INFORMATION

August 12, 2019

Issue:
Improved early wildfire detection measures through possible collaboration with ALERTwildfire for installation of a in wildfire camera system on Tahoe Donner property.

Background:

Following a presentation given by Dr. Grahnm Kent, Professor of Seismology, University of Reno-Nevada, discussing latest video technology use in the efforts of wildfire detection as initiated by Alert Tahoe, aka ALERTWildfire, at the 2018 Tahoe Donner Giving Fund annual fundraising dinner, staff has corresponded with Dr. Kent on the potential install an ALERTWildfire detection camera on Tahoe Donner property to enhance coverage and close viewing gaps. Local cameras include Mt. Lincoln and Martin Peak, but holes in the view shed still exist. Along HWY 89, North of Truckee, cameras at Sagehen and Babbitt are helpful, but do not address the footprint of Tahoe Donner and other areas between the Tahoe Donner ridge and Donner Summit. A camera on Hawk's Peak, is predicted by program directors to be a great location and really be that finishing camera for the region.

What is ALERTWIldfire?

> "ALERTWildfire is a consortium of three universities -- The University of Nevada, Reno (UNR), University of California San Diego (UCSD), and the University of Oregon (UO) -- providing access to state-of-the-art Pan-Tilt-Zoom (PTZ) fire cameras and associated tools to help firefighters and first responders: (1) discover/locate/confirm fire ignition, (2) quickly scale fire resources up or down appropriately, (3) monitor fire behavior through containment, (4) during firestorms, help evacuations through enhanced situational awareness, and (5) ensure contained fires are monitored appropriately through their demise.
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> ALERTWildfire is an expansion of the first network, ALERTTahoe, which was a pilot program deploying PTZ cameras and microwave networks in the region surrounding beautiful Lake Tahoe. This initial project was funded through the Nevada Seismological Laboratory (NSL) at UNR, the Tahoe Prosperity Center, the Eldorado National Forest, and the USFS Lake Tahoe Basin Management Unit. Soon thereafter, through a contract with the Nevada Bureau of Land Management, the

network quickly grew eastward into northern Nevada where the BLM Wildland Fire Camera Project was born. With growing successes in the summers of 2014-16, new contracts with the Oregon-Washington and Idaho Bureaus of Land Management and San Diego Gas and Electric (SDGE) provided further expansion of new fire cameras and microwave locations, and core university participation as UCSD and UO came aboard. Sonoma Water, Southern California Edison, Pacific Gas and Electric, and many counties, including Marin, Sonoma, Napa, Lake and Mendocino, have joined ALERTWildfire to make a statewide network in California a reality. As fire season 2019 begins, construction continues rapidly to expand throughout California and many other locations in four nearby states.

During the past three fire seasons (2016-2018), ALERTWildfire provided critical information for over 600 fires, including the Woolsey, Lilac, Wall, Whittier, Thomas, Tule, Woodchuck, Earthstone, Truckee, Draw, Snowstorm, Hot Pot, and Emerald fires; a 2016 arson spree in Lake Tahoe; and hundreds more. In late 2017, the devastating North Bay Complex and Thomas fires brought into sharp focus the need to quickly expand coverage across the western U.S. The Camp, Woolsey and Hill fires in late 2018 have only strengthened resolve to implement a comprehensive network throughout the western US. Although the three partner universities had been building their own redundant microwave networks to reliably acquire imagery, it became obvious that deploying new infrastructure to cover large areas in a short period of time was not realistic. Thus, a new strategy was adopted in early 2018 to install cameras on existing third-party microwave networks, to build larger virtual networks, produce regional coverage, and do it quickly! In this model, "towers of opportunity" (e.g., utilities, state and county services, and other private point-to-point communications infrastructure) are outfitted with fire cameras and associated equipment to potentially allow one hundred or more fire cameras to be installed in a single season. The data from these confederated networks are seamlessly incorporated into NSL's back-end acquisition systems and presented on a cloud-based website in a straightforward manner. To firefighters and first responders, it means "more cameras more quickly", which equals better decision-making capabilities. Now dozens and dozens of cameras can be installed in a single month as the goal of 200-300 new fire cameras by Oct. 1st, 2019 in California becomes a reality; efforts to scale up in other states are underway." www.alertwildfire.org

INFORMATION

ALERTwildfire is not to be confused with other up-and-coming private early detection systems offered to individuals, businesses, and government use such as SmokeDSystem by IT for Nature. The SmokeD detection system is near to real-time detection based on AI recognition of photos taken every 5 minutes with a range up to 10 miles; monitoring and alert services to the owner, included with software and camera system package purchase. This is not a product for remote installation as it needs electricity and internet.

Funding

Thus far funding for the ALERTwildfire cameras have been a patch work of federal, state, local and private money to make it all work. Firefighters and first responders get access to all cameras and although they are very appreciative of everyone supporting the program, they also like that the interface can seamlessly include all cameras regardless of who purchased it. As Sonoma County recently put it to Dr. Kent "we can wait in hopes that someone else can fund cameras here, or fund it ourselves and actually have a camera system soon with the hopes that it will encourage others to chip in." The county installed cameras this last year. In the South Lake Tahoe region, Heidi Hill Drum (leader of ALERT Tahoe-the origin of the idea and initiative of these detection cameras) has been able to do is it get various communities to chip in for a camera to protect them such as Glenbrook but of course the same camera protects other regions.

Every site installation is different with ranges between $30K -$45K if, for example a helicopter lift is required to move equipment. Annual maintenance in years 2 through N is about 15% of the total or $6K/year. If Tahoe Donner were to provide $45K and the project cost $34K then ALERTwildfire would apply the remaining invested funds to the Year 2 maintenance.

There is great interest with the local governmental agencies towards installation of additional cameras and there has been some talk of grant applications to achieve funding for additional cameras in the Truckee area. Staff has worked towards encouraging seeking these grants for cameras along with other emergency services related needs.

Necessary Processes (funding, approvals, construction, implementation)

Typically, the necessary process for establishing a camera with ALERTwildfire is to:

- Commit funding

INFORMATION

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- Complete an MOU with ALERTwildfire
- Permitting for installation
- Construction (1 year from initiation)

Current Status of Inquiry:

Recent attempts to reach Dr. Kent regarding continued interest in a camera location on Hawks Peak have not been successful and without response. Robert Womack, Emergency Service Coordinator, Truckee Police Department, has been working with the USFS to open the view shed for the current Martis Peak camera location as tree growth has begun to impact the cameras view shed. Unfortunately, the Martis Peak camera location is not on USFS property and is on private property. Robert Womack has been trying to coordinate the relocation of the Martis Peak camera to the lookout location farther up Martis Peak, with limited or no response from Dr. Kent.

Tahoe Donner staff continues to solicit information for further updates on current interest of ALERTWildfire in establishing a Hawks Peak camera installation and timelines for this and other camera installations in the Truckee region.

Below are five video time lapse examples of use of ALERTWildfire technology from 2016/7 (the system was involved with 350+ fires during this time period):

1. Downed Power line (nighttime) Ignition of the Emerald Fire near Lake Tahoe, no redeployment of resources—now a defensive action.

YouTube link: https://www.youtube.com/watch?v=-3kqgARSIho

2. 1:45 minutes later, arsonist uses Emerald Fire to try and sneak a fire into a neighborhood at South Tahoe in 60 MPH winds (lucky for us, he lit the fire dead center in camera). Early discovery/situational awareness, fire is knocked down.

YouTube link: https://www.youtube.com/watch?v=lJGp6HK4-KU

3. Lilac Fire (SD County), cameras were on the Lilac 35 seconds after 9-1-1 call; allowed fire management officer to gamble and throw all resources at the fire as he could see both the severity of the fire and no other fires at that moment in San Diego county. Halted at 4000 acres on worst fire conditions ever recorded in SD County. Other SoCal fires burned much more acreage.

YouTube link: https://www.youtube.com/watch?v=UerppBPnkEI

4. 1st several hours of Thomas Fire from 45 miles, not super useful given the distance but gets the fire start time from that distance.

https://www.youtube.com/watch?v=Z1MNGDh9cSY

5. Discovery of the Tule and Rock Fires (dry lightning)

https://www.youtube.com/watch?v=cDbcygApNCU