



[Winds and Wildfires Put Electric Crews on High Alert](#)

LADWP Works to Prevent Wildfires without Preemptively Shutting Down Power

By Carol Tucker

When the Santa Ana winds kick up and a high wind advisory flashes on his screen, Juan Esparza goes into overdrive. He immediately starts checking rosters and calling out to district superintendents to see how many crews he can drum up to support Electric Trouble during that night's graveyard shift. These days, he is concerned not only about the wind causing power outages, but also about wind-driven hazards with the potential to interfere with electrical lines and trigger a wildfire.

"With conditions being so dry, the potential risk of fires has definitely increased," said Esparza, a 25-year veteran of Electric Trouble and superintendent for 11 of those years. "When we send out crews to restore power outages during these conditions, they have to be prepared to do work to prevent or put out a fire as well as get the power back on."

Andrew C. Kendall, Senior Assistant General Manager of Power System Construction Maintenance and Operations, said conditions this past fall - low humidity and an abundance of fuel such as dry grass — put the region at a greater risk of wildfires. "Any utility line, under the right circumstances, is capable of causing an arc, a flash, which sends sparks to the ground. The opportunity for fires is there if all the elements come together."

All the elements came together during the early hours of October 28 as a wildfire began near the Getty Center in the Sepulveda Basin. Electric Trouble dispatched crews to the fire where an emergency unified command center was already set up. The Energy Control Center (ECC) de-energized three residential circuits in the immediate vicinity of the fire, serving portions of Bel Air, Brentwood and Westwood to prevent electrical equipment from sparking or flaring up hot spots.

Investigators later determined that wind had blown a dried-out eucalyptus branch from a tree located on private property into LADWP distribution lines, causing them to arc. The chain of events started by the wind-blown branch led to a brush fire that destroyed a dozen homes. Inspection showed no failure of electrical equipment in starting the Getty fire. The line that was struck by the branch remained in service throughout the fire and the pole was not significantly damaged. LADWP had also performed

aggressive vegetation management in the fire vicinity, such as trimming 248 trees, in July to protect the public's safety and to prevent power outages.



The Getty Fire destroyed six poles that were replaced by the following day.

Earlier that month, 45 LADWP electrical crews were mobilized to restore outages and repair equipment destroyed by the Saddleridge fire in the Sylmar area of northern Los Angeles. The cause of that fire remains under investigation, and no LADWP equipment was implicated or involved. Pushed by 60 mph wind gusts, the wildfire burned 8,800 acres and destroyed 16 power poles. As a result of that fire, LADWP crews replaced 40 poles, 4,000 feet of overhead and 150 feet of underground conductors. Power was restored within 24 hours for all 17,200 customers who were affected.

Power Shut-offs

Wildfire exposure and mitigation related to power equipment has become a hot button issue for electric utilities, their customers, governing bodies, regulatory agencies, and the financial community. Prior to this fall's devastating blazes, the 2018 Camp Fire in Northern California and the 2017 fires in Ventura, Santa Barbara, and Los Angeles counties were linked to power lines and other electrical equipment.

The increase in the number and severity of wildfires in California has heightened the need for electric utilities to mitigate the risk of fires involving power equipment. Facing predictions of high fire threat this year, the state's major investor-owned utilities (IOUs) - Pacific Gas & Electric and Southern California Edison - preemptively shut off power for large swaths of customers to prevent electric equipment from sparking a blaze. LADWP has determined not to take that extreme measure because only a fraction of its service territory lies in high fire threat zones, and the Department coordinates regularly with the Los Angeles Fire Department (LAFD).

"We want to assure our customers that LADWP does not turn off power to customers before or during wind events. Due to our location in a highly urbanized area with far fewer wildfire prone areas, we do not face the same threat of wildfire as many of the rural counties located in other service areas served by the larger investor-owned utilities," according to a [Department statement](#) issued October 9.

To put the service territories into context, PG&E serves an area approximately 70,000 square miles, Southern California Edison's service area is 50,000 square miles, while the City of Los Angeles, served by LADWP, is approximately 465 square miles. According to the California Public Utilities Commission (CPUC) Fire Threat map, only 0.5 percent of LADWP distribution system lies in an extreme risk (Tier 3) area and about 15 percent of its power distribution lines traverse an elevated risk (Tier 2) area.

"The LAFD has been working closely with our partners at DWP to assist with their ongoing efforts to mitigate wildfire risk," said LAFD Chief Ralph Terrazas. "It's a process that DWP is firmly committed to and together our agencies will continue that work going forward to protect Angelenos from the threat of wildfire."

Stepping Up Wildfire Mitigation

Since 2008, LADWP has employed reliability standards for power equipment that helps mitigate wildfire risks in high-threat fire zones. In addition, the Department has aggressive vegetation management and Power System Reliability Programs (PSRP), both of which serve to help mitigate wildfires.

During Red Flag warning periods (when the National Weather Service informs firefighting and other agencies that conditions are ideal for a wildfire), additional restrictions are in place for work in designated fire threat and brush clearance areas. For example, LADWP suspends all non-essential work in Tier 2 and 3 zones. Esparza said that when work has to be done in these zones, "crews need to carry all their safety gear, communications, food and water to the location they are working, not leave them in the truck down the hill." In some cases, dried brush is cleared, trees are trimmed, and the ground soaked within a 10-foot radius prior to doing the electric work.

This year, LADWP has put new protocols in place to further prevent wildfires and more are in the works. LADWP distribution lines are designed to automatically re-energize after they relay out. For the first time, LADWP turned off the automatic re-closure function of its distribution lines in the area of the Saddleridge fire and the Getty fire in addition to de-energizing those circuits directly impacted by the fires.

LADWP also recently presented a new Wildfire Mitigation Plan to the Board of Water and Power Commissioners in compliance with state legislation (SB 901), which requires that public utilities prepare a wildfire mitigation plan by January 1, 2020 and update it annually thereafter. "The plan calls for hardening our system against fire risk. We'll be installing more steel poles and covered wire," said Kendall, noting that insulated wire is becoming an industry practice in fire threat areas.

Proactive Maintenance

Jeff Williams, Transmission and Distribution District Supervisor, is a subject matter expert on all things related fire mitigation regulations. He said LADWP has a robust inspection and maintenance program that either meets or exceeds state and federal regulations. If a pole is determined to be deteriorated and presents a fire risk, it is scheduled for replacement within a year for Tier 2 fire risk zones and within six months for Tier 3 fire risk zones.

“We ensure the equipment is in safe operating condition and clear of trees, brush, weeds and other vegetation that may cause damage in high wind situations,” Williams said. That includes using infrared cameras on distribution equipment to look for “hot spots,” indicating a loose connection that could lead to a fault. LADWP also performs regular ground inspections of vegetation that may cause damage to power lines in high wind situations, and trims brush and trees as necessary.

Over the last five years, LADWP has invested \$3.9 billion in Power System reliability work, which includes the replacement of aging infrastructure and reduces the frequency and duration of power service interruptions.

Ken Boothe, Supervisor of Transmission and Distribution out of the Van Nuys District, was overseeing the replacement of two wooden poles on Tujunga Canyon Boulevard that were damaged by a falling tree during a wind storm. Because of the location in a Tier 3 extreme fire risk zone, Power Distribution opted to replace the wooden poles with steel poles. Situated close to homes, up against a hillside, the poles were supporting two spans of 4.8 kV wires along with communication lines.

The majority of LADWP poles are still wood but they are often replaced with taller steel poles in the fire risk areas. The wooden poles are still preferred in some locations, such as a high wind area because they are shorter and stouter.



A Van Nuys District crew works to replace a fallen wood pole with a steel pole in Tujunga—an extreme fire risk zone.

Coordinated Effort

It was early the morning of October 29 when Esparza finally went home to get some rest before coming back to the Unified Command Center at Jackie Robinson Stadium off Sepulveda Boulevard, just southeast of where the Getty fire was burning in the canyon. Both LADWP Water and Power Systems had set up emergency command post vehicles on the command center grounds. While Electric Trouble crews worked to restore power, monitor electrical lines, and coordinate with the Fire Department, Water Operations was ensuring that tanks and reservoirs were filled and ready to assist firefighters as needed.

Altogether the Getty fire affected up to 1,360 customers during its peak, with 88 percent restored within 24 hours. Six poles were damaged by the fire and LADWP crews worked through the night and following day to replace them. LADWP will proactively replace another eight wooden poles with steel poles, and will replace 2,000 feet of overhead conductors with insulated wire.

“It definitely takes a coordinated effort both with other agencies and among our LADWP divisions,” Esparza said, as he prepared for a briefing at the Unified Command Center with LAFD, LADWP’s Water System Operations, L.A. Building and Safety, L.A. Unified School District, Cal Fire, Southern California Gas Co. and many other agencies.

Along with the Water and Power Systems, LADWP’s response to the Getty Fire required support from

many other divisions including Office of Emergency Management, Customer Service, Information Technology, and Public Affairs. “I made a lot of new friends,” Esparza said. “You get to know people from other divisions and feel like you’re part of a team. We all may work for the same company but a disaster like this really brings you together.”



[Improving Power Reliability by Land and Sea](#)

By Paola Adler

The last leg of a power reliability project to strengthen an essential transmission line connecting the Pacific Northwest to Southern California has been completed. Spearheaded by LADWP’s Power Transmission and Distribution Division’s Overhead/Underground Transmission team, the Pacific Direct Current Intertie (PDCI) ground return system’s ocean electrode was upgraded to improve power reliability and capacity for Los Angeles customers and other utilities that utilize the line.

The PDCI is a DC transmission system that has a capacity of 3,220 MW, enough to power two million homes. The original system was put in service in 1970 and has been continually maintained and expanded, but the southern ground return connection had not been replaced since the PDCI was built.

Originating at Sylmar Converter Station and terminating in Santa Monica Bay, the ground return system is designed to carry current safely when the PDCI experiences an interruption and also ensures consistent flow of electricity. The ocean electrode component provides a “ground point” where electricity can travel through the earth. As the operating agent of the system’s southern area, LADWP began a project to inspect and upgrade this portion of the line in 2014.

“This project was a unique challenge for LADWP because it included replacing both underground cable on land and submarine cable under 120 feet of water in the Pacific Ocean,” said Mohammad Khajavi, Power System electrical engineer and the project’s director. “There were a lot of technical challenges and moving parts we had to manage, but our biggest achievement is creating a team that worked well together to achieve a complete project at a cost lower than expected.”

Because the cables stretch more than four miles offshore, a barge and tugboats were used to carry equipment and work crews, and ocean divers were used to help properly install components underwater. LADWP used DC cross-linked polyethylene insulated cable for the project and installed 36 offshore vaults, using a design that exceeds safety standards and protects marine life and customers onshore.

More than 50 LADWP employees worked on the project, which was commissioned in November 2018. Divisions beyond the Power System also contributed to the project's success through environmental monitoring and compliance, permitting and public outreach. The team's efforts will help support reliable power flow to Angelenos for decades to come.



The project included replacing both underground cable on land and submarine cable under 120 feet of water in the Pacific Ocean. (Photo by Jairo Guerrero)