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Dealing with Electrical Outage Emergencies

Alice Miller

Jordan Energy Sector Capacity Building Activity



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Emergency Electrical Outages Can Result From Many Causes

- ☐ Snow storms
- ☐ Ice storms
- ☐ Heat waves
- ☐ Hurricanes
- ☐ Tornados
- ☐ Earthquakes
- ☐ Flooding
- ☐ Widespread destruction of infrastructure



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Snow and Ice Storm Damage Can Lead To Difficult Working Conditions





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Ice and Snow Can Cause Widespread Destruction of Utility Property





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So Can Wind Storms





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The principles for how to plan for these disasters is the same, regardless of the type of event.

- ☐ Plans need to be in place ahead of time that specify what will be done and who will do it
- ☐ One person needs to be in charge with a hierarchical chain of command
- ☐ Roles and responsibilities need to be clear
- ☐ Decisions on what restorations get highest priority need to be agreed on ahead of time
- ☐ Customers need to hear a single message



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Planning for Outage Events



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Doing Outage Management Planning Before An Emergency Occurs Is Critical

- ☐ There should be a formal plan that specifies the procedures to be followed when there are widespread outages
- ☐ It needs to be clear who is in charge of each function
- ☐ Roles and responsibilities need to be specified in writing
- ☐ The report needs to be updated at least once a year and after major events to incorporate lessons learned



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Some Restoration Decisions Should Be Specified Ahead of Time

- ☐ Priority should be given to restoring buildings that ensure health and safety (like fire stations and hospitals)
- ☐ Localities are sometimes asked to identify several other buildings that should receive priority
- ☐ After these priorities are addressed, typically restoration is done an area at a time until everyone is restored



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Plan Participants Should Receive Training on What to Do When An Emergency Occurs

- ☐ In the United States, utilities and regulators frequently use FEMA Incident Command Training, which is available in on-line modules
- ☐ Having common training lets all participants know what to expect
- ☐ Training exercises that simulate a natural disaster help reinforce the training and identify opportunities for improvement
- ☐ It is **important** to include local officials in training classes and exercises



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Inter-agency coordination and cooperation

- Utilities-municipal government
- Utilities-state and federal
- Regulators-other government
- Utilities-regulator
- Utilities-media

COORDINATION ISSUES:

- Clearing roads of snow and debris ahead of repairs



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Once It is Clear Where Restoration Work Will Be Needed, Equipment Needs To Be Staged





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The parking lot of the Garden State Plaza in Paramus, N.J., was one of the staging areas used by PSE&G crews and others who assisted the utility during the storm restoration period





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MORE STAGING PICTURES



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MORE ON STAGING

- How long in advance?
- Where to locate your staging area?



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Restoring Service



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There Are Steps That Need to Take Place Before Restoration Begins

- ☐ If an outage is anticipated, the utility should announce this and ask customers to be prepared
- ☐ Utilities should take steps to have all available personnel ready to work
- ☐ Once the emergency event is finished, damage assessment needs to begin
- ☐ Make-safe operations need to occur
- ☐ The process of bringing in additional crews needs to begin



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Examples of Unsafe Conditions That Take Priority





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Some Thought On Restoration Efforts

- ☐ Safety of crews and the public is paramount. Work should not begin until make-safe efforts have been completed
- ☐ Crews need to have a specified list of work to be done for each day.
- ☐ Restoration efforts need to be scheduled in a way that maximizes use of available resources



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Public and customer communications strategies

- Who communicates?
- Role of regulator?



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Repairs Can Be Much More Complex Than Situations Normally Encountered





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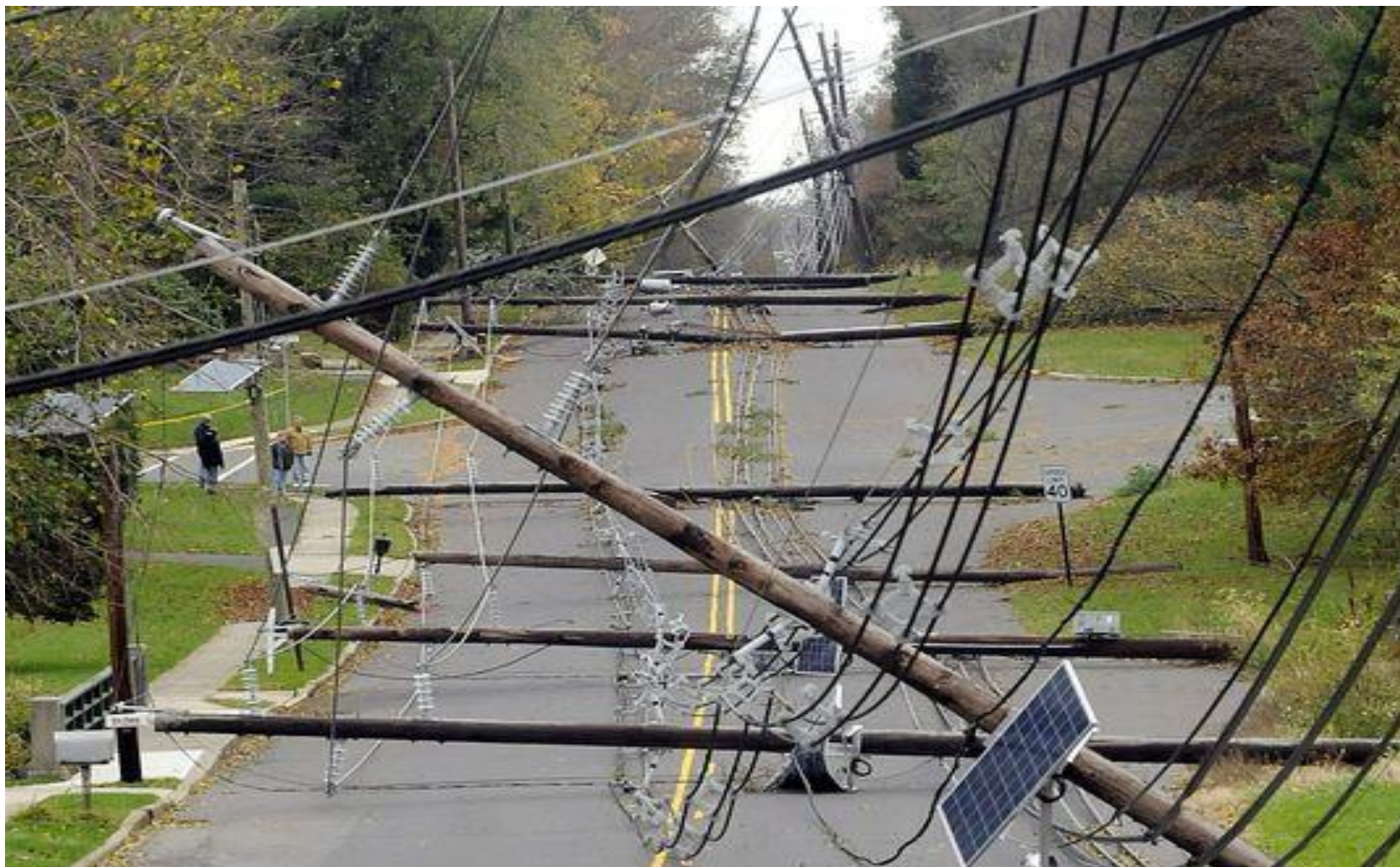


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Restoration Efforts Need to Continue Until All Service Is Restored





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Below Are The Section Headings From A Large Utility's Emergency Plan

- **I. INTRODUCTION**
- **II. INCIDENT COMMAND SYSTEM (ICS)**
- **III. OVERHEAD PLAN**
- **IV. COASTAL STORM PLAN**
- **V. UNDERGROUND CONTINGENCY PLAN**
- **VI. PROGRAM REVIEW**
- **VII. RECOVERY PREPAREDNESS/READINESS**
- **VIII. SELF ASSESSMENT/LESSONS LEARNED**
- **IX. DEFINITIONS**
- **X. GLOSSARY**
- **XI. REFERENCES**
- **XII. CROSS REFERENCE TO PSC PART 105**



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Control Centers



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At Least One Control Center Should Be Readied When A Major Outage Is Anticipated Or Has Occurred

- ☐ Control Centers can be run by the government, by the utility, or a combination of both
- ☐ A single person needs to be in charge of the overall effort and at each control center
- ☐ A hierarchical chain of command should be well understood by all participants
- ☐ The regulator can play a role by identifying where problems are occurring and being able to pass along information



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Control Centers Need To Have Access To Real-Time Information





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Examples of control centers

- Government with utility participation
- Utility with government participation
- Civil defense

Role of regulator in control centers



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Technologies and systems that improve command and control capabilities

- Automated call answering and processing
- Geospatial, satellites
- SCADA
- Tracking trouble crew locations
- Getting customer input to locate outages
- <https://www.pepco.com/home/emergency/report/online/default.aspx>



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Key Decision Makers Need A Meeting Place To Decide on Next Steps





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Control Centers Need To Have the Equipment Needed To Communicate Information Effectively

- ☐ The Control Center should have adequate phone lines, computers, and other equipment needed to communicate decisions on restoration priorities
- ☐ There should be a hot-line phone number for reporting safety issues and for high priority calls
- ☐ It is important to have a coordinated message and to avoid conflicting statements



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Communication



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Communicating Effectively With the Public During An Outage Is Critical

- ☐ Messages to the public need to be consistent (from the call center, from managers, and in the press) and updated at least daily
- ☐ Scheduled call-in meetings can be a good way to ensure a common message
- ☐ Customers are most interested in their own situation, so the more precise the information the better
- ☐ The messaging should come from the utility with oversight by the regulator



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How the Utility Communicates With the Public Is Important

- ☐ Communication with the public should begin before the event occurs and continue until all customers' service is restored
- ☐ There should be one designated spokesperson
- ☐ Customers become upset if a restoration date is established that is not met – it is best to under-promise and over-deliver



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Public messaging should include how to prepare for and cope with outages

- <http://www.pepco.com/home/emergency/prepare/default.aspx>



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Utilities Should Use A Variety of Media to Communicate With the Public

- ☐ Customers should be able to get information via the newspaper, television, phone, website, or social media (Twitter, Facebook, Youtube, and Flickr)
- ☐ Phone and internet communication can be targeted by region
- ☐ Brochures about what to do when a power disruption occurs can be distributed ahead of time and be available on the utility website



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Example of Twitter Content

- [CL&P @CTLightandPower 27 Dec](#)

Thanks to [@WCSH6](#), [@CTLightandPower](#) received great media coverage for helping [@cmpco](#) with the Maine power restorations. Kudos to our linemen!

- [CL&P @CTLightandPower 27 Dec](#)

Despite adverse weather conditions, [@CTLightandPower](#) crews restored power to approx. 2,000 CMP customers yesterday.

pic.twitter.com/qb6WhLLXdX



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Example of Facebook Posting

Connecticut Light & Power

January 11

We are aware of outages in East Windsor and Thompson. If you need to report an outage, please call us at 1-800-286-2000.

Like · Comment

Becky Auger Tellier, Angela Rich, Jennifer Anderson and 4 others like this.



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WhatsApp?

- OTHER SOCIAL MEDIA!!!



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Example of a Flickr Posting





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MORE PICTURES AND EXAMPLES!!!



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Website Pages Dedicated To Storm Information Can Be Helpful to the Public

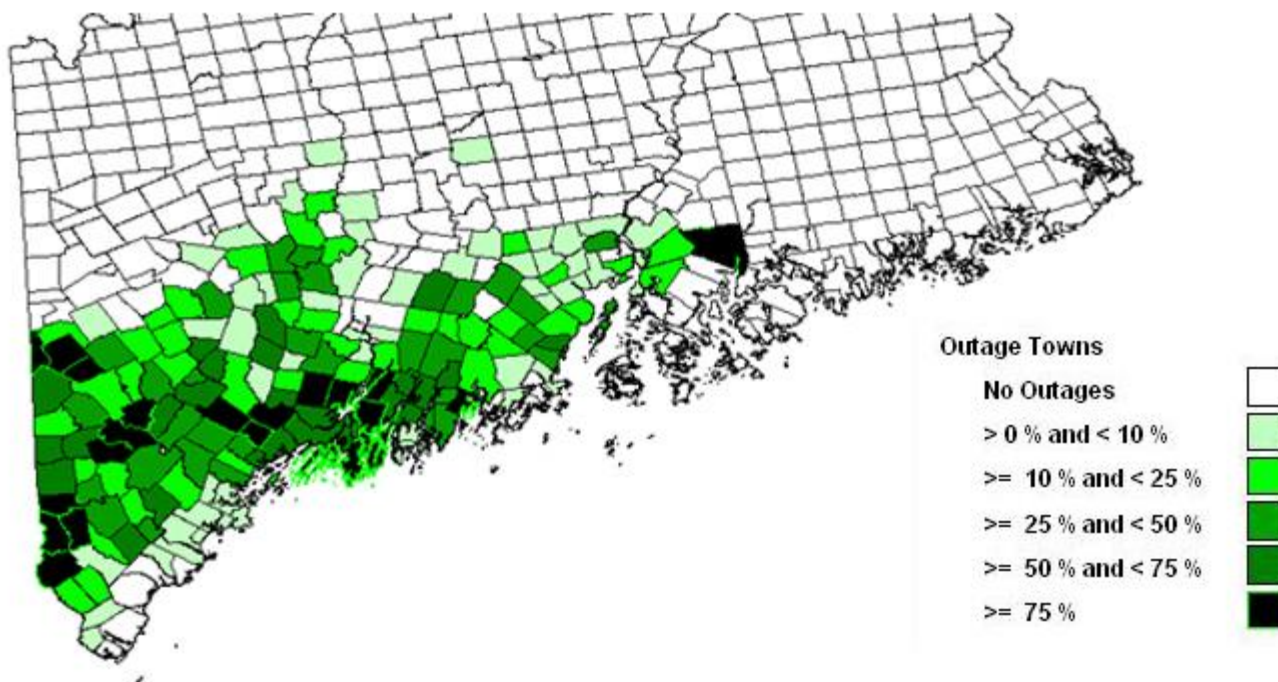
- ☐ Utility websites with special storm alert sections can be activated in anticipation of storms
- ☐ Some websites allow customers to report outages and to get restoration times tailored to their neighborhood
- ☐ Websites are usually easier to access than phone lines and are becoming an increasingly important communication tool



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Outage Maps Can Help Citizens and Government Officials See Restoration Progress

Monday, February 23, 4:30 p.m.





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Outage Information

How to use this map

[Check Outage Status](#)

[Report an Outage](#)



[Visit the Storm Center](#)



[Twitter Updates](#)



888-891-0938

Legend Summary Weather

☒ **Locations** ☐ **County**

- > 2,000 Customers Out
- 501-2,000 Customers Out
- 51-500 Customers Out
- 1-50 Customers Out
- Multiple Outages
- Service Area Boundary

Active Outages: 34

Affected Customers: 781

Last Updated: Jun 5, 6:04 PM

Information is updated every 10 minutes.

Go To Favorites

[Go To Overview Map](#)

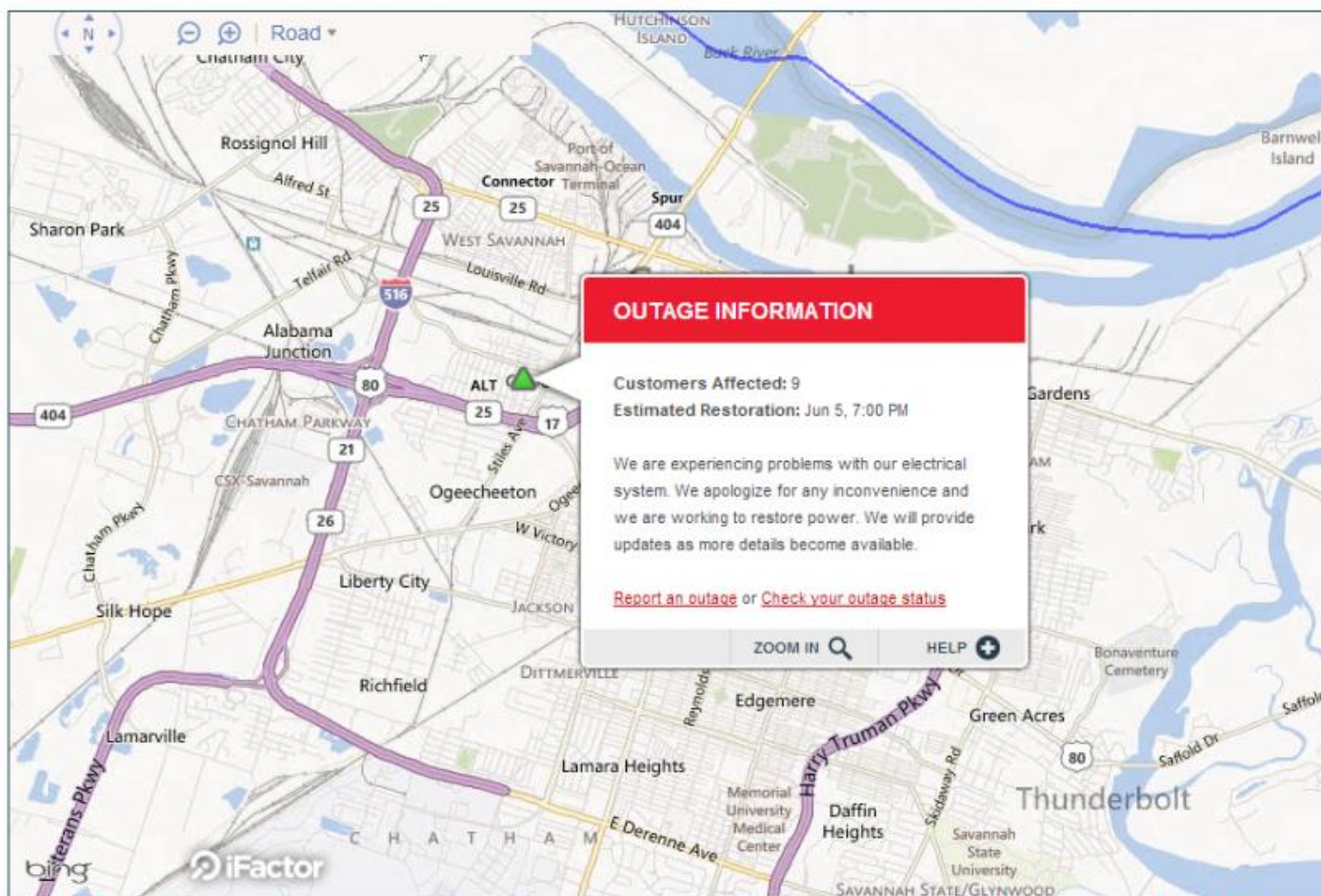
[Go To Your Location](#)

Go to an Address (enter ZIP code or street, city, and state):



Go to County

Select...





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MORE WEB SITE EXAMPLES!!!



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How the Utility Communicates With Those Involved In the Restoration Effort Is Also Important

- ☐ Call center personnel should receive an up-dated script daily explaining what has been accomplished and what is expected
- ☐ Those in the field should receive a daily update that describes what is being done and that emphasizes safety concerns
- ☐ Public officials need to be kept informed of what is happening – a liaison system is one way of doing this



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The Regulator Can Play An Important Role In Ensuring Good Communication

- ☐ Scheduled call-in meetings can be a good way to ensure a common message
- ☐ The messaging about the restoration should primarily come from the utility with oversight by the regulator
- ☐ The regulator's call center can help take messages when the utility's call center is overloaded



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Call Centers



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The Utility Call Center Is A Key Asset During A Major Electrical Outage

- ☐ Call centers should begin gearing up for greatly increased call volumes as soon as a major outage event is anticipated
- ☐ This includes:
 - ☐ Scheduling additional staffing
 - ☐ Increasing hours that call center is open
 - ☐ Making arrangements for handling increased call volumes
 - ☐ Reminding staff about procedures in place during emergencies



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The Utility Call Center Is A Key Asset During A Major Electrical Outage (continued)

- ☐ Supervisors should hold daily meetings with phone center representatives
 - ☐ To make sure they are providing a consistent message
 - ☐ To debrief on the types of calls they are receiving
- ☐ There needs to be a process for dealing with priority calls (those involving safety or from government officials) and for escalating calls to a supervisor



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Call Centers Are The Primary Contact That Customers Have With the Utility During the Storm





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Things To Keep In Mind About Utility Call Centres

- ☐ Working the phones during a prolonged outage can be extremely stressful
 - ☐ This needs to be considered during the planning process
- ☐ Some utilities make arrangements ahead of time for vastly increased phone capacity that can be tapped when needed
- ☐ Phone lines can be configured to take information from customers that can not reach a representative



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Mutual Aid



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Mutual Aid Can Greatly Shorten Outage Time

- ☐ Electrical outages tend to be labor intensive but time-constrained and involve specific regional areas
- ☐ It is in utilities' best interests to agree to help others during outages with the expectation of getting help in return when needed
- ☐ In the U.S. it is common for utility line crews to travel hundreds of miles to help with transmission and distribution line repairs



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PICTURE OF MANY TRUCKS FROM DIFFERENT UTILITIES

- AT work or in staging



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Utilities Need To Plan For How Mutual Aid Will Be Used

- ☐ Utilities need to have plans in place ahead of time to deal with questions such as:
 - ☐ Who do they contact for help?
 - ☐ Where should the crews report?
 - ☐ How will they be assigned?
 - ☐ What equipment will they use and are all systems compatible?
 - ☐ How will they report progress?
 - ☐ How will they be fed and housed?



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Mutual Aid Resources Need to Be Well Managed

- ☐ It is important that mutual aid crews be used effectively
 - ☐ It can be a public relations disaster to have crews sitting around waiting for instructions when there is so much work to be done
- ☐ Mutual aid crews are less likely to return in the future if they believe their services were not used effectively



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Costs associated with providing and receiving mutual aid



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Review and Remediation



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It is important to learn from major outages and make improvements

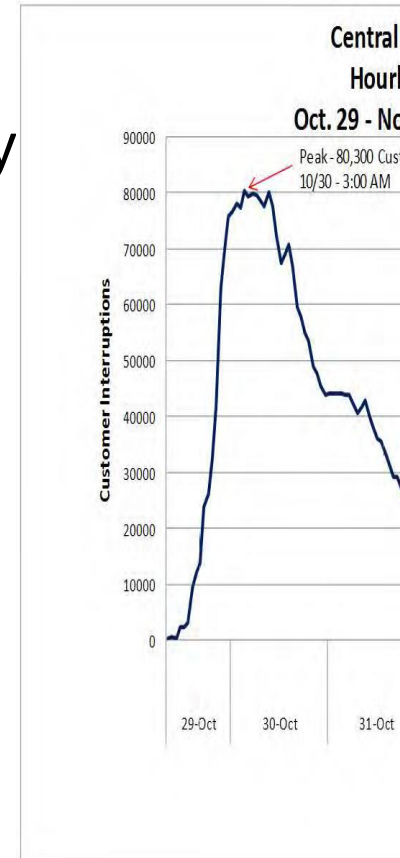
- ☐ All utilities should take note of lessons learned, even if they were not directly affected by the outage event
- ☐ One way to do this is by requiring preparation of a report after each major outage with lessons learned and recommendations
- ☐ [http://nuwnotes1.nu.com/apps/financial/nuinvest.nsf/0/5091F0B5C3FFDAB58525795A00585F4F/\\$FILE/Witt%20report%20on%20CL%26P%20power%20restoration.pdf](http://nuwnotes1.nu.com/apps/financial/nuinvest.nsf/0/5091F0B5C3FFDAB58525795A00585F4F/$FILE/Witt%20report%20on%20CL%26P%20power%20restoration.pdf)



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MORE ON REVIEW AND REMEDIATION

- What is a reasonable expectation for recovery does it vary by weather event?
- Who leads the review?
- What is the role of the regulators?
- Does FEMA or EEL or any other bodies
- get involved?





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Improving the resiliency of infrastructure

- Weather emergencies will grow in frequency as a result of global warming!
- Certain investments can greatly increase reliability of T&D infrastructure and resiliency in the face of weather events (SEE PEPCO press release:
- <http://www.pepcoholdings.com/about/news/archives/2012/article.aspx?cid=1982>

Also NYC:

http://www.nyc.gov/html/sirr/downloads/pdf/final_report/Ch_6_Uilities_FINAL_singles.pdf



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To Sum Up:

- Pre-planning can be a major help in speeding storm recovery efforts
- Safety is the first priority in outage management
- Lines of authority need to be clear and understood by everyone
- All parties need to present a unified message
- Customers want the most accurate information they can obtain and do not want to wait long to obtain it
- Following up on lessons learned makes for better responses to emergencies in the future



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The Goal Is To Get The System Back to Normal and Handle Future Outages Even Better

