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OPTIONS REGARDING UTILITY OUTAGES

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You asked for a discussion of options to better prepare for and respond to major utility outages, such as those caused by Tropical Storm Irene and Storm Alfred.

SUMMARY

This report describes options in the areas of risk mitigation, planning, outage response, and utility structure and regulation. It focuses on options dealing with utility companies, primarily electric and telecommunications companies. In many cases, the options could be implemented administratively or by the utility companies, but a number would require legislation.

Many of the options discussed in this report were raised in the hearings conducted by the legislature in the wake of Tropical Storm Irene, presentations before the governor's Two Storm Panel, and the investigation of the electric companies' response to the outages being conducted by the Department of Energy and Environmental Protection (DEEP), the successor to the Department of Public Utility Control (DPUC). While this report discusses a wide range of options, it is not exhaustive. The hearings and panel meetings have produced many recommendations in other areas, notably public safety, that are not discussed in this report.

RISK MITIGATION

Routine Tree Trimming

Falling branches were a major cause of outages in both storms. [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 to cut or trim the tree.

Among the options the legislature could consider are:

1. allowing the companies to trim a tree within a specified period after notifying the property owner unless the owner objects;
2. eliminating the consent provisions during periods when the governor declares a state of emergency;
3. eliminating the consent provisions entirely;
4. developing statewide vegetation management standards that apply to municipalities as well as utility companies;
5. requiring municipalities to consider the reliability of electric and telecommunications services in developing their tree-trimming programs;
6. requiring the companies' approval for property owners to plant new trees near utility lines, so that they can restrict the planting to species that will not pose a risk to the lines;
7. reducing the time between tree-trimming;
8. increasing the trim zone, at least in areas subject to frequent outages;
9. creating a task force with representatives of state and local agencies, utilities, and other interested parties to develop these standards; and

10. requiring that the electric companies actually spend the amount of money approved in the tree-trimming budgets on this activity.

The first six options would require legislation; the remaining options could be adopted statutorily or administratively.

Currently, telecommunications companies do not directly contribute to the electric companies' tree-trimming programs, although the telephone companies (the landline operations of AT&T and Verizon) do maintain their utility poles (about 50% of the poles in the state). The legislature or DEEP could require the telecommunications companies to contribute their pro rata share of the tree-trimming expenses as a way of reducing the impact of an expanded tree-trimming program on electric rates.

Hazard Trees

As noted above, the utilities have jurisdiction over trees located on highways and public areas or that hang over these areas. They do not have jurisdiction over trees otherwise located on private property, even though they may pose a risk to utility lines. In practice, the companies notify property owners of the hazard such trees create, but cannot (1) trim or remove these trees without the owner's permission or (2) require that the owner do so.

Among the options the legislature could consider are:

1. allowing the companies to trim or remove trees that are an imminent hazard to utility lines, subject to appeal by the property owner to the tree warden or DEEP;
2. requiring the utilities to notify municipalities of the locations of such trees to facilitate the municipality's emergency preparedness planning; and
3. allowing insurance companies to impose a deductible on the policies of property owners who are notified that they have a hazard tree on their property and fail to trim or remove the tree within a reasonable period of time.

One commentator in the DEEP investigation suggested that property owners be given an income tax credit to encourage them to trim hazard trees located on their property.

Hardening Utility Lines

In practice, the electric utilities have taken steps to reduce the damage caused by storms by “hardening” their lines, e.g., by using tree wire that is stronger than ordinary utility wire. Following Storm Alfred, one of the electric company representatives suggested that the companies could reduce outage risk by using such wire and reinforcing poles and crossbeams, although there would be costs associated with these measures.

One member of the governor’s panel suggested that rate-making procedures may discourage investments in hardening the electric system. DEEP or the legislature may want to review this issue.

Undergrounding Utility Lines

As discussed in OLR report [2011-R-0338](#), underground utility lines are subject to less frequent outages than overhead lines, although outages on underground lines take longer to identify and fix. Underground lines cost substantially more than overhead lines, and the utility regulatory commissions in several states have concluded that undergrounding existing lines is cost-prohibitive in most cases. OLR report [2011-R-0400](#) discusses undergrounding requirements in other states.

The legislature or DEEP could:

1. mandate undergrounding for service to critical facilities, such as public safety facilities;
2. require electric and telecommunications utilities to work with municipal highway departments and the Department of Transportation to analyze the feasibility of undergrounding utility lines in conjunction with major highway reconstruction projects;
3. require undergrounding for new subdivisions and other major developments; and
4. require the burial of service drops (the line that runs from the utility pole to a building) in the case of new residential or commercial construction.

In addition, the legislature could allow the creation of special services districts under [CGS § 7-235](#) to finance undergrounding of existing utility lines.

Emergency Generation and Distributed Generation

The law requires that certain critical facilities, such as hospitals, have on site generation that can provide power for a specified period of time after an electric outage. The law also provides a variety of incentives for distributed generation, i.e., generation located on a customer's premises that operates routinely. These include financial incentives and net metering, under which owners of distributed generation that use renewable resources receive a billing credit when they generate more power than they use.

The legislature could require that:

1. DEEP, in consultation with other relevant agencies, review current emergency generator requirements and present findings and recommendations as to whether they should be expanded;
2. mandate that certain facilities, such as cell phone towers, install emergency generators capable of running for specified period of time; and
3. some or all gas stations to have emergency generation, perhaps providing some state funding (see OLR report [2011-R-0389](#)).

The legislature could also expand the scope of the net metering law to allow for virtual net metering under a wider range of circumstances (virtual net metering allows electric accounts owned by the same customer to share net metering credits). It also could make emergency generators eligible for funding under the Local Capital Improvement Program ([CGS § 7-535](#) *et seq.*).

Presenters before the Two Storm Panel recommended that the state (1) help finance the cost of emergency generators for group homes and facilities for people with disabilities; (2) develop a program to provide grants for emergency generators, particularly in small towns; and (3) convene a working group to develop recommendations for expanded access to emergency generators.

Other Measures

An editorial in the November 14, 2011 *Connecticut Law Tribune* recommends that the state limit the ability of a property owner whose property has been damaged by a hurricane to redevelop the property as a way of reducing the risk of future damages.

PLANNING AND PREPARATION

Facilities Maintenance

CGS § 16-32g requires each electric company to submit an annual plan to DEEP for maintaining poles, wires, and other fixtures along public highways or streets that it uses 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.

Among the options the legislature could consider are:

1. requiring DEEP, as part of its plan approval process, to mandate increased staffing levels in light of the recent outages;
2. requiring DEEP to mandate staffing levels that increase with the severity of a storm;
3. extending the planning requirements to telecommunications companies;
4. requiring DEEP to look at staffing levels in comparable states and the impact of staffing levels on reliability; and
5. requiring DEEP to assess the status of the utilities' infrastructure and its ability to withstand various categories of storms.

Protocols

The legislature could require that electric and telecommunications utilities work with municipalities to develop detailed protocols for communications, road clearing, and establishing priorities for service restoration. The protocols could be subject to DEEP review and approval and adopted as enforceable DEEP orders. After an outage, DEEP could conduct a critique and make any needed changes to the protocols.

One commentator at the Tropical Storm Irene hearings recommended that information and processes regarding special needs registries be consolidated and a uniform message be developed so that people who want to identify their needs in the event of an emergency know exactly how to do so. This could be implemented administratively or by legislation.

The legislature or DEEP could require the utilities to use the Federal Emergency Management Agency's National Incident Management System protocols and require that relevant utility staff be certified under this system. The system provides a guide for all levels of government, nongovernmental organizations, and the private sector to work to prevent, protect against, respond to, recover from, and mitigate the effects of incidents to reduce the loss of life and property and harm to the environment. Further information about this system is available at <http://www.fema.gov/emergency/nims/>.

Plans

One commentator at the Tropical Storm Irene hearings recommended that the utilities and other stakeholders develop an emergency response plan that includes:

1. emergency contact information to ensure that municipal officials can request utilities to dispatch crews to immediately respond to dangerous or life threatening situations;
2. a central contact point for municipal officials to communicate with utility officials to better coordinate efforts between utility work crews and public works departments;
3. identifying of critical public safety service areas, such as fire or police stations as priority areas for restoration efforts, even if they are not in densely populated areas;

4. identifying of areas that serve vulnerable populations, such as elderly housing developments, as priority areas in restoration efforts, even if they are not in densely populated areas;
5. identifying of key access roads in small towns that are vital to obtain food, water and health care services or to evacuate residents;
6. coordinating with regional planning organizations and emergency management officials; and
7. methods for employing sufficient staffing levels in the event of widespread outages, including customer service representatives and work crews.

A presenter before the Two Storm Panel noted that special needs populations are increasingly living on their own. As a result, he recommended that the state not develop separate emergency preparedness plans for people with disabilities and the general public.

Pre-outage Communications and Coordination

One of the electric companies has prepared a video on what to do and what not to do when the power goes out. One commentator at the Tropical Storm Irene hearing proposed making this resource more widely available to the public before a forecasted major storm.

Municipalities and other parties have used reverse E-911 alert systems to provide information to residents before and during major storms, e.g., notices of parking bans and instructions on the disposal of storm debris. DEEP and the utilities could develop ways of making these systems more effective, e.g., including additional cell phone numbers in the alert systems. In addition, the effectiveness of such systems is jeopardized by the increasing reliance on telecommunications systems that rely on the electric system, including those using cable and Voice over Internet technologies. DEEP or the legislature could establish a working group to develop ways of communicating during emergencies with people who do not have traditional landlines.

Several commentators at the Tropical Storm Irene hearings and Two Storm Panel meetings recommended that public messages issued before a major storm stress that households may be without power for several days and need to prepare on this basis. A presenter before the Two Storm Panel recommended that communications be transmitted in multiple formats, e.g., televised warnings should be close-captioned and interpreted by sign language interpreters.

Historically, DPUC regulated companies under its jurisdiction by industry (electric, natural gas, telecommunications, etc.). The recent outages often affected electric and telecommunications jointly. Many telecommunications providers were unable to serve their customers due to a lack of power and in some cases telecommunications outages hampered power restoration efforts. DEEP could establish a working group with representatives of electric and telecommunications companies and potentially gas and water utilities as well to prepare integrated emergency preparedness plans. The working group could also work to improve communications among the utilities, state and local agencies, and other stakeholders.

Smart Grid Technologies

The utilities have systems that monitor and control the transmission and distribution grid. While the current systems are sophisticated, there are “smart grid” initiatives around the country to increase their capabilities and effectiveness. The November 7 [Connecticut Law Tribune](#) has an article on this subject. It notes that “smart grids” typically include sensors and other devices that can be used to link all aspects of the grid, from generator to consumer. Proponents note that modernization of the transmission and distribution grid can enhance reliability by allowing for transmission and distribution equipment to repair themselves or to be repaired remotely, as well as providing protection from cyber attacks and natural break downs (e.g., caused by squirrels).

The 2009 American Recovery and Reinvestment Act included more than \$4 billion in funding for smart grid technology investments. The Connecticut Municipal Electric Energy Cooperative received approximately \$9 million under the program, primarily for technologies to support “smart meters” in consumers’ premises, rather than transmission and distribution technologies. The electric companies were unsuccessful in seeking funding under this program but Connecticut Light & Power has argued that its proposed smart meter program would

reduce the duration of outages for individual customers by giving the company more accurate information as to when a customer's power is off. The legislature or DEEP could require by the electric companies to make additional investments in these technologies.

Other Measures

The state's electric companies have mutual aid agreements with out-of-state companies to provide additional staff in case of a major outage. The municipal utilities have similar agreements with their counterparts in other states. One speaker at the Tropical Storm Irene hearings recommended that these arrangements be reviewed as to their adequacy. One legislator has recommended that the agreements be rewritten to require specific and strict timelines to respond to Connecticut outages.

In the Tropical Storm Irene and Two Storm panel hearings, several people recommended that there be more frequent drills involving the electric companies, state emergency personnel, and police, fire and rescue crews.

OUTAGE RESPONSE

Coordination

Restoring utility service after an outage involves many parties, including electric and telecommunications companies, municipalities, state agencies, and others. The suggestions made in the post-storm hearings to improve coordination include ensuring that:

1. crews restoring power move telecommunications lines to make roads passable for public safety agencies,
2. telecommunications company staff are located in electric company emergency operations centers,
3. there are more points of contact between utilities and other parties, and
4. utility crews be assigned to local emergency operations centers immediately after the storm to coordinate road clearing.

Several legislators have recommended that more authority be delegated to utility representatives in each town to direct, control, and command the work crews on the ground to address priority areas as they occur.

Communications

One speaker at the Tropical Storm Irene hearings recommended that electric utilities that have checked downed wires mark them to indicate that they are not live to facilitate public safety access. Another recommended that the electric utilities develop and air public service announcements during outages encouraging customers to turn off or unplug their appliances to avoid surges when power is restored that can damage sensitive electronics.

Another person proposed that specific issues, such as downed trees, downed power lines, and water outages be routed to individual hotline numbers to help consolidate information, avoid duplication, and reduce frustration caused by “ping ponging” inquiries between utilities and various local agencies.

One of the electric companies identified a need to do a better job of translating its policies and practices into information that is useful for municipalities. A telecommunications company recommended an increased awareness and use of the Federal Communications Commission’s disaster information reporting system. Further information about this system is available at <http://transition.fcc.gov/pshs/services/cip/dirs/dirs.html>.

Following Storm Alfred, a municipal official recommended that electric company liaisons to municipalities be given better access to utility damage reports and restoration projections.

Operations

One of the speakers at the hearing following Tropical Storm Irene argued that managing crews from electric company command centers caused many delays, as crews often were idle while waiting for work assignments. He proposed allowing the electric company representative assigned to a town to supervise the restoration crews assigned to that town.

The electric utilities maintain lists of customers who are medically at risk in an outage, e.g., those on respirators. One commentator proposed that the utilities develop specific procedures for such customers who cannot be readily moved. At the hearing, several commentators recommended that restoration priorities take into account for the fact that residents who are on wells or septic systems face health issues if their power is not restored within a few days of an outage.

One commentator at the hearing proposed that the electric companies seek out retired linemen and other experienced personnel in the state before considering bringing in crews from other states. Similarly, one legislator has suggested that the electric companies be required to train and maintain emergency “stand-by crews” made up of first responders, and retired utility workers as well as public safety staff such as firefighters to assist utility crews. Another commentator at the hearing recommended that the companies develop a program to train licensed electricians as certified line testers. During major outages they could work with state and local road crews that clear roads of downed trees and wires and help provide access for public safety vehicles.

Following the storms, several municipalities set up free charging stations that allowed residents to power cell phones and essential communication devices. The state could encourage other municipalities to do this and help provide information on the availability of these sites.

UTILITY INDUSTRY STRUCTURE AND REGULATION

Performance Benchmarks

Massachusetts has adopted legislation, described in OLR report [2011-R-0385](#), that requires the Department of Public Utilities (its equivalent of DEEP) to adopt regulations to establish standards of acceptable performance for emergency preparation and restoration of service by electric and gas companies. The law allows the department to open a full investigation on its own initiative and requires an investigation, if petitioned by the attorney general or city council or board of selectmen in an affected city or town, to determine whether the company violated the standards. The law requires the department to impose a penalty of up to \$250,000 for each violation and for each day that the company violates the standards, subject to a maximum penalty of \$20 million for any related series of violations. Two legislators have recommended that Connecticut adopt similar legislation.

More generally, the legislature may wish to require DEEP to adopt a “performance-based” rate-making model. Under this model, a utility’s rates would go up or down depending on how well it performed based on a set of previously established indicators. These indicators could include such things as system reliability and customer service.

CGS § 16-19e requires all utilities to perform their duties with “economy, efficiency, and care for public safety and energy security.” It also requires that rates reflect “prudent and efficient management” of the company’s operations. The legislature could specify criteria for determining whether a company has been operating prudently and efficiently and the circumstances under which DEEP can deny a company rate recovery of costs it imprudently incurred in responding to an outage.

CGS § 16-245y requires the electric utilities to report their reliability statistics annually to DEEP. The legislature could extend this requirement to the municipal electric utilities, both to provide additional benchmarks for the electric utilities and to identify potential reliability problems for the municipal utilities.

The legislature could require DEEP to develop rate incentives to increase the resilience of critical facilities such as hospitals, sewage treatment plants, and gas stations.

Bill Credits and Grants

CGS § 16-331w requires that when cable service is out for more than 24 consecutive hours the cable company must provide the subscriber a credit or refund that represents the proportionate share of service not received in a billing period, unless the subscriber caused the outage. The legislature could extend this provision to other telecommunications companies and to electric companies regarding their monthly customer service charge. In addition, DEEP or the legislature could require the electric companies to establish a ratepayer-funded account to provide grants to customers who suffer economic losses during major outages, e.g., food that becomes inedible due to a failure of refrigeration.

Municipalization

Several speakers at the Irene hearings suggested that that the state’s six electric municipal utilities responded to the storms more quickly and effectively than the electric companies, although there is no empirical data currently available on this issue. The municipal utilities, which collectively serve about 5% of the state’s residents, are all substantially smaller than the electric companies.

Several of the commentators favored municipalization of the electric company systems. As discussed in OLR report [2011-R-0340](#), the laws governing the formation of a municipal electric utility were adopted in 1893 and have had relatively few substantive changes since then. The legislature could consider updating or expanding these provisions.

Under the Takings Clauses of the U.S. and state constitutions, private property can only be taken for public purposes with just compensation to its owner. The legislature could establish procedures for valuing an electric company's property in case a municipality sought to take it to form a new or expanded municipal utility.

Size of Utility Service Territories

In some cases, it appears that the response to the storms was hampered by the size and complexity of the utility bureaucracies (although there were benefits attributable to their size as well). The legislature could break up the service territory of one or both electric companies and establish a process for other utilities to purchase the company's assets and assume its responsibilities. Alternatively, the state could acquire the company's assets by purchase or eminent domain and contract with private companies to operate them. OLR report [2011-R-0345](#) discusses these options in greater detail.

Other

One legislator has suggested the DEEP be granted additional powers when the governor declares a state of emergency. One possible model is the Massachusetts legislation described in OLR report [2011-R-0385](#), which allows its equivalent of DEEP to order one company to provide staff and other resources to an electric company that is unable to quickly respond to an outage.

By law, DEEP can conduct management audits of utility companies. One legislator suggested that it undertake an assessment of the companies' post-storm damage assessments, their service restoration practices, the accuracy of their restoration estimates, and their communications policies.

Northeast Utilities, the parent of Connecticut Light & Power (CL&P), has proposed merging with NSTAR, a major Massachusetts utility. DEEP could review the merger to determine whether and how it would affect CL&P's ability to respond to outages.

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