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California Legislature

INFORMATIONAL HEARING
JOINT LEGISLATIVE COMMITTEE ON EMERGENCY MANAGEMENT
AND
ASSEMBLY COMMITTEE ON
COMMUNICATIONS AND CONVEYANCE

Sounding the Alarm: Examining the Performance of Emergency Warning Systems in California During the 2017 Fire Season

Monday, December 4, 2017
1:30 p.m.
State Capitol, Room 4202

Background Paper

Introduction

Shortly after 2:00 am on Monday, October 9th of this year, residents of Lake County awoke to a screeching blast on their cellphones. This simultaneous wake-up call for many of the 64,000 residents in the county warned of the approaching Sulphur Fire, a rapidly moving wildfire that had begun only an hour earlier. Fearing that residents could become trapped by wind-driven flames, the Lake County Sheriff's Office decided to issue a mandatory evacuation order and activated its Wireless Emergency Alert system, which overrode volume controls on cellphones and turned them into pocket-sized sirens. By Friday, the Sulphur Fire had destroyed more than 150 structures, burned more than 2,000 acres, and displaced thousands of residents. Yet despite this widespread devastation, no Lake County residents are believed to have died during the wildfire siege that gripped Northern California two months ago and killed 44 people.

Lake County's experience with the Sulphur Fire shows the power that warning systems have to save lives during an emergency. In California today, many local governments operate sophisticated, multi-layered emergency warning systems that can target alerts

to areas ranging from the size of a city block to an entire county. Yet despite the sophistication of today's warning systems, vulnerabilities and weaknesses still exist, and it is sometimes only with the real-world use of these systems that we learn what they are.

This joint hearing of the Joint Legislative Committee on Emergency Management and the Assembly Committee on Communications and Conveyance will examine the variety of emergency warning systems used in California to see how well these systems function under real-world conditions, particularly during this past year's wildfire season. With this information, the Legislature will better understand how these systems work together to ensure that communities are able to react quickly during an emergency, as well as identify areas where these systems need improvement.

Overview of 2017 Wildfires

The following information describing California's 2017 wildfire season helps contextualize the environment in which emergency warning systems were repeatedly used this past year. The 2017 wildfire season has been named one, if not the most, devastating in the history of California. The multiple large-scale wildfires that erupted this past season impacted communities throughout the state, including the following incidents:

- Atlas Fire - Napa County, 51,624 ac
- Buffalo Fire - San Diego County, 1,088 ac
- Cascade Fire - Yuba County, 10,000 ac
- Detwiler Fire - Mariposa County, 81,826 ac
- Helena Fire - Trinity County, 12,846 ac
- Holcomb Fire - San Bernardino County, 1,500 ac
- La Tuna Fire - Los Angeles County, 7,100 ac
- Long Valley Fire - Lassen County, 83,733 ac
- Manzanita Fire - Riverside County, 6,300 ac
- Nuns Fire - Sonoma and Napa County, 56,000 ac
- Pocket Fire - Sonoma County, 17,357 ac
- Railroad Fire - Madera County, 12,407 c
- Redwood Valley Fire - Mendocino County, 36,523 ac
- Sulphur Fire - Lake County, 2,200 ac
- Tubbs Fire - Sonoma County, 36,000 ac
- Whittier Fire - Santa Barbara County, 18,430 ac

Collectively, the 2017 wildfires dramatically impacted a number of California regions and their residents at unprecedented levels. Of those that occurred in Southern California, the La Tuna Fire in Los Angeles County is thought to be the largest that city has ever experienced. In Northern California, a series of devastating fires erupted late in the evening of October 8, 2017, during a period of strong winds, which ultimately resulted in 44 deaths, 8,900 structures destroyed, and 245,000 acres of land scorched. Put into perspective, the estimated total acres burned during the fires is comparable to an area the size of New York City. At its height, more than 11,000 firefighters, 1,000 fire

engines, 30 air tankers, and 73 helicopters battled the blaze. While the total cost of the Northern California October fires is still being determined, preliminary estimates suggest that insured property losses could exceed $3.3 billion.

Emergency Warning Systems in California

Having started late at night when most residents were asleep, the Northern California October wildfires presented a particular challenge to emergency managers tasked with warning the public about the rapidly approaching flames. In generations past, during a fire residents would have awakened to the sound of church bells ringing out across the city -- a centuries-old technique for informing the community that an emergency was taking place. During the Sulphur Fire in Lake County, a modern-day equivalent to the bell tower was used when cellphones of residents in the fire's path began screeching out audible warning tones, signaling an unfolding emergency and the need to take immediate action.

Emergency warning systems in California and across the country come in a variety of forms and each form has specific capabilities and specific drawbacks. Systems range from relatively low-tech options like making door-to-door announcements on foot, to auto-dialing telephones that can relay detailed information to houses at a block-by-block level. Since the middle of the 20th century, many jurisdictions have relied on outdoor warning systems -- like air raid sirens -- to warn the public of an emergency. Most siren systems do not provide specific information about an emergency, but rather prompt those hearing the siren to check local media (television, radio, and internet) to identify the hazard and obtain information on how to respond. Some local governments, like the City and County of San Francisco, have modernized their outdoor warning sirens to also broadcast digital voice messages with specific information about an emergency in multiple languages. While siren systems have certain drawbacks, particularly in rural areas where they may not be heard by some residents, they are potent tools for raising the alarm quickly.

Another system common across the United States is the Emergency Alert System (EAS), administered by the Federal Communications Commission. This system, which replaced the Cold War-era CONELRAD (Control of Electromagnetic Radiation) radio based system to warn of nuclear attack, is an integrated means of distributing emergency information quickly by relay -- first to radio stations, television stations and cable entities, and then to the general public. Broadcasters are required to participate in

EAS for issuing national warnings, but most also voluntarily allow use of the system for state and local emergency messages. In California, EAS is used for warnings of an immediate nature, such as severe thunderstorms or tornadoes, evacuations of areas due to an incident (such as a wildfire or hazardous spill) or a tsunami, or other events requiring immediate action. Because of its vast operating footprint, an EAS warning may be issued for a few blocks or for large parts of a city, sections of specified areas (such as a county or parts of adjoining counties) or a part or all of a region, several states, or the entire nation. While EAS has a better capacity than other systems to deliver detailed emergency information to the listening or viewing public, it requires individuals to be tuned-in to receive the information, and may not be as effective as other warning options at night while people are sleeping or during a widespread power outage.

Many California jurisdictions use auto-dial telephonic emergency notification systems to notify residents of an emergency. These systems can send pre-recorded messages to telephones identified as being located within a defined target area, usually based on the physical address assigned to a landline telephone number. Mobile telephones may receive an alert from a telephone notification system if the phone user has opted-in to the service and registered their device with the local jurisdiction, but the process is not automatic. These systems may not reach citizens who don't maintain a landline telephone and fail to opt-in their mobile device, commuters outside their home region, and out of town visitors to an area.

One of the more modern alert systems in use in California and across the country is the Wireless Emergency Alert (WEA) system. Administered by the Federal Communications Commission, WEA allows mobile phone subscribers to receive geographically-targeted, text-like messages alerting them of imminent threats to safety in their area. Unlike telephonic notification systems, individual phone users do not opt into the WEA system. Rather, alerts are broadcast to all mobile devices within a defined alert zone, meaning that an alert issued in downtown Sacramento is received by all WEA-capable mobile devices in that zone, even if they are roaming or the phone's owner is visiting from another area. WEA's inclusive approach to issuing warnings to all mobile phone users within a defined area helps ensure that an emergency message is widely disseminated, which is beneficial in scenarios like the need to shelter a large population in place due to an airborne chemical release, but could be counterproductive in other scenarios such as a staged evacuation of an area with limited road capacity.

In California, the decision to adopt one or more specific systems to issue emergency warnings to residents is left to local governments. At present, California does not have a standardized statewide emergency warning system, though this is a subject the Legislature has pursued in the past (see e.g. AB 2231 [Pavley, Ch. 764, Stats. 2006]).

Performance of Warning Systems During Wildfires

No matter how well designed an emergency warning system may be, unanticipated flaws or shortcomings tend to surface during its use in an actual emergency. The goal of this hearing is to capitalize on California's real-world experience with these systems by identifying flaws that have come to light -- particularly during this year's wildfires -- and using this knowledge to make our warning systems more resilient. During the October fires in Northern California, for example, several media outlets reported that some residents may not have been able to receive emergency alerts on their mobile phones due to the loss of wireless telephone infrastructure during the early phases of the fires (see e.g. Dakota Smith and Joy Resmovits, *Damaged Cell Towers Create Communication Problems In Northern California Fire Zone*, Los Angeles Times (Oct. 10, 2017) <http://www.latimes.com/local/california/la-northern-california-fires-live-damaged-cell-towers-create-1507667633-htmlstory.html> [as of Nov. 30, 2017].) Reports such as this will likely prompt local governments to examine whether cellular infrastructure used for emergency warning systems ought to be better protected from wildfire damage, or whether alternate notification systems ought to be developed to ensure that critical messages can still get out when any one notification system is compromised. Today's hearing will feature local government leaders and emergency managers from across the state who will share their experiences with these systems, and their observations on how emergency notification can be improved in California.

Conclusion

Wildfires and other disasters like earthquakes and floods are part of California's natural landscape. While these hazards will always be with us, the impact they have on our lives and communities can be mitigated through tools like the emergency warning systems operated by California's local governments. By examining how well these systems perform under real-world conditions, this hearing will help the legislature and the public determine whether our existing systems are adequate, where known problems with these systems exist, and how these systems can be improved.

Today's hearing will certainly not be the last to consider the devastating impacts that the 2017 wildfires had on communities throughout California. While there are many aspects to wildfire response and recovery deserving of the Legislature's attention, the performance of our emergency warning systems is an issue of paramount importance. The warning systems discussed in this hearing are critical tools that can give people in the path of a fire precious minutes to get to safety. No amount of planning and preparation can stop wildfires from erupting, but with effective warning systems in place, California's first responders have a potent tool to give the public time to react during an emergency.