

Not If, but When...

By Craig Kelly, Supervising Vegetation Program Manager, Pacific Gas and Electric Company, Redding CA

As California and other western states endure a third consecutive drought year, the threat of wildfire and its impacts become more and more of a daily occurrence. Dark columns of smoke are frequently seen on the horizon and nearby mountains, sounds of horns coupled with sirens are heard in the distance, and 'special reports' with the hook, "FireWatch 2009" are being broadcast over radio and television venues. As I face the Northern California Air Attack base in Redding, I hear the very familiar rumble of dual prop engines and wait only seconds before I see initial attack aircraft take off into the sky to battle the flames. In each and every case I hear or see fire fighting aircraft in the sky, I ceaselessly question if electric distribution or transmission facilities are involved. Regardless if you are from the fire prone west, in the Midwest's tornado alley or the hurricane impacted south, it's not a matter of "if" something is going to happen, it's a matter of "when."

Pacific Gas and Electric's (PG&E) Utility Vegetation Management (UVM) Department learned several valuable lessons during the 2008 fire season and successfully implemented several new operational tools to minimize the impact of fire as well as maximize its efficiencies. The most vital lesson learned from the 2008 fire season was that preparation for any type of crisis is key. Customers feel utilities should expect the unexpected and be prepared for anything and everything. *As utility vegetation managers, preparation for any on-coming event is imperative in assisting maintenance and construction personnel in re-establishing power to those that have been impacted and catastrophically affected.*

Our lesson in preparation started on a calm June afternoon just outside of Chico, CA when the Humboldt fire raged out of control burning nearly 25,000 acres, destroying 87 residences and resulted in 10 injuries, all within a 48-hour period. A significant number of electric distribution facilities were also damaged or destroyed during the fire and, it was imperative that we repair or replace such assets as soon as safely possible. In effort to restore power, PG&E worked closely with Cal Fire's Incident Command Team and had effectively reestablished power to all of it's customers within a few days of the fire being extinguished.

However, the clear smokeless blue sky did not last long. While continuing to mitigate remaining hazardous conditions (hazard trees) left by the Humboldt fire, the western horizon was brewing and weather reports were indicating a storm originating in the Pacific Ocean would soon hit California with a vengeance. The forecasts came true on June 21, 2008 as Northern California was struck with a storm consisting of dry lightning generating over 8,000 lightning strikes and sparking countless wildfires. California was, in effect, under attack. While in the second year of drought, dangerous fire conditions already existed at the time making it ripe for disaster, and so it began:

- 2,780 wildfires resulted from less than 5 hours of lightning
- countless structures and residences would be destroyed
- over 20,000 fire personnel responded to the region
- resources throughout the country as well as Australia were called upon to help; including nearly 2,100 pieces of fire fighting equipment such as fire engines, bulldozers, helicopters, air tankers and water tenders, were used to douse the flames
- hundreds of utility poles were damaged beyond repair

- numerous transformers and electric operating mechanisms were in need of replacement
- tens of millions of dollars were spent by PG&E not only to replace equipment but remove 30,000 hazard trees along its distribution and transmission facilities
- 1,157,930 acres were destroyed
- in the end...tragically, *23 people were killed*

During the first few days of this disastrous event, PG&E employees and its vegetation management contractors worked tirelessly to assist Cal Fire and the other agencies. We worked in teams to de-energize transmission and distribution facilities, when necessary we removed downed trees for emergency response access, and we provided firefighting personnel with access to hydro facilities for water needs. In addition, while working closely with Cal Fire's Incident Command Team, PG&E's vegetation management force teamed up with PG&E's Maintenance and Construction (M&C) personnel to perform wood pole/tower protection. Vegetation crews would clear away any flammable material near a wood pole/tower and the asset would then be pre-treated with fire retardant known as Thermo-Gel®, protecting the pole from direct flame, embers and radiant heat. This was initially considered a non-traditional task for Vegetation management personnel but soon after the first round of success was realized, asset protection teams are now being implemented when time and topography allowed.

After the initial attack phase of these major events, PG&E's M&C personnel began comprehensive damage assessment inspections within each of the fire perimeters. These inspections determined that fire caused the destruction of over 130 poles and their cross-arms, numerous transformers were damaged beyond repair and the replacement of miles of conductor was necessary. In conjunction with each damage assessment team, a Vegetation Risk Assessment Arborist evaluated vegetation risks and identified needed resources. Once the damage patrols and risk assessments were complete, PG&E employed the use of roughly 110 professional hazard tree crews, 3 registered professional foresters and countless support personnel in effort to remove all trees that were affected by the innumerable wildfires. By early October, hundreds of miles of facilities had been impacted, millions of dollars were spent repairing or replacing assets and over 30,000 hazard trees were removed, lessening any future risk of failure.

By early October 2008, the orange colored skies returned to normal and by month's end the weather conditions changed. Relief was in air as one of the worst fire seasons in California's history came to a close. Thousands of firefighters as well as our vegetation team settled in for a long needed break.

Throughout the winter break, PG&E's UVM team worked diligently and determined there were a number of key lessons learned just five months previous. The team also established that the education gained would be extremely valuable during future fire seasons. Two of the more significant lessons we focused on were: first, we must order resources immediately upon fire condition reports and initial field assessments, and second, we must somehow communicate immediately with the customer regarding our vegetation management needs and intentions.

Lesson #1: Order Resources Immediately

Frequently during California fire seasons, wild land fires are scattered throughout the state exhausting any and all fire fighting resources as well as hazard reduction (hazard tree) crews. Therefore, it is imperative to immediately order any available resources to handle hazardous tree removal and pole clearing. Depending on the magnitude of the incident, it is also important to order tree risk assessment teams and to consider the following:

- Initiate the Incident Command System (ICS) in order for ease of communication with responding agencies. Based on recent regulations and laws, all fire and law enforcement agencies operate using the ICS during any emergency situation
- Order specialized resources immediately and if required, place on stand-by
- Augment your initial resource requirements by 10-20% to ensure immediate availability for potential dispatch
- Initiate specific teams to handle safety, budget, finance, communications (external and internal), procurement, resources, and other needs

Lesson #2: Be Open and Honest and Act with Integrity ~ Communicate with the Customer

Regardless of the severity or magnitude of the incident, the rush to restore electricity should be performed in conjunction with a coordinated public relations effort. We need to focus our communication around safety, but at the same time we need to be open with our customers regarding work needs and intentions. During the aforementioned fire storm event, PG&E was allowed access to replace poles, cross-arms and other equipment as well as drop hazardous trees before the property owner returned home. Repairing or replacing poles and associated equipment was expected by the customer, but as far as trees being removed without their being aware became a large concern, understandably. Although hazardous trees adjacent to electric utility lines must be removed to comply with California Public Resource Code 4293, customer communication and notification of such mitigation is paramount. In effort to communicate with our customers during an emergency situation, PG&E has established a list of public relations activities and tools including, but not limited to:

- Contact local media with utility-specific informational releases
- Work with public information officers of other agencies to develop joint media releases
- Review other agency communication tools and protocols. For example, review field placards from county, state and federal agencies
- Set-up a communications booth at local evacuation centers
- Work with local Fire Departments and Fire Safe Councils to develop communication venues with the evacuees
- Create and post placards of intended work activities in highly visible locations such as on power poles, general store bulletin boards, etc. Include on the notice a direct phone number to a local office voice mail and return all calls within 48 hours
- Attend town hall meetings to disseminate the “Why We Do What We Do” message
- Pre-event activities might include:
 - Hold resident field trips to inform and educate property owners of potential fire risks and probable required work should a fire burn in the area
 - Participate in local fire prevention groups such as Fire Safe Councils
 - Help provide customers with educational resources regarding living in the urban interface

With lower than normal precipitation between the 2008 and 2009 fire seasons, Northern California endured yet another major blow from Mother Nature. On August 1, 2009 over 885 lightning strikes were recorded in Shasta County alone, eventually causing over 40 major wildfires. Two of the largest fires started, the SHU Lightning Complex and Hat Creek Complex, burned from August 1 through August 26, consuming over 17,626 and 11,269 acres respectively. Although we were impacted once again by smoke and flame, the lessons learned during the previous year were found to be advantageous and the impacts to PG&E and its customers were significantly mitigated.

PG&E's UVM team continues to develop innovative tools and activities to decrease the impacts to its assets and customers as well as improve emergency response efficiencies. Although optimism remains high for a less disastrous 2010 fire season, we will be prepared for the "when!"