

# Managing Liability and Risk of Unavoidable Events

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## INTRODUCTION

This paper summarizes key issues around managing the risk and associated liabilities in instances where electric distribution and transmission systems are affected by events or entities beyond the control of the utility, state regulatory body, and FERC/NERC. Recognizing the potential for large scale impact from entities and events beyond the control of the utility is the first critical step in properly preparing for and managing the associated risks. Once the potential is recognized, creating a formalized plan, communicating that plan and practicing implementation are next steps that provide the tools to properly mitigate the impact. Plans must be compatible with existing protocols and scalable to fit the size and impact of the event as well as consider the scope of impact to all those affected both internal and external to the company.

The Utility Arborist Association's (UAA) System Managers Summit participants reviewed presentations, discussed local practices, including successes and failures, and reported out to the larger group on consensus best approaches. This consensus was captured in this white paper and reviewed prior to publishing on the UAA website. These practices are designed to serve as guidelines for leaders in the utility line-clearance industry.

## PROBLEM STATEMENTS

Electric Utility Distribution and Transmission systems are subject to events and entities beyond the control of the utility, and regulators which can have significant impact on the utilities reliability and finances.

These impacts can be the result of catastrophic weather (i.e. Hurricane Sandy), insect or disease infestation (i.e. Emerald Ash Borer), or government entities which control large tracts of land (i.e. Forest Service or National Parks).

Failure to recognize the potential of these or similar threats and therefore not to properly plan and prepare lead to significant risks and liabilities for a utility

## OVERVIEW

Threats come in many forms and can change from insignificant to significant with little warning. Three examples discussed in the 2015 Summit demonstrate the wide range of issues and how unpredictable they can be.

### **Major Weather Event (Hurricane Sandy):**

- Significant hurricanes rarely track along the east coast then make landfall north of the Mason-Dixon Line.\*
- Hurricane Sandy made a late track adjustment and made landfall in New Jersey (as opposed to Virginia/Maryland) creating a significant tidal surge, flooding the Jersey shore and New York City as well as bringing high winds inland.\*
- The utilities in this area did not have significant experience with a weather event that created widespread significant damage to both the underground and overhead facilities.

### **Insect and/or Disease infestation (Emerald Ash Borer\*):**

- Known Event / Unknown Duration
  - Start date may be unclear
  - Normally starts locally
  - Potential to spread across system
  - Pace of spread may be unclear

### **Government Lands:**

The industry's relationship with several governmental agencies, impacting large tracts of governmental land, experienced a significant development following the 2015 Summit. See below for further information.

## SOLUTIONS

### **Major Weather Event (Hurricane Sandy):**

Preparation and Response:

- Develop a protocol for responding to these events that includes a resource plan and a communications plan (both internal and external).
  - Share your plan with others
  - Look to industry peers for additional input to your plan
- Practice the plan to train folks in storm roles and to identify gaps in plan.
  - Mutual Aid agreements in place
  - Contingency for impact on mutual aid partners
  - Logistics plan for feeding and housing additional resources (off site vendors typically do not recognize urgency associated with this task)
- Predict impact
  - Scale plan according to predicted impact
  - Adjust to actual impact
- Communicate (throughout the event)
  - With internal departments
  - With external entities (governmental agencies) and customers
  - Consider redundancy in case of infrastructure failure
    - Cell towers may fail or lose power
    - Texting works when calls fail
    - Landlines may lose network
    - Satellite phones may be required
    - Short wave radios often work for on system communications
- Continually assess damage and progress
  - Adjust plan as needed
  - Communicate progress
  - Anticipate changing customer

- expectations
- Thorough patrols to assure potential hazards are not overlooked
- Follow-up
  - Critique
  - Share experience with others

***Insect and/or Disease infestation (Emerald Ash Borer):***

- Preparation and Response:
  - Develop a framework for responding to these events.
    - Utilize subject matter experts
    - Look to industry peers for additional input to your plan
    - Document experiences to track and adjust plan
    - Anticipate and communicate funding issues with management
  - Utilize specialized equipment of professionals to address issues.
  - Communicate (throughout the event)
    - With internal departments
    - With external entities (governmental agencies) and customers
    - Utilize media relations to communicate with broader audience
    - Utilize governmental affairs to keep elected officials educated
  - Continually assess damage and progress
    - Adjust plan as needed
    - Communicate progress
    - Assess technology advancements to assist with recognition and tracking
      - GIS
      - LIDAR

A Memorandum of Understanding dated February 2016, has been entered into

by the UAA, Edison Electric Institute, U.S. Department of Interior (National Park Service, Fish and Wildlife Service and Bureau of Land Management), U.S. Department of Agriculture Forest Service and, the U.S. Environmental Protection Agency. The purpose of the MoU is to facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline ROWs and associated facilities.

1. Facilitate implementation of cost-effective and environmentally sound vegetation management plans, procedures, and practices on federal lands;
2. Reduce adverse environmental and cultural impacts while enhancing the ability of utilities to perform vegetation management work.

A summary of the MoU is provided in the appendix. The full MoU is available at [www.NEEDLINK](http://www.NEEDLINK)

**SUMMARY**

There are several types of threats that can cause significant impact to Distribution and Transmission systems. It is critical that managers stay current with developments that could impact their systems (weather, disease, insect infestation, changing focus of governmental agencies) in order to realistically anticipate the threat level and fashion a response appropriate to the potential impact. Once the potential threat is identified the manager must develop a protocol or framework to address the threat. The plan must be communicated to all stakeholders including those partnering to address the threat (i.e. other departments and contractors) as well as those impacted (i.e. customers). Following communication of the plan sufficient effort must be put forth to assure everyone understands their role (from funding to field activities)

and is proficient at executing their role. Upon impact, ongoing assessment and communication is critical in order to adjust the plan to assure response is appropriate for the actual impact of the event and all entities have the information needed to support a successful outcome. Following successful mitigation of the impact, the process should be reviewed and critiqued to assure all risks have been addressed and facilitate improved planning and preparation for the next event.

Prepared from notes provided from the 2015 UAA Managers Summit:

## APPENDIX (References and Examples)

### **Hurricane Sandy Reference Information**

Per National Oceanic and Atmospheric Administration (NOAA) "Sandy was a classic late-season hurricane in the southwestern Caribbean Sea. The cyclone made landfall as a category 1 hurricane (on the Saffir-Simpson Hurricane Wind Scale) in Jamaica and as a 100-kt category 3 hurricane in eastern Cuba before quickly weakening to a category 1 hurricane while moving through the central and northwestern Bahamas. Sandy underwent a complex evolution and grew considerably in size while over the Bahamas, and continued to grow despite weakening into a tropical storm north of those islands. The system strengthened into a hurricane while it moved northeastward, parallel to the coast of the southeastern United States, and reached a secondary peak intensity of 85 kt while it turned northwestward toward the Mid-Atlantic States. Sandy weakened somewhat and then made landfall as a post-tropical cyclone near Brigantine, New Jersey with 70-kt maximum sustained winds. Because of its tremendous size, however, Sandy drove a catastrophic storm surge into the New Jersey and New York coastlines. Preliminary U.S. damage estimates

are near \$50 billion, making Sandy the second-costliest cyclone to hit the United States since 1901. There were at least 147 direct deaths recorded across the Atlantic basin due to Sandy, with 72 of these fatalities occurring in the mid-Atlantic and northeastern United States. This is the greatest number of U.S. direct fatalities related to a tropical cyclone outside of the southern states since Hurricane Agnes in 1972."

### **Emerald Ash Borer Reference Information**

From EmeraldAshBorer.info:  
"Emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. The adult beetles nibble on ash foliage but cause little damage. The larvae (the immature stage) feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients. Emerald ash borer probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia. Emerald ash borer is also established in Windsor, Ontario, was found in Ohio in 2003, northern Indiana in 2004, northern Illinois and Maryland in 2006, western Pennsylvania and West Virginia in 2007, Wisconsin, Missouri and Virginia in the summer of 2008, Minnesota, New York, Kentucky in the spring of 2009, Iowa in the spring of 2010, Tennessee in the summer of 2010, Connecticut, Kansas, and Massachusetts in the summer of 2012, New Hampshire in the spring of 2013, North Carolina and Georgia in the summer of 2013, Colorado in the fall of 2013, New Jersey in the spring of 2014, Arkansas in the summer of 2014, Louisiana in the winter of 2015, Texas in the spring of 2016, and Nebraska in the summer of 2016. Since its discovery, EAB has:

- Killed hundreds of millions of ash trees in North America.
- Caused regulatory agencies and

the USDA to enforce quarantines and fines to prevent potentially infested ash trees, logs or hardwood firewood from moving out of areas where EAB occurs.

- Cost municipalities, property owners, nursery operators and forest products industries hundreds of millions of dollars.”

### Excerpts from T&D World article in May 2014

- *“Mark Contat, manager of forestry services for Toledo Edison, a FirstEnergy company in northwestern Ohio, confirmed this. His utility’s EAB mitigation program began in 2009 with the removal of 380 ash trees during its normal vegetation management schedule. The following year, many more ash trees were falling and causing outages, so removals increased to more than 3,700 in 2010 and costs increased more than twelvefold.”*
- *“.....Toledo Edison has removed approximately 15,000 ash trees from about 6,500 line miles (10,460 km). Contat reports that EAB mitigation has cost the utility an average of US\$300 more per line mile.”*
- *“In February 2013, AEP Ohio began its three-year program to identify and remove ash trees outside of its normal easement on 4,406 distribution line miles (7,091 line km) in the Columbus district. The objective is to mitigate ash trees that are at least 25 ft (8 m) tall and within 30 ft (9 m) either side of a single-phase conductor (60-ft [18-m] swath) or within 50 ft (15 m) either side of a three-phase conductor (100-ft [30-m] swath).”*
- *“By the end of 2013, AEP Ohio was well on its way to meeting its goal of proactively cutting ash trees safely and efficiently before they fail. More than 13,700 ash trees were removed*

*along 1,047 line miles (1,685 line km) in the Columbus district and there are still two more years of the EAB mitigation program to go.”*

### **Example Mitigation Plan (Pest infestation & Wild Fire)**

Xcel Energy’s Colorado service territory includes thousands of miles of electric transmission and distribution infrastructure located in areas that are at high-risk for wildfires, including state and national forests.

This threat is only worsened as declining forest health issues across the western United States increase the frequency and severity of wildfires. Epidemics like the mountain pine beetle infestation are further exacerbating the forest health issues and increasing the risk for fires. The mountain pine beetle, a native insect that affects primarily the lodge pole pine species, has taken advantage of favorable conditions to launch its attack. No bigger than a grain of rice, the beetle has devastated more than 3.4 million acres of forests in Colorado alone.

As a result, Xcel Energy has seen trees die in unprecedented proportions in its service territory over the last decade and thousands upon thousands of trees threatened Xcel Energy’s lines.

The threat is two-fold. First, the rising count of dead trees increases the risk of a tree falling into overhead facilities – causing outages but also potentially catching fire and becoming an ignition point. To manage this, Xcel Energy developed its Mountain Hazard Tree program to lessen the risk of fire ignition due to tree failure. The program focuses on trees that have died due to the described epidemics on both the distribution and transmission system. Through additional cyclical patrols and associated mitigation work, hundreds of thousands of hazard trees have been cleared in the decade.

Second, fires burning through electric facility rights of ways (ROW) can damage or destroy facilities. And facilities in remote areas can take extended time to replace, disrupting service reliability. To manage this, Xcel Energy developed its Transmission Wildfire Protection (TWP) program. This program focuses on reducing risk near transmission structures by physically clearing vegetation and woody debris on the ground, as well as thinning the forest adjacent to these structures. This work is done in prescribed radiuses around structures, based on structure type and fire models, to reduce the fuel loads, and thus fire temperatures, to the point where the structures are less likely to be lost due to the passing wildfire.

Fletcher Johnson  
Xcel Energy  
Director, Vegetation Management & Ancillary Programs

**Memorandum of Understanding on Vegetation Management for Powerline Rights-of-way**

**Entered into by:**

Utility Arborist Association – Edison Electric Institute – US Dept. of Interior - National Park Service – Fish & Wildlife Service – Bureau of Land Management – US Department of Agriculture - Forest Service – US Environmental Protection Agency

In the fall of 2013 a delegation representing the UAA met with representatives of various federal land agencies to begin a process of reviewing and updating an earlier memorandum of understanding (MoU) that had expired. The earlier MoU was for the purpose of fostering more cooperative relationship between the industry and agencies, in particular, to facilitate access to powerlines for maintenance in both routine and emergency situations. It

was recognized by all parties that the earlier MoU had little tangible affect. It was agreed by all that the MoU could be improved and that all parties would need to work harder to ensure its constituents (e.g., member companies, regions, ...) were better informed about the document and better prepared to implement the agreement.

The UAA signed the revised MoU on September 21, 2016.

This document is intended to 1) provide an easy-to-read summary of the MoU, 2) begin to lay out a strategy for informing and equipping utility vegetation managers, 3) identify ways to help inform and educate federal land agency personnel, and 4) establish a process for review of progress towards implementation.

**Purpose of MoU**

The purpose of the MoU is to facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline ROWs and associated facilities.

- Facilitate implementation of cost-effective and environmentally sound vegetation management plans, procedures, and practices on federal lands;
- Reduce adverse environmental and cultural impacts while enhancing the ability of utilities to perform vegetation management work.

**Both Parties Agree To**

- Comply all laws and regulations;
- Coordinate and cooperate to promote cost-efficient, proactive, environmentally appropriate, and safe management of undesirable

- vegetation;
- Prevent or control the spread of invasive plants;
- Recognize integrated vegetation management (IVM) as an accepted standard and best management practice;
- Adhere to the NEPA process;
- Work to enhance pollinator habitat using “pollinator-friendly” best management practices;
- Work together to accelerate development of vegetation management plans and land use authorizations;
- Promote safety;
- Facilitate prompt identification and mitigation of potential risks;
- Encourage opportunities to provide training and technical assistance to government agency staff, utility personnel, ...;
- commit to working with the Association of State Fish and Wildlife Agencies on a separate MoU.

### The Industry Commits To

- Coordination and cooperation with the various federal agencies on federal lands;
- Ensure companies with powerline ROW on federal lands provide the information necessary for review and approval;
- Ensure compliance with applicable ROW permit:
  - Give appropriate notice,
  - Include procedures for conducting emergency vegetation management work, prior approval

for emergency work is not required, emergency work must be reported on or before the next business day;

- Disseminate and educate members regarding the MoU;
- Work with agencies to review the effectiveness of the MoU, and;

### The Federal Land Agencies Commit To:

- Coordination and cooperation with utilities that maintain lines on federal lands;
- Modify policies and procedures as necessary to facilitate utility compliance with NERC standards and other regulatory and legal requirement;
- Review and approve annual vegetation management plans submitted by the companies;
- Strive to review requests for non-emergency vegetation management work within companies desired time frame;
- Implement IVM strategies to prevent and manage nonnative species and incorporate native ecoregion specific plants where possible;
- Disseminate this MoU to federal agency field offices.

### KEY for UAA and EEI

Identify what utilities need to do to comply and educate IOU’s, REC’s and Public Utilities

1. Annual plans that include emergency procedures;
2. Use of IVM with attention to reducing

- populations of incompatible species, controlling spread of invasive species, promoting pollinator habitat, reducing adverse environmental and cultural impacts;
- 3. Proactive attention to practices and procedures that minimize the introduction and spread of nonnative species;
- 4. Develop a bmp for pollinator-friendly vegetation management;
- 5. Develop mechanism to monitor and **document** successes and failures under this MoU.