

Fighting Fire With Data

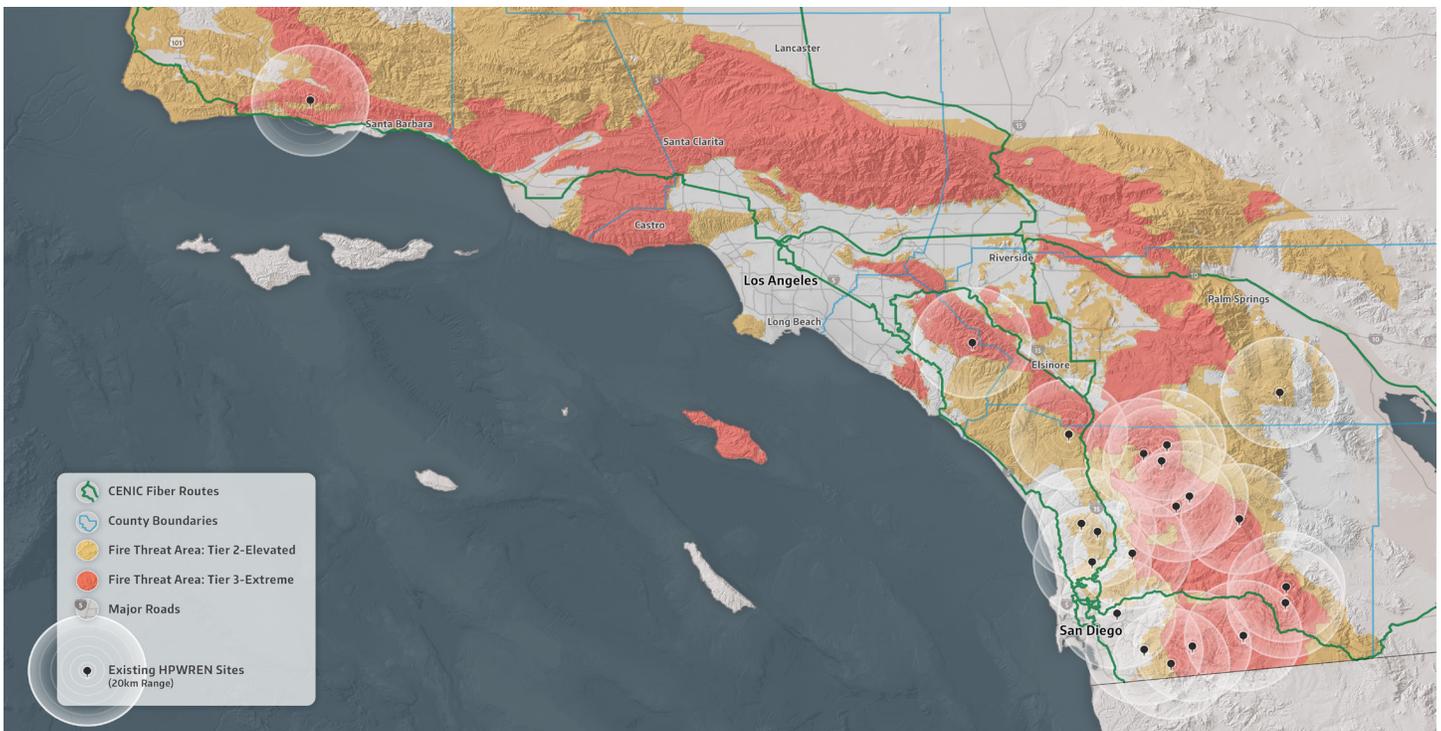
Wildfire Detection, Prevention, & Situational Awareness Systems

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The unprecedented scale and scope of recent catastrophic wildfires show that larger swaths of California are at risk than previously understood. Smart investments in strategic technologies may serve to limit the loss of life and property damage. One promising — and proven — line of defense is connecting remote cameras and weather sensors across the state to a vast mesh of wireless and fiber-optic cable to relay data. The collected data is combined and analyzed to produce information that supports wildfire prevention, detection, and management.

This system — ALERTWildfire (University of Nevada, Reno, University of California, San Diego, and the University of Oregon) — is actively collaborating and partnering with local firefighters, GeoLinks, and CENIC. During the 2016-2017 fire seasons, such a system provided critical information for over 350 fires, and in 2018, has assisted in more than 150 fires so far.

Statewide expansion of this proven system would offer strategic advantages for early fire detection, situational awareness for first responders, fire mapping, predictive simulations, and evacuation planning. Rapid investment in this shovel-ready system would soon save lives, property, habitat, and infrastructure across California, and the state would see an almost immediate return on its investment. Additional partners that would benefit from this effort and so might be approached for financial support are the insurance industry, technology accelerators, and local community organizations.



HOW IT WORKS

ALERTWildfire uses a network of cameras to continuously capture images of high-risk California landscape, while weather sensors on many of the same towers collect data on wind, humidity, fuel moisture, and other factors. The data is passed along via GeoLinks's fixed wireless microwave technology and then handed off to CENIC's high-capacity, optical-fiber network that runs throughout California. WIFIRE then analyses the data to create real-time simulations, wildfire path predictions, and visualizations of wildfire behavior, and provides these visuals to firefighters to inform evacuation and containment planning. Data visualization is also supported by the California Institute for Telecommunications and Information Technology's (Calit2) Qualcomm Institute.

For example, early fire detection by ALERTWildfire provides immediate input to burn models that incorporate weather, fuels, and topography. Such a collaboration exists between ALERTWildfire and WIFIRE (San Diego Supercomputer Center) to provide first responders with burn models almost in real time. WIFIRE was launched in October 2013 with a grant from the National Science Foundation, and has been advised by representatives from CAL FIRE, US Forest Services, US Bureau of Land Management, National Institute of Standards and Technology, and Los Angeles Fire Department. WIFIRE's "Firemap" software rapidly and accurately predicts and visualizes wildfire rates of spread. In late 2017, over 800,000 public users accessed information with the Firemap tool over 8 million times. Since grant funding ended this year, WIFIRE is operating under an annual subscription model for the fire departments of Los Angeles, Orange, and Ventura Counties.

WHAT IS NEEDED NOW

While these efforts have prevented significant loss of life and property during recent California wildfires, this fire monitoring network is geographically limited in its current deployment. Now is the time to expand use of this proven system across the state while systematically integrating it with local networks. Some possible next steps:

- Include language allowing for data, communications, and broadband strategies to support wildfire data applications in future legislation;
- Extend towers, cameras, and fixed wireless capacity throughout the state to provide first responders with powerful, contemporary tools;
- Where wireless towers exist on state property, work with ALERTWildfire to support the installation of cameras and other equipment to expand coverage;
- Explore opportunities to coordinate this system with FirstNet to augment the reach of this national first-responder network.

In light of the devastating effects of wildfires on California, scaling this work to create a vast data relay mesh across the state, in partnership with first responders, utility companies, and the State, would significantly protect Californians and lead the way for other states that are also fighting fires of unprecedented scale.



FOR MORE INFORMATION, VISIT (CONTACT):

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