

Storm Response

Part 2: Preparing for Safe and Effective Responses to Storms

By Geoff Kempter

Objectives

- Explain why thorough preparation is essential for safe and effective storm response
- Explain what the Incident Command System is and why its use can improve storm response
- List several reasons why practice drills are important in preparing for storms
- Discuss why it is important to monitor weather conditions and the development of storms

CEUs for this article apply to Certified Arborist, Utility Specialist, Municipal Specialist, Tree Worker/Climber, and the BCMA management category.

In Part 1 of this series (June 2013), we discussed the vital role played by arborists when storms strike, the effects that loads and stresses of storms have on trees, the characteristics of various kinds of storms, and how regional variability means that some areas are more vulnerable to certain kinds of storms than others. In this article, we will discuss how arborists prepare and respond to storms large and small, locally and remotely. The focus is geared more toward large-scale responses typical of municipalities and utilities; however, many of the concepts apply to any arborist who performs storm work for any client.

The large number of tree failures during storms cause widespread damage to infrastructure and can block access for police, fire, utility and other first responders. Arborists play a critical role in the initial clearing efforts following storms, while also ensuring that damaged trees are properly assessed and saved when appropriate.

Storm emergency management planning, preparedness, response, and recovery should be viewed as a continuous, cyclical activity. The first two steps in storm response are

planning and preparation. Long-term storm planning by municipalities and utilities involve identifying and assessing risks from storms (as described in Part 1), developing effective mitigation and response plans, and getting those plans approved.

When large storms strike a wide area or major population center, demand for arboricultural services outstrips local supply. At such times, personnel, equipment, and support services are moved in from unaffected areas. This movement is often carefully scripted and monitored, as with institutional requests from utilities and governmental agencies. Increasingly, these efforts are coordinated through formalized regional storm emergency planning and response procedures that include government, utility, and other critical service providers, and are consistent with Incident Command System (ICS) best practices and standards for emergency management.

Commercial arboriculture firms not contracted to utilities or qualified for line clearance may also have agreements with arborists in adjacent regions to assist with added workload after storms hit. Many arborists simply recognize that damage caused by storms offers an opportunity to provide valuable assistance to areas in need, and provide additional work for their crews. Regardless, storm response efforts are safer and more successful when steps are taken to properly plan and prepare.

Pre-coordination/Preparation

Personnel and resources identified in storm emergency plans that are likely to be called upon should be prepared to deploy, either for a short-term, local response, or extended deployment to another region. Likewise, necessary equipment should be well-maintained and ready for long trips. Office and other personnel not deployed should also be prepared to alter their routines as necessary, including being on-call or extending their normal working hours to ensure that responding crews receive the support they need while they are away.

Plans and contingencies should be developed and rehearsed both internally and with potential responders



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Following storms, arborists' skills are essential to local authorities in gaining access to stricken areas and restoring essential services.

and suppliers. Scenarios should include various types of storms that are likely to occur and unexpected problems that must be solved.

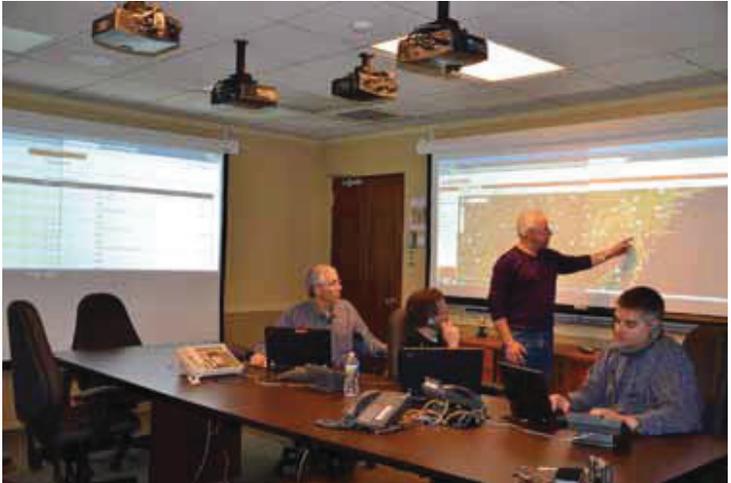
Storm Center

Most utilities, municipalities, and large tree contracting firms have designated storm processes and a central designated "storm center" where conditions are monitored and decisions are made. The size and scale of the storm center will vary depending on the size and type of organization, as well as the frequency and severity of storm events. Regardless of size, storm centers should have reliable communication, business continuity plans, backup power, links to weather and news services, and enough capacity to accommodate necessary personnel during large-scale responses. Additionally, during major responses, on-site regional command centers may be required, often in the form of mobile offices to further support response capabilities. These centers should be prepared act in coordination with the ICS chain of command framework.

Pre-storm Communications

Organizations involved with storm response should ensure that contact information for all essential personnel is up-to-date. This information should be readily available

internally and shared with other organizations likely to be involved with storm response. Key personnel from external organizations should be identified, including those in utilities, contractors, support services, suppliers, and first responders and government personnel at the federal, state/provincial, and local levels.



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A storm center with communication links and backup systems.



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Labor contracts may have clauses that require certain personnel to be called out first. Call-out lists should be kept up-to-date and highlighted with this type of information.

Chains of Command and the Incident Command System

To avoid misunderstandings, and verify that any commitments made will be honored, each organization involved in a storm response should establish a clear chain of command. Alternates should be designated and their contact information should be available in case primary personnel are unavailable. An unambiguous chain of command allows a responding organization to quickly adjust as the scale of the response changes or shifts focus, and to fit into an overall response structure, such as the ICS.

The ICS is a well-established, standardized method for handling emergencies. It is recognized internationally and promoted by the United Nations. Emergency responders in the public and private sectors have come to recognize that using an ICS assures better coordination with government emergency management agencies, such as FEMA (Federal Emergency Management Agency) in the

United States, Public Safety Canada, and corresponding emergency management agencies in other countries. Use of an ICS can improve the overall effectiveness of emergency response by reducing friction or redundancy between participating organizations.

The U.S. Department of Transportation describes the ICS as a systematic method for “command, control, and coordination of emergency response.” According to FEMA, the ICS allows multiple organizations, facilities, equipment, and personnel to operate in “a common organizational structure, designed to enable effective and efficient incident management.” As providers of essential services, utilities are often included in ICS plans. By creating response plans and procedures that fit into the ICS structure, utilities, contractors, governments, and other organizations involved in a response can ensure better coordination of restoration efforts.

Practice Drills

Many utilities and municipalities routinely perform practice storm drills so that the extended team of employees and suppliers understand the appropriate procedures,

Planning for the Unpredictable: The Uncertainty of the Track Forecast Cone

In 2011, Hurricane Irene formed in the Caribbean, struck Puerto Rico on August 21, and moved northwestward, quickly strengthening, with Miami and the rest of Florida in the center of the “Track Forecast Cone” provided by the U.S. National Hurricane Center (NHC). Four days later, Irene was pummeling the Bahamas, barely within the earlier cone and well east of Florida, with most of the east coast of North America in a new track forecast cone.



Irene track forecast cone as of August 21, 2011.

The track forecast cone is based on the accuracy of previous NHC forecasts, and is intended to predict the track of the storm center with an accuracy rate of 67 percent. This means that it is designed to be wrong one-third of the time, on average. To further complicate matters, the predictability of individual storms varies, but the size of the cone is fixed, meaning that forecasters may be far more or less confident about their forecasts than the shape of the cone would suggest. And of course, areas distant from the storm center may be significantly affected, depending on the storm's strength and size. These vagaries have led some to dub the track forecast cone as “the Uncertainty Cone.”

After a somewhat unpredictable start, Irene settled in on a course practically identical to the center of the August 25 track forecast cone. It brushed North Carolina and the Mid-Atlantic states, and made another landfall on August 28 in New Jersey, New York, and Connecticut as a large tropical storm, before dumping torrential rains into northern New England and eastern Canada.

At some point between August 21 and August 30, Irene directly affected or threatened every state and province on the eastern seaboard of North America. The path of Irene, which was not at all uncommon, effectively paralyzed the resources of potential responders from Florida on north, delaying the release of assistance personnel until the threat passed. To meet requests, crews were mobilized from areas as far as 700 miles (1127 km)

and to also identify opportunities to improve performance before storms strike. Drills should include various scenarios because real storms often impact nearby areas, affecting the availability of resources and the timing of the response.

In planning for storm response, the ancillary effects of storms should be anticipated. These effects might be road closures due to flooding or emergency declarations, slippery and other adverse conditions, and the evacuation of residents from afflicted areas. Practice drills should account for these variables in planned response times.

Storm drills generally include a realistic scenario that involves the type, strength, and scale of storm, and the extent of damage. Potential responders are contacted, estimates of available resources and response times are obtained, routes and staging areas for responding crews are designated, and other details are handled as they arise. In short, everything is addressed except the actual movement of personnel, supplies, and equipment.

Potential responders should take these drills seriously and participate as if a real storm is occurring, including obtaining necessary releases of crews and equipment from areas not affected by the hypothetical storm.



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Difficult travelling and working conditions should be anticipated when practicing responses.

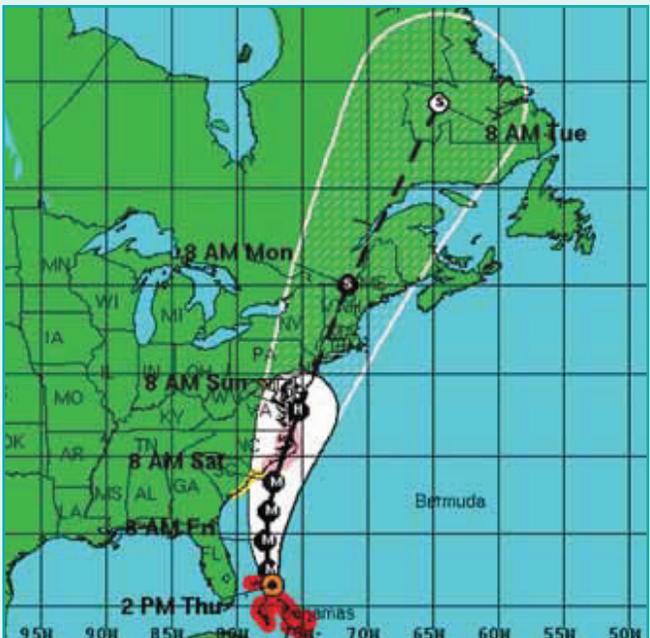
Considerations for drills:

- Accurate contact information internally and externally, including other utilities, contractors, and government officials.

inland. Similar logistical difficulties may be experienced with ice storms as they develop, strengthen, and track between regions.

As computer models and the science of forecasting have improved, track forecast cones have narrowed. Still, when storms

like Hurricane Irene threaten long stretches of populated coastlines, the inherent uncertainty of the track forecast cone will continue to vex those who plan for, and respond to, such storms.



Irene track forecast cone as of August 25, 2011.



Actual track of Hurricane Irene, August 20–30, 2011.



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- Types and paths of storms (consider multiple storms, e.g., a second hurricane on a similar or dissimilar track).
- Seasonal considerations (appropriate clothing, lights, tire chains, or other necessary supplies).
- Estimated response times (accounting for extra distances required due to the incoming storm's affect on nearby areas).
- Routes taken by incoming crews (account for road restrictions, such as bridge load limits, height restrictions, weather conditions, and whether commercial traffic is permitted).
- Locations of staging areas.
- Contingencies for disruption, including power outages, communications, displaced residents, and the availability of food, housing, fuel, and other support services.
 - Locations and capacities of regional hotel and motel facilities, as well as alternative facilities, including schools, community centers, or army barracks.
 - Providers of logistical services, such as climate-controlled tents, cots, sleeping trailers, catering, sanitation, and security.
 - Alternative communications—such as radios or satellite phones—in the event land line and cell phone networks are down.



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Specialized supplies, such as sleeping trailers, may be necessary to ensure workers receive adequate food and rest.

Identify Suppliers and Pre-negotiate Terms

During a storm emergency, responses should not be hindered by confusion or disputes that could be worked out ahead of time. Pre-negotiated agreements should be in place with suppliers, including billing terms. To reduce the likelihood of disputes and misunderstandings, some flexibility may be necessary to accommodate reasonable differences in the customary practices of responders.

Pay rates, equipment charges, and work rules may vary significantly between regions. Generally, it is understood that incoming personnel will receive the higher of either the worker's home pay rates or the established local rates, and that existing contract agreements of incoming workers will be honored. However, under certain emergency situations, and with the cooperation and consent of unions, some work rules may be suspended.

In some cases, especially in large or extended responses, storm work may require specialized support services or supplemental supplies, such as

- temporary housing (e.g., tent cities)
- mobile food, shower, or sanitation services
- security
- entertainment
- specialized equipment
- fuel
- extra tools, spare parts, clothing, lights, or other materials

Suppliers of these items and services that are needed in a worst-case scenario should be identified and the terms of their delivery and payment put in place.

Monitor Conditions and Pre-mobilize

Storms like tornados or severe thunderstorms often strike quickly, while others such as hurricanes and ice storms may take several days to develop. Regardless, all personnel who could be involved with storm responses—including office support—should monitor weather conditions daily, especially during the times of year when storm response is most likely, and be prepared to respond as appropriate on short notice. Web-based service providers and weather alert services offer automatic notifications of weather events, as well as updates as changes occur.

As storms develop, and stormwatches and warnings are issued, management personnel should provide organizational momentum going into the response by verifying that pre-mobilization efforts are complete. Employees should be reminded that a response is likely. They should also be reminded of both the general (e.g., conduct while away) as well as specific (e.g., tire chains, warm clothing, extra food), professional demands typical of any storm

response situation. The coordinating personnel should stay in close contact with corresponding coordinators at utilities, government agencies, or contractors.

When it is evident that a storm will not strike a particular region but will instead affect nearby areas, and there are no additional threats, potential responders should remain at a high state of readiness, and utilities, municipalities, and contractors should release an appropriate number of crews for a response, if necessary.

Obtaining Releases of Personnel and Equipment

Storm response is a cooperative endeavor that leverages the capabilities of multiple regions to more quickly restore local services. Utilities, municipalities, and other agencies requesting help recognize the value of assisting one another during emergencies because they understand that limited resources will be available to assist when a storm hits them. Likewise, individual customers of arboricultural firms may be willing to forego scheduled maintenance knowing that the efforts of skilled arborists are in greater need elsewhere.

Because most large-scale vegetation management work is contracted, requests for assistance are often directed to contractors. Typically, a request will include the number of personnel and the type of equipment needed for the expected workload, and a preferred time of arrival. For example, if there is extensive damage to electric transmission lines in wetlands, then specialized equipment and personnel suited for that type of work must be located and transported to the site. The amount and severity of damage caused by some large storms can create acute local labor and equipment shortages, which has necessitated travel distances in excess of 1000 miles (1600 km) or more for many responders.

Requests for assistance to a responding organization should be directed to a designated coordinator or other contact person in the storm center. The coordinator should have ready access to all necessary contacts and other key information. Calls received after hours must be directed to that person or, in the event of a problem (e.g., dead phone, personal emergency), a designated alternate. The storm center systematically assembles a list of available personnel, equipment, and supervision with corresponding distances and estimated travel times. Travel time estimates should be realistic, accounting for mobilization time, lower truck speed limits, and any weather, traffic, or other conditions that may slow progress.

Many utilities are part of regional mutual assistance associations. For example, part of the stated mission of The Southeast Electric Exchange is “coordination of storm restoration services to impacted member companies.” As part of these agreements, contracted line-clearance crews

may be assigned to other member utilities as part of a mutual assistance effort.

To reduce the possibility of any misunderstanding, utilities that are signatories to pre-negotiated mutual assistance agreements should be certain that their contractors are apprised of any obligations that might apply to them under such arrangements. Contractors should be notified immediately when such agreements or obligations become effective, and should be provided with timely notice when threats to member companies have passed, so that resources can be made available outside the mutual assistance agreement, if needed.

It should be recognized that storm work performed by outside crews also represents work not done where the crews are based. As a courtesy to those who are assisting, those requesting assistance should ensure that they ask for only the resources necessary to restore service, and that crews are released to go home or assist elsewhere in a timely manner, unless other arrangements are made.

Conclusion

Each storm, whether a localized event or a widespread disaster, poses challenges that cannot be foreseen. Mounting a smooth and effective response requires careful planning and preparation, the ability to work cooperatively as a team, and a willingness to adjust to changing or unexpected situations as they arise. In larger events, the team may include thousands of people and multiple entities, both public and private, working under a unified ICS structure.

In preparing and planning for storms, it should be remembered that a storm response represents the collective hard work of many individuals. Whether employees cut brush at the storm site or coordinate from an office location, difficult conditions and long hours away from family should be expected. However, their efforts in creating a safe and successful response benefit many, and reflect well on everyone involved.

Understanding the threat from various kinds of storms, monitoring weather conditions and storm development, taking the time to rehearse procedures with employees and clients, and assuring that employees, equipment, and tools are ready to be deployed are all critical steps in planning and preparing for safe and effective storm response.

In Part 3, we will discuss large- and small-scale responses, considerations involved in positioning resources in advance of large storms, routing and navigation, and storm response checklists.

Additional Reading

FEMA. ICS Resource Center. Glossary of Related Terms. <www.training.fema.gov/EMIWeb/IS/ICSResource/Glossary.htm>

