Over</b>	Not recommended. The making of many small cuts so that the tree top is sheared in a uniform line. This creates an unhealthy tree condition and results in rapid regrowth directly back toward the area intended to remain cleared.
<b>Sag</b>	The vertical distance that a conductor will drop due to heavy load current and/or high temperature.
<b>Shearing</b>	See "Rounding Over"
<b>Shrub</b>	A woody plant normally maturing at less than 15 feet in height, presenting a generally bushy appearance because of its several erect or spreading stems.
<b>Side Trimming</b>	Cutting back or removing the side branches that are threatening the conductors; required where trees are growing adjacent to conductors.
<b>Species</b>	The basic category of biological classification intended to designate a distinct group or kind of plant or animal having common attributes.
<b>Sway</b>	The horizontal distance that a conductor will move due to wind.
<b>Top Trimming</b>	Cutting back large portions of the upper crown of a tree; required when trees are located directly beneath a conductor.
<b>Tree</b>	A woody plant normally maturing at 15 feet or more in height, usually with a single trunk, unbranched for several feet above the ground with a definite crown. Any trunk that is 5 inches or over DBH shall be considered a tree.
<b>Tree Crown</b>	Upper portion of the tree; the branches or leaf area.
<b>Trimming</b>	See "Pruning"
<b>Trim Cycle</b>	The period of time between when a tree is trimmed and trimmed again.
<b>Trim Paint</b>	A wound dressing applied to cut surfaces on standing trees. Application of such paint is <u>not</u> recommended.
<b>Under Trimming</b>	Removing limbs beneath the tree crown to allow wires to pass below the tree.

## *General Worker Guidelines*

First impressions count!

The following items are important to remember at all times:

### *Crew Image*

- ✓ Be neat in appearance.
- ✓ Have an orderly appearance of the work vehicles.
- ✓ Be professional in conduct and attitude.
- ✓ Have energetic work habits.

### *Public Relations*

- ✓ Be courteous and sociable.
- ✓ Be attentive to customer's concerns.
- ✓ Have respect for the customer's property.
- ✓ Leave the area as you first found it (or better).

### *Job Knowledge*

- ✓ Conduct a "Tailboard Conference" before starting the job (e.g. Confirm what, who, where, why, etc.).
- ✓ Prepare before approaching a customer (e.g. Have in mind the importance to trim the line, the species of tree involved, type of trim needed, etc.).
- ✓ Have confidence in yourself.

### *Communication*

- ✓ Control the volume and tone of your voice.
- ✓ Maintain professional body language.
- ✓ Concentrate on what the customer is saying. Don't interrupt.
- ✓ Don't draw premature conclusions. Ask questions.
- ✓ Identify clearly what work is to be done. Confirm it.
- ✓ Trim only what had been discussed.

*You represent the UI Company and are expected to  
treat the customer with respect and value*



# LINE CLEARANCE

## CUSTOMER APPROVAL PROCEDURE

**Dated 7/16/07**



# LINE CLEARANCE

## CUSTOMER'S APPROVAL PROCEDURE

### PREFACE

Keeping trees and limbs clear of United Illuminating's overhead Transmission and Distribution system is necessary to ensure safe, reliable electric service to our customers. In recognition of the interests and value of trees being properly maintained, we seek through better mutual understanding to gain the customer's permission and minimize refusals to perform needed work.

### PURPOSE

This procedure provides an organized process for obtaining a customer's permission to perform *routine* line clearance work and report cases where permission has not been granted.

### SCOPE

Applies to line clearance work performed on UI's overhead Transmission and Distribution System.

### RESPONSIBILITIES

Contractor:

1. Obtain permission from customers within planned work area before starting actual work. If the customer is not home, a "door knob hanger" notice should be left discreetly (i.e., not to advertise that no one is home. Two additional attempts should be made to obtain permission using door hangers.
2. Where permission has not been obtained after three attempts, the contractor crew foreman is to complete the "Customer Permission—follow-up" form (see Exhibit A). Regarding Distribution system reporting, special note should be made to identify: "Serious" Conditions (e.g. burn marks, limb heavy on wire, etc.) OR "Non-Serious" Conditions using the Customer Permission -follow-up form. Regarding UI's Transmission system, use NERC critical forms Clearance 1 and 2 for reporting locations not meeting those standards. Note the "Job Issue" or difficulty (customer permission, access problem, permit/legal issue, or arboricultural issue) that prevents sufficient clearance for being obtained. (see Exhibits B & C). United Illuminating employees, Line Clearance contractors – both tree contractors and ROW inspection contractors are to notify the Line Clearance Arborist or designee via phone of any locations that do not meet the NERC FAC-003-1 Clearance 2 standard and the ISO New England Right of Way Vegetation Management Standard (Appendix 3 of OP3). (clearance distance of 10 feet for 345KV and 4 feet for 115KV lines)



**These forms should be forwarded to the UI Line Clearance Arborist or designee at the end of each week. In addition, "Serious" Conditions are to be reported to Supervision verbally when found.**

UI Arborist or Designee:

Distribution

**1. Line Clearance Arborist or designee are to review all reports forwarded by the contractor and proceed as follows:**

**a. Serious Conditions**

- i. If the customer cannot be contacted in person, a letter and permissions postcard is to be sent requesting their permission (see Exhibit D). If no response is obtained within ten (10) working days, contact next level of supervision.**
- ii. If the customer agrees to a light trim only, so note for future follow-up.**
- iii. If the customer refuses to grant permission, note and explore other engineering alternatives (e.g. out rig construction, armless construction, contact tree warden).**

**b. Non-Serious Conditions**

- i. If the customer cannot be contacted in person, the Line Clearance Arborist or designee will instruct the Contractor General Foreman to pursue obtaining permission. A follow-up report is to be provided to UI's Arborist (i.e., full/partial/no permission granted, no contact made, etc.).**
- ii. Line Clearance Arborist or designee is to prepare a summary report with copies of "Customer Approval Follow-up" forms on a quarterly basis. This report is to be sent to UI's Reliability Engineer (System Integrity) for record and is reported to the Department of Public Utility Control (DPUC).**

Transmission

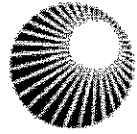
**1. The Line Clearance Arborist or designee is to review all reports and forms forwarded by the Line Clearance and ROW inspection contractors and will proceed as follows:**

- a. Re-Inspect all locations reported as not meeting either Clearance 1 or 2 this is to verify the information reported.**
- b. Line Clearance Arborist or designee works with the property owner, the Line Clearance Tree Contractor; UI's Transmission Operations, Real Estate, and Legal Departments to secure permissions to achieve the clearances necessary to meet the standards.**

- c. Any unresolved and unmitigated issues are reported by location to UI's Transmission Operations, Real Estate, and Legal Departments for review to explore any alternatives for eventual mitigation and resolution for the issue.**

**A schematic diagram is attached as Exhibit E that depicts the process of gaining permissions and tracking all locations that do not meet the NERC FAC-003-1 standards (Clearances 1 & 2).**

Ab.



**Northeast  
Utilities System**

**SPECIFICATION**

**for**

**LOCAL DISTRIBUTION**

**LINE CLEARANCE**

**TREE WORK and BRUSH CONTROL**

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2010

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## Northeast Utilities

### Specification for Local Distribution

#### Tree Work and Brush Control

##### 1. General Requirements

This document describes the scope of work and technical requirements for the Northeast Utilities Distribution Line Clearance Program. All work shall be performed by qualified line clearance contractors. Safety shall take precedence over all requirements described herein and at no time shall work be performed in an unsafe manner.

- All contact with the public and government officials shall be done in a courteous manner.
- Work shall be subject at all times to inspection by NU and government officials. The crew foreman, or the contractor's designee, shall notify NU of the crew's daily work location and of any change made during the day.
- Work shall be performed in such a manner that it will not interfere with or affect in any way the operation of any existing energized lines or electrical equipment, except as specifically directed by NU.
- All line clearance work shall be performed in strict accordance with all applicable federal, state and local governmental laws and regulations or approved standards and safety practices – ANSI A300 (Part 1)-2001, Best Management Practices – Utility Pruning of Trees, ANSI Z133.1-2006,

OSHA 29 CFR 1910.269. The contractor shall be responsible for the knowledge, supervision and enforcement of them.

- When necessary, the contractor requests permission from tree owners and others to perform line clearance tree work around electrical conductors. Where the tree owner is not at home, use the appropriate permission card and customer brochure. For all refusals, light trims or no contacts the contractor shall fill out a copy of form OP5520, DISTRIBUTION LINE CLEARANCE PERMISSION REFUSAL/LIGHT TRIMMING and submit the form weekly.
- The crew foreman shall complete a WEEKLY DISTRIBUTION TREE OR BRUSH CONTROL REPORT adding information daily for all T&M work. The report shall be submitted to NU no later than Tuesday of the week following the completed work week.
- The line clearance crew shall work progressively along the distribution system, as directed by NU, and shall complete all work on a given portion 1 of the line before starting work at another location, unless otherwise approved by NU.
- Retrimming will be required to correct all situations where trimming quality is determined by NU to be improper.
- Climbing irons shall not be used in any tree unless the tree is to be removed.
- Wherever NU is solely responsible for clean-up (as differing from NU special instructions where a public authority or property owner or his agent has agreed to clean-up), normally it shall be completed daily and the site shall be left in at least as neat and orderly condition as it was found.

## **2. Scope of Work**

This Specification covers the trimming and removal of trees and brush, including the use of herbicides for brush control along rural and urban overhead electrical lines and around substations owned or used by Northeast Utilities. This includes clearing for existing lines as well as for new lines, and applies to local distribution only, along and off-roads, and not bulk supply distribution rights-of-way.

### **2.1. Scheduled Maintenance Trimming (SMT)**

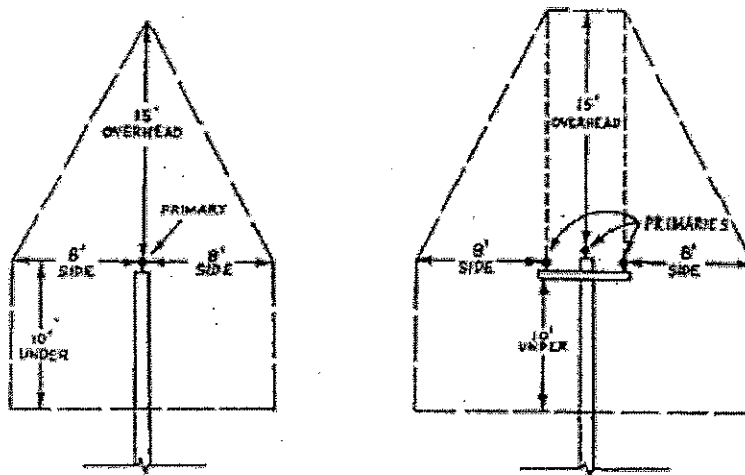
#### **2.1.1. Primary Conductors**

Conductor clearances relative to various primary wire positions are shown in Figure 1. Each tree must be evaluated on its own at the time it is trimmed. The tree crew must consider the variables including tree species, condition, growth rate and location.

Watersprouts and suckers shall not be trimmed, they shall be removed back to the originally established clearance level.

Figure 1

**CLEARANCE ZONE DIMENSIONS  
for  
PRIMARY VOLTAGE CONDUCTORS (2.4 to 34.5 kV)**



**CLEARANCE ZONE DIMENSIONS  
for  
PRIMARY VOLTAGE CONDUCTORS (2.4 to 34.5 kV)**

The 15 feet overhead clearance shall be measured vertically upward from the highest primary.

The 8 feet side clearance shall be measured horizontally outward from the outermost primary.

The 10 feet under clearance shall be measured vertically downward from the lowest primary.

Normally, remove all branches within the clearance zone bounded by the dashed line perimeter and all overhead hazards within reach of a 55' aerial lift.

If the existing clearance is less than the required clearance between tree trunk or large ( $\geq 6$  inches in diameter), healthy limb (with strong crotch) and wires, leave them and remove all other branches within the clearance zone.

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**2.1.2. Service Drops and Secondaries Without Primaries Above**

**2.1.2.1. Triplex**

Do not clear around them unless authorized by NU.

When approved, trim only limbs in contact with the conductor. Trimmed branches shall provide 2 feet of clearance around all conductors.

**2.1.2.2. Open Wire Secondary**

Do clear, trimmed branches shall provide 2 feet of

clearance around all conductors.

### **2.1.3. Tree Removal**

Remove all hazard trees up to and including 16 inches DBH within 8 feet of the outermost conductor. The removal of any tree greater than 16 inches DBH must be approved by NU. NU will provide specific instructions in each case depending upon whether others are sharing the cost or disposing of the tree parts.

## **2.2. Enhanced Tree Trimming**

### **2.2.1. Fall Zone Hazard Tree Management**

- Inspect, evaluate and eliminate all hazardous trees within the fall zone by pruning or removal.

### **2.2.2. Roadside Clearance Zone**

#### **2.2.2.1. Lateral**

Prune and remove all overhead hazards and provide a minimum of 20 feet of overhead clearance above primary conductors.

#### **2.2.2.2. Backbone**

Prune and remove all overhead limbs.

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#### **2.2.2.3. Side and Under Clearance and Brush Removal**

Prune to provide 8 feet of side clearance and 10 feet of under clearance around primary conductors. Flat cut all brush. Cut vines on all poles and guy wires.

## **2.3. Maintenance Enhanced Tree Trimming**

### **2.3.1. Lateral**

Prune to provide a minimum of 20 feet of overhead clearance above primary conductors. Remove all overhead hazards within reach of a 55 foot aerial lift.

### **2.3.2. Backbone**

Re-clear to the previously established ETT clearances including new growth into the clearance zone. Remove all overhead hazards within reach of a 70 foot aerial lift.

### **2.3.3. Side and Under Clearance and Brush Removal**

Prune to provide 8 feet of side clearance or to the previously established tree line and 10 feet of under clearance around primary conductors. Flat cut all brush. Cut vines on all poles and guy wires.

### **2.3.4. Hazard Tree Management**

Remove hazard trees up to 16 inches DBH within 8 feet of the outermost conductor.

## **2.4. Mid-Cycle Trimming**

Inspect and evaluate tree conditions along the entire back bone section of line scheduled. Prioritize pruning and removals based on tree conditions and likelihood of a tree causing an outage prior to the next scheduled routine trim. Where necessary:

- Remove hazard trees within the fall zone.
- Prune and remove all overhead hazards.
- Cut vines on all poles and guy wires.

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- Prune trees to establish a minimum clearance of 8 feet to the side, 10 below and 15 feet above the primary conductors

### **2.5. New Business and Capital Construction**

Remove all tree species in a strip centered on the pole line 8 feet to either side of the outermost conductors.

Provide hazard tree removal as specified in article 2.2.1 and clearance as specified in article 2.1.1 for laterals and 2.2.2.2 for backbones.

### **3. Pruning**

Prune and remove limbs in all trees that are not scheduled to be removed. Remove overhead hazards. Pruning shall be performed in accordance with ANSI A300 standards and the Best Management Practices – Utility Pruning of Trees.

### **4. Tree Removal**

- Contractor shall not "top" trees unless authorized by the Owner's Representative. Normally, these trees will be removed.
- Any tree which would, after trimming to clearance, be left with less than 66% of its original leaf area shall be removed. Trees greater than 16 inches DBH shall be removed only after authorization from the Owner's Representative.
- Specific instructions on billing of T&M removals, depending upon whether others are sharing the cost will be provided by the Owner's Representative.

### **5. Stumps**

All stumps shall be cut as close to the ground as possible, and in no case shall they be cut higher than 3 inches unless used as supports for a fence or approved otherwise by NU. If certain trees serve as fence supports, they shall be cut no higher than 2 inches above the fence. All stumps shall be cut off parallel to the ground to avoid leaving sharp points on the stumps.

Normally, sproutable cut-off stumps (all hardwoods, pitch pine and vines) shall be treated with an NU approved herbicide mixture in accordance with label directions and regulatory requirements.

### **6. Brush and Vine Removal**

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All tree stems less than 6 inches DBH shall be considered brush. Brush shall not be trimmed or topped. The width of the brush removal area shall be 8 feet on each side of the outermost conductor. Flat cutting or selective brush removal shall be approved by NU.

Cutting of tree brush and woody vines shall be done with care to minimize damage to non-interfering shrubs such as the following that are permitted to remain:

Pinxterbloom Azalea Hazelnut  
 Highbush Blueberry Gray Dogwood



Redosier Dogwood Huckleberry  
Oldfield Common Juniper Spicebush  
Sweetfern Mountainlaurel  
Bayberry Rhododendron

### **6.1. Flat Cutting Brush**

Remove all brush that is capable of growing tall enough to touch the primary conductors.

### **6.2. Selective Brush Removal**

Selectively remove only that tree brush which is presently at or above the height of the telephone conductor(s). Where no telephone conductor exists, tree brush 16 feet tall and over shall be removed.

### **6.3. Vines**

All woody vines which are growing up poles or guy wires shall be cut at the groundline and cleared for 3 feet up the pole or guy.

## **7. Wood and Chip Disposal**

The contractor shall make every effort to minimize the amount of wood and wood chip disposal that requires hauling away from the site. This can be accomplished by; making agreements with property owners to leave logs and larger limbs at the site for use as firewood, blowing chips onto the ground in rural and unimproved natural locations, and offering chips to property owners for use as mulch. All debris shall be disposed in accordance with all local laws and regulations.

The tree contractor shall not sell any unwanted logs or chips directly from his trucks during the normally scheduled work day.

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The contractor shall not leave cut-off brush overnight except on off-road sections.

### **7.1. Chips**

Smaller limbs, branches, or cut-off brush shall be chipped, normally by chipping into a truck mounted dumping chip box. However, at unimproved natural locations, chips may be blown upon the ground provided that the depth of fresh chips shall be no greater than 3 inches. Limited brush piling may be done along the edges of off-the-road pole lines, either method being subject to the land owner's approval.

### **7.2. Logs**

Logs from the tree trunks and larger limbs shall be cut into mutually agreed or convenient handling lengths. No logs shall be split.

### **7.3. Debris disposal**

The tree owner shall be given first preference to utilize logs and/or chips. This agreement shall be made at the time of the permission request.

#### **7.3.1. Chips**

Where chips cannot be left on site, they shall be delivered to the nearest appropriate disposal space.

#### **7.3.2. Logs**

Logs shall be left at the work site in a safe location, not to pose

a hazard to anyone, for a maximum of 7 days, during which time they will be available for anyone to pick up. Any logs remaining after 7 days shall be delivered to the appropriate disposal site.

## **8. Substation Perimeter Clearing**

This section describes how tree and brush work shall be performed around substations. Prior to beginning any work around a substation, NU personnel will provide site specific guidelines to the contractor. At no time shall contractor personnel enter the fenced area of the substation without an NU approved escort.

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### **8.1. Brush removal**

#### **8.1.1. Non-visually sensitive or non-landscaped substations**

Cut and remove all brush within 10 feet of the substation fence. If the land adjacent to the substation fence slopes toward the fence, the cleared area shall be 20 feet.

#### **8.1.2. Visually sensitive or landscaped substations**

Clear as far away from the fence as practical as directed by the NU representative.

### **8.2. Pruning**

Trim back all branches that touch or overhang the fence. Minimum clearance shall be 5 feet to the side and 10 feet over the top of the fence.

### **8.3. Ornamental Screens**

Ornamental trees and shrubs (arborvitae, hemlock, white pine, yew, etc.) that have been planted to provide a visual screen of the substation shall not be removed. If necessary, shearing shall be performed as directed by the NU representative.

### **8.4. Stump treatment**

All stumps from trees and brush that have been removed and are capable of resprouting shall be herbicide treated with an appropriate herbicide as directed by the NU representative.

### **8.5. Cleanup**

Remove and dispose of all trimmings and removal debris away from the job site unless directed otherwise by NU. The site shall be left in at least as neat and orderly condition as it was found.

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## **9. Definitions**

**ANSI A300 (Part 1)-2001 Pruning** – American National Standard for Tree Care Operations – Tree Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning)

**ANSI Z133.1-2006** – American National Standard for Arboricultural Operations – Safety Requirements.

**Backbone** – a three phase section of line starting at a substation and extending to the first fused device or single/double phase reclosing device.

**Brush** - Tree species with a DBH of less than 6 inches. Occasionally, shrub

species are considered as brush, if they have to be removed for line clearance or access.

**Clearance** - The distance between vegetation and conductor.

**Clearance zone** – The area within 8, 10 and 15 feet for laterals, within 8, 10 and 20 feet for lateral enhanced and 8, 10 and clear overhead for backbones.

**Contractor** - The business or employees of that business, that has contracted with Northeast Utilities to perform line clearing.

**DBH - Diameter Breast Height** - Diameter of a tree measured at a point 4 1/2 feet above ground.

**Fall Zone** - The area including the roadside clearance zone and extending from the conductors out a distance to where an uprooted tree could strike the conductor and cause an outage.

**Hazard tree** – Any tree that is dead or, after evaluation using the ISA's A Handbook of Hazard Tree Evaluation for Utility Arborists, rates as a moderate or high hazard.

**Lateral** – a section of primary voltage line extending from the end of backbone to a secondary or service wire.

**Line Clearing** - Controlling vegetation to maintain proper clearance from conductors which includes tree trimming, removal, topping, and brush and woody vine removal.

**NU** - Northeast Utilities Service Company or The Connecticut Light & Power Company or Public Service of New Hampshire or Western Massachusetts Electric Company employee who is the Northeast Utilities representative.

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**OSHA** – Occupational Safety and Health Administration.

**Overhead hazards** – dead, dying, diseased, insect infected and structurally weak branches including those which could break at weak points and strike conductors when swinging down in an arc.

**Refusal** – A refusal is when a property owner does not allow any trimming to be performed. A light trim is when the property owner allows some trimming but does not allow the contractor to trim for the required clearances.

**Shrub** - A woody plant normally maturing less than 20 feet in height and presenting a generally bushy appearance because of its several erect, spreading or prostrate stems.

**Stump Treatment** - Herbicide applications made to sproutable cut-off stumps (all hardwoods and Pitch Pine) in order to prevent the stump from sprouting.

**Substation** - An electrical facility that receives electricity at high voltages and reduces the voltage so that it can be passed on to customers at a lower voltage.

**Tree** - A woody plant normally maturing at 20 feet or more in height, usually with a single trunk, unbranched for several feet above ground, with a definite crown. It shall have a DBH of 6 inches or greater.

**T&M** – Tree work performed at Time and Material billing rates. Work is recorded on the Weekly Distribution Tree or Brush Control Report using labor and equipment codes approved by NU's Purchasing Department.

**Wires/Lines/Conductors** - The overhead wires which carry the electric

current at required voltages. Also to be considered for tree clearance and safety are other pole mounted equipment such as transformers, fuses, circuit breakers, etc.

**Wire types –**

**Primary** - A wire running from pole to pole operating at a voltage level exceeding 600 volts (2400 to 34500 volts on the NU overhead System), and normally located at the top of a pole.

**Secondary** - A wire running from pole to pole operating at a voltage level of 600 volts or less (normally 120 to 240 volts on the NU overhead System), and normally located approximately 4 feet below the pole top.

**Triplex** - Two insulated wires in a twisted configuration around a bare neutral wire.

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**Open Wire Secondary** - Three parallel wires normally in a vertical configuration separated from each other by a few inches.

**Service Drop** - The secondary wires connecting the point of attachment on the premises being served to the nearest pole of the distribution system.

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# OLR RESEARCH REPORT

September 21, 2011

Ac  
2011-R-0330

## TREE TRIMMING LAWS AND PROGRAMS

By: Kevin E. McCarthy, Principal Analyst

You asked about the laws that govern tree trimming by electric companies and the companies' trimming programs.

### SUMMARY

The law generally requires the electric companies to get the consent of the adjoining property owner before trimming any tree that is on or hangs over a highway or public property, but provides mechanisms for trimming if the owner does not consent. The law also requires the electric companies to submit annual plans to the Department of Energy and Environmental Protection (DEEP, formerly the Department of Public Utility Control) for maintaining their systems, which include tree-trimming programs.

This report describes Connecticut Light and Power's (CL&P) plan and programs, which are available at

<http://www.cl-p.com/templates/faq.aspx?id=4294986424&terms=TREE>. The tree trimming programs are found in Appendix 3. United Illuminating has a similar plan and programs.

Under CL&P's programs, trees near distribution lines are normally trimmed every five years. Trees are trimmed to clear eight feet on sides of the line, 10 feet below the line, and 15 feet above it. Trees in areas subject to frequent outages are trimmed to greater clearance.

### LAWS

CGS § 16-234 bars electric and telephone companies from cutting or trimming any tree on a highway or public ground or that hangs over such property without the adjoining property owner's consent. If the company cannot obtain the owner's consent, it can cut or trim the tree with the approval of the town tree warden or DEEP. The tree warden or DEEP can only consent after a hearing with notice to the property owner. The hearing must be held within a reasonable time after the application for cutting or trimming the trees.

CGS § 13a-140 allows the Department of Transportation (DOT) to cut, remove, or prune any tree or vegetation within the limits of a state highway so far as this is reasonably needed for safe and convenient travel on the highway. No person or entity may cut, remove, or prune these trees or vegetation without first obtaining a DOT permit, but this does not limit the rights of utility companies to cut and trim trees

and branches and otherwise protect their lines, cables, and other equipment from encroaching vegetation.

CGS § 16-32g requires each electric company to submit to DEEP an annual plan for maintaining poles, wires, and other fixtures along public highways or streets that are used to transmit or distribute power. The plan must include a (1) summary of appropriate staffing levels needed for maintaining the fixtures and (2) program for trimming branches and limbs located near overhead electric wires that may damage them. DEEP must review each plan and may issue orders as necessary. DEEP may require each electric company to submit an updated plan containing information it prescribes. DEEP must adopt implementing regulations.

CL&P's 2011 plan notes that:

In most cases, [owner] denials are resolved and either a partial or a full trim is allowed. In general, tree trimming denials do not represent a major obstacle to CL&P achieving its tree-trimming goals because they represent a relatively small number of miles when compared to the total number of miles trimmed. In 2009, there were 397 tree trimming refusals. Through October 2010, there were 344 refusals.

## **PROGRAMS**

According to CL&P, during the course of a year, trees are responsible for approximately 25% of all outages and more than 90% of storm-related outages. Company and contractor crews trim trees on a cycle that generally results in all trees being trimmed every five years. This work is performed year round. Licensed arborists employed by the company oversee contractor crews that work on trees. In the event of severe weather or widespread outages the number of contractors increases substantially.

According to CL&P, the company or contractor informs property owners and right-of-way abutters with homes or buildings located within 200 feet of the right-of-way, with maintained property to the edge of the right-of-way, or within the right-of-way area of the proposed work at least 48 hours before it starts. DOT must consent to the trimming of trees in the right of way of state highways. For other trees located on public property, the town tree warden must give consent. Before any tree work can be performed on private property, the company or its contractors must obtain consent from the tree owner. Consent may be requested in person if the owner is at home; if not door hanger requests are left for the owner. In practice, if the owner does not respond within the amount of time specified on the door hanger, the crew will begin its work.

In trimming individual trees, the crew must consider the tree's species, condition, growth rate, and location. In most case, trees are trimmed to clear eight feet on the sides of the line, 10 feet below the line, and 15 feet above it. In areas that have experienced frequent outages, trees are trimmed to 20 feet above the line. If the existing clearance between the line and the trunk or a branch that is more than six inches in diameter is less than these distances, the crew is directed to leave the trunk or branch but remove all other branches in the clearance zone. If trimming the clearance area would remove more than one-third of the tree's leaves, the tree will

normally be removed instead. But the owner's consent is required to do this to large trees (those with a diameter of 16 inches at chest height).

Branches are trimmed using a tree-care industry technique known as target pruning. Each branch is pruned back to where it meets the branch collar so that the pruning cut will callous over and prevent decay of the pruning wound.

Trees that are decayed, insect-infested, damaged, or structurally weak may be removed. Small trees and saplings that are capable of growing into the conductors are normally removed before they grow tall enough to interfere with the lines.

In the case of lines located away from rights-of-way, the company either owns the land outright or holds an easement on the land under the line. Ownership or an easement gives the company the right to remove vegetation that is hazardous to its facilities or restricts access along the right-of-way. To keep the lines, access roads, and facilities clear of interfering vegetation, all tree species capable of growing tall enough to contact the overhead conductors and shrub species that may restrict access to the facilities are removed manually, mechanically, or controlled through the use of herbicides.

KM: ts



STATE OF CONNECTICUT

Ad.

DEPARTMENT OF PUBLIC UTILITY CONTROL  
TEN FRANKLIN SQUARE  
NEW BRITAIN, CT 06051

DOCKET NO. 11-04-11 DPUC 2011 ANNUAL REPORT TO THE GENERAL  
ASSEMBLY ON ELECTRIC DISTRIBUTION COMPANY  
SYSTEM RELIABILITY

June 8, 2011

By the following Commissioners:

Kevin M. DelGobbo  
Anna M. Ficeto  
John W. Betkoski, III

DECISION



## DECISION

### I. INTRODUCTION

#### A. SUMMARY

General Statutes of Connecticut (Conn. Gen. Stat.) §16-245y(a) requires each electric distribution company to report reliability data to the Department of Public Utility Control (Department) for the prior 12 months in terms of System Average Interruption Duration Index and System Average Interruption Frequency Index by October 1 of each year. The Department is then required to report the data for each electric and electric distribution company and for the State as a whole to the joint standing committee of the General Assembly having cognizance of matters relating to energy, by the following January 1. This report covers calendar year 2010. The Department finds that reliability in the State has not declined since Public Act 98-28, An Act Concerning Electric Restructuring, was enacted. CL&P's overall reliability has improved since 1998. UI's reliability has declined slightly according to measures of reliability; however, it is still excellent compared to many other utilities. On a state-wide basis, reliability has improved since 1998.

#### B. CONDUCT OF THE PROCEEDING

By letter dated March 31, 2011, The United Illuminating Company (UI) provided its annual reliability data to the Department. By letter dated March 31, 2011, The Connecticut Light and Power Company (CL&P) provided its annual reliability data.

No hearing is required on this matter, and none was held. The data provided by UI and CL&P were not contested.

#### C. PARTIES AND INTERVENORS

The Department recognized the following as participants in this proceeding: The Connecticut Light and Power Company, P. O. Box 270, Hartford, CT 06141-0270; The United Illuminating Company, P. O. Box 1564, New Haven, CT 06506-0901; and the Office of Consumer Counsel, Ten Franklin Square, New Britain, CT 06051.

### II. DEPARTMENT ANALYSIS

#### A. IMPLEMENTATION OF CONN. GEN. STAT. §16-245Y(A)

Conn. Gen. Stat. §16-245y(a) requires the Department to submit reliability data, in terms of the System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI), to the Legislature by January 1 of each year. SAIDI is defined as the sum of customer interruptions in the preceding 12-month period, in minutes, divided by the average number of customers served during that period. Conn. Gen. Stat. §16-245y(a). SAIFI is defined as the total number of customers interrupted in the prior 12-month period divided by the average number of customers served during this period. Id. SAIDI can be viewed as the average outage

duration experienced by all customers on an electric distribution company's system, and SAIFI can be viewed as the average outage frequency on an electric distribution company's system. Lower SAIDI and SAIFI numbers reflect better reliability performance in terms of outage duration and frequency. Both SAIDI and SAIFI are required by statute to exclude outages attributable to major storms, scheduled outages, and outages caused by customer equipment, each as determined by the Department. Conn. Gen. Stat. §16-245y(a)(1).

Conn. Gen. Stat. §16-245y(a) requires the electric distribution companies to report reliability statistics to the Department by October 1 each year. The Department currently receives the Transmission and Distribution Reliability Performance Reports (TDRP Reports) on or about March 31 of each year. The TDRP Reports contain comprehensive data regarding outages and reliability from each utility for the prior calendar year. These reports provide valuable information regarding the factors that affect reliability and the effectiveness of reliability initiatives by the electric distribution companies.

In this report, the Department exceeds the requirements of Conn. Gen. Stat. §16-245y(a) by including data for both SAIDI and SAIFI with and without major storms plus information on the causes of outages. This will provide the Legislature with insight into the circumstances that affect the reliability data the Department reports to the Legislature.

Conn. Gen. Stat. §16-245y(a)(1) requires the Department to exclude major storms from the SAIDI and SAIFI data. Traditionally, the Department has emphasized reliability data excluding major storms, since major storms have a large effect on reliability data and can cause large year-to-year variations. Further, the electric distribution companies have limited influence over the reliability of the system under major storm conditions. Some factors under the control of the electric distribution companies can certainly improve performance of the distribution system under major storm conditions; however, the impact of major storms on overhead distribution system reliability data are significant regardless of the design or operation of that system.

For the purpose of determining reliability trends of the distribution system, the Department believes it is correct to exclude major storms from the reliability data. However, the Department also examines reliability data including major storms, since this data reflects the ultimate reliability seen by consumers. Also, since reliability of the system under major storm conditions is not entirely out of the control of the electric distribution companies, it is proper to consider major storm conditions when considering the adequacy of the overall design, operation, and maintenance of the distribution system. Therefore, the Department includes SAIDI and SAIFI data both with and without major storms in its annual report to the Legislature, even though the statutes only consider data excluding major storms.

The Department defines "major storm" based on the following statistical criterion: whenever the number of trouble locations (that result in outages) exceeds the 98.5 percentile of the trouble location frequency over the preceding four years, a major storm will be declared and all interruptions during the major storm period, or that began in that period, are excluded from the non-storm SAIDI and SAIFI calculations. Therefore, the

definition is not based on meteorological criteria, but solely on the impact a weather event has on the distribution system. It should be noted that this does not eliminate the effects of weather on a distribution company's reliability data; rather, it just excludes the most significant storms. The data is still affected to a high degree by annual variations in weather, particularly the severity of winter weather.

The Department further notes that weather is not the only factor to be considered when examining reliability data. Singular events, such as a large transmission disturbance, can have a significant effect on the reliability statistics. The Department considers the effects of such events when determining whether changes in the reliability statistics truly reflect a change in reliability, and whether such a change is reasonably within the control of a distribution company.

Traditionally, the Department has used a four-year average of reliability data excluding major storms to determine reliability trends. The Department has used this measure after considering two competing concerns. First, annual variations in weather, such as frequent minor storms that are not classified as major storms, can significantly affect reliability data. Second, to capture recent changes in reliability data or trends in reliability, the time period should not be too long. The Department believes a four year period is a reasonable compromise of these two concerns. The Department therefore includes reliability data for a four year period in its annual report to the Legislature. Additionally, the Department includes data for the four years ending in 1998, so that current reliability may be compared to reliability statistics that were current when Public Act 98-28, An Act Concerning Electric Industry Restructuring (the Act), was passed into law. This is also consistent with Conn. Gen. Stat. §16-244i(d), which states that the Department shall ensure that the quality and reliability of service are the same or better than levels that existed on July 1, 1998.

## **B. DESCRIPTION OF THE UTILITIES**

CL&P covers 87% of the geographic area of Connecticut and serves approximately 1.2 million customers. CL&P TDRP Report for 2010, p. 2. CL&P's service territory includes urban, suburban, and rural areas, as well as an extensive amount of wooded and hilly terrain. *Id.* The rural area and high density of trees in much of CL&P's territory can have a significant effect on CL&P's distribution system, both in terms of the design of many of the circuits and the performance of the circuits that traverse such areas.

UI covers 7% of the geographic area of Connecticut and serves approximately 322,000 customers. UI's service territory includes predominantly urban and suburban areas, with one small rural area in Easton. UI TDRP Report for 2010, p. 4.

The remaining 6% of the territory of Connecticut is served by municipal utilities, which are not required to report SAIDI and SAIFI data to the Department.

**C. RELIABILITY STATISTICS**

**1. The Connecticut Light and Power Company**

Reliability statistics for CL&P as of year-end 2010 are as follows.

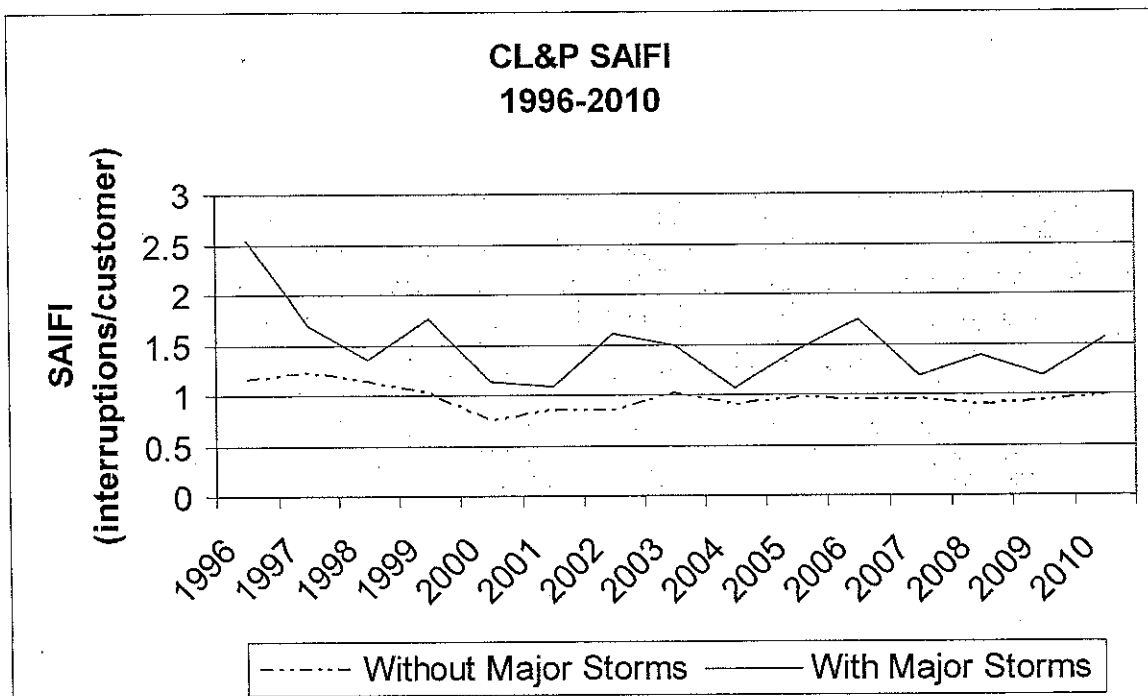
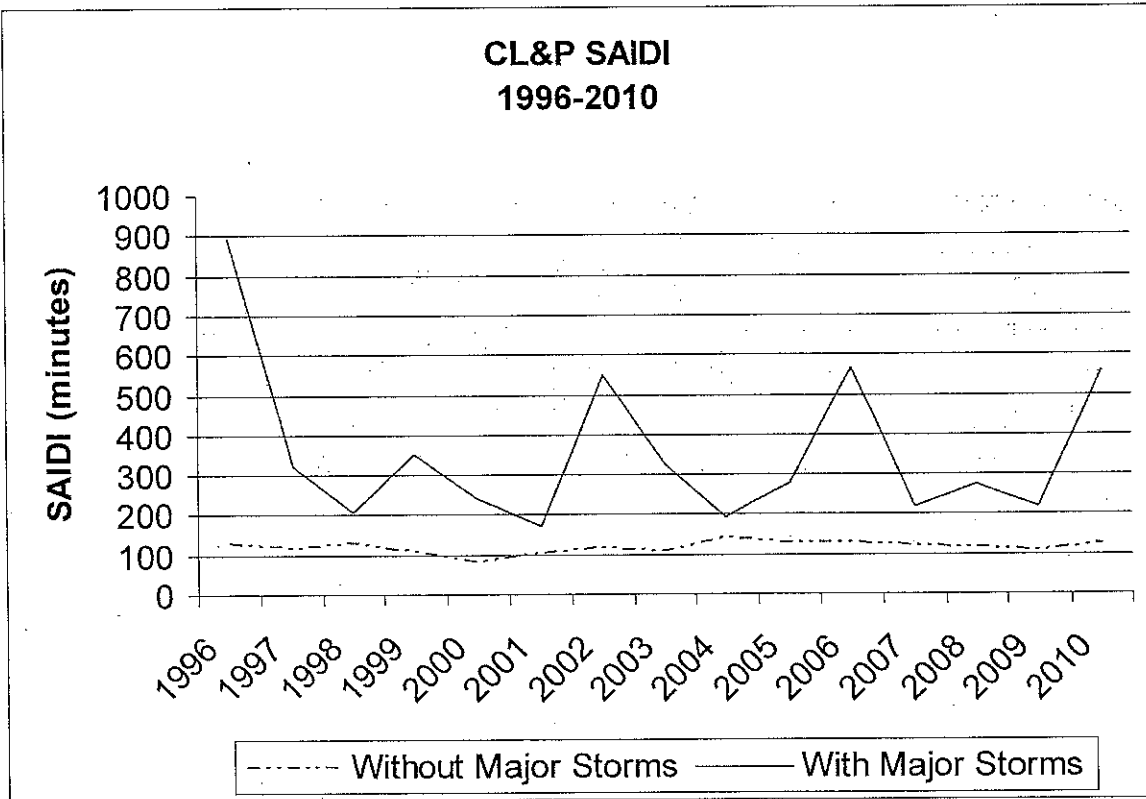
**CL&P Reliability Data<sup>1</sup>**

	Without Major Storms		With Major Storms	
	<i>SAIDI</i>	<i>SAIFI</i>	<i>SAIDI</i>	<i>SAIFI</i>
1996	130	1.16	893	2.54
1997	116	1.22	320	1.69
1998	129	1.14	205	1.35
1999	107	1.02	352	1.77
2000	81	0.75	240	1.14
2001	102	0.84	171	1.09
2002	114	0.85	548	1.61
2003	107	1.02	328	1.49
2004	140	0.89	191	1.06
2005	127	0.97	280	1.44
2006	129	0.95	566	1.75
2007	119	0.95	220	1.19
2008	116	0.90	275	1.39
2009	107	0.83	200	1.12
2010	125	0.98	558	1.56
2007-2010 Average	117	0.92	313	1.32
1995-1998 Average <sup>2</sup>	132	1.22	484	1.96

CL&P TDRP Report for 2010, p. 4; Decision dated December 1, 1999, in Docket No. 99-06-12, DPUC 1999 Annual Report to the General Assembly on Electric Distribution Company Reliability, p. 4. The SAIDI and SAIFI indices are shown graphically below.

<sup>1</sup> Data excluding major storms also excludes customer caused outages and scheduled outages, as required by Conn. Gen. Stat. §16-245y.

<sup>2</sup> As stated previously, the Department includes the four-year average ending 1998 in conjunction with Conn. Gen. Stat. §16-244i.



CL&P's overall reliability has improved since 1998, as evidenced by the generally lower SAIDI and SAIFI numbers during that time. Furthermore, the most recent four-year average reliability statistics are all improved over the 1995-1998 averages. The Department notes that all four measures of reliability declined in 2010, and it will closely monitor these indices in the future to ensure that it does not become a trend.

The following major storms in CL&P's service territory in 2010 met the Department's major storm definition criterion:

- On January 25, 2010 a rain and wind storm resulted in a total of 130,133 customer-hours interrupted;
- On March 13-15, 2010 a rain and wind storm resulted in a total of 5,893,552 customer-hours interrupted;<sup>3</sup>
- On April 29-30, 2010 a wind storm resulted in a total of 164,926 customer-hours interrupted;
- On May 8-9, 2010 a wind storm resulted in a total of 211,306 customer-hours interrupted;
- On May 27, 2010 thunderstorms resulted in a total of 226,778 customer-hours interrupted;
- On July 21, 2010 a tornado and thunderstorms resulted in a total of 706,213 customer-hours interrupted;
- On October 1, 2010 a rain and wind storm resulted in a total of 182,429 customer-hours interrupted;
- On December 1, 2010 a rain and wind storm resulted in a total of 200,852 customer-hours interrupted; and
- On December 26-27, 2010 a blizzard resulted in a total of 513,770 customer-hours interrupted.

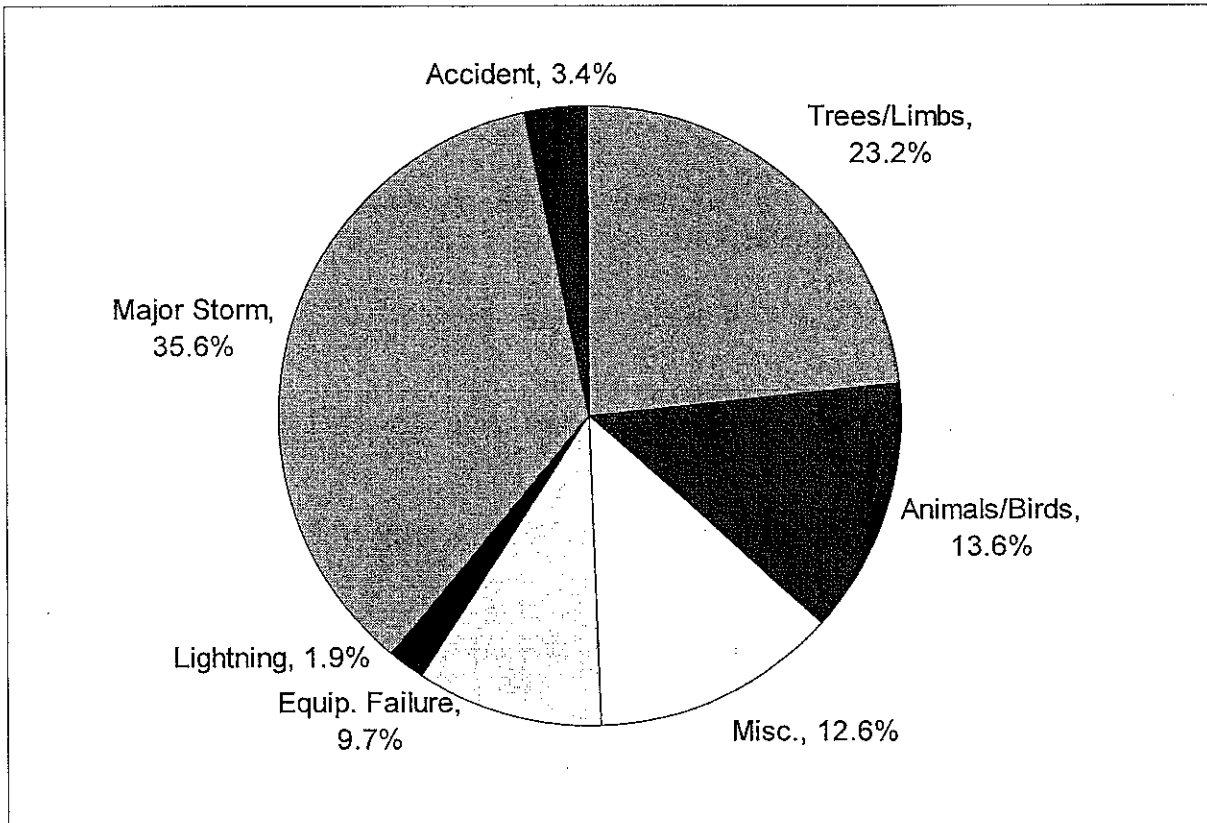
CL&P TDRP Report for 2010, Appendix 7.

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<sup>3</sup> The Department investigated the performance of CL&P and UI during this storm and stated its findings and conclusions in its Decision dated December 1, 2010 in Docket No. 10-03-08, Investigation of the Service Response and Communications of The Connecticut Light and Power Company (CL&P) and The United Illuminating Company (UI) following the Outages from the Severe Weather over the Period of March 12 through March 14, 2010.

The following chart provides data on the causes of outages in CL&P's service territory in 2010.<sup>4</sup> CL&P TDRP Report for 2010, p. 6.

**2010 CL&P Outage Causes**



<sup>4</sup> See Appendix A for information on the causes of outages.

## 2. The United Illuminating Company

Reliability statistics for The United Illuminating Company as of year-end 2010 are as follows.

### UI Reliability Data<sup>5</sup>

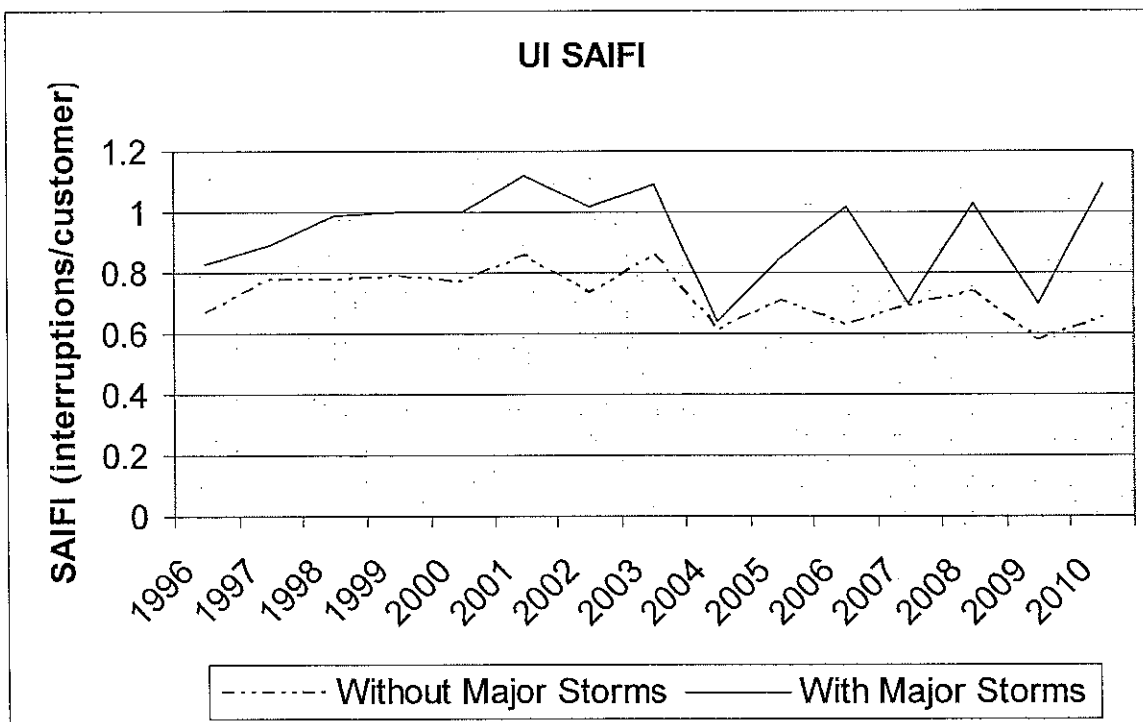
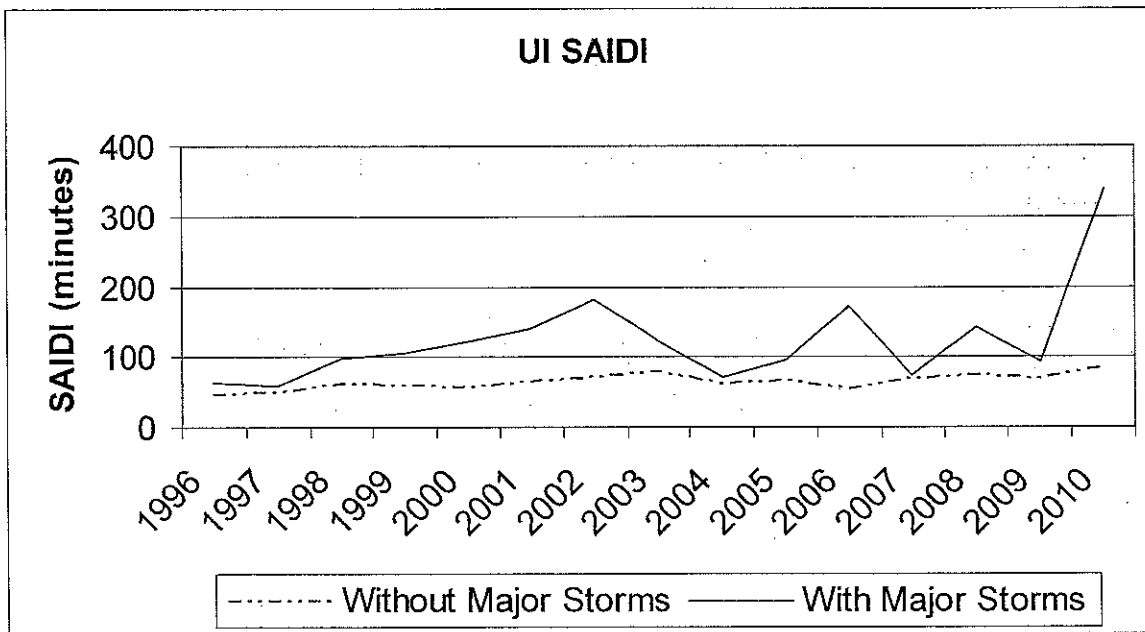
	Without Major Storms		With Major Storms	
	<i>SAIDI</i>	<i>SAIFI</i>	<i>SAIDI</i>	<i>SAIFI</i>
1996	46	0.67	64	0.83
1997	48	0.78	60	0.89
1998	61	0.78	97	0.99
1999	58	0.79	106	1.00
2000	57	0.77	122	1.00
2001	63	0.86	140	1.12
2002	70	0.73	182	1.02
2003	79	0.86	122	1.09
2004	62	0.61	72	0.64
2005	66	0.71	96	0.85
2006	54	0.63	173	1.02
2007	69	0.69	74	0.70
2008	73	0.74	143	1.03
2009	68	0.58	94	0.70
2010	85	0.65	338	1.09
2007-2010 Average	74	0.67	162	0.88
1995-1998 Average <sup>6</sup>	52	0.77	71	0.90

UI TDRP Report for 2010, pp. 12 and 13; Decision dated December 1, 1999, in Docket No. 99-06-12, DPUC 1999 Annual Report to the General Assembly on Electric Distribution Company Reliability, p. 7. The SAIDI and SAIFI indices are shown graphically below.

<sup>5</sup> Data excluding major storms also excludes customer caused outages and scheduled outages, as required by Conn. Gen. Stats. §16-245y.

<sup>6</sup> As stated previously, the Department includes the four-year average ending 1998 in conjunction with Conn. Gen. Stat. §16-244i.





UI's average outage duration has increased since 1998 and its average outage frequency has shown some improvement overall. UI states that its average outage duration has trended higher over the years because of changes in work rules and priorities that emphasize public and worker safety, at the expense of outage restoration activities. Furthermore, its 2010 non-storm SAIDI was strongly impacted by two significant storms that did not meet the major storm criteria. These storms occurred on July 21 and September 22, 2010, and together contributed 15 minutes to non-storm SAIDI. Finally, UI states that 2010 was unusual in its number of so-called "active days"

during which UI's line crews were unusually busy restoring from outages, and provided statistical evidence to support this assertion. UI TDRP Report for 2010, pp. 6-7.

The Department notes that UI's non-storm SAIDI reached a historical low in 1996 and 1997, which makes comparisons to that time difficult. SAIDI's recent values have been approximately the same as prior to 1996. Much of the variation in outage statistics can be attributed to annual differences in weather patterns as discussed in Section II.A above, and may be further affected by other operational events in the course of a year. The Department concludes that UI's reliability has declined slightly since 1998. Although SAIDI has increased somewhat since 1996 and 1997, UI's reliability is very good in comparison to most electric utilities in the U.S.

The following major storms in UI's service territory in 2010 met the Department's major storm definition criterion:

- On January 25, 2010 a heavy wind and rain event resulted in a total of 36,070 meter hours interrupted;
- On March 13-15, 2010 a heavy wind and rain event resulted in a total of 407,885 meter hours interrupted;<sup>7</sup>
- On May 8, 2010 a heavy wind/rain/lightning event resulted in a total of 27,107 meter hours interrupted;
- On May 27, 2010 a heavy wind/rain event/lightning event resulted in a total of 22,448 meter hours interrupted;
- On June 24-25, 2010 a heavy wind/rain/lightning event resulted in a total of 757,752 meter hours interrupted;
- On July 6, 2010 heat wave resulted in a total of 6,693 meter hours interrupted;
- On July 19, 2010 lightning storm resulted in a total of 19,160 meter hours interrupted;
- On October 1, 2010 a heavy wind and rain event resulted in a total of 27,212 meter hours interrupted;
- On December 1, 2010 an heavy wind and rain event resulted in a total of 15,768 meter hours interrupted; and
- On December 26-28, 2010 an heavy wind and snow event resulted in a total of 36,858 meter hours interrupted.

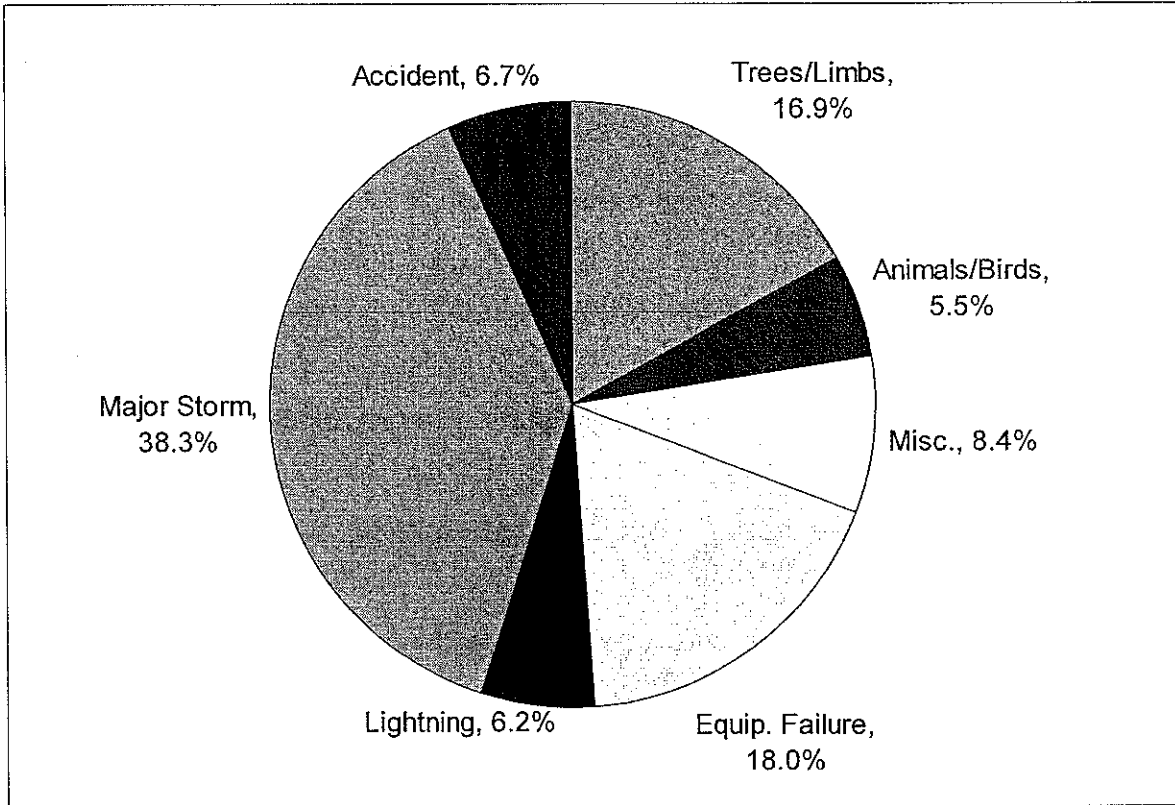
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<sup>7</sup> The Department investigated the performance of CL&P and UI during this storm and stated its findings and conclusions in its Decision dated December 1, 2010 in Docket No. 10-03-08, Investigation of the Service Response and Communications of The Connecticut Light and Power Company (CL&P) and The United Illuminating Company (UI) following the Outages from the Severe Weather over the Period of March 12 through March 14, 2010.

UI TDRP Report for 2010, Appendix 7.

The following chart provides data on the causes of outages in UI's service territory in 2010.<sup>8</sup> UI TDRP Report for 2010, p. 11.

**2010 UI Outage Causes**



<sup>8</sup> See Appendix A for information on the causes of outages.

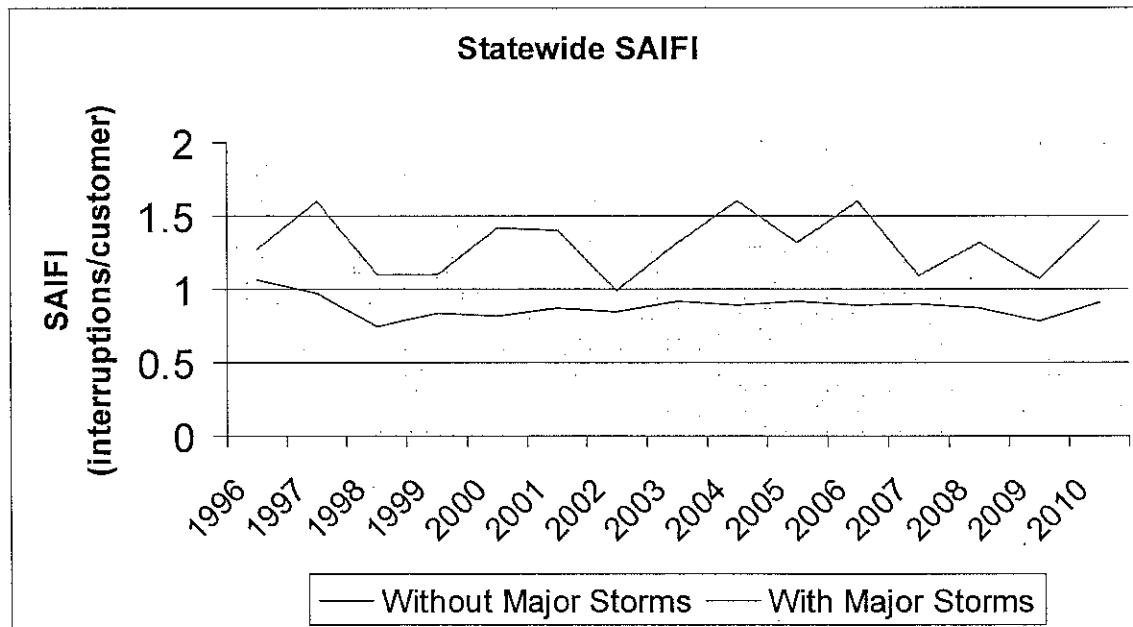
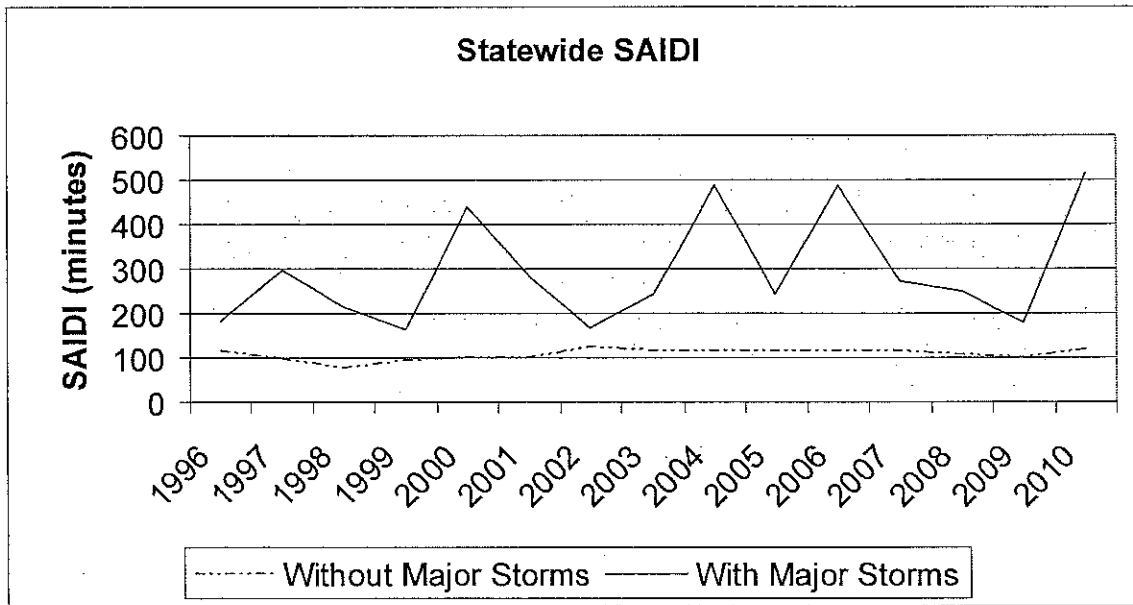
### 3. State-wide Reliability Indices

Conn. Gen. Stat. §16-245y(a) requires the Department to include state-wide SAIDI and SAIFI data in its report to the Legislature, excluding outage statistics attributable to major storms, customer caused outages and scheduled outages. The following chart shows state-wide SAIDI and SAIFI data that combines data from UI and CL&P, using a weighted average by customer count and the SAIDI and SAIFI data provided by each electric distribution company.

#### State-wide Reliability Indices

	<u>Without Major Storms</u>		<u>With Major Storms</u>	
	<u>SAIDI</u>	<u>SAIFI</u>	<u>SAIDI</u>	<u>SAIFI</u>
1998	114	1.06	181	1.27
1999	96	0.97	298	1.60
2000	76	0.75	214	1.10
2001	94	0.84	164	1.10
2002	101	0.82	438	1.42
2003	101	0.87	282	1.40
2004	125	0.85	168	0.99
2005	115	0.92	243	1.32
2006	114	0.89	487	1.60
2007	109	0.90	191	1.09
2008	107	0.87	249	1.32
2009	99	0.78	179	1.07
2010	117	0.91	514	1.46
2007-2010 Average	108	0.86	283	1.23
1995-1998 Average	116	1.13	401	1.75

The data exclude the approximately 6% of the State that falls within the service territories of the municipal utilities. The SAIDI and SAIFI indices are shown graphically below.



As demonstrated by the above data, state-wide reliability, excluding major storms, has improved since 1998. All four year average reliability indices demonstrate improvement over the indices during the 1995-1998 time frame.

### III. CONCLUSION

The Department finds that reliability in the State has not declined since Public Act 98-28, An Act Concerning Electric Restructuring, was enacted. CL&P's overall reliability has improved since 1998. UI's reliability has declined slightly according to measures of reliability; however, it is still excellent compared to many other utilities. On a state-wide basis, reliability has improved since 1998.

## Appendix A

### Explanations of Outage Cause Categories

Power Supply-	Outages caused by the operation of the electric transmission and distribution system in conjunction with other electric distribution companies, such as Independent System Operator-imposed load shedding or loss of a transmission line owned by another electric distribution company.
Scheduled-	Outages caused by intentionally de-energizing facilities serving customers for the purpose of apparatus change-out, conversion, maintenance, relocation/extension, permanent repair, or customer request.
Major Storm-	Outages associated with weather events that meet the Department-approved major storm criterion.
Customer Caused-	Any interruption caused by customer-owned equipment failure or customer operation.
Animal/Bird Contact-	Any interruption caused by animals or birds contacting energized facilities.
Lightning-	Any interruption caused by lightning affecting energized facilities.
Accident-	Any interruption caused by an employee error, or by a vehicle or foreign object contacting a structure, guy, or enclosure.
Equipment Failure-	Any interruption caused by the failure of a component of the electric distribution company's transmission or distribution system.
Tree/Limb Contact-	Any interruption caused by vegetation contacting energized facilities, other than those felled by customers or employees.
Miscellaneous/ Unknown -	Any interruption caused by an electrical overload, an interruption for which the cause is indeterminate, or miscellaneous causes not included in other categories.

DOCKET NO. 11-04-11 DPUC 2011 ANNUAL REPORT TO THE GENERAL ASSEMBLY ON ELECTRIC DISTRIBUTION COMPANY SYSTEM RELIABILITY

This Decision is adopted by the following Commissioners:


Kevin M. DelGobbo

Anna M. Ficeto

John W. Betkoski, III

CERTIFICATE OF SERVICE

The foregoing is a true and correct copy of the Decision issued by the Department of Public Utility Control, State of Connecticut, and was forwarded by Certified Mail to all parties of record in this proceeding on the date indicated.



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Kimberley J. Santopietro  
Executive Secretary  
Department of Public Utility Control

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June 13, 2011

Date

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UTILITY VEGETATION MANAGEMENT AND BULK ELECTRIC RELIABILITY  
REPORT FROM THE FEDERAL ENERGY REGULATORY COMMISSION

SEPTEMBER 7, 2004



## Executive Summary

Electric transmission owners and operators conduct vegetation management to prevent physical contact between transmission lines and nearby vegetation that could cause a transmission line to fail. On August 14, 2003, an electric power blackout affected large portions of the Northeast and Midwest United States and Ontario, Canada. President George W. Bush and Prime Minister Jean Chrétien established a joint U.S.-Canada Power System Outage Task Force (Task Force) to investigate the causes of the blackout and how to reduce the possibility of future outages. On April 5, 2004, the Task Force issued a Final Blackout Report<sup>1</sup> stating that one of the four primary causes of the blackout was inadequate vegetation management (tree pruning and removal).

In response to the Final Blackout Report, the Federal Energy Regulatory Commission (Commission) directed all designated transmission owners to file reports with the Commission by June 17, 2004, explaining their vegetation management practices for designated transmission facilities and rights-of-way.<sup>2</sup> The Commission staff worked with the leadership of the National Association of Regulatory Utility Commissioners' (NARUC) ad-hoc Committee on Critical Infrastructure to analyze these reports to look for significant patterns and potential problems in the vegetation management practices of the electric industry. This report to Congress summarizes the Commission's findings and recommendations. In this report, the Commission also recommends that Congress enact legislation providing for mandatory, enforceable reliability rules.

## Key Observations

The transmission owners were asked to report on the results of their most recent transmission line vegetation management inspections, necessary remedial actions identified, and whether such actions had been completed before the summer 2004 peak

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<sup>1</sup> U.S.-Canada Power System Outage Task Force, Final Report on the August 14<sup>th</sup> Blackout in the United States and Canada: Causes and Recommendations (April 2004) (Final Blackout Report).

<sup>2</sup> Order Requiring Reporting on Vegetation Management Practices Related to Designated Transmission Facilities, 107 FERC ¶ 61,053 (2004) (Vegetation Management Order). "Designated transmission facilities" are defined, for the purposes of the Vegetation Management Order only, as transmission lines with a rating of 230 kV or higher as well as tie-line interconnection facilities between control areas or balancing authority areas (regardless of kV rating) and "critical" lines as designated by the regional reliability council. See NERC, August 14, 2003 Blackout: NERC Actions to Prevent and Mitigate the Impacts of Future Cascading Blackouts at 9 n.3 (Feb. 10, 2004).

load season. Review of the vegetation management filings found that it appears transmission owners and operators have performed extensive vegetation management along the nation's high-voltage transmission network, which should produce better grid reliability during the summer. However, there is a wide range of vegetation management practices and procedures among the reporting transmission owners. There is very little uniformity in regard to right-of-way width,<sup>3</sup> vertical line clearance,<sup>4</sup> inspection frequency,<sup>5</sup> and vegetation management guidelines<sup>6</sup> used. The lack of uniformity may be understandable in part, as transmission owners must design their vegetation management practices based on factors such as the demands of the terrain, location, climate, vegetation species, and local laws and regulations.

The Commission recognizes that, while the data filed in response to the Vegetation Management Order reveals each transmission owner's practice, it does not directly address how effective the practice has been in limiting preventable transmission line outages. The Commission did not ask for such data in the April request, because similar data are now being reported to the Western Electricity Coordinating Council and to the North American Electric Reliability Council (NERC). Such a review is beyond the scope of this report.

Transmission owners report that they are not able to acquire all necessary permits to maintain their rights-of-way from various federal and state agencies. However, this problem could be alleviated, at least in part, if the acquisition of these permits is made a higher priority on the part of transmission owners. For instance, transmission owners could allow additional lead time to acquire many needed permits. The agencies responsible for issuing permits, however, should ensure that they have clear rules and procedures for issuing permits in a timely manner.

With respect to any jurisdiction issues that may arise involving vegetation management, it is important that state and federal regulators continue to coordinate so that jurisdictional considerations do not impede effective vegetation management.

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<sup>3</sup> A right-of-way is a segment of land used for the route of a transmission line. A right-of-way should be devoid of vegetation that can interfere with a transmission line. The right-of-way width is the distance between the outer bounds of a right-of-way.

<sup>4</sup> The vertical distance between a tree or vegetation and an electric transmission wire.

<sup>5</sup> The time between complete inspections of a utility's transmission system, *e.g.*, semiannual, annual, etc.

<sup>6</sup> The guidelines that utilities report they adhere to in regards to the management of vegetation along transmission lines.

The Commission believes that better coordination among federal agencies and between the federal and state governments to develop clear, consistent policies and procedures for timely and effective vegetation management by transmission owners could help to alleviate many real and perceived obstacles to proper vegetation management.

The transmission owners reported that vegetation management approvals on federally managed rights-of-way are particularly problematic in the Western United States. The Council on Environmental Quality (CEQ) coordinates federal environmental efforts and helps resolve inter-agency differences over environmental issues. The Commission believes federal agencies and the CEQ should work together on vegetation management on federal rights-of-way. In addition, the CEQ could facilitate coordination with Native American tribes for vegetation management on Native American tribal lands. We understand that vegetation management practices affect the environment and look forward to working with other agencies to coordinate efforts to assure that neither the environmental quality of federal lands nor regional electric reliability are put at risk.

### **Summary of Recommendations**

- 1) The United States Congress should enact legislation to make reliability standards mandatory and enforceable under federal oversight.
- 2) Effective transmission vegetation management requires clear, unambiguous, enforceable standards that adequately describe actions necessary by each responsible party.
- 3) With respect to any jurisdiction issues that may arise involving vegetation management, it is important that state and federal regulators continue to coordinate so that jurisdictional considerations do not impede effective vegetation management.
- 4) Federal and state regulators should allow reasonable recovery for the costs of vegetation management expenses.
- 5) While permitting and environmental requirements properly protect public lands, the procedures implementing those protections may be inconsistent and time-consuming and have the potential to significantly hinder transmission vegetation management. The Commission should work with the CEQ and land management agencies to better coordinate these requirements.
- 6) Federal, state and local land managers should develop “rush” procedures and emergency exemptions to allow utilities to correct “danger” trees<sup>7</sup> that threaten transmission lines, from both on and off documented rights-of-way.

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<sup>7</sup> A danger tree is a tree that is dead or dying and has the potential to fall into a

- 7) Five-year vegetation management cycles should be shortened, and the Commission and states should look at the cost-effectiveness of more aggressive vegetation management practices.
- 8) Transmission owners should fully exercise their easement rights for vegetation management and better anticipate and manage the permitting process for scheduled vegetation management.
- 9) Variances in vegetation management practices may be resolved in the NERC vegetation management standard development process; if they are not, the Commission may seek to convene the industry, states and other stakeholders to address the remaining issues.
- 10) State regulators and the utility industry should work through NARUC, the National Conference of State Legislators, and other organizations to help state and local officials better understand and address transmission vegetation management.

## Introduction

On August 14, 2003, an electric power blackout occurred over large portions of the Northeast and Midwest United States and Ontario, Canada. The blackout lasted up to two days in some areas of the United States and longer in some areas of Canada. It affected an area with over 50 million people and 61,800 megawatts of electric load. In the wake of the blackout, a joint U.S.-Canada Task Force (Task Force) undertook a study of the causes of that blackout and possible solutions to avoid future such blackouts. The Task Force's Final Report was issued on April 5, 2004.

The Task Force identified FirstEnergy Corporation's (FirstEnergy) failure to adequately prune trees and manage vegetation in its transmission rights-of-way as one of the four primary causes of the August 14, 2003 blackout.<sup>8</sup> The blackout investigation explained that, during the hour before the cascading blackout occurred, three FirstEnergy 345 kV transmission lines failed as a result of contact between the lines and overgrown vegetation that encroached into the required clearance zone for the lines.<sup>9</sup> It stated that "because the trees were so tall . . . each of these [three] lines faulted under system conditions well within specified operating parameters."<sup>10</sup>

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right-of-way close to a line.

<sup>8</sup> Final Blackout Report at 20.

<sup>9</sup> *Id.* at 57-67.

<sup>10</sup> *Id.* at 58.

The Final Blackout Report also compared the August 2003 blackout with seven previous major outages and concluded that conductor contact with trees was a common factor among the outages.<sup>11</sup> The Task Force emphasized that vegetation management is critical, and that many outages can be prevented by managing vegetation before it becomes a problem.<sup>12</sup> It also noted that investigation reports from previous major outages recommended paying special attention to the condition of vegetation on rights-of-way and the need for preventative maintenance in this area.

In March 2004, the Commission made available to the public a 128-page vegetation management report, prepared to support the blackout investigation.<sup>13</sup> The report details problems with vegetation management relating to the August 2003 blackout, and the impact of vegetation management on electric reliability. The report concludes that the August 2003 blackout likely would not have occurred had the rights-of-way been maintained for three 345 kV transmission lines that tripped due to tree-line contacts.<sup>14</sup> It also concludes that utilities responsible for the right-of-way maintenance had in place vegetation management programs that were in line with current industry norms. Further, it concludes that current industry “standards” are inadequate and must be improved. The CNUC Final Vegetation Report recommends specific practices that would reduce the likelihood of tree and power line contacts and provides recommendations for the oversight and enforcement of utility vegetation management activities.

On April 19, 2004, the Commission issued the Vegetation Management Order requiring all entities that own, control or operate designated electric transmission facilities in the lower 48 states to provide information on their vegetation management practices. This order was issued pursuant to section 311 of the Federal Power Act, 16 U.S.C. § 825j (2000) which authorizes the Commission to conduct investigations in order to secure information necessary or appropriate as a basis for recommending legislation.

The Commission ordered that designated transmission owners describe in detail the practices and standards that the transmission owner uses for control of vegetation near designated transmission facilities, and indicate the source of any standard utilized (*e.g.* state law or regulation, historical practice). In addition, transmission owners were asked

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<sup>11</sup> *Id.* at 107.

<sup>12</sup> *Id.* at 59.

<sup>13</sup> CN Utility Consulting, Utility Vegetation Management Final Report, (March 2004) (CNUC Final Vegetation Report). The CNUC Final Vegetation Report is available on the Internet at [www.ferc.gov/cust-protect/moi/blackout.asp](http://www.ferc.gov/cust-protect/moi/blackout.asp).

<sup>14</sup> *Id.* at 26-27.

to describe the clearance assumptions or definition used for the appropriate distance between vegetation and the facilities, how often the transmission provider inspects that facility for vegetation management purposes, whether identified remediation has been completed as of June 14, 2004, and any factors that the respondent believes prevents, or unduly delays, the performance of adequate vegetation management.<sup>15</sup>

This report analyzes the information gathered pursuant to the Vegetation Management Order, provides relevant additional information regarding the current status of vegetation management practices, and offers a recommendation for Congressional consideration.

### **Review and Analysis Method**

The Commission received 161 responses from transmission owners.<sup>16</sup> On June 21-22, 2004, Commission staff, along with three state commissioners, Connie Hughes of New Jersey, Don Mason of Ohio, and Judith Ripley of Indiana, representing the leadership of the NARUC ad-hoc Committee on Critical Infrastructure, performed an initial review of the vegetation management responses.<sup>17</sup> This initial two-day review was intended to identify any immediate issues that could potentially impact electric grid reliability requiring rapid follow up by state or federal regulators. In addition, it looked for progress made since the blackout of the previous year, fact patterns suggesting additional inquiry is required, and a general overview of current vegetation management practices. The initial review was followed up by a more intensive Commission staff data analysis. This analysis included the creation of a database that tracked:

- all respondents' right-of-way width maintained in feet by voltage,
- vertical line clearance in feet by voltage,
- ground and aerial inspection frequency,
- vegetation management cycle,<sup>18</sup> and
- vegetation management guidelines utilized, if any.

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<sup>15</sup> Vegetation Management Order at P 12.

<sup>16</sup> Some respondents provided responses on behalf of multiple operating companies or multiple transmission owners.

<sup>17</sup> Edison Electric Institute (EEI) prepared templates for its members to use in filing the requested data. Many EEI members used these templates. The templates made it easier for Commission staff to review the filings.

<sup>18</sup> The period of time required for a utility to perform maintenance including the pruning of all vegetation and the removal of all vegetation of concern on its entire transmission system.

Commission staff reviewed the data in the five categories above and looked for patterns in vegetation management practices.<sup>19</sup>

## Findings

The majority of respondents have completed necessary vegetation management remediation measures identified during the most recent inspection of their transmission lines. While this does not guarantee that there will not be adverse impact to grid reliability caused by vegetation interfering with transmission lines, it is a positive indication of reduced risk to reliability. However, 29 percent of respondents identified some line vegetation management remediation that was not completed by the June 17 filing date and may not be performed this summer.<sup>20</sup> A list of these respondents is provided in Attachment A. The results suggest that a significant amount of the remediation occurred between April 19, 2004 and June 14, 2004.

Utility vegetation management practices vary significantly. While some variation is expected because vegetation management practices are affected by climate, terrain, vegetation species, local laws, and regulations, other variations are unexplained. Below is a discussion of reported data on right-of-way width, vertical clearances, inspection frequency, vegetation management cycles, and vegetation management guidelines followed. Some of these variations may be resolved in the NERC vegetation management standard development process;<sup>21</sup> if they are not, the Commission may seek to convene the industry, states and other stakeholders to address the remaining issues.

### 1. Right-of-way Width

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<sup>19</sup> In their filings, certain respondents asked for and were granted protection regarding specific transmission line information under the Commission's Critical Energy Infrastructure Information (CEII) policy. CEII is information concerning proposed or existing critical infrastructure (physical or virtual) that relates to the production, generation, transmission or distribution of energy. While this report does not disclose any specific CEII data, the Commission's conclusions reflect its review of such data.

<sup>20</sup> In some instances, the transmission owner/operator reported that remediation before the summer was not needed and would be completed as part of the regular vegetation management cycles later in the year. In other instances, the respondent states that there is no immediate threat to the line. Some stated that the work would be completed shortly after June 17 or as soon as possible. In at least one case, the required work was pending reaching agreement with a landowner.

<sup>21</sup> NERC recently initiated a vegetation management standard development process. See [ftp://www.nerc.com/pub/sys/all\\_updl/docs/bot/Agenda-Items-0604/Item12e.pdf](ftp://www.nerc.com/pub/sys/all_updl/docs/bot/Agenda-Items-0604/Item12e.pdf).

Right-of-way widths vary significantly among the reporting transmission owners. Generally, right-of-way width increases as line voltage increases. Higher voltage lines require wider rights-of-way because greater separation is needed between conductors. Wider right-of-way widths are also necessary to accommodate multiple lines and in some cases more than one tower. Since right-of-way width depends on many factors, and since some respondents provided ranges that depend on such factors as the number of circuits on a right-of-way, no pattern was identified from the data on the range of right-of-way widths. Table 1 shows the range of responses by voltage class.

Table 1. Right-of-Way Width

Right-of-Way Width							
500 kV		345 kV		230 kV		Less than 230 kV	
Minimum Width (ft)	# of Companies	Minimum Width (ft)	# of Companies	Minimum Width (ft)	# of Companies	Minimum Width (ft)	# of Companies
Less than 125	4	Less than 75	6	Less than 75	40	Less than 50	51
126-175	21	76-125	36	76-125	36	51-125	41
176 >	13	126 >	30	126 >	30	126 >	7

In general, if a utility has a wider right-of-way, well documented right-of-way easement rights, and exercises those rights fully, it will be more successful in avoiding vegetation-line contact than a utility that maintains narrower rights-of-way. A narrow right-of-way increases the risk of contact with vegetation that is outside of the right-of-way and adjacent to the transmission line. Expert commentary included in the CNUC Final Vegetation Report stated, “[m]ost tree/power line contacts occur when trees fall onto lines from outside the rights-of-ways or corridors. Many utilities are slow to act to address this issue due to the perception of increased costs and the pressure from landowners etc. to leave trees standing.”<sup>22</sup>

## 2. Inspection Frequency

Vegetation management inspections are performed to inspect the status of vegetation and the rights-of-way surrounding electric transmission facilities. During these inspections, vegetation of concern is noted and scheduled for remediation. Typically, a utility will utilize a combination of aerial and ground inspections. Ground inspections are performed by walking or driving the length of transmission lines to inspect the condition of vegetation. While slow, ground inspections may be more effective because they enable an inspector to more thoroughly view vegetation conditions and the relationship between vegetation and the wire. Aerial inspections are performed using aircraft (a helicopter or a small plane flying at low altitude) to visually inspect the

<sup>22</sup> CNUC Final Vegetation Report at 115.



condition of vegetation. Given the greater distance from the vegetation and the speed of aerial inspection, it is considered to be less reliable and thorough than ground inspection.

Annual, semi-annual, or more frequent aerial patrols are part of the transmission inspection practice of 105 utilities, twenty-five of which conduct aerial inspections more frequently than twice a year. Table 2 summarizes the responses.

Table 2. Aerial Inspection Frequency

<b>Aerial Inspection</b>	
Frequency	# of Companies
More than twice a year	25
Semi-annual	34
Annual	46
Biennial	6
Every 3 years	1
> than 3 Years	3
As Needed	8
Did Not Report	38

Most transmission owners use aerial patrols to identify areas that need remediation or areas that will need remediation soon. Aerial inspections are followed by additional ground inspection or remediation.

Over 100 respondents indicate that they conduct annual or more frequent ground inspections of their entire system. Ground patrols are more effective in identifying vegetation-related problems.<sup>23</sup> Table 3 summarizes the responses.

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<sup>23</sup> CNUC Final Vegetation Report at 49.

Table 3. Ground Inspection Frequency

<b>Ground Inspection</b>	
Frequency	# of Companies
More than twice a year	7
Semi-annual	22
Annual	76
Biennial	6
Every 3 years	6
> than 3 Years	25
As Needed	12
Did Not Report	7

As with right-of-way width, patrol frequency and method varies significantly among reporting utilities. This could be due to the variation in the number of transmission circuit miles owned or operated by the utility, terrain, and vegetation characteristics.

### 3. Vertical Clearance

Vertical clearance is the distance between a wire and the vegetation directly below it.<sup>24</sup> The minimum vertical clearance requirement increases by line voltage (although some transmission owners reported the same vertical clearance for all voltage classes). The maintenance of sufficient vertical distance between the conductor and vegetation is essential because direct physical contact is not necessary for a line outage to occur. An electric arc can occur between a part of a tree and a nearby high-voltage conductor without sufficient clearance.<sup>25</sup> These electric arcs can cause fires and line outages. Vegetation management practices should maintain a minimum vertical clearance between a line and a tree. The pruning should create clearances with a healthy safety margin beyond the minimum required clearance that will last until the next scheduled pruning or treatment. Table 4 shows vertical clearances used by reporting utilities.

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<sup>24</sup> Vegetation can interfere with power lines from below, sides, and above and appropriate clearance must be maintained all around the wire. This section discusses vertical line clearance as an example of the variation among utilities in maintaining line clearances.

<sup>25</sup> In effect, electricity on a transmission wire can “jump” a very short distance from the wire to tree limbs without direct contact, creating a short circuit that can lead to a line outage.

Table 4. Vertical Clearances Reported

Vertical Clearance Table							
500 kV		345 kV		230 kV		Less than 230 kV	
Clearance (ft)	# of Companies	Clearance (ft)	# of Companies	Clearance (ft)	# of Companies	Clearance (ft)	# of Companies
0-15	11	0-15	17	0-10	23	0-10	16
16-20	11	16-20	17	11-15	17	11-15	20
21-25	9	21-25	12	16-20	24	16-20	14
26>	8	26 >	14	21-25	16	21-25	3
				26 >	13	26 >	5

There is no apparent rationale for the wide variance in vertical clearance requirements.<sup>26</sup> The current industry effort through NERC to develop a vegetation management standard should resolve this issue.

#### 4. Vegetation Management Cycle

A vegetation management cycle is loosely defined as the time it takes to complete the pruning and removal of trees or other vegetation on a utility's entire transmission system. In most cases, a utility prunes or treats a portion of its total circuit-miles of right-of-way in each year; once the circuit is completed, the company starts the cycle over. The Vegetation Management Order did not formally request this information, but the CNUC Final Vegetation Report found that a five-year cycle is the industry norm. Furthermore, the report found that the five-year cycle is insufficient to maintain reliability.

Of the 70 respondents that volunteered their vegetation management cycles, many indicate that they prune and remove vegetation along their lines within a five-year or longer interval.<sup>27</sup> Table 5 summarizes the responses.

<sup>26</sup> There could have been varying interpretations of the reporting requirement (e.g., clearance achieved at the time of pruning vs. minimum clearance maintained). However, the EEI templates used by a large number of respondents instructed that "minimum clearance maintained between conductor and vegetation" be reported.

<sup>27</sup> A five-year cycle is consistent with the industry practice; however, common or average industry practices need improvement. Final Blackout Report at 59.

Table 5. Pruning Cycle

Pruning Cycle	
Frequency	# of Companies
0-2 years	11
3-4 years	35
5 or More years	24

In the future, the Commission and the industry should work to identify the correlation between vegetation management practices and actual vegetation-caused transmission line outages.

When managing vegetation, 93 companies employ herbicides to limit vegetation growth; others use mechanical techniques to cut vegetation on rights-of-way; and some use a combination of both.<sup>28</sup>

## 5. Current Vegetation Management Guidelines

Establishing clear, unambiguous standards pertaining to maintenance of safe clearances of transmission lines from obstructions in rights-of-way was one of the recommendations of the Final Blackout Report.<sup>29</sup> The vast majority of transmission owners report that they follow the National Electrical Safety Code (NESC) rules or American National Standards Institute (ANSI) guidelines, or both when managing vegetation around transmission lines. The NESC deals with electric safety rules, including transmission wire clearance standards, while the applicable ANSI code deals with the practice of pruning and removal of vegetation. However, these rules and guidelines are not specific with regard to clearances between transmission lines and vegetation and are subject to interpretation. Nor do these rules provide a performance target for keeping vegetation from conflicting with transmission lines. Furthermore, these standards are not enforceable upon transmission owners, but have been adopted by NESC and ANSI as guidelines for appropriate practice.

- 104 utilities indicate that they adhere to NESC standards for transmission system maintenance.
- 92 of these specifically adhere to NESC Rule 218, which only provides that

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<sup>28</sup> Mechanical and chemical techniques are not mutually exclusive in general. Rather, mechanically clearing, *e.g.* with a bushhog, might take place followed by treatment with herbicide to retard regrowth.

<sup>29</sup> Final Blackout Report at 154.

trees that may interfere with conductors should be trimmed or removed. NESC Rule 218 does not prescribe clearances.

- 12 reported that they specifically follow NESC Rule 232, 233 or 234 which prescribes clearances of wires from ground, structures, and other installations.
- 34 respondents follow ANSI A300, which deals with proper tree pruning techniques to maintain the health of the tree, and does not contain any clearance requirements.
- ANSI Z133, used by 22 transmission owners, provides guidelines for utilities related to worker and public safety during tree pruning and removal operations.
- A large number of respondents adhere to NESC standards in conjunction with ANSI standards such as A300.
- 96 transmission owners report that they use internally-developed, state, or other guidelines.

Respondents did not explain why they follow a particular standard. As stated earlier, NERC is in the process of developing a vegetation management standard that may resolve the current lack of a clear, unambiguous standard.

### **Good Practices**

The CNUC Final Vegetation Report identified a number of good utility vegetation management practices. Among these good practices for existing rights-of-way are:

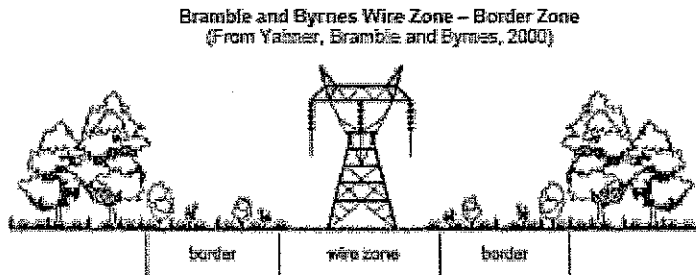
- Application of wire zone – border zone concepts (described below)
- Proper consideration of line sag and sway
- Frequent field inspection of vegetation conditions
- Comprehensive public education programs

In reviewing the filings, Commission identified a number of utilities that report practices consistent with the best practices identified in the CNUC Final Vegetation Report. Some examples follow.

One good practice relates to customer education. For example, some utilities have public outreach programs that educate the public about tree types and line clearances so that citizens will have the knowledge to report vegetation that is dangerous to transmission wires.

Several transmission owners employ a wire zone – border zone approach which is both environmentally friendly and effective in ensuring reliability. This method involves creating a low-growing vegetation environment directly under transmission lines, which physically prevents dangerous vegetation from encroaching into energized transmission facilities. The CNUC Final Vegetation Report stated that the wire zone-border zone has

“been proven to be effective in reducing and/or eliminating outages related to vegetation on transmission ROW [rights of way].”<sup>30</sup> The wire zone-border zone concept is depicted in the graphic below.



Several companies have taken measures to improve vegetation management-related reliability. Certain utilities, for example, conduct frequent ground and aerial patrols, as well as an inspection of all of its power lines after every major storm.

### **Reported Obstacles to Effective Vegetation Management**

In trying to understand the state of the industry’s vegetation management programs, the Vegetation Management Order sought information on factors that the utilities believe prevent or unduly delay their performance of adequate vegetation management. Sixty-six utilities report that their efforts to properly maintain their transmission lines are impeded by a variety of federal and state regulations that legally or practically prevent them from performing effective vegetation management. While such ordinances can be problematic and hinder the vegetation management process, proper planning and foresight on the part of the utilities, including allowances for additional lead time, would likely reduce the threat to vegetation management caused by some ordinances.

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<sup>30</sup> CNUC Final Vegetation Report at 21.

<b>List of Reported Obstacles</b>	
<b>Reported Obstacles</b>	<b>Responses</b>
U.S. Forest Service	22
U.S. Fish and Wildlife Service	12
National Park Service	6
Departments of Transportation	6
Other Federal/State/Local Governments	35
Private Landowners	20
Other	10

No transmission owners complained of the financial costs of vegetation management.

In many instances, a situation may arise in which a transmission owner is not able to plan for vegetation management. For example, trees can become hazardous to a line suddenly, as when a tree is dead or dying and has the potential to fall into a right-of-way and impact a line. These are a risk to reliability as long as the situation is not corrected, and so must be dealt with on a priority basis. Many transmission owners reported that the permitting processes can impede action necessary to properly manage situations such as this.

The conflicting goals and requirements for environmental protection and electric reliability create practical problems for vegetation management. Transmission owners cite federal regulations and their enforcement programs most frequently as impeding their ability to properly manage the vegetation within transmission line rights-of-way.<sup>31</sup> Twenty-two transmission owners cited U.S. Forest Service (Forest Service) restrictions on transmission owners across the country. They state that the Forest Service requires impact studies on wildlife and habitat impacts, requires environmental impact assessments, and limits the use of access roads to transmission rights-of-way and has inconsistent permitting procedures across the National Forests. In addition, twelve utilities claim that the U.S. Fish and Wildlife Service restricts the times at which trees can be pruned and limits herbicide use in order to maintain endangered species habitats. If

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<sup>31</sup> Some of the land management agencies have already begun streamlining their permitting processes. For example, the Forest Service began overhauling its permitting and environmental review process over a year ago. These changes should reduce the impact of permitting on vegetation management.

herbicide use is limited, many manually or mechanically removed trees can re-sprout and quickly grow back into power lines. Utilities also report that the various state Departments of Transportation had restricted tree pruning and removal in the name of “beautification” efforts. Otter Tail Power reports that the U.S. Department of Transportation, the U.S. Fish and Wildlife Service, and the Department of Natural Resources have repeatedly planted trees in its rights-of-way.

Several companies stated that state government organizations had taken action that they believed hindered their reliability programs as well. For instance, PacifiCorp reports that the Utah Department of Transportation had planted trees directly under several of its 345 kV transmission lines and would not allow them to be pruned. The New York State Department of Environmental Conservation requires transmission owners to file “Temporary Revocable Permits” that take up to two years to process for transmission owners to get access to trees that need to be managed.

Respondents also claim that a variety of local regulations and property owners prevent effective vegetation management. One of the most frequent claims is local and private entities limit the use of herbicides and the removal of trees. Some local park restrictions hinder trucks from accessing power lines. Native American tribes are sovereign and can restrict transmission owners in numerous ways when transmission rights-of-way pass through tribal land. For many utilities, attempting to manage numerous local and private restrictions can be extremely burdensome and can result in failure to conduct effective vegetation management. For example, the outage that occurred on Cinergy’s 345 kV Columbus – Bedford line on August 14, 2003 was due to a property owner’s refusal to allow Cinergy to complete the required work.<sup>32</sup> Cinergy had documented rights at the location but work was halted due to a court-granted temporary injunction obtained by the property owner.

### **Need For Legislation**

Ineffective vegetation management was a major cause of the August 14, 2003 blackout and a contributing factor to other large-scale blackouts. The U.S.-Canada Task Force found that clear, unambiguous, and enforceable standards are needed to reduce the potential for reoccurrence of vegetation related transmission line outages and recommended that NERC, in cooperation with the industry and the appropriate governmental agencies, develop such a standard.<sup>33</sup> The Commission’s review of the responses submitted confirms a lack of common standards and significant variations among utilities in their vegetation management practices.

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<sup>32</sup> CNUC Final Vegetation Report at 36.

<sup>33</sup> Final Blackout Report at 154.



NERC recently initiated a vegetation management standard development process. The Commission supports NERC's initiative to develop a clear, unambiguous vegetation management standard. However, adherence to NERC standards will be voluntary unless Congress enacts legislation with a clear federal framework for mandating development and enforcement of this and other reliability rules.

## **Recommendations**

The following recommendations are based on the information received in response to the Vegetation Management Order. The Commission has also drawn from the Blackout Report and the CNUC Final Vegetation Report. These recommendations were developed in collaborative discussions between the Commission staff and the state commissioners who participated in the initial review.

- 1) The United States Congress should enact legislation to establish an Electric Reliability Organization and make its standards mandatory and enforceable, under federal oversight. Under such legislation, if the Commission were to approve a NERC standard, then it would be mandatory and enforceable for all transmission owners and operators. Mandatory, enforceable standards will result in greater compliance and, therefore reduce the likelihood of individual transmission line outages due to tree contacts, electric arcing, and fires, and thus improve local and regional grid reliability.
- 2) Effective transmission vegetation management requires clear, unambiguous, enforceable standards that adequately describe the actions necessary by each responsible party. The NERC standard now being developed should serve this purpose. We recognize that the details of such standards must respect differing vegetative, climate, terrain, and other considerations, and thus may need to balance between results required and detailed prescriptions for how to manage vegetation, so it will be challenging to develop a clear, effective standard. But it must be done, and done as quickly as possible to assure that the nation's customers and economy do not remain at risk to this known reliability threat.
- 3) With respect to any jurisdiction issues that may arise involving vegetation management, it is important that state and federal regulators continue to coordinate so that jurisdictional considerations do not impede effective vegetation management.
- 4) As noted above, no reporting utility suggests that lack of financial resources or recovery of vegetation management expenses is an obstacle to the achievement of vegetation management goals. Nevertheless, both federal and state regulators should be sensitive to requests for rate adjustments in order to recover reasonable reliability and security related expenses such as those for vegetation management.<sup>34</sup>

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<sup>34</sup> See, e.g., Policy Statement on Matters Related to Bulk System Reliability, 107

5) The Commission should work with the CEQ and the federal land management agencies to streamline and better coordinate permitting and environmental requirements to facilitate better vegetation management without compromising environmental quality. While it is entirely appropriate that federal and state land managers protect the lands for which they have responsibility, the costs and consequences of vegetation-caused outages or blackouts are so high that agencies should reexamine these processes and requirements to see whether they need to be reformed. The Commission commits to work with the CEQ and other federal land management agencies on such an effort. Additionally, the CEQ could facilitate coordination with Native American Tribes for vegetation management on Native American tribal lands.

6) Outages are often caused by trees that become hazardous to a line, as when a tree is dead or dying and has the potential to fall into a right-of-way and impact a line. These are a risk to reliability as long as the situation is not corrected, and so must be dealt with on a priority basis. State, local and federal land managers should recognize the importance of this situation and should develop priority or rush procedures to allow the utility to take prompt corrective action to mitigate these “danger” trees.

7) Since numerous recent major blackouts have been caused by tree contacts with transmission lines, and the August 14, 2003 blackout was caused by trees that were managed on a five-year vegetation management cycle, the CNUC Final Vegetation Report concluded that a five-year cycle, while the industry norm, is not effective nor adequate for assuring transmission reliability across much of North America. For that reason, a shorter cycle should be used. While this and other enhanced vegetation management requirements suggested herein may increase utility costs, given the substantial and perhaps growing costs of reliability failures of the modern grid, the Commission and the states should encourage cost-benefit studies to examine the relative costs and benefits of current and more aggressive vegetation management practices.

8) Transmission owners should work to remove the obstacles to effective vegetation management along transmission rights-of-way. This should include, at minimum:

- Whenever possible, renegotiation of easement provisions where they do not grant adequate clearance and vegetation management rights.
- Full exercise of all existing easement provisions and rights to assure adequate tree-pruning and clearing.
- Where landowners or land managers have established lengthy permitting requirements or time-limited vegetation management operational windows, planning ahead to assure that the transmission owner or operator secures the

needed permissions in a timely and predictable fashion.

9) Variances in vegetation management practices may be resolved in the North American Electric Reliability Council (NERC) vegetation management standard development process; if they are not, the Commission may seek to convene the industry, states and other stakeholders to address the remaining.

10) State regulators and the utility industry should approach NARUC, National Conference of State Legislators, and similar organizations to develop model guidelines and educational materials that can be used to help state and local officials understand the importance of this issue and how to manage it more effectively, through measures such as tree-pruning and tree-planting ordinances. If state legislation or changed agency rules are needed, utilities and state utility regulators should take the lead within each state to initiate the communications and cooperative discussions required. The Commission would support this effort, if requested.

## Attachment A

### Companies that did not perform all identified vegetation management remediation by the June 14, 2004 reporting date

- American Transmission Co.
- Aquila, Inc.
- Austin Energy
- Basin Electric Power Cooperative
- Black Hills Power, Inc.
- Carolina Power and Light Co.
- Central Hudson Gas and Electric Corp.
- Central Louisiana Electric Company, Inc.
- City of Tallahassee Electric Utility
- Consolidated Edison Company of New York, Inc.
- Dairyland Power Cooperative
- Entergy Corp.
- Georgia Transmission Corp.
- Indiana-Kentucky Electric Corporation
- International Transmission Co.
- Lakeland Electric
- Louisville Gas & Electric Co.
- Lower Colorado River Authority Transmission Services Corp.
- Montana-Dakota Utilities Co.
- Municipal Electric Authority of Georgia
- Nebraska Public Power District
- New York Power Authority
- NorthWestern Energy
- Nstar Electric and Gas Corp.
- Ohio Valley Electric Corp.
- Oklahoma Gas & Electric Co.
- PacifiCorp
- PPL Electric Utility Corp.
- Public Utility District No.1 of Chelan County
- Puget Sound Energy, Inc.
- Rappahannock Electric Cooperative
- Santee Cooper Power
- Seattle City Light
- Sierra Pacific Power Co.
- South Carolina Gas & Electric Co.
- South Texas Electric Cooperative, Inc.
- Texas Municipal Power Agency
- Tucson Electric Power Co.
- TXU Electric Delivery
- Western Area Power Administration
- Xcel Energy

In some instances, the transmission owner/operator reported that remediation before the summer was not needed and would be completed as part of the regular vegetation management cycles later in the year. In other instances, the respondent states that there is no immediate threat to the line. Some stated that the work would be completed shortly after June 17 or as soon as possible. In at least one case, the required work was pending reaching agreement with a landowner. On August 26, 2004, Dairyland Power Cooperative filed an update with the Commission stating that all remediation has been completed.

## **Attachment B**

### **Primary Contributors**

LaChelle Brooks  
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Connie Hughes, Commissioner, New Jersey Board of Public Utilities  
Don Mason, Commissioner, Public Utilities Commission of Ohio  
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AF.

The United Illuminating Company  
Response to request from John Buckingham

Provide the following information for The United Illuminating (UI) Company's Distribution Tree Trimming program for each of the last five years:

- Total miles of tree trimming performed
- Cost per mile
- Explanation for increases in cost per mile trimmed

Also provide the planned spending and cycle trim miles for 2011

**Response:**

The UI Distribution Line Clearance Program is comprised of several projects which can be grouped into the five categories as shown below. The following table enumerates the last five years of actual costs and current budget for 2011 into these categories along with the program costs and the cost per mile for the two programs which are predominantly mileage based; Planned Circuit Miles and Traffic Control.

*in thousands*

Subcategory	2006	2006	2008	2009	2010	2011**
Planned Circuit Miles*	1,343	1,275	1,256	1,438	1,771	1,712
Traffic Control	512	658	407	518	960	910
Unit & Spot Trimming	579	586	587	555	699	679
Hazardous Trees	241	170	48	238	108	176
Remaining Line Clearance	150	196	238	190	148	225
<b>Total</b>	<b>2,825</b>	<b>2,885</b>	<b>2,537</b>	<b>2,939</b>	<b>3,686</b>	<b>3,702</b>

Annual Circuit Miles Completed	2006	2007	2008	2009	2010	2011***
Miles	539	491	418	443	469	492

Costs per Mile	2006	2007	2008	2009	2010	2011
Annual Circuit Miles Completed*	2,492	2,597	3,006	3,246	3,777	3,480
Traffic Control*	902	1,272	926	1,110	1,944	1,757
<b>Total</b>	<b>3,394</b>	<b>3,869</b>	<b>3,932</b>	<b>4,356</b>	<b>5,721</b>	<b>5,237</b>

\*Programs/costs relevant to per mile comparison

\*\*2011 budget 9 months actual 3 months projected

\*\*\*2011 miles total - 475 miles original plan, 17 miles advanced from 2012

\* Programs/costs relevant to per mile comparison

The United Illuminating Company  
Response to request from John Buckingham

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The following sections provide a description of each program category, the scope of work and explanation of annual cost variations

**Planned Circuit Miles:**

**Description:**

The expenditures related to the Line Clearance Planned Circuit Miles program work is based on the completion of the specific circuit miles trimmed in that particular year. This program is an effort to maximize the reliability benefit by cycle trimming all portions of the planned circuits. It includes costs associated with planned circuit miles (program work), brush removal, permissions and fuel cost adjustments

Program work encompasses trimming the three-phase portions of circuits on a four-year cycle and single-phase portions of circuits on an eight-year cycle with follow-up trimming scheduled for those single-phase sections experiencing two or more tree related contacts in a 36-month period.

Brush removal is the elimination of weed trees/brush from the edge of the road to 6 feet past the field phase conductor. Typically, brush is identified by Contractor Permissions Persons and it is performed during Cycle Bid Trimming.

The Contractor Permissions personnel obtain permission in advance for the Price per Mile cycle trim in support of program work, brush removal, hazardous trees and other line clearance.

Fuel cost adjustments is the estimated increase of fuel costs over the base rate as established in the contracted price. Fuel is estimated at \$3.25 per gallon diesel and \$3.00 per gallon gas. Any costs incurred for fuel prices paid in excess of this base rate is billed monthly as a separate item and passed through without mark up to UI. Likewise, any costs incurred for fuel prices below the base rate will be credited to UI on the monthly bill.

**Variance Explanation:**

In 2007, the contract price per circuit mile was inclusive of trimming per spec of planned circuit miles, brush removal, permissions and fuel. The new contract dated March 1, 2008 separated the costs for such items. The contract was competitively bid with the low bidder being awarded the contract. Additionally, the number of circuit miles trimmed varies from one year to the next creating variances in annual cycle trimming program cost. The variance in cost per mile can be attributed to the following factors; annual contractually negotiated increase in cycle trim cost per mile, annual variances in the number of brush units

The United Illuminating Company  
Response to request from John Buckingham

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removed<sup>1</sup> and variance due to the fuel cost adjustment. The 2011 dollars reflect \$65K which is being advanced from the 2012 budget.

**Traffic Control:**

**Description:**

Traffic Control is paid to municipalities for police utilization for traffic control associated with line clearance work. Approximately 95% of the traffic control costs are for cycle trim program work while the remainder is for other line clearance typically on main thoroughfares.

**Variance Explanation:**

The fluctuations in traffic control budgeted is driven by following factors; the number of circuit miles trimmed for the year, an increasing number of locations requiring police protection and the number of officers required at a given location varies by town and location. The 2011 dollars reflect \$30K which is being advanced from the 2012 budget, associated with the advancement of 17 miles from 2012.

**Unit & Spot Trimming:**

**Description:**

Line clearance units and spot trimming is specific work identified through customer requests. Customers include all UI ratepayers/homeowners, State Department of Transportation, all Town/City public works, parks, highway and tree departments. This includes unit costs for takedowns as well as crew time for set up and permissions related to the job. This category includes units, spot removal, storms and time and material trims.

**Variance Explanation:**

The variance is attributed to the actual type and volume of spot trimming performed annually. The new contract unit price is inclusive of all associated costs, overheads and profit of which the increase in the unit cost is mainly attributable to chip disposal, fuel costs and related labor and equipment increases.

**Hazardous Trees:**

**Description:**

The Hazardous Tree program requires the complete removal to ground of all identified trees. Hazard trees are identified in several ways including; UI vegetation management resources, contractor permissions personnel, tree trim

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<sup>1</sup> The volume of brush units removed annually are related to the miles of line trimmed under the cycle trim program and the vegetation characteristics along section of lines trimmed under the cycle trim program



The United Illuminating Company  
Response to request from John Buckingham

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crews, town tree wardens and customers. The hazard tree removal program is designed to remove trees identified as dead, dying, diseased or structurally defective and that are outside the normal trim area, but are a potential hazard to UI facilities. The process involves identification of hazardous trees through the circuit trimming program, reliability engineer, and Line Clearance Arborist and Technicians then communication with customers, CDOT and/or municipalities to inform them of the hazard and obtain permission to remove.

**Variance Explanation:**

In 2007, the budget related to Hazardous Trees was reduced by \$30K due to overall budget constraints and, as explained in OCC-84 and EL-58 of UI DN 08-07-04, approximately \$100K related to Hazardous Trees was deferred from 2008 into 2009. The 2011 dollars reflect \$23K which is being advanced from the 2012 budget.

**Remaining Line Clearance:**

**Description:**

The remaining line clearance category includes Contractor Incentive, Vine Management, Right-of-Way Line Clearance, RCM Single Phase Line Clearance and Substation Vegetation Management.

Contractor Incentive is an incentive payout to Contractor Tree crew workers as part of the contractor alliance. The plan contains three main goals with two overall criteria that must be met for eligibility. The main goals are (1) Financial/Productivity (per mile productivity of program work), (2) Customer Issues (less than 5 issues escalated to the executive level at UI) and (3) Reliability (number of tree related meters out) while the two overall criteria to meet eligibility include professionalism and attendance.

Vine Management is the removal of various vines from poles and guy wires including the ground cut, removal, chip and disposal of debris.

Right-of-Way Line Clearance is the removal of overgrowth on the distribution right-of ways. Typically, such work is identified and generated through ROW inspections and maintenance trim cycles.

RCM Single Phase Line Clearance is not part of the program work but rather performance based trimming initiated following occurrences of two or more tree related outages on a circuit during the prior 36 months. Trimming is performed based on the trim specifications on the entire side tap back to the first interrupting device. This is intended to minimize any tree related outages from occurring perpetually.

The United Illuminating Company  
Response to request from John Buckingham

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Substation Vegetation Management is bare ground and perimeter fence weed and vegetation control for safety at distribution substations.

**Variance Explanation:**

As explained in OCC-84 and EL-58 of UI DN 08-07-04, approximately \$25K related to Right-of-Way Line Clearance was deferred from 2008 into 2009 causing variances. The 2011 dollars reflect \$34K which is being advanced from the 2012 budget.

(B)

Two Storm Panel Testimony (11/9/2011)

Good morning and thank you for the opportunity to testify on this important topic today. My name is Eric Hammerling and I am the Executive Director of the Connecticut Forest & Park Association. CFPA was the first private, nonprofit conservation organization established in Connecticut in 1895 with a mission to foster a public appreciation for the value of forests; secure the passage and enforcement of laws directed to preserve, maintain and increase forests in Connecticut; and disseminate information about the science of forestry, the proper use of forests, and the care of trees.

At the time of CFPA's founding, there was no State Forester, no state forests or parks, no DEP or DEEP. In fact, there were no schools of forestry in the U.S. Then again, there were also no storms like Alfred yet on record.

We have come a long way in Connecticut in terms of our understanding of trees and forestry science, and as the knowledge of forests has grown, so has our society's love for trees. Forests now blanket almost 60% of our state, and we derive many benefits from our trees.

Yes, we have all been impacted by losing power, and yes, there are ways that trees could be better managed to reduce conflicts with power lines, but I want to make sure that we all take the long view and recognize that investing in the professionals who maintain and manage healthy trees and forests provide incredible benefits to all of us.

When maintained and managed properly, trees are not the problem; in fact, they make our communities more livable in many ways.

**Trees Reduce Flooding and Erosion: [imagine the damage that Irene would have done without trees holding things together]**

- Trees increase soil permeability; that is the ability of the soil to retain water, reduce flood runoff, and recharge groundwater aquifers.
- Tree roots also serve as anchors that reduce erosion and sediment flowing into our streams and Long Island Sound.
- Without trees, cities would need to increase stormwater drainage channels and waste treatment capacities to handle increased water runoff.

### **Trees are good for your Health:**

- Trees trap and hold pollutants like dust, ash, pollen and smoke that damage human lungs.
- Shorten post-operative hospital stays when patients are placed in rooms with a view of trees and open spaces.
- On average, every acre of trees produces enough oxygen for 18 people every day.
- Absorb enough CO<sub>2</sub> on each acre, over a year's time, to equal the amount you produce when you drive your car 26,000 miles. Trees also store an average of 2.6 tons of carbon every year, thus slowing climate change problems.

### **Not only do they improve Air Quality, Trees are good for your Mental Health:**

- Create feelings of relaxation and well-being.
- Provide privacy and a sense of solitude and security.
- When well-managed, urban forests contribute to a sense of community pride and ownership.

### **Used Strategically, Trees Reduce Energy Expenses:**

- Deciduous trees provide shade in the hotter months, and then drop their leaves and admit sunlight during the winter.
- Trees provide shade for homes and office buildings which reduces air conditioning needs up to 30%.
- Trees also help prevent the so-called "heat island effect" that features unshaded hard surfaces that can be 3 to 10 degrees warmer than the surrounding areas in the shade.
- Evergreens planted on the north side of a building can provide a wind break during winter that can reduce the need for heating by 10 to 50%.

### **Trees Are Good for Business:**

- Trees enhance community economic stability by attracting businesses and tourists.
- People linger and shop longer along tree-lined streets.
- Apartments and offices in wooded areas rent more quickly, have higher occupancy rates, and retain tenants longer.

- Businesses leasing office space in wooded developments find their workers are more productive and absenteeism is reduced.

### **Trees create Wildlife Habitats and Support Biodiversity**

- Trees and associated plants create local ecosystems that provide habitat and food for birds and animals.
- Trees offer suitable mini-climates for other plants that could otherwise be absent from urban areas. Biodiversity is an important part of urban forestry.

### **Trees increase Property Values**

- Healthy trees can add up to 15 percent to residential property value.
- Office and industrial space in a wooded setting is in higher demand and is more valuable to sell or rent.

Healthy trees and forests provide tremendous benefits, but if not managed properly can be implicated in severe problems like our power outages.

Above all else, we would like to see the State dedicate more resources to managing its tree and forest resources. Clearly, the current situation isn't cutting it.

At the town level, many towns have tree wardens who have many other responsibilities besides maintaining the public trees (in some instances, the tree warden has many other responsibilities that may include being the town's dog catcher).

At the State level, each field forester in the DEEP Forestry Division is responsible for managing over 40,000 acres as well as having responsibilities to work with private landowners. State forests could provide income to the state's coffers as well as support jobs if resources were allocating to managing them. We could double the field and urban foresters tomorrow and make a huge difference immediately in DEEP's ability to educate forest landowners.

UConn should be a great resource for private landowners who want to manage their trees and forests well (90% of our state's forests are owned and managed by

private landowners), but since Steve Broderick retired from UConn a few years ago, there has not been a dedicated Cooperative Extension Forester.

Thanks for the opportunity to testify today. I'd be glad to answer any questions you might have.



**➤ Requirements**

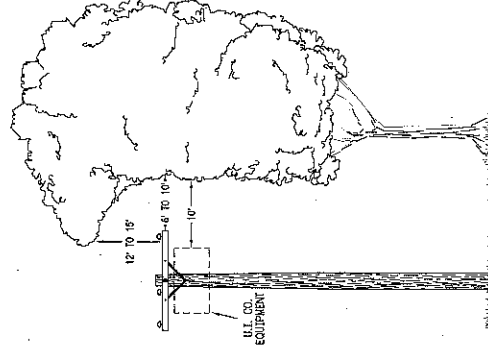
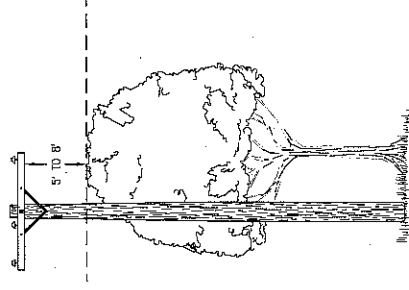
- The UI Company maintains the electrical system in accordance with the National Electric Safety Code.
- UI is required to maintain adequate line clearance between trees and conductors.
  - UI's program meets these requirements and those of the State of Connecticut Public Utilities Regulatory Authority to ensure safe and reliable electric service to customers.

**➤ Regulations**

- All work practices and definitions are in accordance with all applicable Industry, Federal, State and Local laws and regulations, approved standards and safety practices.
- These include, but are not limited to:
  - NESC
  - OSHA 29CFR 1910.269 Electric Power Generation, Transmission & Distribution
  - ANSI A300 "Standard Practices for Trees, Shrubs and Other Woody Plant Maintenance"
  - ANSI Z133.1 "Pruning, Trimming, Repairing, Maintaining and Removing Trees, and Cutting Brush – Safety Requirements"
  - Connecticut General Statutes
  - Department of Transportation
  - Local Ordinances
  - "Pruning Trees Near Electric Utility Lines" by Dr. Alex L. Shigo
  - ISO New England ROW Vegetation Management Standard OP-3 Appendix C.
  - NERC Vegetation Management Standard FAC-003-1



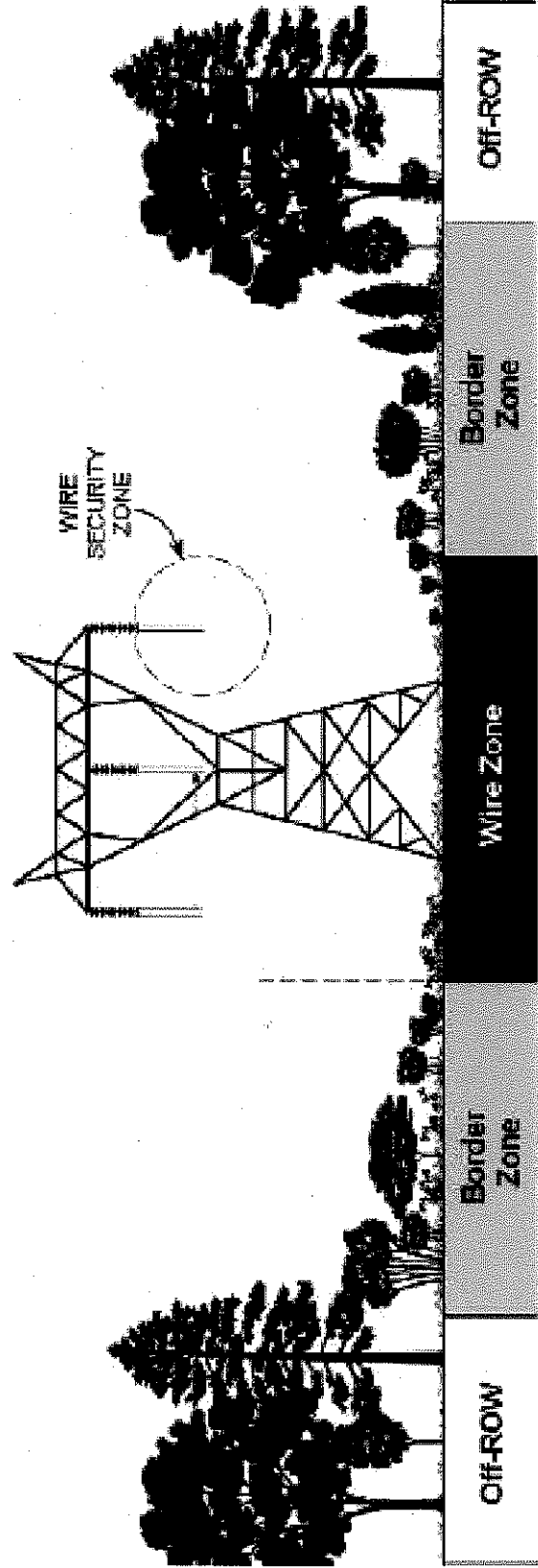
- **Overhead Distribution**
  - Approx. 1,382 miles single phase
  - Approx. 1,332 miles three phase
- **Cycle Tree Trimming**
  - Three phase lines are trimmed on a four year cycle
  - Single phase lines are trimmed on an eight year cycle
- **Additional programs**
  - Hazard tree removal
  - Vine removal
  - Reliability triggered trimming
- A study from 1988 estimated there are over 300,000 trees located along UI's distribution lines requiring maintenance
  - Over 100 trees per mile



TYPICAL DIMENSIONAL CLEARANCES

- **Overhead Transmission:**
- Approx. 94.3 miles 115kV
- Approx. 6.1 miles 345kV
- Lines are trimmed on a four year cycle
- Annual inspections are performed – to identify & remedy hot spot issues

## Visual of typical transmission line cross section



## Distribution

*in thousands*

Subcategory	2006	2,007	2008	2009	2010	2011P**
Planned Circuit Miles*	\$ 1,343	\$ 1,275	\$ 1,256	\$ 1,438	\$ 1,771	\$ 1,712
Traffic Control	\$ 512	\$ 658	\$ 407	\$ 518	\$ 960	\$ 910
Unit & Spot Trimming	\$ 579	\$ 586	\$ 587	\$ 555	\$ 699	\$ 679
Hazardous Trees	\$ 241	\$ 170	\$ 48	\$ 238	\$ 108	\$ 176
Remaining Line Clearance	\$ 150	\$ 196	\$ 238	\$ 190	\$ 148	\$ 225
<b>Total</b>	<b>\$ 2,825</b>	<b>\$ 2,885</b>	<b>\$ 2,537</b>	<b>\$ 2,939</b>	<b>\$ 3,686</b>	<b>\$ 3,702</b>

Annual Circuit Miles Completed	2006	2007	2008	2009	2010	2011P***
Miles	539	491	418	443	469	492

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Traffic Control*	\$ 902	\$ 1,272	\$ 926	\$ 1,110	\$ 1,944	\$ 1,757
Total	\$ 3,394	\$ 3,869	\$ 3,932	\$ 4,356	\$ 5,721	\$ 5,237

\*Programs/costs relevant to per mile comparison

\*\*2011 budget 9 months actual 3 months projected

\*\*\*2011 miles total - 475 miles original plan, 17 miles advanced from 2012

## Transmission

Description	2006	2007	2008	2009	2010	2011P*
Line Clearance ROWs	\$ 425,451	\$ 389,503	\$ 383,416	\$ 644,142	\$ 838,517	\$ 934,523
Veg. Mgt. Substation	\$ -	\$ 246	\$ 5,303	\$ -	\$ 128,000	\$ 2,865
	\$ 425,451	\$ 389,749	\$ 388,719	\$ 644,142	\$ 966,517	\$ 937,388

\*2011 Current Budget 9 months actuals, 3 months projected

**➤ Irene**

- 263 of 443 distribution circuits affected
- Estimated 1,750 locations investigated
- 300 locations with uprooted trees

**➤ Alfred**

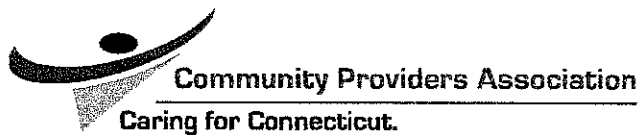
- 186 of 443 distribution circuits affected
- Estimated 450 locations investigated

**➤ Utility line clearance programs are not designed to eliminate the type of damage seen in storms like Irene and Alfred**



## **Tree Maintenance Recommendation**

- **United Illuminating recommends the development of a statewide task force comprised of all utilities and levels of government to develop a plan to address the issues of vegetation along roadways and adjacent to utility infrastructure.**
- **Key objectives:**
  - ▶ **Create a consistent statewide policy**
  - ▶ **Promote effective working relationships**
  - ▶ **Reduce the number of outages caused by tree impacts**
  - ▶ **Reduce the number of road closures as an aid to restoration efforts**



November 9, 2011

**COMMUNITY PROVIDER PRESENTATION - TWO STORM PANEL**

**Impact of the Storms on Health & Human Services  
Consideration of Issues and Recommendations for the Future - Overview**

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I am Terry Edelstein, President/CEO of the Connecticut Community Providers Association.

I am pleased to have been invited by Governor Malloy to serve on the Two STORM Panel representing nonprofit and health and human service organizations.

The Connecticut Community Providers Association (CCPA) represents organizations that provide services and supports for people with disabilities and significant challenges including children and adults with substance use disorders, mental illness, developmental, and physical disabilities. Community providers deliver quality health and human services to 500,000 of Connecticut's residents each year. We are the safety net.

The panel presentations this afternoon will focus on health and human services from the provider and the consumer perspectives. In this first panel, CEOs of nonprofit community provider agencies will discuss the steps that they took to assure the safety of the individuals they serve, identify issues raised during the two storms and make recommendations for potential action steps.

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Community providers have contracts with half a dozen state agencies to support people with disabilities and other challenges in community-based settings. These organizations provide healthcare services funded by Medicaid as well. They assist individuals to acquire vocational skills and support people in their employment. They provide residential supports for people in group homes, residential treatment centers, apartments and their own homes. They provide essential services in every city and town in the state.

Community providers are reliant on state funding which has remained flat through the end of the FY13 biennial budget cycle, far from keeping pace with the Consumer Price Index.

Our Association surveyed nonprofit organizations throughout the state, assisted by other associations, after Tropical Storm Irene and held numerous discussions with our members in the interim between the two storms and now, following Storm Alfred. I have attached summary findings from our survey as well as comments from the field to my remarks.

We thought that Storm Irene challenged our emergency capacities, but Storm Alfred tested every emergency plan we had.

1. We provided continuous services during both storms to meet the needs of the people we support and credit the extraordinary commitment of our staff providing this support.
2. We all do better living in our own homes and as community providers we attempted to utilize our own service delivery systems, including use of hotel beds, ahead of utilizing emergency shelters. Even the best intentioned shelter isn't equipped to meet the special healthcare needs of those we serve for a prolonged period of time.
3. The loss of cell coverage, internet access and cable lines made communication among our programs and with other parties extremely difficult in a time when we were providing basic healthcare to a vulnerable population. Texting was the most reliable means of communication.



4. Providing services during the warm weather after Storm Irene was entirely different than the challenge we faced during Storm Alfred in making sure that the people we serve were protected in a safe, warm environment.
  
5. The inability to receive accurate notifications from CLP about when power might be resumed impeded our ability to provide continuous services. Did we have to assure food safety and the availability of medication and shelter for one day or for eight days? For how many days in a row were we to ask our staff to work overtime to meet the needs of the people we serve?

Our panel participants will discuss the impact of the storms on the individuals they serve and make recommendations for the future.

**Panel Participants**

**Impact on Individuals with Intellectual Disabilities**

Patrick Johnson, Jr., ACSW, President  
Oak Hill

**Impact on Individuals with Behavioral Health Issues**

Barry M. Simon, Chief Executive Officer  
Gilead Community Services, Inc.

**Impact on Children and Families**

Gary M. Steck, LMFT, Chief Executive Officer  
Wellmore Behavioral Health

**Summary Comments: Nonprofit Provider Survey and Other Input from the Field**  
**Storms Irene and Alfred**

**1. Consideration of community providers as healthcare providers/ as essential safety net providers**

Community providers support people who:

- may be in precarious health
- require electrical hookups to power wheelchairs and breathing apparatus
- require electricity to prepare food/ grind food/ treat food
- require refrigeration to protect medicine

Providing more rapid access to power will offset other potential costs such as:

- Supporting individuals at higher levels of care such as emergency rooms and inpatient beds if they decompensate/ and/ or their health status declines

Providing more rapid access to power will provide for health and safety for vulnerable people in such areas as:

- Maintaining sanitation
- Maintaining safe drinking water
- Assuring that fire alarms work

**2. Alternatives to shelters**

Like the general public, individuals with disabilities who are served by community providers are best served in their own homes.

*According to our survey data, almost one-third of clients did not want to go to shelters during Storm Irene.*

- Stays in shelters may be necessary, but shelters aren't equipped to serve individuals with disabilities and older adults with complex healthcare, physical and cognitive needs.
- Shelters aren't equipped to serve individuals with exacerbated stress levels or those who fear going to strange settings.

**3. Each emergency prompts its own emergency plan**

Despite the excellent emergency plans developed by nonprofit organizations, Storm Irene and then Storm Alfred demonstrated system failures that might not be applicable in another emergency including:

New communication tools needed to be developed due to inability to communicate via land line, cell phone, internet, and cable

The length of the storm and the duration of the power outages meant that in some cases services could not be provided at agency locations for over a week resulting in:

- development of alternative service arrangements
- lost business revenue
- lost staff pay

Loss of electricity during an even colder time of year would have required widespread evacuations or much larger use of shelters

Loss of electricity meant lack of potable (and other) water and unsanitary conditions resulting in building closures

**4. If more nonprofit organizations had generators consumers would have been served at customary locations and businesses could have operated with less interruption**

State financing could be provided for the purchase of emergency and permanent standby generators. *43.8% of respondents to the Storm Irene survey did not have generators of any type.*

The State Bond Commission could support allocating bond funds already appropriated for purchase of generators

An emergency grant program could be established for the purchase of emergency and permanent standby generators for nonprofit organizations with contracts with the state

DSS reimbursement caps could be lifted to allow DDS group homes to purchase generators

The DSS reimbursement freeze could be lifted to allow DDS ICF-MR homes to purchase generators

**5. Business interruption resulted in lost revenue**

The inability to operate services meant a loss of fee-for-service and per diem revenue, affecting the agency bottom line. *43.3% of providers responding to our Storm Irene survey lost revenue because they could not provide services at agency locations. 46.7% had significant overtime expenses in order to make sure that services were maintained.*

The inability to know when power would be restored meant that clients could not access services and employees could not work (loss of pay).

The inability to know when power would be restored meant that organizations providing housing were dependent on longer stays in hotels than may have been necessary.

The inability to operate services will result in cash flow problems in the ensuing months

State agencies reimbursing or funding providers on a fee-for-service, hourly or per diem basis may need to adjust funding levels to assist nonprofit providers in weathering the months with reduced revenue

## 6. State agencies

State agencies provided helpful notifications to provider associations and provider agencies about FEMA and SBA opportunities. *45.2% of Storm Irene survey respondents praised the state agencies for providing updates to contractors.*

In future state agencies should consider:

- Asking for emergency plans as part of the contracting process rather than during preparation for a crisis or during a crisis
- Asking providers to provide updates in a consistent format across state agencies

It was difficult for service providers to provide information to state agencies during the crisis while trying to meet the needs of those that they serve

## 7. Governor's Office

*Many respondents to the Storm Irene survey praised Governor Malloy for providing regular and helpful updates on the status of storm remediation.*

## 8. Utilities

*44.4% of respondents to the Storm Irene survey were critical of the role of the utility companies.*

Accurate updates about power restoration would have assisted in providing services. Without this information businesses needed to remain closed to the public.

Power outage sites and maps were not specific about restoration times.

Text services did not provide specific information about restoration times.



**Oak Hill**

Since 1893, services  
& solutions for people  
with disabilities.

REMARKS

TWO STORM PANEL

November 9, 2011

Patrick J. Johnson Jr., President.

(E)

Eleanor A. Brooks  
Blindness Related  
Supports Center at  
Oak Hill

Individual and Family  
Supports Center at  
Oak Hill

The NEAT Center  
at Oak Hill

Oak Hill Birth to  
Three Program

Oak Hill Camp

Oak Hill Center for  
Relationship & Sexuality  
Education

Oak Hill Day Services

Oak Hill Foundation, Inc.

Oak Hill Professional  
Development

Oak Hill Residential  
Services

Oak Hill School

OAK HILL

My name is Patrick Johnson and I am President of Oak Hill. Oak Hill (also known as the CT Institute for the Blind Inc.) is the oldest and largest community based provider of services to people with disabilities in CT. Starting out as a residential school for blind children 118 years ago and today with over 100 sites in 59 towns throughout CT we provide residential services to over 400 people with multiple and severe disabilities primarily intellectual (developmental) disabilities. We have 84 residential facilities (7 independent living facilities, 61 CLA's & 16 ICF-MR facilities) which I will refer to here as group homes or homes.

Our mission and the parents, guardians, and family members who trust us to care for their children and loved ones have one expectation above all others and that is that we keep people safe. Our funding sources and licensing authorities; DDS, DCF, DSS, and local Boards of Education, also require that we have emergency and disaster plans and we do. Storm Irene and shortly thereafter Storm Alfred pushed our plans and our people to the limits of what is possible. You all know what it was like in your own homes over the past 10 days. When I reported to work on Sunday October 30 from my own home in West Hartford we had 40 homes without power. 15 were evacuated that day and remained evacuated for three to 5 days. 3 of our independent living facilities were also evacuated. Six of our 13 day programs were closed. The seven open day programs served as familiar shelters with showers, food, laundry facilities and heat. We faced five major challenges; communications, (which one of my colleagues will address), and the lack of power with declining temperatures in our facilities, gasoline for portable generators, and access to our facilities with downed trees and power lines and getting staff to and from facilities which are staffed 24 hours per day. Our entire main campus was running on generator power in North Hartford and our maintenance mechanics had begun visiting each of our group homes to assess damage and triage who would get the portable generators we had available. 20% of our properties have hard wired generators installed. This enables clients to charge their wheelchair batteries, staff to operate Hoya lifts, operate sump pumps to prevent flooding, operate pumps to provide water for bathing and toilets, assure refrigeration for food and medication, and lighting to assure safety and proper medication administration, keep phones operating and enable cell phones to be

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charged, do laundry, and on and on, and assure that facilities can survive safely for days if necessary if not accessible.

We have elaborate plans for evacuation, doubling up people in properties with power, utilizing day programs, and getting portable generators to properties that cannot be evacuated and need power due to cold temperatures, the need for refrigerated medication, or medical equipment requiring electric power. Many of our residents have extreme difficulty evacuating and adjusting to new environments. Responding to the needs of those in our care put some staff at serious risk. Our maintenance mechanics were using our own and their own chain saws to cut trees in the streets to get to our group homes with portable generators and assess damage and clear evacuation routes. If we could not reach a group home by phone we had trained maintenance mechanics (most of our colleague agencies do not have this capability and rely on contractors) that were required to personally visit each house that could not be contacted. They did this in some cases at serious personal risk. After installing generators, fueling them became a real problem because five gallon containers had to be filled and gas stations were not open and those that were had long lines and in one case after waiting over one hour our staff was told they could only fill two five gallon containers when they needed to fill a dozen. Many stations would accept only cash. Despite our pleas they were turned away. Our 1,400 staff covering various shifts could not get gasoline to get to and from work and in some cases hiked for miles to get to their assignments because roads were blocked. When staff is required to be awake at all times to support and assure the safety of our clients there is a limit to the number of hours they can do this.

Because of our size and contacts with generator distributors we were able to acquire and install 20 additional generators for Irene and 12 additional generators for Alfred. Some houses required more than one generator because of the size of the generators. We could only do this because we have skilled trade staff trained to do it. This is in addition to the 16 hard wired generators already in place and four portables we had previously. Many of our colleague agencies had to utilize hotels, community shelters and alternative sites but hotels were out of power too and filled up quickly. There was substantial food spoilage and replacing that food is a significant additional cost. We all certainly know that it is best to be in our own homes whenever possible. For people with disabilities who need help with toileting, Hoya lifts to get in and out of beds and wheelchairs, and who may have unique medical and behavioral issues that cannot be easily addressed in community shelters this is not only important. It is necessary. Their lives may depend on it.

**PLAN FOR THE FUTURE:** We must plan for the future. Imagine if this had been a major ice storm followed by a week of sub zero temperatures. Access might have been impossible for days, evacuation might not have been possible, and burst pipes and flooding due to lack of sump pumps as well as lack of water where there are wells

would have resulted in loss of life and a major disaster. I am a realist and know that in a major disaster we may be on our own for 24 hours or even several days so we should be prepared but can't be without proper tools, equipment, and plans.

#### **RECOMMENDATIONS:**

1. That the state of CT Dept. of Social Services again permit the capitalization of permanent generators with automatic switching equipment in all group homes and facilities for people with disabilities and allow reimbursement for cost in the room and board rates over a 10 to 15 year depreciation period. These generators should be fueled by propane with a two week supply or natural gas. Portable generators are only practical when safely installed, maintained, and fueled by trained staff and when fuel is easily accessible. For many non-profit agencies operating in deficit due to multi-year rate freezes, rate caps, and chronic underfunding, other funding options should be made available as a safety priority. Options could include bonding, grants, and revolving loan funds.
2. All gas stations should be required to have generators to pump fuel. I've been told Florida has such a requirement.
3. All group homes should be required to have battery powered CO detectors, especially where generator equipment is in use.
4. The Dept. Of Social Services should allow more than a three day reserve of medication for people on Medicaid. It used to be five days and was reduced to three days which could be disastrous when storms occur early or late in the month. This was problematic for a number of our clients and nursing staff with drug stores rationing supplies early last week because they were not sure they could get supplied.
5. Chronic underfunding has resulted in less attention to routine maintenance such as tree trimming and capital improvements but this is not sustainable as we all know if we do not keep up with maintenance in our own homes. Funding flexibility to enable us to cover the very real additional and alternative costs resulting from storms and natural disasters like these two storms needs to be addressed and some agencies are doing so but it needs to be codified and assured for already financially fragile private agencies.
6. Communications is being addressed by my colleague so suffice it to say this is a real problem as well with highly decentralized service delivery systems to folks with chronic needs.
7. A major concern remains getting our staff to their job sites. Group home staff are not viewed as essential personnel and in one case I am familiar with one of my staff being berated by a local police officer because her car slid off the road while attempting to get to the group home for her shift. -\*Local public officials do not see the critical nature of group homes in their communities

and generally do not prioritize clearing streets of trees to assure access and egress by staff and emergency vehicles. This needs to be addressed. We cannot keep people safe and alive if we can't get our staff to them.

I want to conclude by expressing my sincere thanks to those we serve and their families for their patience and faith in what we do, the wonderful staff in all community based services, public and private who stayed on the job despite their personal hardships and personal risks to assure the safety and quality care of our most vulnerable, people with multiple and severe disabilities. My gratitude as well to the Governor, our public officials, emergency responders, and a special note of thanks to the linesmen & women & tree crews who endured long hours of grueling physical labor to overcome, in a relatively brief period, the impact of Irene and Alfred. It could have been worse and it is for that we must prepare now.

Oh, and just in case anyone thinks disabled people are totally dependent, on Monday October 31<sup>st</sup> a number of Oak Hill clients who help prepare and deliver meals on wheels were making deliveries to shut in elderly. For those fragile elderly people this was often their only meal for days last week. In the end this is about building communities that care!





## **COMMUNITY PROVIDER PRESENTATION - TWO STORM PANEL**

### **Impact of the Storms on Health & Human Services Consideration of Issues and Recommendations for the Future**

By Barry M. Simon, Chief Executive Officer – November 9, 2011

Good afternoon Mr. McGee, Mr. Skiff and Members of the Storm Panel. My name is Barry Simon and I am the Chief Executive Officer of Gilead Community Services. Gilead is a community healthcare agency serving Middlesex County with programs in Middletown, Portland, Durham, Deep River, Chester, Cromwell, Old Saybrook, and Clinton. Gilead is one of several community agencies that make up the Mental Health Managed Service System in our area, and provides care to clients who are identified and referred by the Department of Mental Health and Addiction Services (DMHAS) and the Department of Children and Families (DCF). Gilead also provides Medicare and Medicaid services to the general public through our outpatient clinics. We have 245 employees and serve more than 600 individuals in our programs. We are the largest provider of Community Mental Health Residential and residential support services in Middlesex County.

Gilead's mission is to provide a broad range of high quality health care and recovery support services in the home and community to improve mental health, physical well being, independence, and community integration for the individuals we serve. We provide these services to individuals who are insured, underinsured, or who lack the financial means to secure such services in the private sector. Gilead operates a continuum of care to support recovery which includes Adult and Adolescent Group Homes, Supported Apartment Programs, an Assertive Community Treatment (ACT) Team, Community Case Management Programs, Outpatient Clinics, and Social Rehabilitation Programs.

As an agency All Gilead Programs are accredited by CARF International:

- **Gilead ACT - Assertive Community Treatment: Mental Health (Adults);**
- **Gateway – Community Support Program, Gateway – Recovery Pathways - Case Management/Services**  
*Coordination: Mental Health (Adults);*

- **Gilead Outpatient Clinic (Middletown), Gilead Outpatient Clinic (Chester) - Outpatient Treatment: Mental Health (Adults);**
- **Gilead One, Gilead Two, SCAP – Group Home - Residential Treatment: Mental Health (Adults);**
- **Baldwin Home, Iris Home, Anchorage Home - Residential Treatment: Mental Health (Children and Adolescents);**
- **Liberty Home, Women’s Program, GAP, SCAP – Apartments, Specialty Care ABI/TBI - Supported Living: Mental Health (Adults) services; and**
- **Gilead Social Rehab Center, Gateway – Social Rehab –Community Integration: Mental Health (Adults).**

As you can see, community providers are an integral part of the public/private partnership in the Purchase of Service Community healthcare system. We are the safety net that helps people live as full a life as possible. Our clients need the services we offer in order to live more productive, fulfilling and healthy lives. The services we provide are essential services. If we are unable to deliver on behalf of our clients...then there are significant consequences.

The community provider system is a cost effective means of providing vital services that are an integral part of the core mission of government. I am here today on behalf of my clients and my incredible staff who went above and beyond during both of these storms. In preparation for these storms the Agency staff and clients prepared the program sites by following our Natural Disaster and Utility Failure Plans. These plans are part of our Policies and Procedures and copies were sent to all staff asking them to print and review these plans at each program. Our Rehab Center is the designated emergency shelter for our programs to provide essential services which may include provision of medications, support services, or assistance with daily living requirements. When evacuation and relocation occurred, essential items to be relocated with clients and staff included: Client prescription medications; Non prescription medications; Client clinical information for emergency reference; Change of clothing; Blankets, pillows; Toiletries; and Specific food for specialized dietary needs. Five of our 16 sites have standby generators which have been installed over the past 5 years and provided shelter for a significant portion of our greatest need clients. We experienced outages in 13 sites with some experiencing outages lasting a week in a number of our residential and community client settings.

Gilead has done significant preparation with utilities to assure that communication systems are maintained in an emergency situation, especially due to our electronic Medical Record system. Our Doctors, Nurses, Therapists, and Case managers are dependent upon access to critical information. Our Computer system has multiple layers of backup and protection, yet with a total system failure we were only able to access the information from within our main Administrative building. This building functioned as a clinical hub for staff during the day and as a shelter for clients at night. Staff were challenged in locating some clients in the community (to make sure that they are OK/ in safe settings/ accessing medication/ taking their medication)

with cell, cable and internet services cut off this became quite a feat. Since many of our clients are located in their own apartments there was also a significant challenge in coordinating service delivery with so many systems inaccessible due to reliance on communication with Electronic Health Records, coordinating care, and availability of gasoline necessary to serve clients in the community.

Therefore, there is the obvious recommendation about support for backup power but, further I encourage the STORM Panel to recommend that the Executive Branch convene a small working group to develop recommendations to assuring access to essential supplies such as gasoline, propane, food, healthcare supplies and the utilization of state and municipal stock of supplies. Also needed is recognition of the priority standing for communication with cell, cable, and internet services for medical personnel to gain access to Electronic Health Records and to coordinate other healthcare services.

We provide excellent care to our clients, are part of the community, and are in contact with all the town offices within those communities. Community providers deliver services to over 500,000 of the state's most needy residents. Our clients did not wake up and ask to live the life they have, they fight every day to overcome significant obstacles. Community providers are part of the solution for addressing the needs of Connecticut's most vulnerable citizens during crisis situations like these storms. The 500,000 Connecticut residents that use community services need for us to be there in their communities. Given adequate support, we have the capacity and willingness to provide these needed services; which saves the State money and emergency resource by keeping individuals out of and taxing already stressed emergency rooms and shelters and provides people with their independence.

I want to thank the Governor and you for your time and effort to assure the safety of the individuals we serve, and to grapple with the issues which arose during the two storms. I hope you find the recommendations for potential action steps helpful and would be happy to answer any questions.



November 9, 2011

Good Afternoon Mr. McGee, Mr. Skiff and to the Members of the Panel,

My name is Gary Steck and I am the Chief Executive Officer of Wellmore. Recently Wellpath, Inc. and Morris Foundation affiliated to form Wellmore as the first step in a merger to be completed during 2012. Wellmore is a Waterbury-based, private non-profit corporation that provides innovative, lifespan-oriented community behavioral health care. We provide a continuum of essential and unduplicated services for children, adolescents and adults. Our origins date back to 1951 when Wellpath, then the Child Guidance Clinic of Greater Waterbury was formed and served less than 100 children a year. The Morris Foundation began in 1968 as a halfway house for males.

Wellmore Behavioral Health serves a 48-town region spanning from Greater Waterbury to the lower Naugatuck Valley and northwest Connecticut. When combined, the private non-profit company will operate with a \$20,000,000 budget and nearly 300 employees at 13 sites. Wellmore is expected to serve more than 15,000 clients on an annual basis, including children, adolescents, adults and entire families. Our primary funders are the Connecticut Departments of Children and Families, Mental Health and Addiction Services, Corrections, Social Services through Medicaid and Judicial Branch – Court Support Services Division. We are a United Way agency and also receive support from many Connecticut based charitable foundations.

Wellmore is one of the largest child and adolescent behavioral health providers in the State of Connecticut, operating regional emergency mobile psychiatric and outpatient programs, two therapeutic group homes, a series of intensive home based interventions, child abuse and victim recovery care, early intervention, prevention and community support services. Wellmore is directly linked to the Connecticut Behavioral Health Partnership as one of the highest volume Enhanced Care Clinics in the State. Most of those we serve are poor with almost a third of the children in our care reporting a history of child abuse or neglect. Adult services include three 24 hour facilities housing about 60 adults at a time.

As I described, Wellmore operates a regional Emergency Mobile Psychiatric Service for children, adolescents and their families, as well as five, 24 hour care sites. EMPS is part of a statewide network, coordinated through InfoLine/211. EMPS is a critical community resource with direct interface with schools, emergency services, hospitals

and emergency rooms, and, of course with parents when their child is in crisis. While we experienced some minor challenges during Tropical Storm Irene, maintaining critical and emergent services during this most recent storm was challenging, to say the least. All our land line communications and internet were down for days. Our main office was without power until November 2 and the computer network/internet, including our electronic client records, was down until November 3<sup>rd</sup>. One of our primary computer servers was destroyed and had to be replaced due to multiple power surges.

Despite frigid conditions, our vigilant and dedicated staff kept all our programs and services operational for critical response, even when the power was off. We do not have generator back up for our non-residential sites as it is cost prohibitive so our staff worked with cell phones and flash lights. Our primary focus was addressing emergent referrals, supporting families as best as we could to insure continuity of care including renewing prescriptions, until power was restored. Many of our staff were without power in their homes but reported to work to make sure our kids were taken care of.

Wellmore operates 5 twenty four hour a day facilities. Two of these sites lost power for many days. One had a hardwired generator and had no disruption. The other did not and it took days for us to find a portable generator to power heat, emergency lights and hot water. Many of our group home staff worked double shifts to take care of our clients and insure their safety. But there was no choice. We were on our own and it did not appear any of our locations were determined to be 'high priority', or at least there is no way for us to determine if even in Waterbury the City has us noted as an essential service. Given our ability to respond successfully and support the several thousand clients in our care through this unprecedented storm, it would make sense that an Emergency Mobile Psychiatric provider and an agency that houses 5 dozen people struggling with recovery be included in local plans to respond to emergencies.

In the absence of EMPS and the dedicated staff of Wellmore who came to work and took care of our clients despite these conditions, we would have been forced to direct clients to the local shelters and emergency rooms, which could have overwhelmed the already taxed system. We are proud to have maintained operations and contributed to the safety of the 48 communities we serve.

The effects of Storm Albert linger as we now tally the unplanned businesses losses we incurred through lost billing income, staff overtime, emergency purchases, computer damage, and the such. It will take many weeks for us to 'catch up' on all our scheduled appointments as many clients were unable to access services since there was no "non-



emergency" transportation, roads were blocked and schools were closed. As a non-profit organization that already delivers millions of dollars in free or subsidized care, we can not simply charge clients more or deliver more services to make up what was lost.

I would like to encourage the Storm Panel:

1. Recommend that the Executive Branch convene a small working group to develop recommendations for expanded access to permanent standby generators;
2. Recommend that the Executive Branch convene a small working group to develop recommendations to assuring access to essential supplies such as gasoline, food, healthcare supplies;
3. Recommend that the Executive Branch convene a small working group to develop recommendations about ensuring that community providers are integrated into municipal and utility emergency planning.

That being said, it is important to remember the members of Connecticut Community Provider Association are local, community based agencies. We serve every community in Connecticut. Our staff are your friends and neighbors who know your community and are there to help, even during the most extreme weather conditions. We were and remain an important solution to the challenges that face Connecticut.

Thank you for the opportunity to testify today.



# STATE OF CONNECTICUT

OFFICE OF PROTECTION AND ADVOCACY FOR  
PERSONS WITH DISABILITIES  
60B WESTON STREET, HARTFORD, CT 06120-1551



JAMES D. McGAUGHEY  
Executive Director

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## **Recommendations of the Office of Protection and Advocacy for Persons with Disabilities For Improving Emergency Preparedness and Responses for People with Disabilities**

**Presented to the Two Storm Panel**

James D. McGaughey  
Executive Director  
November 9, 2011

Good afternoon and thank you for this opportunity to provide information about the experiences of people with disabilities who have been in contact with our Office following Tropical Storm Irene and Storm Alfred, and to also share our insights about some lessons that experience can teach us. For those of you who may not be familiar with our Office, we are a small, independent agency that operates pursuant to both State and Federal statutory mandates to protect the civil rights of people with disabilities, investigate abuse and neglect, and provide information, referral and problem-solving assistance for people with disabilities. We are part of a network of Protection and Advocacy agencies that do similar work in each state and territory.

Our Office has been involved in efforts to shape emergency responses for people with disabilities since 2005. That was the year that Hurricanes Katrina and Rita hit the Gulf coast, and it became clear from both the media coverage and from after-action reports that people with disabilities had fared very badly. After several months of stressful struggling to help people mourn, find family members and locate caregivers, replace expensive mobility equipment and service animals, reconstruct treatment records, re-establish support systems, connect with new mental health providers and begin to find accessible places to live, my counterparts in Louisiana and Texas issued a plea to all Protection & Advocacy agencies to become more involved in preparedness planning in our respective states.

And so, working with a lot of other people and organizations, our Office has done just that. I have served on committees and task groups with staff from DEMHAS, the Red Cross and several local emergency managers to develop guidelines for Universally Accessible Shelters, to improve the accessibility of emergency communications, and to reach out through the DEMHAS Regional Emergency Preparedness Teams to local emergency managers and responders. Most recently, I have been serving on a committee that is co-chaired by DEMHAS and the Red Cross to develop a state-wide mass care sheltering plan. In addition, our Office has developed accessibility guides, offered to assist municipalities to review their facilities and plans to ensure accessibility, and has co-sponsored personal preparedness training sessions with the Department of Social Services' Aging Services Division. With

November 9, 2011

our DD Network partners, we also developed, and with DEMHAS' help we published a *Guide for Including People with Disabilities in Disaster Preparedness Planning* ([http://www.ct.gov/opapd/lib/opapd/documents/adobe/guide\\_final.pdf](http://www.ct.gov/opapd/lib/opapd/documents/adobe/guide_final.pdf).)

We certainly haven't done these things alone. Other disability interest groups have also provided trainings and engaged in advocacy activities as well. Our collective message has been consistent and fairly simple:

1. **The demographics in Connecticut communities have shifted significantly over the past 30 years as an increasing percentage of the population is aging, preferably "in place", and younger people with significant disabilities are no longer being kept in hospitals, nursing homes and other institutions.** Disaster planning must take this demographic reality into consideration – preparedness planners must understand that the numbers of people with age-related disabilities, the numbers of families raising children with complex medical conditions, the numbers of people using personal care assistance to live independently, the numbers of people who have cognitive, communications and psychiatric disabilities who are living in their own homes, scattered throughout towns and cities have all grown dramatically. **For both practical and legal reasons, it makes no sense to plan for "the general population" and "the special needs population" as if they were two separate groups, and it is an especially bad idea to assume that people living with disabilities are "patients" who need to be transported to health care facilities in a disaster.**
2. **The second part of the message is aimed at seniors, families and people with disabilities living independent lives in their communities: prepare yourself for an emergency.** Make realistic plans, develop a kit of essential supplies, do not count on help being able to get to you quickly.

As we look at the experience with Storms Irene and Alfred, the good news is that we can see that those messages have had some impact. Our Office has been conducting an informal survey over the past several months, and, though the information gleaned is far from comprehensive, we have found that many people did have personal or family preparedness plans, and that in most cases home health and human service agencies that support people in Connecticut communities had helped prepare people to weather the storms, and found ways to continue to provide support throughout the weeks following those storms. Families and neighbors rallied together and people helped each other. Nonetheless, it is very clear that with some notable exceptions, too few municipalities were prepared to meet the needs of people with accessibility and "functional needs", particularly with respect to sheltering. It is also clear that we need to refine and turn-up the volume of our personal preparedness message: depending on where they live, people who rely on electrical power for mobility devices or health-sustaining equipment, or who rely on helpers to get to them on a daily basis, or who are signed up for "lifeline"-type emergency calling systems, may need to make more extensive preparations and even make somewhat different decisions when facing the prospect of a prolonged event. Our specific observations and recommendations are as follows:



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1. Make Accessible and Functional Needs Sheltering a Reality: In the post-Katrina world, a lot of emphasis has been placed on trying to improve our capacity to evacuate people and provide public shelters. Because there had been so much trauma and loss of life amongst seniors and people with disabilities during that disaster, guidelines on inclusive sheltering for local and state governments have been developed by FEMA and the U.S. Department of Justice. The DOJ has also pursued ADA enforcement actions against municipalities that persisted in patterns of disaster planning that relegated people with disabilities to segregated sheltering.

This is much more than a matter of legal compliance. Research and operational experience has shown that if we want people to heed evacuation orders and utilize public shelters, we have to understand their concerns. **We now know that we have to let them bring pets with them, that we have to allow families and support circles to shelter together, that we have to assure people that their functional needs – including their need to bring mobility devices and recharge their batteries - will be met, and, perhaps most importantly, we must be able to assure them that they will not find themselves being sent to a medical or long term care facility simply because they have disabilities. Many seniors and younger people with disabilities dedicate their lives to staying out of nursing homes, and any suggestion that that is where they will end up if they present themselves at a local shelter, or heed an evacuation order, will result in non-compliance and decisions to “tough it out”, with possibly tragic results.**

It was disappointing to note, therefore that only one of the municipalities that opened a public shelter during Tropical Storm Irene advertised it as being accessible. And it was downright distressing to note that some towns chose sites for shelters that proved to be inaccessible, or that they erroneously thought had features which they later discovered did not exist. (One town had assured itself that the local high school had a back-up generator before opening a shelter there, but, after it opened, emergency managers discovered that the generators were only wired into circuits for refrigeration and lighting, and could not be used to power or charge batteries on wheelchairs, computers, cell phones or other devices.) Clearly, if adequate pre-disaster surveying and planning had been done, either better sites could have been identified, or temporary “work-arounds” could have been planned. Our Office has twice written to Chief Elected Officials, and I have personally visited and presented to each of the Regional Emergency Preparedness Teams regarding our willingness to assist with accessibility surveying and functional needs planning – so far only two municipalities have accepted the offer.

Perhaps the most distressing thing I learned by monitoring the Situation Reports from the State EOC during Irene was that one municipality had requested assistance from the State Department of Public Health in placing shelter clients with disabilities into nursing homes because it wanted to close one of its shelters, and electric power had not yet been restored to those people’s homes.

Fortunately, power was restored to their homes before they could be sent to nursing homes, but the fact this was considered an acceptable alternative is distressing.

This isn't to say that all shelters were deficient – the way that some were located, staffed and operated reflected the kind of site selection and administrative flexibility that one hopes for. And, especially during storm Alfred, when there were so many more people seeking public shelter, many shelter managers adapted “on the fly”, as best they could, to support functional needs people presented. Clearly, some local emergency managers have been paying attention. But, it is also clear that part of Connecticut's after action analysis of both these storms should include an examination of the issue of accessibility and capabilities of public shelters with an eye to getting everyone to understand their legal obligations as well as the considerable resources available to assist in inclusive planning.

2. In some places it appears there were significant disconnects between human service support agencies, home health agencies, and vendors of medical equipment and supplies on the one hand, and local emergency managers and utility companies on the other. The result was that neither the municipal officials nor the agencies could get answers to questions, and often didn't even know where to begin asking. This could be remedied by involving all concerned in local planning exercises. In fact, in those areas where that has happened (e.g. the Millstone Evacuation Zone), things went appreciably better. Here are some examples of this problem:
  - During Tropical Storm Irene, one agency that supports people with cognitive disabilities, most of whom live in their own apartments in shoreline towns, did not know how to advise people concerning evacuation and sheltering. The problem was that each town communicated very different and, in some cases potentially confusing information and directions. One town announced that all residents south of Route 1 should evacuate, but then chose to locate its daytime public shelter in a building that was, itself, south of Route 1. The overnight shelter in that town was in a different location, and did not open its doors until 10:00 pm. In contrast, the next town on the shoreline did not direct people to evacuate, but did keep a shelter open day and night for several days. The non-profit human service support agency's managers had trouble tracking and re-communicating the town by town evacuation and sheltering information, and felt their clients, who operate fairly independently and may receive only a few hours of support each week, were likewise confused.
  - Three days after the storm Irene hit, one Visiting Nurses' Association (VNA) that had made considerable advanced preparation and was diligently serving over one hundred people in several towns in Eastern Connecticut received a call from an official in one of those towns asking for assistance identifying and reaching out to “the shut-ins”. The official was unaware of the fact that the agency had already been doing exactly that, and

he clearly had minimal awareness regarding how home health agencies operate. Had the home health agency been included in regional planning and table top exercises, it would not have felt it was operating by itself, and the extent of its services and general information about its client population and operations would have been known to local emergency planners.

- A supplier of home oxygen equipment had distributed supplies of bottled oxygen to its customers prior to the storm, but knew that those tanks would only last for a limited time. Many of its customers normally use electrically powered oxygen concentrators (a.k.a “oxygen generators”). The company could not, however, get information from anyone about how long the power would be out, and couldn’t rely on usual telephone communications to keep customers informed. They tried to make the rounds and check on people, and they also contacted fire departments, that they also supplied with oxygen cylinders, to offer assistance to anyone they heard of who needed oxygen. If they had been included in regional planning exercises, they would have had a much better idea of who to contact for information, and emergency planners would have had a much clearer picture of peoples’ needs, and that this vendor was a potential resource that could have prevented a lot of EMS trips to local hospitals.
3. In addition to planning for congregate sheltering, give greater consideration to the needs of people who can and do “shelter in place”, especially during prolonged events. For many people the difference between Storms Irene and Alfred was temperature. Because it was colder in the days following Alfred, many more people needed to avail themselves of public, congregate shelter, and many more shelters opened and stayed open longer than was the case during Irene. It is predictable, however, that there will be other warmer weather events like Irene, and there are some scenarios – like pandemic events – when it will be desirable to avoid congregate sheltering. We have to get better at supporting people in “shelter-in-place” situations. This may mean affirmatively visiting people in their homes to distribute water, ice, food, etc., and to deliver prescriptions or other needed supplies. It may also mean coordinating road and debris removal with home-health agencies and meals-on-wheels, lending and tending portable generators, setting up “neighborhood watch” types of person-to-person mutual aid plans, or making other arrangements to communicate with and support people who stay in their homes. It also means being conscious of the dimension of time: the longer basic infrastructure is disrupted, the harder it is to maintain oneself at home, and the greater the likelihood of needing increased supports. To date, very little attention has been paid to this aspect of preparedness planning.

I should also note the importance of using multiple means of communicating warning information and updates. Members of the deaf community expressed appreciation that throughout Tropical Storm Irene, whenever the Governor addressed the State from the EOC, there was a sign language interpreter working close to him – so the TV cameras could include

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both in the frame. That was not the case, however, during Storm Alfred – there were no interpreters in sight when the Governor spoke. It is generally much easier for a person who has grown up with American Sign Language (ASL) to view an interpreter who is signing for a speaker than it is to read captions in English. Often the captions flash by quickly, and for native ASL users, English is a second language. On the other hand, for people who become hard of hearing or deaf later in life, and who never learn ASL, closed captions are very important. So, to ensure effective communication of important instructions and information during an emergency, both ASL interpreters and captioning are needed.

4. People reported considerable confusion about where, how and with whom one can “register” oneself as a person or family that might need some particular type of assistance in the event of an emergency. There is no uniform way this is handled amongst municipalities or even at the State level. People may think that because they filled out a “special needs” registration form for the Enhanced 911 system that they also signed up for a particular form of communication under the CT Alert Emergency Notification System (which is also sometimes called “reverse 911”). Or, vice versa. Similar confusion exists about notification to electric power companies about one’s need for uninterrupted power to operate ventilators, oxygen concentrators, suctioning devices, etc. Does the notification mean only that power will not be shut off for failure to pay the bill, or does it mean that the company knows it should not cut power to your home in the event it must de-energize lines for repairs? Does that notification mean that restoring power to your home will be considered a priority? And what about people living in senior/disabled housing? Do they have to register individually, or will the power company automatically consider them a priority for restoration of service? What about registering with local emergency services? Having worked extensively with local emergency managers and responders from across the state, I am well aware that there are lots of problems with operating and maintaining “registries”. In some towns they are formally kept, tied to the municipality’s Emergency Notification System, and updated by confirming contacts annually. Others are much less formal and much less likely to be kept current. Residents who inquire are sometimes directed to the local fire chief, sometimes to a first selectman. And some towns keep no registry at all. There are lots of differing opinions about the value of registries, about the resources necessary to maintain them, and about who should have access to information in them. I do not pretend to know what is best. My point is that there is considerable confusion about these issues, and that confusion does not serve people well. We need to examine these questions, consolidate whatever information and processes we can, and develop a solid, uniform message so that people who want to identify their needs in the event of an emergency know exactly what to do.
5. We need to rethink the personal preparedness messages we have been sending. Most are based on the national Ready.Gov material, which emphasizes having a personal plan, and developing a kit with flashlights, a battery-operated radio and sufficient water, non-perishable food and other supplies to last three days. This may be misleading people into thinking that they should

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anticipate a three-day period of disruption, after which things will be pretty much back to normal. As we have seen, that isn't necessarily so. In fact, as frustrating as it is to live without electric power for 5, 6, 7, 8, or 9 days in early November, if we experienced widespread outages in the depth of winter, when we would be fighting deep snow, ice, and sub-freezing temperatures, the path back to "normal" could take considerably longer. And then there are the local conditions to consider – remote, rural locations may be on their own longer than populated urban areas; proximity to flood-prone rivers or coastal areas carry their own risks, as do certain types of close-by industrial facilities. It may be that we need to urge people to plan for different scenarios and to acquire additional supplies or equipment depending on their needs and circumstances. I also think we need to give people some type of realistic guidance on how they should factor their own personal health and care needs into decisions about when they can stay home, and when it would be best for them to evacuate or seek shelter elsewhere.

6. Lastly, I would urge that the State create a position to specifically and exclusively coordinate the inclusion of people with access and functional needs in all aspects of emergency preparedness and response. This function is too important, and the knowledge and experience needed is too specialized to leave to already over-worked staff from agencies that are focused on other concerns. Ideally, such a coordinator would be someone from the disability world who has also gained experience working with preparedness planners and responders. He or she would have access to commissioner-level leaders as well as the capacity to work with municipal and regional staff and private sector agencies and consumer groups.

Thank you for this opportunity to share our experience and views. If there are any questions, or if there is any way that our Office can assist with your work, please feel free to contact me.



# STATE OF CONNECTICUT

OFFICE OF PROTECTION AND ADVOCACY FOR  
PERSONS WITH DISABILITIES

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## Summary of Key Points and Recommendations

1. Raise awareness amongst preparedness planners of the changing demographics of Connecticut Communities; and the implications of those changes for emergency preparedness. Just as there are many more large trees in Connecticut than there were in 1985, when Hurricane Gloria hit, there are many more people with access and functional needs living independently and/or “aging in place” in Connecticut Communities than was the case in 1985.
2. Clarify the legal responsibility of all levels of government to ensure that people with access and functional needs are included in preparedness planning, and are not treated as “patients”, are not thought of as a separate, “special needs” group, or seen as someone else’s responsibility. Good material and training opportunities are available on this – let’s use them.
3. Identify and conduct thorough surveys of potential congregate shelter locations to ensure they can meet (or can be temporarily set up to meet) the access and functional support needs of the communities they will be serving. Emergency managers and shelter staff should also receive specific training on access and functional needs. Superficial or dated shelter checklists and training curricula are insufficient for this task. However, resources do exist that can assist municipalities and planning regions to conduct shelter surveys, and assure that people are trained in the competencies needed for inclusion – there is no need to reinvent these resources. What is needed is a clear understanding that these are basic, imperative steps that must be taken. The following links will help:

### **Emergency Shelter Accessibility Checklist**

An Assessment Tool for

Emergency Management Staff and Volunteers

[www.ct.gov/opapd/lib/opapd/documents/adobe/emg\\_shelter\\_accessibility\\_checklist.pdf](http://www.ct.gov/opapd/lib/opapd/documents/adobe/emg_shelter_accessibility_checklist.pdf)

### **Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters November 2010**

[http://www.fema.gov/pdf/about/odc/fnss\\_guidance.pdf](http://www.fema.gov/pdf/about/odc/fnss_guidance.pdf)

### **Planning for the Whole Community**

Integrating and Coordinating the Access and Functional Needs of  
Children and Adults with Disabilities in Preparedness, Response,  
Recovery and Mitigation. April 2011

[http://www.fema.gov/pdf/about/odc/all\\_hands\\_0411.pdf](http://www.fema.gov/pdf/about/odc/all_hands_0411.pdf)

4. Improve communication and support strategies for “shelter-in-place” scenarios. Many of the weather/industrial/pandemic/terrorist events likely to affect Connecticut will involve sheltering in place rather than evacuation and mass sheltering. It is especially important to recognize that the dimension of time – the duration of an event and the time of year – has a significant impact on the needs of those sheltering in their own homes. To date, too little attention has been paid to this area.
5. Ensure that warning communications are transmitted in multiple formats and by multiple means. (E.G. Televised warnings and instructions should be both interpreted by sign language interpreters, and closed captioned; web-based material should be formatted so that screen readers can read it.)
6. Involve human service agencies (private as well as public), VNAs, home health agencies, equipment vendors, and disability organizations in municipal and regional preparedness planning and exercises. These agencies are community-based; have access to knowledgeable, experienced people; are able to access equipment, supplies and vehicles; and often know many of the individuals within particular communities who will need support to maintain their successful functioning. They are important resources. Many are also required to, or do have their own disaster plans, but are not included in municipal or regional planning or training exercises. The best way to ensure coordination is to involve them in drills and exercises.
7. Develop a uniform, coordinated, one-stop “pre- registration” system that include all possible emergency services and notification mechanisms. The goal should be to end the fragmentation across jurisdictions and confusion of multiple, uncoordinated appeals to sign up for this or that notification system, utility listing, etc., and give people a simple, clear, step-by-step process to follow across all jurisdictions.
8. Re-think personal preparedness messages and provide more detailed information about developing personal disaster plans. People should be encouraged to think about having plans “A”, “B” and “C”, rather than just having “a plan”.



**Two STORM Panel – Health & Human Services  
November 9, 2011**

My name is Therese Nadeau, and I'm here today to talk about the importance of emergency preparedness planning. I am here both as a person who has significant access and functional needs during an emergency, and a professional who has worked as an advocate for people with disabilities throughout my career. The past week for me, as I know is true for many of us, is a week I will never forget!

Over the past few years I have been involved in emergency planning efforts on a number of different levels. I assisted on a committee which developed universal access guidelines for shelters for people with access and functional needs, helped to train over 1,100 first responders, became trained and participated in a Citizen Emergency Response Team and I am trained in shelter management through the American Red Cross. Currently, I work for CT Community Care and provide training and technical assistance to municipalities in Region 2 (New Haven area) through a grant that ends at the end of this month. Little did I know when this grant started, the state would face Irene and Alfred. While one would not want the devastation that did occur to occur, it brought to light the need to prepare, and that hearing "we aren't ready to plan at this level" is not the answer that can be provided any longer.

Through these last few months of training/technical assistance in Region 2, I am starting to see people sitting together to brainstorm on what must happen now. Sadly, so much is needed everywhere and waiting is not an option!

During Alfred towns struggled to do the best they could, but I also know from the calls I received and people crying or scared, municipalities (even at their best) needed support with what to do for people with access and functional needs. People with critical needs requiring electricity to assist with breathing or nutrition struggled, people were told to go to hospitals even though they were not medically sick, cots were not accessible for many people with access and functional needs, and people were brought to shelters and left with little to no support. For some people, who generally needed little supports on a regular basis, they needed more supports in a shelter. Funding also limited what supports people received.

On a positive note, I heard stories about people feeling a real sense of community, and feeling supported by their neighbors. What people with access and functional needs want most is to be a "true" member of their community where they can share experiences together. There isn't a "one size fits all" approach to sheltering.

What is so obvious by all that has occurred, is training and technical assistance must continue. This should also go hand-in-hand with citizen preparedness training. It also MUST include equal participation of people with access and functional needs, including people with significant disabilities.

When I think about the past week, even with all the preparing I did and all that I knew, and the people I had in my life supporting me, life was a struggle, a HUGE struggle, and some days I just didn't know what to do. My days were spent mostly in my van keeping warm (hoping I would



have enough gas to get by), spending time at my town's shelter doing my breathing treatments and charging other necessary medical equipment, and going to bed early with my service dog against me to help keep me warm or sleeping in my wheelchair. Along the way, I met and spoke to people, had "van meetings" or gave support where I could. This helped to keep me going! But while the state gets back to where it was before Alfred, this memory for me will not fade. It encourages me more to want to share my knowledge and skills in an area we can't push aside any longer.

I urge the STORM Panel to consider the following two recommendations:

1. Provide support to municipalities for training/technical assistance so that if/when there is a next time, what occurred these past two emergencies will diminish because planning has occurred. This training/technical assistance should also include people with personal experience as an equal participant to the team.
2. Citizen preparedness for everyone is critical, including people with access and functional needs. Having representatives with personal experience helps to make the message "real."

Speaking for myself, and I know Connecticut Community Care, Inc. is also committed, we would like to be a participant at that table.

To conclude, I'd like to share an email I received a couple days ago from one of the emergency planners I have been working with over the last few months because it is an example of how we all need to work together, and when we do changes can happen. The email is as follows:

"I can't stop thinking about all the others who had simple and not so simple needs that did not get addressed these past 9 days. It is time that the state, DEMHS regions and municipalities work together with input from people like you who have expertise in sheltering to have a master plan that can be activated that all people in this state have knowledge of and can buy in to. Now is the time to strike!!!! We are going to move ahead in our area as it is a size (area and population wise) that has a chance of working."

Thank you for the opportunity to share my experiences and recommendations with you. I would be happy to help with further details and recommendations as planning continues.

Respectfully,

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Members of the Panel, Good Afternoon,

My name is Brian Cournoyer---Manager of Government Relations at the Connecticut Hospital Association.

Thank you for inviting Connecticut hospitals to participate in today's forum.

Hospitals are complex organizations, open and providing services 24 hours a day, 7 days a week, 365 days a year.

The challenges hospitals face are many---on a daily basis, healthcare professionals in hospitals prepare for both natural and man-made disasters.

Through working closely with the state's Department of Public Health, hospitals receive federal grant money which allows them to better coordinate and respond to local, regional and statewide disasters.

Also, in partnering with hospitals and other healthcare providers, the state of Connecticut, has become a national leader in the establishment of a Healthcare Professionals (ESAR-VHP) Volunteer response system---which basically allows for the pre-credentialing and sharing of licensed healthcare professionals in times of emergencies.

The most recent storm put tremendous pressures on hospitals and the healthcare delivery system. Without pause, hospitals across the state worked with community partners in order to meet the challenges they faced.

With me today are three healthcare professionals who are on the front lines of planning for and responding to the issues associated with disasters---I will defer to them to share with you their perspective on how Connecticut's hospitals plan for, respond to and recover from disasters. With me, I have:

Jim Paturas  
Director,  
Yale New Haven Health - Center for Excellence for Emergency Preparedness and Disaster Response

Beth Lawlor  
Director, Case Coordination  
Hartford Hospital

Roseann Williams  
Director, Environment of Care  
Eastern Connecticut Health Network

Again, thank you for allowing us to participate in today's forum.



**State of Connecticut  
Two-STORM Assessment Team**

**Acute Care Hospital Storm Preparations**

**How Hospitals Have Prepared for Disasters**

Connecticut hospitals have developed all hazards emergency operations plans (EOPs) that include annexes for responding to chemical and radiological releases, natural disasters, epidemics or pandemics, accidental or intentional biological agent exposures and other mass casualty incidents. In all cases, current EOPs require that hospitals are sufficiently prepared to meet the surge demands imposed upon them by these emergencies.

Despite these plans, recent large-scale incidents have underscored the necessity for more rigorous and comprehensive preparations to deal with what have become known as catastrophic health events (CHE) or hyper-complex events; that is to say, events which could result in many thousands of sick or injured victims. Examples of such scenarios include large-scale bioterrorism attacks, a nuclear detonation, or a major earthquake. Unfortunately, while conceptualization of the needed preparations exists, their realization is limited the lack of sufficient deployable resources, or transportation and medical assets required to manage the number of patients that a CHE could potentially engender. What is more, we have only just begun a state or national dialogue on altering standards of care in a crisis. Because of the overwhelming potential for the tremendous loss of life resulting from disasters such as the tornado in Joplin, Missouri, the earthquake and ensuing tsunami in Tohoku, Japan and Hurricanes Katrina and Rita in the Gulf Coast of the US, an enhanced level of catastrophic preparedness must be attained to minimize morbidity and mortality from such events. This does not diminish the need for continuing our all-hazards planning and preparedness approach toward disasters and other emergencies of a single-event.

To Connecticut's credit and in large part because of the support provided by the Connecticut Department of Public Health Hospital Preparedness Program (HPP),

hospitals across the state have been actively engaged in on-going cooperative planning and coalition building which directly contributed to the development and routine maintenance (updating) of emergency operations plans for traditional disasters and public health emergencies. Proven productive planning activities include working with interagency partners, namely, public health departments, emergency management agencies, fire departments, emergency medical services and law enforcement at local and state levels.

In support of cooperative planning, memoranda of understanding (MOUs) with hospitals for the expansion of on-site surge capacity, priority setting for limited resources, expansion of on-site health care work force as well as management of pediatric and other special populations have been developed. Every hospital in the state is also required to provide daily inpatient bed reporting and asset tracking. Currently, this is done through a real-time hospital-bed tracking system (HAvBED) and complemented by a situational awareness tool (WebEOC). During a mass casualty event, the bed and asset tracking system will be invaluable for managing patient surge.

The Connecticut Department of Public Health, with the support of state hospitals, has been a national leader in developing and implementing the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP). The ESAR-VHP program provides a single interoperable network of state-based databases which facilitate the verification and deployment of qualified volunteers in local, state and federal emergency responses. The patient tracking system and the ESAR-VHP were extensively utilized during the recent storm in Connecticut.

### **How Hospitals Have Prepared for and Handled Increased Patient Loads**

As mentioned, effective surge capacity requires the coordination of multiple resources including: staff, beds, supplies, equipment, physical structure, and systems. Arguably, the most important component of surge capacity are human resources. Among these are physicians, nurses, allied health professionals and support staff. For Connecticut hospitals, ensuring adequate availability of staff to care for patients may rely on

activation of the ESAR-VHP. It also requires that hospitals maintain HAvBed and WebEOC systems and provide updated information through these systems by conducting daily inventories of inpatient beds, operating room suites and emergency department status.

Whenever hospitals are presented with an emergency or disaster resulting in a marked increase in patient census, key operational decisions and situational assessments are made to maximize the efficacy of medical response, including the implementation of the hospital emergency operations plan; cancelation of non-emergency surgeries and other elective procedures; need to discharge of patients to home, other hospitals, long-term care or home care; and availability of sufficient sources of additional pharmaceuticals, medical equipment such as ventilators and IV pumps and other equipment.

#### **What Were Some of the Discharge Issues Specific to the Recent Storm Events**

Following the recent Connecticut snowstorm, decisions by hospitals to discharge patients were largely dependent on the locations of hospitals, amount of accumulated snow, number of patient visits, lack of electrical utility and degree of staff absenteeism. Hospitals in areas where large snowfalls occurred issued patient transfer requests to hospitals in areas with very light snowfalls. This is reminiscent of the situation that followed Hurricane Irene in which the Connecticut Hospice, in Branford, began making preparations to transfer patients, medical equipment and staff to the Yale-New Haven Hospital campus to ensure the continuity of care for the Hospice's patient population, as the result of an electrical power failure.

In the aftermath of the recent snow storm, several hospitals in the most affected areas were constrained to shelter elderly and chronically ill patients (e.g., oxygen dependent or special needs and/or technology/energy dependent individuals such as those with feeding pumps, wheelchairs, etc.) who did not require acute medical attention. In doing so, these hospitals inappropriately expended scarce resources to manage non-acute medical conditions and as such, reimbursement for resources and services rendered may be impossible.

### **Some Ongoing Gaps Include**

As alluded to above, it is likely that following of a major disease outbreak or bioterrorist attack, hospitals throughout Connecticut (and perhaps across the country) would be overwhelmed with patient arrivals and have limited capacities to surge. In addition, surge capacity–related issues extend beyond hospital staffing concerns; among several areas, they impact overall hospital response activities (versus solely medical activities), crisis care standards, alternative care sites and regional coordination of response activities.

The ability to work collaboratively with all response partners to ensure a community-integrated response to a disaster or public health emergency remains a major challenge for emergency preparedness. Of particular concern is the challenge of addressing the needs of at-risk, special needs, and vulnerable populations, including children, the uninsured or underinsured, the elderly, people with underlying health conditions, and lower-income communities.

To this end, the Connecticut Department of Public Health working with the hospitals will continue to participate in meetings with various stakeholders to finalize plans that ensure that special populations including those with functional and access needs, medical dependencies and other at-risk groups are provided with local or regional shelters that are appropriate for their needs during a disaster.

Thank you for the opportunity to address these issues today.

Respectfully,

James L. Paturas

Director, Emergency Preparedness

Center of Excellence for Emergency Preparedness and Disaster Response

at Yale New Haven Health System

## Hospital Panel: Governor Malloy's Two-Storm Assessment

### **Tropical Storm Irene:**

As part of Hartford Hospital's emergency preparedness efforts the hospital began initial planning activities in response to expected TS Irene on Wednesday August 24<sup>th</sup>. Departments reviewed their departmental preparedness plans, and contractors, vendors, suppliers, along with clinical and non-clinical staff were put on alert for potential activation in support of anticipated resource needs. A Hurricane Preparedness Meeting was called by the hospital's CEO Jeff Flaks to discuss preparedness activities. The hospital's Emergency Operations Plan and Hospital Command Center were activated through the weekend. Anticipating that travel would be difficult on Sunday morning, additional clinical and support staff were called into the hospital Saturday evening to support potential medical surge on Sunday, and a staff shelter was established to provide overnight accommodations for those staff members. The HCC operated until 3pm on Sunday, with a total of 44 staff members activated to the HCC to fill a variety of Command, General Staff, and Hospital Incident Command System positions.

**Challenges:** A collapsed City of Hartford sewage line under Retreat Avenue, combined with the volume of rain, caused the sewer system to back up into the basement level of the hospital and required significant clean up and restoration efforts; Hartford Hospital was able to reach out to community partners (Hartford Fire, Hartford City MDC) and vendors to identify sources for sandbags and pumps.

**Communication:** Multiple safety messages were developed to help keep staff, patients, family and visitors informed throughout the incident. Distribution included electronic media, but were also printed in both English and Spanish and hand distributed to patient floors.

**Staffing:** The incident did not result in more than a few storm-related patient admissions, and the additional support staff brought in, in anticipation of a potential medical surge, was more than adequate to meet the needs of all patients. Most of the storm related admissions were secondary to oxygen-dependent patients without power, and the inability of oxygen vendors to keep up with the increased demand for portable oxygen sources. As well, one ventilator patient without generator power at home arrived within 2 hours of her battery backup failing. This admission required a step-down level of care.

**Community Pharmacies:** Closed on Saturday and early Sunday in preparation for the expected storm landfall. This prevented emergency department patients to be released/discharged home with prescriptions that could not be filled. HCC worked with hospital pharmacy and CT DPH to develop a policy permitting prescriptions to be filled onsite by Hartford Hospital pharmacy with a temporary (3-day) supply of medication. This exemplary example of integrated problem solving involving multiple departments facilitated the ongoing delivery of safe and effective patient care.

**New York Hospital Evacuation:** Based on an emergent need, Hartford Hospital was quickly able to accept a number of critical care patients from a New York hospital under evacuation, facilitating timely and safe care management.

### **Winter Storm Alfred**

The rapidly increasing volume of patients presenting to Hartford Hospital Emergency Department required careful planning, day by day, minute by minute in order to effectively and safely manage all patient care needs. The planning necessitated creativity that went well beyond the hospital's existing surge plan.

In 2007, in collaboration with a multidisciplinary Capacity and Throughput Team, Hartford Hospital leadership developed a Hospital Surge Response to Bed Emergency. This plan includes operational capacity levels, as well as individual roles and responsibilities by department and is meant to manage capacity and throughput day to day, with a heightened response during any increased demand for inpatient beds. Bed huddles occur daily regardless of demand for beds, and during this emergency, the team met several times during each day to communicate all pending discharges, assess patient movement, identify any delay in patient throughput to and from all areas, and to determine next steps regarding surgical scheduling, staffing, and best placement of each patient.

**Existing and available surge capacity:** the hospital is able to surge up and accommodate approximately 24 additional beds on any given day based on patient needs, Emergency department volume and number of inpatient boarders. An Emergency Department pod, based on the number of inpatient boarders, can be converted to an inpatient area, with additional resources deployed from the STAR (float) team, other inpatient units, and calling in additional staff resources

### **When Demand Exceeded Capacity:**

#### **Additional Surge Areas Created in Response to Heightened Needs:**

- Conklin Building 1-an area reserved for Cardiac Rehabilitation-transformed in less than 12 hours into a discharge area for patients ready to return home, yet could not do so due to loss of power: staffed with RN's, this area was able to accommodate 10 persons
- Educational Resource Center-35 dormitory rooms available for discharged patients. For independent persons, no care provisions available.
- Emergency Department Admissions Unit-for admitted patients (boarders). This unit was created in less than 24 hours and involved erecting a wall in our Emergency Department Waiting Room to provide space for up to 10 admitted inpatients. This area is fully equipped to allow inpatient care delivery, including standard emergency equipment, and telemetry.

#### **Staffing:**

- Maximizing staffing levels included the activation of our Weather Advisory Policy; all employees on duty at the time of a weather advisory may be required to remain past the end of the assigned shift to ensure appropriate staffing levels to provide patient care. An employee scheduled to work who does not report for work, or has not been excused by management, during a weather advisory will not be paid, except due to extraordinary situations (if approved).
- STAR Team: A float team of nurses trained in coverage of all units, including the Emergency Department and all critical care areas. This team is instrumental in



assisting with our day-to-day staffing and coverage needs, and most importantly, assisting with coverage during crises.

- **Staff Commitment:** Commendable work on the part of nursing leadership and their staff nurses and all support staff. Many came in early, stayed late to meet the needs of our patients, despite the multiple challenges they faced at home.
- **Case Coordination:** Additional case management resources were deployed to the Emergency Department, working closely with social work staff to identify plans for the non-acute, but medically compromised patient unable to go home due to loss of power. Typical case volume each day was between 10 and 15 patients at any one time. Most required SNF placement, as the above defined surge areas would not meet their needs.
- **Staff Accommodations:** Cots were placed in Heublein Hall and nursing unit conference rooms to accommodate staff overnight. The dormitory rooms in ERC were reserved for discharged patient use.
- **Child Care:** Thursday and Friday (November 3<sup>rd</sup> and 4<sup>th</sup>) hospital administration recognized the need to assist staff in child care accommodations and quickly responded by planning and organizing this activity for 150 children of staff members.

### **Discharge Challenges Specific to Most Recent Storm**

- The volume of patients transitioned to SNF's increased significantly (from all hospitals) and bed capacity was quickly overwhelmed. As well, several facilities reported generator failures that prevented the timely transition of patients.
- SNF's with associated Assisted Living Facilities had to work with power outage problems in those settings before accepting hospital inpatients, decreasing further the number of available beds.
- Phone service interruption: one SNF lost telephone access later in the week, and thus were unable to accept patients safely into their building by order of the DPH. Other facilities also experienced phone access problems, hampering the ability of hospitals to call nursing reports and facilitate safe and timely transition.
- By week's end, many facilities were full and unable to accept new patients through the weekend (as unable to discharge their own patients into the communities where there was still no power)
- Discharge Transportation: Ambulance, wheelchair van and taxi transports were overwhelmed with the number of calls, and the delayed response affected many discharges. Specifically problematic was the increased number of 911 calls to ambulance providers, which directly impacts patient discharge flow.
- The inability to track the return of power to any given area hampered the ability to facilitate timely transition home.

### **Opportunities for Improvement:**

- Hospitals did not have real-time information on the SNF's able to surge up, and could rely only on the usual referral and acceptance process.

- Medical Necessity for SNF stay: the Hospital experienced difficulty with many commercial payers in securing authorization for those patients requiring a facility for safe care, but who failed to meet medical necessity for the level of care. Cases were either denied or hospital case managers were unable to reach assigned case managers.
- When patients did not meet medical necessity requirements for SNF care, the Hospital developed one-time contracts with several facilities for 7 distinct patients in order to ensure coverage for the costs of care for 3-5 days, in order to facilitate timely and safe transition.
- The expressed concerns (from many SNF's) related to reimbursement (or potential lack thereof) was the dominating theme throughout the week.
- MIMR and Level of Care Process: delayed transition of patients to SNF's. Ascend delays occurred in onsite evaluations of patients who were discharge ready.

### Summary and Conclusions:

Hospitals facing bed crises of potentially disaster proportions calls for a focused and rapid response by internal leadership, and one that cascades throughout the organization; at the same time, the hospitals must be able to trust that their state and local governments, other community healthcare providers and related service organizations are working in an organized fashion. The daily conference call with DPH and the other hospitals in Region 3 provided a forum during which hospitals could express issues related to exhausted capacity, resources, and safety concerns. Proactive planning in anticipation of a potentially overwhelming situation is critical. As well, Hospitals must have the confidence in a proactive response by all community providers, carefully guided by their state and local agencies in order to effect the safe and timely transition of every patient. Streamlining the regulatory requirements associated with each SNF placement when Hospitals are under such crises would be best if more prescriptive, and included waiving level of care requirements, assuring reimbursement for nursing home days, strategically and carefully managing the direction to SNF's to allow them to surge up (considering the safe staffing levels in order to accommodate such a directive) and ensuring full cooperation with all commercial payers to waive the specific Interqual or Milliman criteria guidelines that otherwise hamper efforts to effect timely discharge; these measures would all work to decompress overburdened emergency rooms and facilitate patient throughput overall.

Moreover, the activation of community resources that are aligned better with the needs of the healthcare community is critical; areas where power restoration was delayed included towns that are resource-rich in terms of available SNF beds. Concerns regarding generator failures, staffing challenges unable to accommodate surging beyond licensed bed capacity, inadequate phone access into the facilities, and the expressed concern of potentially not being reimbursed for level of care issues and lack of medical necessity all worked to slow down the process.

Despite the barriers, hospital discharges remained on track for the week; a total of 707 patients were safely transitioned last week. Despite the need for creative planning and discharge coordination, 38.5% of patients were still discharged prior to 12 noon. The hospital's OR schedule remained uninterrupted, and timely transition of patients from the PACU to the nursing units occurred safely and with rare delays.



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*Testimony of*  
**Roseann Williams, RN**  
**Director of Environment of Care, Safety & Security**  
**EASTERN CONNECTICUT HEALTH NETWORK (ECHN)**

*Submitted to the*  
**Two S.T.O.R.M. Panel**  
Wednesday, November 9, 2011

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Good afternoon Chairman McGee and Major General Skiff, members of the S.T.O.R.M. Panel and distinguished members of the Connecticut General Assembly, my name is Roseann Williams and I am the Director of the Environment of Care, Safety & Security for Eastern Connecticut Health Network (ECHN). I am also a registered nurse.

I want to thank you for giving me and my colleagues the opportunity to share our perspectives when it comes to our preparation, response and recovery from Tropical Storm Irene and Storm Alfred. I also want to commend Governor Malloy for establishing this assessment team.

ECHN is a not-for-profit community-based healthcare system that serves the residents of 19-towns. Our healthcare system includes Manchester Memorial Hospital; Rockville General Hospital; Woodlake at Tolland Rehabilitation and Nursing Center; John A. DeQuattro Cancer Center; wellness centers and a series of medical practices.

My remarks will focus on how ECHN prepared for the crises, the challenges we faced at the height of storms and how our health system overcame them with the help of our community partners. After you hear from the hospital panel, you will see that small community hospitals like Manchester Memorial Hospital and Rockville General Hospital face the same issues larger hospitals confront during a public emergency.

**Preparation:** Although an organization can never be 100 percent prepared, we must do what we can to be ready. Manchester Memorial Hospital and Rockville General Hospital develop various plans to deal with the influx of patients. Plans have been developed for evacuation, decontamination, mass fatality and, of course, our surge plan.

We conduct periodic drills to educate our staff and test our preparedness system, and work with the Connecticut Hospital Association to coordinate information sharing procedures throughout the state and region.

All hospitals faced the same challenges this past week: staffing, not enough beds, social admissions (patients that did not meet admission criteria), the medically-challenged self-care patient and those who just wanted a place to eat, stay warm and see a friendly face.

- ECHN, like other Connecticut hospitals, did the following:
  - set up a command center;
  - opened a supervised play area for our staff's children – since we are fortunate to have a licensed school in one of our buildings, this allowed school staff to operate the play area section;
  - formed a transport team;
  - developed a personnel staffing pool;
  - created a meal plan for local residents who came to our hospitals;
  - designated an area as a conference discharge room for those who needed to be transported to a shelter, their home or with family members;
  - assigned personnel to be stationary in the (Emergency Department (ED), such as lab, pharmacy and hospitalist;
  - held “huddles” several times a day to discuss issues and solve problems;
  - MD's shared offices and staff if their power was out;
  - established an area for our behavioral health clients to be seen and treated instead of coming to the ED because our off-site location was out of power;
  - assigned safety sitters to patient care units who worked in various departments such as Planning, Medical Records, Medical Affairs, that would round on patients during all 3 shifts to ensure their safety;
  - assigned non-clinical staff to clinical areas to answer phones or complete any task that was necessary during the surge;
  - and paired up registered nurses (RNs) who normally do not work patient units, Cardiac Rehab, Nursing Education, with other RNs to allow for a larger assignment (we did just in time training with these nurses).

When taking this all into consideration, one of things to remember is that in reviewing the ANA Standards of Care, we never compromised our patient's safety. Our motto was “all hands on deck” and I was proud to be part of those hands.

#### **Challenges:**

Do we face challenges beyond what we encountered last week? Absolutely - that is why we have a long way to go in addressing the crises testing Connecticut hospitals.

- Our hospitals were on generator for over 24 hours and we could not get an estimated time for the power to be back online. That meant no elective surgery because when we are on generator surgery was canceled.

- Ambulances were not transporting oxygen-dependent (O2) patients to shelters. They were all arriving at the hospital which slowed down the care for the patients who needed acute care. A question that needs to be answered is will this practice of transporting patients directly to a shelter with the O2 concentrator and medications be part of EMS standard during disasters?
- It is critical for hospitals to be financially reimbursed for the social admissions or they will be in trouble.
- A plan for shelters needs to be drafted to include not only well persons but those who are medically-compromised self-care and others who are medically compromised that do not meet hospital criteria for admission.
- Hospitals and their surrounding communities need to come together to devise solutions that would minimize problems at the time of a disaster.
- The community relied on our hospitals to support them, admit them, feed them, give them medication and provide whatever else they needed. They thought they had no other option but to call 911 and came to our hospitals.
- An education campaign on what hospitals and shelters can provide during a disaster must be implemented – focusing on an audience that includes families, private physicians, Visiting Nurse Associations, home oxygen companies and an individual’s support system.
- The Emergency Credentialing Program, although a good program, did not work for most hospitals simply because each hospital was responsible for staffing itself. No additional help was available from other hospitals because all of us were in the same situation.

**What Worked Well:**

Speaking on behalf of our health system ECHN, there are many things we can be proud of when it comes to our response to the storms. Our work with towns like Manchester and Vernon over the years paid off. I would encourage and challenge all communities to work with their hospitals to come up with solutions that would minimize problems at the time of a disaster.

The fact is the ECHN family pulled together to ensure the care of area residents was paramount during these storms. We faced difficult challenges but we overcame most of them because of our commitment to being prepared for all emergencies.

In terms of the work you are doing, here are some questions to think about when it comes to hospitals as you complete your assessment:

1. Medical shelters are needed throughout the state to house not only medically-compromised self-care individuals but those who are medically-compromised that do not meet the hospital criteria for admissions.
2. This storm required us to deviate from standard practice to meet the public need. Will these deviations automatically take place when faced with similar emergencies in the future?
3. There is a problem when it comes to payment for transportation and social admissions. Hopefully, you will be reviewing this.

4. What are the criteria for public health emergencies and should it be reviewed?
5. How can the state help hospitals when it comes to staffing and beds in times of emergency, particularly when other hospitals are in the same predicament?

I want to thank this panel and Governor Malloy for the opportunity to share the hospital perspective and thank you for your commitment in making sure our state and its partners learn from these crises and become stronger because of them.

If you have any questions, I would be happy to answer them now.

Submitted by:

**Roseann Williams RN, BA, COHN-S, HEM**  
**Director of Environment of Care, Safety & Security**  
**Eastern Connecticut Health Network (ECHN)**



## Governor Malloy's Legislative Storm Panel

### Introductory Statement

November 9, 2011



Good afternoon. Thank you for the opportunity to address this panel.

My name is Kathryn Roby. As Deb Hoyt indicated, I am a member of the Board of Directors of the CT Association for Home Care and Hospice; I am also employed by Qualidigm as a Quality Management Consultant. Qualidigm works across the health care continuum to improve the quality, safety and cost effectiveness of care. Today, I am speaking to you as a private individual, a Community Health Nurse with 30 years experience and a volunteer in a community shelter following Storm Alfred.

Let me begin by saying that my husband and I started volunteering at the shelter on Sunday helping with set up-cots, chairs, rooms, registrations, etc. The initial expectation was that we would shelter approximately 90-100 town residents in a "universal non-medical" setting. At its maximum, our shelter housed approximately 400 over night, literally hundreds more in/out for showers, meals and warming.

As the care needs increased, a decision was made to try to staff the shelter with a registered nurse on-site and EMT (off site) back-up. For three consecutive nights, I was the 8:00 PM – 6:00 AM on-site nurse.

An overview of the types of conditions I saw included individuals using breathing apparatus, insulin dependent diabetics, asthmatic children, oxygen dependent and wheelchair bound persons. Shelter residents ranged from infants to frail elders nearly 100 years old, elders with dementia and persons discharged directly from the hospital to the shelter. A dialysis patient went to and from the shelter for dialysis, but was returned each evening to our care. On one morning alone, three required emergency transport to the hospital. One of these suffered a significant heart attack and it was the shelter nurse who sat up in the night comforting the spouse. It was these moments that remind us why I became a nurse.

During those eight days, three VNA's sent nurses in to treat their patients who were in our shelter. Two private companion agencies had 24 hour staff tending their charges in the shelter. The shelter nurses tended diabetic reactions, bumps and bruises, hypothermia, anxiety and dementia. I could not be more proud of the care and comfort provided by not only the nurses but every single staff and volunteer who worked in our shelter.

As a Qualidigm consultant, I have been trained to step back after an event like this and ask what are our lessons learned from this experience? As I reflect on the last week and in the context of Connecticut's aging population, here's what comes to my mind:

**- As exhausted as everyone was, as surprised by the volume and length of the crisis, people saw a need and stepped up to fill it. Volunteer and staff alike across our state should be applauded for the efforts they put forth during this time. Citizen volunteers should be nurtured and encouraged.**

**-The skill sets of an experienced public health nurse or home care nurse lend itself to this type of unusual situation.**

**-In planning for future emergency situations, let us consider:**

**-the potential needs of the medically-fragile people of all ages**

**-Physician back-up and pre-approved emergent treatment orders**

**-some form of liability protection from the sponsoring municipality**

In a crisis situation like this, a Medical Shelter model may best meet the needs of an older, fragile medically-needy population; one that is larger and with fewer family or neighborhood resources available to them. I believe that the Home Care Community can be an integral part of a solution. I welcome your questions.