Natural Disasters and Utility Vegetation Management – A Discussion Paper

Introduction

Major weather events and natural disasters are in the news with increasing frequency. The public, electric utility employees and state regulators know all too well the devastating impact snowstorms, hurricanes, tornados, and fires can have on the nation's electrical infrastructure.

In March 2013, over 35 system utility vegetation managers gathered to discuss their experience with storms. The participants represented over 30 utilities, have an average of nearly 25 years of experience and are responsible for managing the vegetation on over 1,000,000 miles of primary distribution and high-voltage transmission lines.

This paper presents issues identified as being of critical importance to vegetation managers and emergency tree crews tasked with helping restore power after a devastating event.

Preparation

Safe and effective disaster response is dependent upon what takes place before the event occurs. Comprehensive planning and rehearsal of plan implementation are critical. Utilities need a well-defined Incident Command Structure (ICS) and clear triggers for mobilizing it. It is advised that a vegetation-specific ICS be established as well.

Storm preparedness drills

Practicing the implementation of the disaster response plan is as important as development of the plan itself. Internal and contract resources should be drilled in all storm response policies and procedures.

Contracts

Local Contract Crews

Utilities that are implementing best practices will have already reviewed their contracts. Contracts need to provide control measures that ensure contract crews are not released to serve elsewhere until the local need is thoroughly assessed and the utility gives permission for them to respond. Contracts should include specific language that addresses the process for approving the release of crews.

Foreign Contract Crews

Catastrophic events often require more manpower and equipment than can be provided by the normal maintenance workforce. Utilities that wait until the event is imminent may find that resources have been already moved to better prepared utilities. Companies should have mutual assistance agreements in place to ensure adequate resources can be brought on to the system. Improperly staffed and under-equipped crews are not uncommon so contract specifications should clearly dictate staffing and equipment to be sent.

Building relationships

When a natural disaster strikes, many areas of interest are affected. Building relationships with internal resources and external stakeholders such as law enforcement, local and state government officials, and fire officials takes place before the storm or other event occurs.

Mobilization

Request crews early

One of the most important elements identified for successful disaster response is ensuring adequate resources are in place. The earlier that crews are made available, the better the response. Requesting crews and equipment and pre-positioning them as early as possible are essential. Determining how many resources, when and where they will be needed is an assessment that needs to include input from experience utility vegetation managers.

Logistics

One of the most important parts of planning is the development of comprehensive plans for lodging, food, fuel, and other essential supplies. Utilities also need to ensure that they have, if required, the necessary permits for cross state transport of equipment.

Pre-positioning

Plans for the pre-positioning of crews should be dependent upon the nature of the event. For instance, in the case of hurricanes, crews are often staged outside of the immediate area of impact until after the storm passes. More localized events such as fires should allow for the crews to be staged as close to the event as possible to speed response time after the initial threat passes. The importance of accurate weather forecasting in the proper pre-positioning of crews cannot be overestimated.

Onboarding

Detailed plans for onboarding foreign crews are essential. It must be assumed that resource brought in from other utilities operate under different rules and requirements. They need to clearly understand local work practices and safety procedures. This will include items such as switching procedures, the use of rubber gloves, grounding practices, the use of hold cards, and the role of the tree crew and so on.

Communications

A communications plan for the mobilization and restoration process is essential. It is equally important that there be a backup plan. The utility must be prepared for situations in which planned avenues of communication are disrupted by the disaster.

Daily tailboard meetings should be part of the communications plan. Though brief, they are an important way to keep workers informed, answer questions and reinforce the need for work safely.

Restoration work

Damage assessment

Damage assessment and prioritization of work is a top priority. Assessments should be done by a qualified assessor. Utility workers familiar with the electrical system and supporting infrastructure are usually tasked with damage assessment. Utilities that have used people familiar with tree maintenance to supplement the linemen's assessment improve efficiency in allocating the proper resources. While assignment of tree crews to line crews is deemed a best practice in general, flexibility to adjust assignments is important. Flexibility becomes increasingly important as the restoration work unfolds over several days or weeks.

Local guides & local law enforcement

It is useful to consider planning on having local resources available to assist with guiding foreign tree crews. At times, it will be necessary to involve local law enforcement to ensure unhindered access to critical locations.

Post-storm activities

De-mobilization

Planning for de-mobilization is as important as it is for mobilization. Resources sitting idle are expensive and, at some point, hinder the restoration efforts rather than aid them.

Legal considerations

In some situations, post-event cleanup plans need to be discussed with the corporate legal staff. For instance, fires that may have been ignited by electrical facilities often need investigated by fire or state officials. In such cases, mitigation of hazardous conditions or removal of damaged trees must be coordinated with the proper authorities.

Post-storm assessment

Vegetation managers know all too well that the residual effect of storms on trees can be very long-lasting. Broken branches, unstable trees and other hazardous conditions may go unnoticed during performance of emergency work. Utilities should have a well-thought out plan for post-incident assessment of trees. Without proper inspections and adequate funding, latent effects can have a significant impact on safety, reliability and on the routine tree maintenance program.

Lessons learned

One of the most important components of restoration is the post-storm debrief. It is best to capture lessons learned as soon as possible after the event. Input should be received from all levels of the tree maintenance operations including the utility's staff, the contractors' management, and the tree crew workers of both in-house and contract staffs as well as local and foreign crews.