SMART TREES PACIFIC

Urban Forestry Emergency Operations Planning Guide for Storm Response. The Report.

This document describes the process used to develop the guide and includes information about the survey, the interviews, the expert meeting and next steps.




This project was funded by a grant from the USDA Forest Service National Urban and Community Forestry Advisory Council (NUCFAC) and the USDA Forest Service Pacific Southwest Region in 2009. The data contained in this document and the guide does not include interviews based on experiences with Superstorm Sandy.

A special thanks to the advisors and team for their support throughout the project. Jack McCabe, Davey Resource Group; Kevin Eckert, Arbor Global and Smart Trees Pacific; Alan Yue, Premier Network Systems; and Colleen Carroll, NatureTalks.

Thanks to ISA, SMA, UAA, WCISA, and Aloha Arborists Association for helping with the distribution of the survey; the 70 industry professionals interviewed, the experts who met to ensure the guide was sufficient, scalable and user friendly, and the experts who helped with the review and writing of the guide .

Photos were generously provided by Asplundh Tree Expert Company and National Grid.

This work is being funded entirely or in part by the State and Private Forestry, branch of the U.S. Forest Service, Department of Agriculture, Region 5.

A Special Thanks

This guide is possible because of the time, talent and support of a number of people who believe in the value of telling the story of storm response in the urban forest. Their involvement ensures key concepts and elements are included in the guide so others can learn from their experiences.

Lessons learned from the storm preparedness survey, the interviews, and the meeting of experts resulted in the "Urban Forestry Emergency Operations Planning Guide" for storm response. The guide can be found online at www.smarttreespacific.org.

Interviews May 1 – August 15, 2011

Region:	Name:	State/Province:
International		
	John Ho	Hong Kong
	Frederick Janes	NSW, Australia
	Derek Lynn	Victoria, Australia
	Alberto de Sousa	Brazil
	Gordon White	Alberta, Canada
Northeastern		
	Keith Cline	Washington, DC
	Nancy Stremple	Washington, DC
	Kurt Elsesser	Illinois
	Carlos Garcia	Illinois
	Chris Johnson	Iowa
	Thomas Hoerth	Maine
	Walter Dodge	Massachusetts
	Anne-Marie Moran	Massachusetts
	Paul Sellers	Massachusetts
	Nick Kuhn	Missouri
	Ray Wallace	Missouri
	Glenn Gentzke	New York
	James Maloney	New York
	Daniel Rohe	New York
	David Bienemann	Ohio
	Brad Bonham	Ohio
	David Gamstetter	Ohio

	Sue Mottl	Ohio
	Thomas Munn	Ohio
	Charles Owen	Ohio
	Jim Orr	Pennsylvania
	Brian Satterlee	Rhode Island
	Bertram Stewart	Vermont
Southern		
	Dudley Hartel	Georgia
	Eric Kuehler	Georgia
	Rob Allen	Kentucky
	Peter Barber	Kentucky
	Sarah Gracey	Kentucky
	Jenny Gulick	Kentucky
	Ray Wallace	Missouri
	Louis Ehinger	South Carolina
	Alan Moore	North Carolina
	Eric Muecke	North Carolina
	Tom Rapp	South Carolina
	Gene Hyde	Tennessee
	Melinda Adams	Texas
	Jim Carse	Texas
	Keith Martin	Texas
	Frank Fentress	Virginia
	Blake Shores	Virginia
Western		
	Michael Neal	Arizona
	Ken Vonderscher	Arizona
	Terry Dougan	Arkansas
	Larry Abernathy	California
	Sam Gonzales	California
	George Gonzalez	California
	Gordon Mann	California
	Jack McCabe	California
	Suzanne Remien	California
	Peter Severynen	California
	Robert Tate	California
	Tony Wolcott	California
	Kevin Eckert	Hawai`i
	Steve Nimz	Hawai`i
	Tom Wells	Colorado

Barbara Priest	Oregon
Cynthia Orlando	Oregon
Paul Ries	Oregon
Dave Van Bossuyt	Oregon
Alan Haywood	Washington
Duane Northrup	Washington
Andrew Stenbeck	Washington

Meeting of Experts May 3, 2012

Colleen Carroll, NatureTalks, HI
Stephen Cieslewicz, CN Utility Consulting, CA
Dave Dockter, City of Palo Alto, CA
Kevin Eckert, Arbor Global, HI
Bill Heriford, Davey Tree Surgery Company, CA
Sandy Macias, USDA Forest Service, Pacific Southwest Region, CA
Gordon Mann, Mann Made Resources, CA
Jack McCabe, Davey Resource Group, CA
Mark Mead, City of Seattle, WA
Teresa Trueman-Madriaga, Smart Trees Pacific, HI
Alan Yue, Premier Network System, CA

Review of Document August – December 2012

Colleen Carroll, NatureTalks, HI
Kevin Eckert, Arbor Global, HI
Dudley Hartel, USDA Forest Service, GA
James Maloney, National Grid, NY
Cynthia Orlando, Oregon Department of Forestry, OR
Paul Ries, Oregon Department of Forestry, OR
Mary Steiner, Consulting Service, HI
John Sullivan, Lewis Tree Company, NY

Introduction

> Preparedness saves more lives than responders.
>
> Amanda Ripley, The Unthinkable.

According to the National Urban and Community Forestry Advisory Council report to the Secretary of Agriculture on Catastrophic Storms and the Urban Forests, a storm's impact on the urban forest is a national problem and its consequences affect our urban forests and our communities. [1]

It should not come as a surprise that we are in a new *era of catastrophes."*[2] *There is a concentration of more people and assets in hazardous areas while at the same time new vulnerabilities and new hazards are emerging*.[3] In fact 91% of Americans live in places at a moderate-to-high risk of earthquakes, volcanoes, tornadoes, wildfires, hurricanes, flooding, or high-wind damage according to an estimate calculated for TIME by the Hazards and Vulnerability Research Institute at the University of South Carolina.

Slightly more than 50% of the population lives in coastal areas and lessons learned from Katrina in the Gulf have not deterred construction and both the Gulf and Florida continue to boom. This dense coastal construction is the main reason storms are causing more and more damage every year. Amanda Ripley, "Why we don't Prepare for Disaster", TIME, in partnership with CNN, August 20, 2006.

In 2009 the Friends of Hawaii's Urban Forest was awarded a Forest Service National Urban and Community Forest Advisory Council (NUCFAC) Grant to

---

[1] Forest Service, National Urban and Community Forestry Advisory Council, (February, 2008) Report to the Secretary of Agriculture on Catastrophic Storms and the Urban Forest.

[2] Kunreuther, H.C.; Michel-Kerjan, E.O. *At War with the Weather: Managing Large-Scale Risks in a New Era of Catastrophes*; The MIT Press: Cambridge, MA, USA, 2009; p. 416.

[3] Gall, M., Borden, K., Emrich, C., Cutter, S., (2011, November 14), The unsustainable trend of natural hazards losses in the United States. Sustainability, www.mdpi.com/journal/sustainability. Retrieved on July 26, 2012.

develop this *Urban Forestry Emergency Operations Planning Guide for Storm Response*.

The project was driven by a growing awareness of the devastation that happens to the urban forest after a natural disaster such as a hurricane, ice storm or wind event.

The question posed: how can the urban forestry industry be equipped to respond to natural disasters?

The solution: develop an urban forestry emergency operations planning guide for storm response.

Methodology:

This project includes four phases which are described in this report:

- Phase one - survey
- Phase two – interviews
- Phase three - a meeting of experts
- Phase four – compilation of data

Survey:

A survey was developed to gain an understanding of the essential practices, training and experiences of urban forestry storm responders. The survey data formed the basis for creating the guide and subsequent planning materials and helped the team answer the questions:

- What are the features of an "*Urban Forestry Emergency Operations Planning Guide*" that would be of value to the industry?
- How would the guide help the industry prepare for a storm?

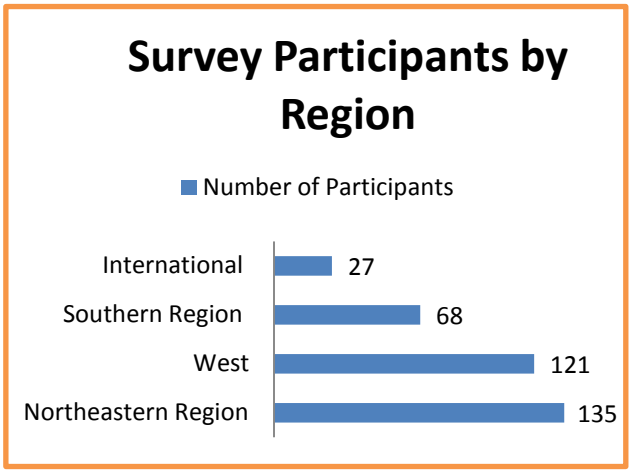
Questions were asked about preparedness, types of certifications, experiences in storm response, plans in place, training and drills, contracts and mutual aid agreements, incident command in the urban forest, safety protocols and communication strategies.

The survey development phase took six months and involved industry experts to ensure that questions would consistently provide data about the readiness of the industry to respond to storms.

Five hundred and seventeen (517) surveys were started and 367 surveys were completed. The chart to the right identifies participants by region.

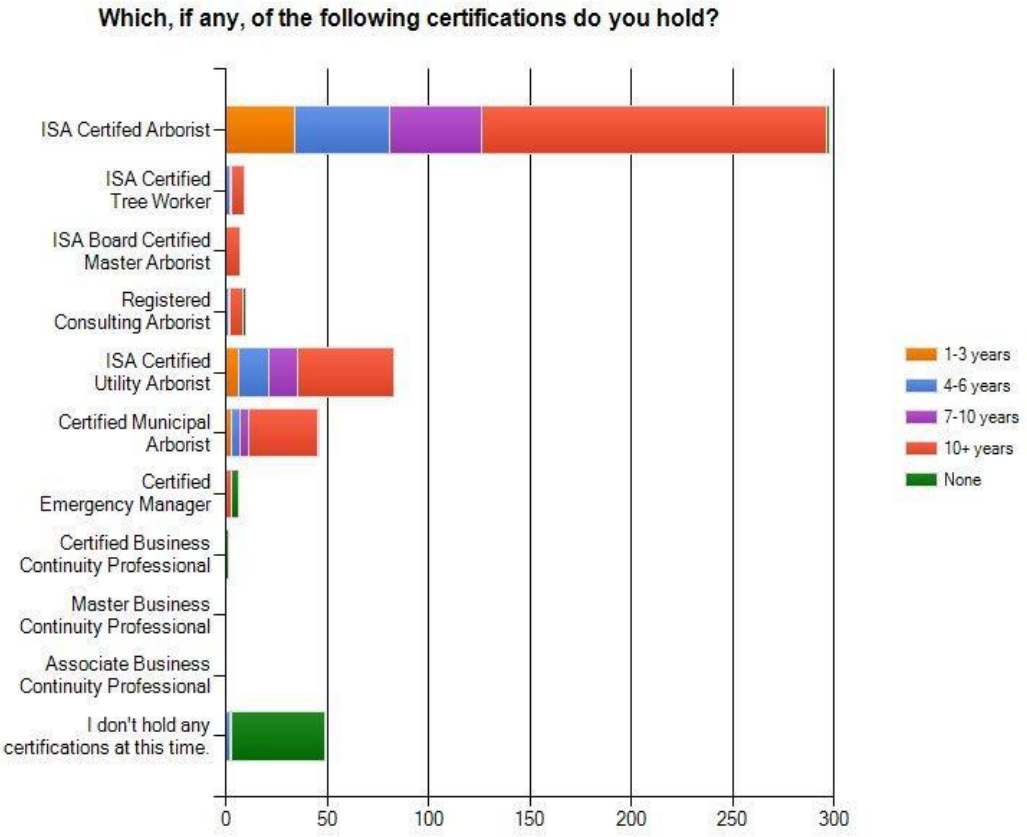
Click this link for more information about the survey questions.

Several survey questions are explained below.



Survey Participants:

The majority of participants had multiple certifications, management skills and 10+ years of experience. The table below identifies the professional experience by number of years.



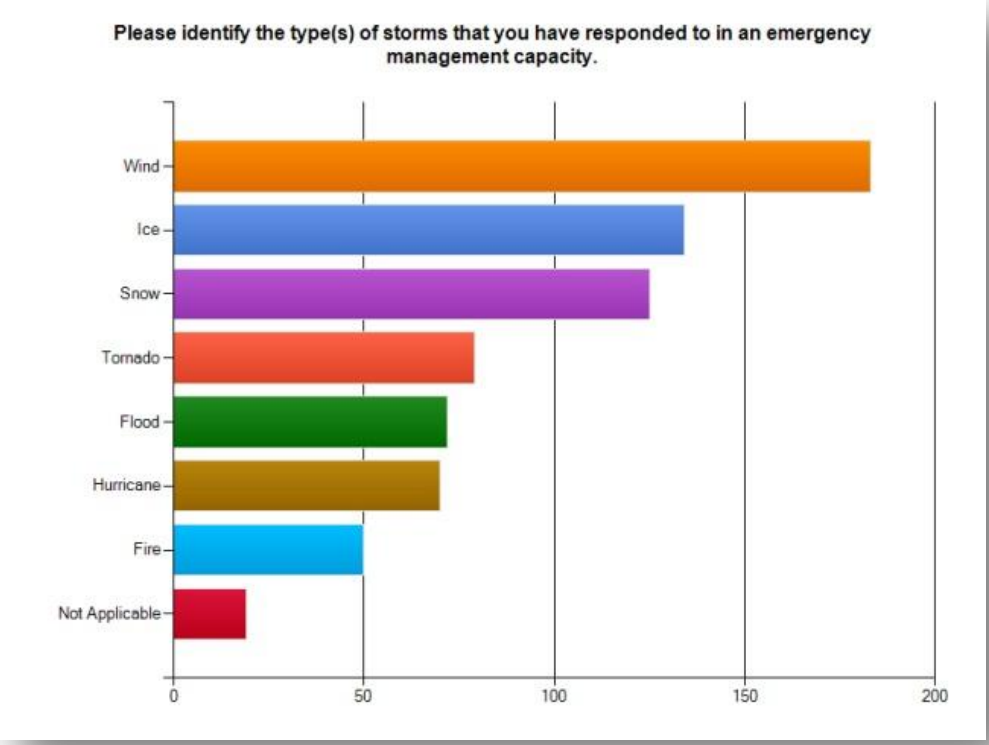
The comment area included additional job classifications such as damage assessment, crew leader, team scout, incident commander, certified forester, restoration team member, lineman, lodging coordinator, researcher, emergency operations center manager, communications coordinator, public information officer, strike team, and zone manager and tree safety.

By industry, the majority of responders represented city government, public and local in scope, electric utilities, and private industry.

Storms:

Wind events were responded to far more frequently than any other type of storm.

Reported responses per event in days ranged from 1.6 to 43.71 days, with the longest response taking 790 days.

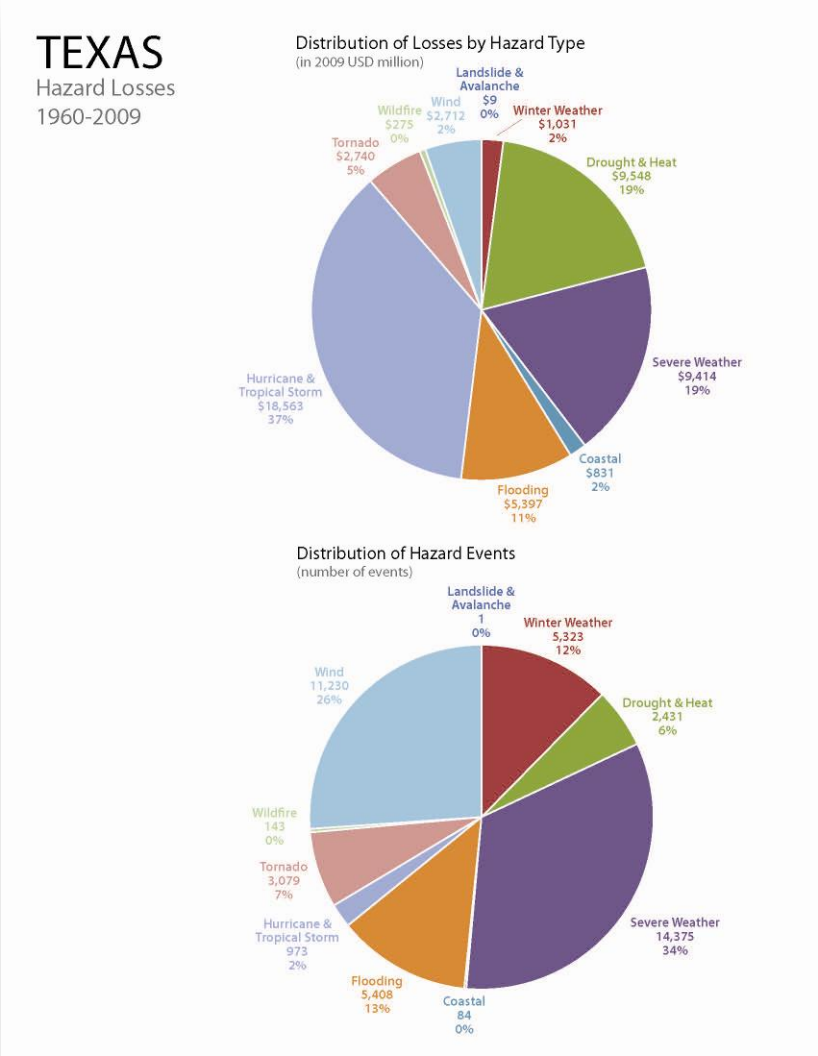


As a side note regarding storms:

Be aware that infrequent storms may carry a heavy price tag. You never know when a seemingly small storm may escalate into a financial doomsday.

In a 2011 article called, "*The Unsustainable Trend of Natural Hazard Losses in the United States*" Melanie Gall charted the monetary losses from natural hazards from 1960 to 2009 as being in the billions. Hurricanes were the costliest followed by flooding and coastal hazards, severe weather, geological, heat and drought, winter weather, wildfire, and landslides and avalanches.

See a sample chart below for an example of hazard losses by number of events as compared to the dollar cost.



Texas Hazard Losses 1960-2009. [4]

[4] http://webra.cas.sc.edu/hvri/products/sheldus80_img/charts/total/PDF/Texas.pdf

Reported Current State of Preparedness:

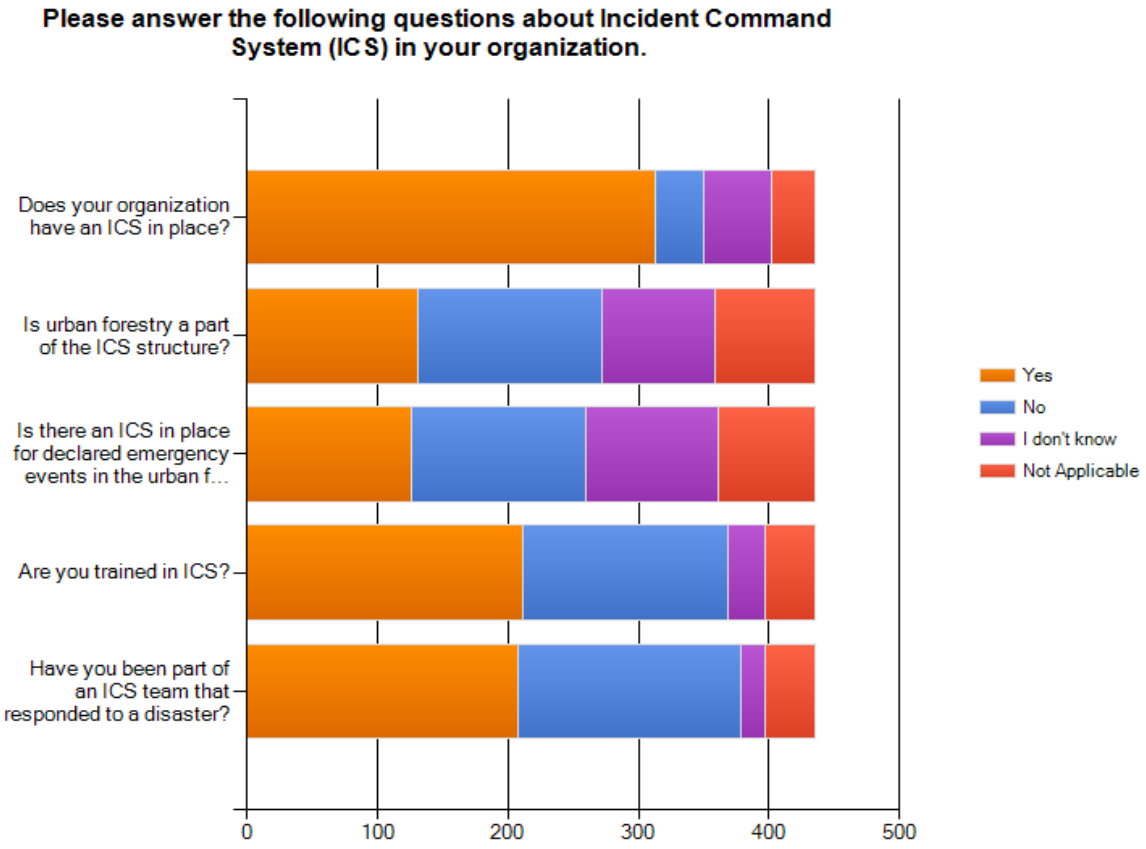
Responders reported moderate to very good preparation for nine of the 16 options listed below. Those areas with less preparation include:

- Community profile and hazard analysis.
- Inventory of trees in a community.
- Post-storm urban forest restoration planning.
- Debris management plans.
- A tool to estimate debris.
- Debris removal contracts.
- Debris disposal options.

No.	Option	Very Good - Good Preparation	Less Preparation - No Preparation
1	Pre-disaster planning	X	
2.	Community profile and hazard analysis		X
3.	Key leadership and staff position descriptions	X	
4.	Process for collecting information about storms	X	
5.	Process for reporting and sharing information	X	
6.	Administrative, financial and logistics roles	X	
7.	Training activities and exercises	X	
8.	Current inventory of trees in the community		X
9.	Post storm urban forest restoration plan		X
10.	Debris management plan		X
11.	Tool to estimate the amount of vegetative debris		X
12.	Debris removal contracts in place		X
13.	Debris disposal options identified		X
14.	Safety protocols in place	X	
15.	Mutual aid agreements in place	X	
16.	Incident command system for storm response in place	X	

Incident Command System (ICS):

Five questions were asked about the presence of ICS in an organization.



Findings: While ICS is in place within an organization, the reported results indicate that urban forestry is not part of the ICS structure and is not in place for a declared emergency in the urban forest. The training in ICS and participation on a team responses were nearly equal yes and no's.

Partnerships:

The survey indicated that electric utility companies, municipal government, and private and state organizations are the most important partnerships when planning, responding to and recovering from a storm.

In the comment section additional partners identified were: state emergency services, tree contractors, tree crews, National Guard, and contracted weather forecasters.

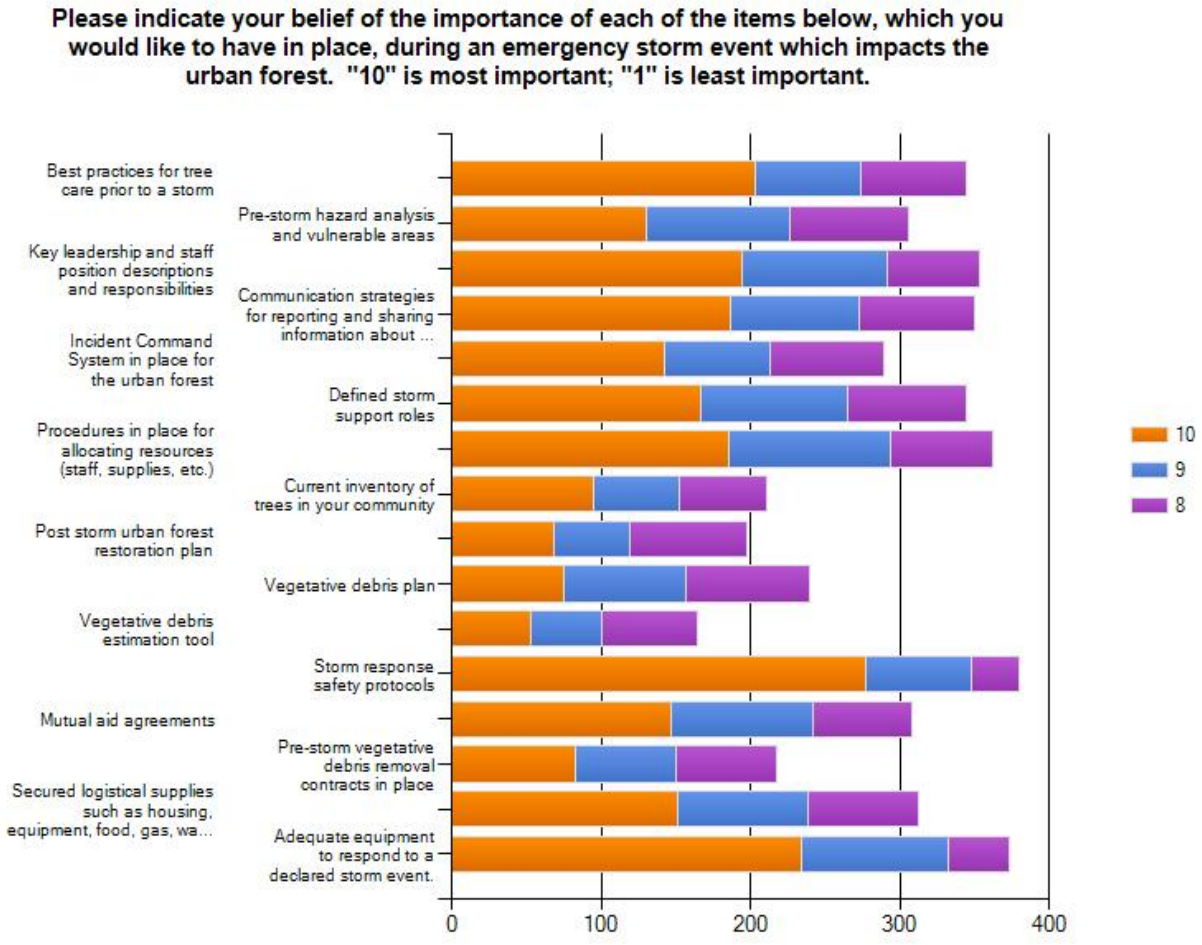
What needs to be in place?

Respondents were asked to rank the importance of 16 items that could be in place during an emergency storm in the urban forest.

The six highest priorities identified in terms of importance are:

1. Safety protocols.
2. Adequate equipment to respond to a declared storm event.
3. Procedures for allocating resources (staff, supplies, etc.).
4. Key leadership and staff position descriptions and responsibilities.
5. Communication strategies for responding and sharing information.
6. Best practices for tree care prior to a storm.

The responses are charted below.



Based on the reported response storm response in the urban forest is a concern. While the data suggests a favorable picture of storm preparedness interviews painted a slightly different picture. A summary of the interview methodology and conclusion follows.

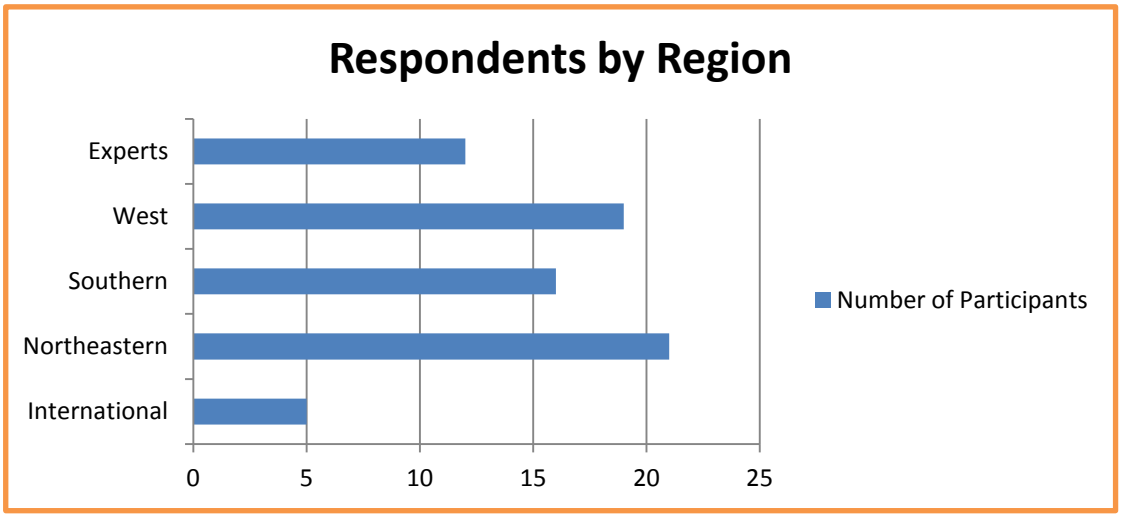
INTERVIEWS

Methodology:

A survey question asked if the team could follow up with an interview. Two hundred survey respondents agreed. Individual emails were sent to schedule one-hour interviews. A team of two conducted the interviews, took notes, recorded the interviews and sent a link for photos and documents.

Between May 1 and August 15, 2011 seventy interviews were completed. The responders came from a variety of industries including municipal, utility, and private organizations, and small and large cities.

The interviews provided an opportunity to understand the issues. What topic areas were of most concern? What did the industry want in a document? What were their recommendations for others in the industry? Where should efforts be focused?



Of particular concern was the growing number of municipalities and cities without forestry departments or certified arborists. Many communities do not have up-to-date inventories, contracts or mutual aid agreements in place, and urban forestry is not part of ICS. The most interesting observation was the fate of small communities. As one contractor stated, “They are at the bottom of the barrel in terms of response.”

Broad recommendations from the interviews:

- Trees are the common resource among everyone and can impact your life.
- See the big picture.

- Work, plan and think safety.
- Know what to expect when a big storm hits.
- Focus on exactly what you need to have in place and from whom.
- The more you train and plan for disasters the less you bleed in battle.
- Utilize the expertise of the industry, and don't reinvent the wheel.
- Know how to inform the public about the storm in the urban forest.
- Understand your trees. Know the scope of what you are dealing with.
- Work more effectively and efficiently in changing unpredictable circumstances.

Urban forestry emergency managers need to be at the table when decisions are being made about the management, selection, planting and storm preparedness for trees in their community.

Conclusion:

Without the interviews a complete picture of storm readiness would not have been understood. Discussions were essential to the creation of the guide.

Analyzing the comments and recommendations, identifying topics in terms of relative importance and the number of times topics were discussed or recommended provided the basis for the selection of the guide components.

The guide components include:

- Planning
- Safety
- Communications
- Contracts
- Hazards and vulnerabilities
- Incident Command System
- Inventory
- Mutual aid agreements
- Trainings and drills
- Vegetative debris

Our industry experts suggested the guide can be the basis and foundation for an Urban Forestry Storm Response BMP.

The wealth of information and quotes extrapolated from the interviews provided data that is used throughout the guide.

Meeting of Experts

A team of industry experts met on May 3, 2012 following the Western Chapter of ISA conference to review the document.

The goals of the meeting were to ensure the guide was sufficient, scalable, and user friendly; gaps were addressed; and next steps were identified.

Participants included:

- Colleen Carroll, NatureTalks, HI
- Stephen Cieslewicz, CN Utility Consulting, CA
- Dave Dockter, City of Palo Alto, CA
- Kevin Eckert, Arbor Global, Smart Trees Pacific, HI
- Bill Heriford, Davey Tree Surgery Company, CA
- Sandy Macias, USDA Forest Service, Pacific Southwest Region, CA
- Gordon Mann, Mann Made Resources, CA
- Mark Mead, City of Seattle, WA
- Jack McCabe, Davey Resource Group, CA
- Teresa Trueman-Madriaga, Smart Trees Pacific, HI
- Alan Yue, Facilitator, Premier Network System, CA

The experts made specific recommendations for the guide. Their recommendations included:

1. Urban forestry emergency managers need to be at the table when decisions are being made about the management, selection, planting and storm preparedness for trees in their community.
2. An appropriate effective safety program must be developed to properly address safety issues during and immediately following a storm event.
3. Planning will help an organization mitigate, respond to, and recover from a natural disaster in a timely and cost effective manner.

4. A strong communications plan must be developed to communicate within and outside the department, company and/or municipality.
5. Contracts ensure adequate support with sufficient personnel, proper equipment, and adequate qualifications to address storm conditions.
6. Mutual Aid Agreements (MAAs)allow for the procurement of resources when needed. Urban forestry should be included in the mutual aid agreements that are made by the municipality. Additionally urban foresters need to be at the table when municipalities/cities negotiate MAAs.
7. If you manage or are responsible for trees in the urban forest you must have a seat at the ICS table during planning, exercise, and response; not just after the fact.
8. Have an inventory of trees in your community. Know what you have and for what you are responsible. To effectively manage and address tree related damage you have to know the tree's composition, location, and condition.
9. Training ensures competent personnel who can safely and cost effectively prepare for, reduce risk and damage, and respond to tree related problems resulting from natural disaster events.
10. Natural disasters can generate exceptionally large volumes of debris containing trees, toxic materials and other waste. All urban forestry managers must be prepared to cost effectively manage vegetative debris.
11. Have an understanding of predicted weather events and patterns and consider more recent extreme weather events and how they can impact your community. This will help organizations prepare for and respond to a storm event.

Next Steps:

- Develop an urban forestry storm response BMP for utilities and municipalities.
  - Initiate joint discussions between professional associations (for example, ISA, UAA and SMA) to facilitate mutual collaborations.
  - Work with a team of experts to develop the BMP.
  - Develop an urban forestry ICS.
- Communicate and promote the BMP.
- Implement the BMP.

Conclusion:

The results of this study illustrated a need for an urban forestry emergency operations planning guide for storm response. No organization or municipality has the luxury of working and responding to storms independently. Collaboration is the key.

This project is unique due to its participation of experts who provided:

- Support for the development and launch of the survey.
- Informative discussions about storm readiness through interviews.
- Expert review of the document based on a working knowledge of storm response.

Our team hopes that the reader finds this guide useful in planning and preparing your community's response to storms. We believe that a well thought out and tested storm preparedness protocol is essential in this era of increasing storms across the urban forest.

Contact information: Teresa Trueman-Madriaga, Team Leader, 808-672-3383, ttm@hawaii.rr.com or ttm@smarttreespacific.org.