

LEGISLATIVE OFFICE BUILDING  
1020 N STREET, ROOM 175  
SACRAMENTO, CA 95814  
(916) 319-3531  
FAX (916) 319-3625

**STAFF**

PHILIP W. HORNER  
PRINCIPAL CONSULTANT

# California Legislature



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“Emergency response to disasters – Emergency Alerts and Evacuations.”

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### Emergency Alerts and Evacuation Plans

Over the past four years, California has experienced severe problems in notifying or warning citizens in times of disaster or emergency. This has resulted in the loss of lives and can be generally attributed to: faulty preparation, issues in planning and decision making, limitations in existing warning and notification technology and systems, the inability of communications providers to have needed equipment or services in rural communities, and, the failure of citizens to sign up for warnings or heed them.

While the legislature, the Governor’s Office of Emergency Services and our local governments have made great strides over the past few years in improving emergency alerts and evacuations, we are still a long way from the level of protection and communication our citizens demand.

After the 2017 and 2018 disastrous fire seasons, state and local officials realized that not all jurisdictions were prepared to issue emergency alerts and many did not understand how they should be sent. This caused many individuals to fail to receive emergency alerts or the information necessary for them to take action to protect their property and lives. As a result of the 2017 devastating fires, the Legislature passed SB 833, Senator McGuire, (Chapter 617, Statutes of 2018) that required the Governor’s Office of Emergency Services (Cal OES) to prepare and release voluntary statewide alert and warning guidelines. These guidelines provide local government with “best practice” procedures on how emergency alerts and warnings should be sent to the public. The guidelines are voluntary and the procedures and practices that are ultimately used are the responsibility of local government. (See Appendix A for more information).

A result of the passage of SB 833 has been that our local governments have made great strides in improving their emergency alert systems, procedures and messages. At the same time, OES has worked diligently with local government to assist in these efforts

## Emergency Alerts

When an emergency takes place or a disaster strikes, the toolbox for public warnings includes:

- Automated phone calls or texts through a city's or a county's opt-in warning program.
- Reverse 9-1-1 calling systems.
- Pushed notifications from local authorities onto cellphones through the federal Wireless Emergency Alert system (WEA).
- Warnings broadcast on TV and radio stations.
- Social media alerts, including through Nixle.com and CodeRed.
- Specialized sirens on law enforcement patrol cars, used to signal people to be on alert and seek out additional information.
- Local broadcast speaker systems and sirens
- Door to door alerts from first responders.
- Community systems of sirens or broadcast speakers
- Neighbors warning neighbors.

### Examples of Recent California Alert Notification Problems

In Mendocino County in 2017, county emergency staffers waited for a supervisor to arrive before they issued a warning to residents of a disastrous fire.

In January of 2018 Santa Barbara County, officials hesitated to issue a blanket evacuation order before mudslides ripped through Montecito because they were worried that such an alert might cause a panic. The Montecito debris flow killed 23 people.

Wildfires that broke out late the night of Oct. 8, 2017, in Sonoma County burned nearly 5,300 homes and killed 24 people. Many survivors reported receiving no warning about the fire's spread, and a review by the state Office of Emergency Services found that the county's warning system was inadequate to effectively notify residents about an impending natural disaster. The County did not use the Federal Communications Commission's Wireless Emergency Alerts (WEA) system to notify citizens. County officials erroneously believed at the time that WEA was inadequate for ordering evacuations because it couldn't target specific neighborhoods and expressed concern that the alert would reach too many people outside the evacuation area, causing widespread panic and traffic jams. In addition, a total of 341 cell sites went down during the 2017 Wine Country fires, making it impossible for many public safety personnel to send alerts, communicate with each other or reach 911. *Note: To their credit, Sonoma County subsequently requested and received an OES audit of their performance, their systems and procedures and as a result have made significant changes and improvements.*

During a 2014 Mendocino County wildfire, officials reported that the destruction of 400 feet of a local telephone carrier's sole fiber optic line in the fire area resulted in the loss of almost every type of communication — telephone, internet, cellular and 911 — for nearly two days.

During California's severe rainstorms in January and February of 2017, nearly 1 million customers lost access to 911 due to service outages.



In the October 2017 Redwood Complex Fire, wildfires took out the main cell tower and the Laughlin Repeater, leaving residents of Willits without cellphone or landline service or the ability to call 911.

In Butte County in November of 2018, whole neighborhoods were never told to evacuate as the Camp fire burned 90% of the structures in the city. An analysis by the Bay Area News Group showed that about 56 percent of the 4,272 emergency alert calls in the first hours of the Paradise blaze failed. As the fire progressed, the call-failure rate climbed. Seventeen cell towers were lost in the fire's first day; either because they were damaged or they lost power.

In August of 2020 as the massive LNU wildfire ripped through parts of Northern California, emergency officials in Napa County turned to the federal WEA messaging platform to warn residents to "remain vigilant," should they need to evacuate. When authorities tried to send the alert, using a private contract company, they discovered a terminal coding error message and were unable to send the alert. They were forced to switch to Nixle, a local emergency alert program that is similar but is a much less robust platform. This program requires residents to sign up to receive alerts and this caused fewer residents to receive the critical warning.

During the 2020 LNU wildfire, Sonoma County sent alerts to areas that required no evacuation and the alerts linked recipients to an evacuation map that was a year old and out of date.

In Vacaville, a city emergency operations employee missed a call to report to work help respond to the wildfire because their phone was set to vibrate. The Vacaville Police Department on their Facebook page, told residents at 10:40 p.m. on August 18, 2020 that "there is currently no danger or evacuation orders to the residents of Vacaville. If for some reason this changes, we will work nonstop to notify our community via social media, phone or in person." Less than an hour later, evacuations were ordered and underway. The county sent out messages through its Alert Solano program. They also posted them on social media and shared them with the media. None of these approaches will work when people are asleep, are not checking social media, or have muted or turned their devices off. The city eventually had to send law enforcement and firefighters out to the Vacaville foothills, which were darkened and without power, to go door to door to tell residents to evacuate.

### **Ensuring our Alerting Systems are Resilient and Redundant.**

What Makes a Communications System Resilient? - Communications resiliency means that a network can withstand damages, such as loss of power or damage during an earthquake or fire, thereby minimizing the likelihood of a service outage of systems that are vital to providing communications to Californians.

One of the most critical and vulnerable parts of these networks is the local access network. The local access network is the 'last mile' connection between an organization's on-site communications infrastructure and the service provider's network. In the event of an emergency, such as a cable cut, fire, flood, or damage to the service provider's facility, the local access network may be lost, leaving an organization unable to perform critical functions."

## **How to address resiliency**

1. Route Diversity. This can be defined as, communications being routed between two points over more than one physical path with no common points. This permits communication to occur even if one route is disabled. The issue for our communications companies is that route diversity costs money and this is a disincentive to providing alternate communication lines.

In the event that cell towers lose power or are too damaged to function, agencies should have a backup communications route to make sure messages can still be delivered. During our recent wildfires, our county and city local emergency alerting systems did provide an alternative messaging route to landline phones. One problem that exists is that a great majority of Californians no longer have landlines and many of these landlines are VoIP or internet based. VoIP phones have their own distinctive vulnerabilities. As a practical matter, every resident should register both landline and mobile phones with their local governments in order to ensure they receive alerts. The opt-in nature of Nixle and CodeRed combined with the fact that landlines are quickly becoming obsolete mean that alerts are in danger of being unheard.

Although opt-in participation in local emergency alerting systems have been increasing, these numbers are still only in the 12% to 20% range. As will be mentioned later, recent legislation may help. Even with improving resiliency we are finding that many people are still not receiving alerts. A private alerting system's dependency on cell phone service is an inherent weakness of these warning systems.

2. Redundancy. This means that additional or duplicate communications assets share the load or provide backup to the primary communication method or asset.

If all communications leaving a county are sent solely through a platform such CodeRED or Nixle, this creates the possibility of a single point of failure. This occurred in the LNU fire when a coding error caused the system to fail to connect to IPAWS -- a system that could have quickly disseminated a single message to every cell phone covered by designated cell towers. WEA alerts cause a distinctive sound to play even if the phone is on mute. The county in this case had to fall back on its opt-in program that was run by Nixle. This system does not cause a sound to be played on phones that are muted and will only send alerts to phones that are registered. These local alerting systems do not use GPS or location identification so the alert is sent to a list.

While the federal WEA system reaches more people and is capable of being more accurately targeted, government agencies use it much less frequently, reserving its use for extreme emergencies. This means that other, less reliable alerting methods are being used to provide the information Californians need prior to the emergency use of WEA.

3. Protective measures. These will decrease the likelihood that a threat will affect the network, while restorative measures, such as mobile cell towers like "flying COWS" enable rapid restoration if services are lost or congested. It should be noted that restorative measures are brought in after an event; meaning networks may not available during an emergency when evacuation orders may need to be sent.



Protective measures include hardening cell towers and communication networks to withstand wildfires and earthquakes. A significant source of network weakness has been the loss of power to systems that control our communications and emergency networks.

In July of this year, in what appears to be a first-in-the-nation rule, the Californian Public Utilities Commission (CPUC) voted unanimously to require cell towers to have 72 hours of backup power in emergency situations, including electricity shutoffs during fire seasons. The decision mandates a 72-hour backup power requirement for all parts of the networks, including cell towers, with clean energy options instead of diesel generators whenever possible. The CPUC decision aims to ensure comprehensive communications resiliency plans that maintain connectivity during disasters and improve coordination with emergency response agencies. According to the state's Office of Emergency Services, 88% of 911 calls come from wireless devices so maintaining cell service alerting capability is vitally important.

### **Emergency Alert and Notifications Systems**

All of California's current notification tools have inherent limitations and weaknesses, especially in our more rural areas. None of the existing notification systems alone is capable of doing everything government needs it to do. Even the Federal Communications Commission, when it released recommendations last year on improving IPAWS, recommended using multiple platforms or systems to be effective. No one system is the silver bullet or the "be all, do all" answer to alerting the public in times of emergency. Only when alert systems are layered by simultaneously using several alert systems such as: WEA, other tools of the Integrated Public Alert and Warning System, Reverse 9-1-1 and a branded notification solution such as Nixle or Code RED, will government get closer to notifying more people in a timely manner. As technologies continue to develop and expand and our systems grow more sophisticated and complete, the ability to get real time notifications out in time of disaster will improve. We are not there yet and as a result lives are endangered.

Because of these deficiencies the public is encouraged to register or verify that they are registered for Reverse 911, opt-in for all local, state and federal alerts, have an NOAA weather radio, and have a battery powered radio to ensure that emergency officials have multiple ways to provide emergency information.

As mentioned, a major deficiency in private companies providing emergency alerts is that for the most part, they are opt-in. That means Californians have to proactively sign up to receive alerts. The exception has been Reverse 911 where a city or county generally has access to telephone numbers for landlines. While opt-in systems such as Nixle or CodeRED are seeing increased sign-ups, they are still only covering 12% to 20% of residents. This is unacceptable and the legislature has been working to get access to more residents' phone numbers. See:

SB 821 (Jackson, Chapter 615, Statutes of 2018) authorized counties to enter into an agreement to access the contact information of resident account holders through the records of a public utility for the sole purpose of enrolling county residents in a county-operated public emergency warning system.

AB 2213 (Limon, Chapter 98, Statutes of 2020) expands emergency notification programs to include cities and universities, by clarifying that emergency alerting authorities may use wireless telephone subscriber data to enroll residents in local alerting systems and authorizes county social service departments to share contact information of seniors and disabled individuals with emergency responders to facilitate mandatory evacuations.

AB 2213 was amended late in the 2019-20 legislative session to include language contained in a bill by Senator Jackson, SB 794 to increase the number of phone numbers available to local government for emergency alerts. We will have to wait and see if greater access to larger numbers of phones without having to have residents sign-up or opt-in, will cause emergency alerting to be more effective.

### **Other concerns**

Another major limitation to the effectiveness of using private company alert notifications is the inherent weakness of using cell towers to disseminate alerts. Cell coverage or broadband availability in rural areas can be spotty or non-existent, meaning that individuals in these areas may not have the capacity to receive these types of alerts. Wildfires or other disasters can also destroy cell towers or cause loss of power to operate them.

Local emergency alerting systems do not work using GPS, so residents must update their addresses every time they move. Providers also suggest that residents choose a specific ring tone for Nixle or Code Red numbers so they know when an emergency alert has been sent. Residents can also install free mobile alert apps on their mobile devices. Emergency notifications received through a mobile app can show a map of the affected area and can use an emergency alert tone. Mobile alert apps generally require a separate registration.

### **Do We Need to Retool Fire Messaging**

An October 7, 2020, National Public Radio article that aired on "All things Considered" suggested that the messaging of wildfires should be changed. The program, "4 Million Acres Have Burned In California. Why That's The Wrong Number To Focus On," stated the following:

"Even within a single fire, we have to be able to distinguish between the good and the bad and focusing on area burned doesn't allow us to do that," says Crystal Kolden, a fire scientist at the University of California-Merced, writing in the journal *Nature*.

Instead, some fire scientists say public messaging should focus on the community impact: the number of people evacuated and homes threatened. Fire agencies should also attempt to quantify the benefits a fire may have to natural ecosystems. Wildfire has been absent from many landscapes after decades of suppression and some plants are adapted to and benefit from regular fires.

While 4 million acres may seem staggering, studies show it's on par with California's natural fire cycle over millennia, influenced in large part by Native American tribes who



used fire proactively to shape the landscape. Since fires happened more regularly then, they wouldn't have been as extreme.

### 1. Instead of reporting acres burned, focus on homes and people

For firefighting efforts, determining how much acreage is burning is crucial for operational planning, as agencies try to coordinate the needed personnel and resources. "It's the easiest thing for us to calculate," Kolden says. "When you're in fire management, it's the way you report to your superiors."

Still, for the public, wildfire size says little about what's actually at stake. "It gives you this one perception of fire: that it's all bad and it's something to be battled," says Matthew Hurteau, a forest ecologist at the University of New Mexico.

Often, the human cost of wildfires has little to do with their size. California's three most destructive wildfires aren't among the state's largest. The 1991 Tunnel fire in the Oakland hills was relatively tiny at 1,600 acres, but destroyed 2,900 structures and killed 25 people. Even the Camp Fire, which burned more than 18,000 structures in Paradise, California, isn't even in the top 20, ranked by acreage.

### 2. Categorize a wildfire's speed and intensity

In recent years, many fire evacuees have had alarmingly similar stories: with just minutes to spare, they fled their homes as a fast-moving wildfire closed in. Some haven't made it.

Hurteau says more communication about that speed and intensity could help the public understand the threat better and take evacuation orders more seriously. Hurricanes are categorized by their wind speed and destructive power, such as a "Category 5" storm. Wildfires currently have no rating system, aside from a "red flag" warning about high wind events.

(Excerpts chosen from the article)

This article raises the question, should California adopt a different system to categorize wildfires? Currently, besides listing a "red flag warning," the other basic metrics typically used to inform the public are; acres burned and percentages of containment. "Red flag warning" is a term used nationally as a way to alert the public to dangerous high wind fires. CAL FIRE's website states, "A Red Flag Warning is issued for weather events which may result in extreme fire behavior that will occur within 24 hours. A Fire Weather Watch is issued when weather conditions could exist in the next 12-72 hours. ... CAL FIRE urges Californians to be extremely cautious, especially during periods of high fire danger."

Is "red flag warning" descriptive enough? The words "red flag" denote that we should pay attention, but the use of the word "warning" detracts from the seriousness of the terminology. During a wildfire, events and situations can change in a matter of hours, from "extreme" to disastrous. We do not have a warning for disastrous.

Comparing wildfires to hurricanes may not be a good example. Hurricanes are generally slow moving and their speed and destructiveness subject to forecasting days in advance. Wildfires are

less predictable. A sudden shift or dramatic increase in winds can drive a managed, controlled fire in to a firestorm that can travel miles in just minutes. If you were in the path of such a firestorm, would receiving the “red flag warning” notice give you enough information about the danger or seriousness of the wildfire? Our alerting systems would have to provide the needed additional information.

It was reported during this summer’s fires that a couple in northern California received a wildfire warning but discounted it because the fire’s containment numbers were high. Overnight, high winds forced the fire to jump containment and rapidly pushed it to communities that were not in danger earlier. In instances like this, the statistic on acres burned does not effectively reflect the seriousness or danger of a fire, while prior containment numbers may prove meaningless or even misleading.

Should California create a warning system or set of warnings that denotes the current dangerousness of a wildfire; including one that essentially says, “If you don’t leave now, you are likely to die?”

### **Private Alerting Systems**

Going in to the future, California must require a seamless emergency alert system that crosses county lines and gives clear, useful information about what is happening. Alerts should have evacuation maps accompanied by written descriptions that can also be posted on social media sites to make it easier to see what areas are in danger. All counties and cities, regardless of size and resources, must be able to give accurate and timely alerts. To their credit, this is where local government is heading and they have been taking seriously the problems and errors that have arisen in the past.

The patchwork of emergency alert systems in California can make staying informed and connected with the right emergency notifications extremely difficult and confusing, especially if a person lives in one county and works in another. Many cities have an emergency alert contract in addition to the county contract. This can create a possibility that one message could conflict with other alerts. This can also occur because the cell phone user may actually be far outside of the jurisdiction that issued the alert.

Some have alleged that we may be relying too heavily on technology from the private sector to provide the state’s disaster communications. Our emergency alert system is reliant on our communications companies, both cellular, VOIP, internet and landlines to carry our alerts to individuals. In addition, the programs we use such as Nixle, Everbridge, CodeRed and Reverse 911 are all products sold or contracted by private companies to our cities and counties.

To some extent, it is a piecemeal situation throughout the state because there aren’t any statewide standards throughout the state. As a result, we may have a system that exists because whatever sales people from different companies have sold a product to various jurisdictions at various points in time.



Should the Legislature authorize the OES to regulate or set standards for the private alerting companies or should a free market determine the product? Are such standards and product testing needed?

The state of Florida has adopted a statewide alerting system that is capable of backing up the alerting systems of all local governments in the state. Known as AlertFlorida, it can send alerts throughout the state or focus on specific communities. Each community in Florida retains the ability to send messages and is the primary source of alerting, but in an emergency, the state can step in and message local communities. AlertFlorida has a contract with Nixle to run the program and by having people opt-in and by using phone numbers from other sources, more than half of Florida's population of 21 million people can be reached.

Would such a system benefit California? Would it provide another layer of redundancy? It must be acknowledged that California's emergency response system is set up differently than Florida's. California has instituted the Standardized Emergency Management System or SEMS. SEMS is the cornerstone of California's emergency response system and the fundamental structure for the response phase of emergency management. The system unifies all elements of California's emergency management community into a single integrated system and standardizes key elements.

While some in California's emergency management community may not think a statewide emergency alerting system is advisable, preferring to leave it to local control; events in the past have shown there are times when such a system might be helpful.

The recent failure in Napa County to send a WEA alert during this summer's fires. If there was redundancy in the ability to send this alert, the state or another agency could have stepped in and sent it rather than having to use the fallback of sending a less robust Nixle alert.

During the 2014 Napa earthquake, the building that housed the county's Emergency Operation Center (EOC) was damaged so severely that operations had to be taken down and set up in a different location. This impacted emergency communications to the extent that the county had their ambulance provider take emergency calls and dispatch their own ambulances.

## **Evacuation**

As technology improves, the ability to have greater accuracy in the issuance of evacuation orders is likely to help reduce the number of people required to evacuate. Greater accuracy will further assist with the credibility of the officials who issue the evacuation orders.

One of the most important considerations is working with and educating the people in possible danger areas before an evacuation is made necessary. Creating maps of evacuation routes and providing them to citizens before they are needed. Posting evacuation routes on maps and streets is helpful and making sure that streets and roads are wide enough and have the capacity to handle evacuation traffic as well as removing possible obstructions and bottlenecks. Having an

evacuation plan and practicing it will improve compliance and safety. OES and local governments are making strides in doing this.

The best emergency alerting system in the world will do no good if people do not heed its warnings or we do not do enough to help evacuate our citizens with access and functional needs. Studies also indicate that some people are simply unable to evacuate due to disabilities, lack of transportation or lack of assistance.

While there have been some recent successes in mass evacuations in the past few years, there have also been some difficulties. During the Woolsey Fire in November of 2018, Los Angeles and Ventura counties saw more than 250,000 people successfully evacuated. The Kincadee Fire that burned in Sonoma County in October of 2019 saw more than 185,000 people successfully under evacuation orders. This summer also saw large numbers of people evacuated.

This year, wildfire evacuations were made more complicated due to the Covid-19 pandemic. Faced with the problem of how to evacuate over a 100,000 people during a pandemic; OES and our local governments responded well. The people who did not have a place to go during the evacuations, were mostly placed and housed in hotels and motels. The congregate facilities that were set up, were done in a manner that observed safety precautions for the coronavirus. This included physical distancing, the use of masks and monitoring health conditions.

We were fortunate that this year's evacuations were moderate in size. In 2007 the Witch Fire was a major contributor to the mass evacuations across much of Southern California, which saw 1 million residents evacuate, becoming the largest evacuation in California history. The question that must now be asked is; how do we fight fires and safely evacuate two and half percent of California's population during a pandemic? We did not need the answer in a year that saw over 4 million acres burn, but we may in the future.

### **Does the public take warnings seriously?**

During recent fires and disasters many people were reluctant to leave their homes and belongings until, in some cases, it was too late. Studies have been conducted to determine why people fail to follow mandatory evacuation orders. The reasons are both simple and complex in nature.

Failure to evacuate may depend upon the demographics of the individuals at risk, such as financial resources, available shelter for family members, pets and livestock, and structural mitigation measures already taken by residents. An individual's age, income, their level of preparation for a wildfire, or having a risk-taking personality has also been shown to be factors. In addition, complacency, apathy and a sense of "it won't happen to me" can play a part in whether people heed an evacuation warning or not. Any past success of riding out a storm or fire also plays a major factor in their evacuation decision.

These studies also indicate that some people are simply unable to evacuate due to disabilities, lack of transportation or lack of assistance. On December 5, 2019, the California State Auditor released the audit "California Is Not Adequately Prepared to Protect Its Most Vulnerable Residents From Natural Disasters" (Report No. 2019-103).



This report was highly critical of state and local emergency preparation and planning necessary to address the needs of California's "access and functional needs" population. These are individuals with needs "... that cannot be met by traditional emergency response and recovery methods. These access and functional needs come from a variety of circumstances, such as disabilities, limited English proficiency, transportation disadvantages, and older age. Although everyone is vulnerable during a natural disaster, people with access and functional needs are even more vulnerable."

Other reasons people fail to evacuate include a fear of their home being looted or damaged, along with not wishing to leave behind a familiar place they know as home with all its contents and memories. Some residents are afraid to leave pets or animals like horses, goats or cattle behind.

More complex reasons that people fail to heed evacuation warnings include a lack of knowledge or understanding of the risks they are facing and a lack of training. Some residents simply do not understand the threat and its potential dangers. There is a strong need for emergency personnel to have education and training regarding the risks of an event and the ability to communicate those risks to citizens to ensure that at-risk residents heed evacuation warnings.

Our disaster and emergency management professionals need to know how to communicate these risks effectively. This is extremely difficult to do in a 360 character WEA alert. Public education needs to take place prior to the event.

In an attempt to gain greater compliance with evacuation warnings, California changed the wording of its evacuation orders following the deadly debris flow in Montecito. California officials dropped the word 'voluntary' completely from its evacuation vocabulary, in an attempt to clarify the risk that residents faced.

The effect of people refusing to obey a mandatory evacuation can be disastrous. It not only can it cost lives, it changes the duties and functioning of our first responders. Firefighters faced with individuals who have disobeyed a mandatory evacuation alert are required to stop fighting the fire and protecting property, and must switch to life safety and focus on rescue. This not only unnecessarily endangers firefighters safety and lives, it hinders their ability to respond to fires. Law enforcement is also unnecessarily tied up going door to door to try to get people to evacuate. It puts their lives at risk and distracts them from other duties they could be performing. While failure to observe a mandatory evacuation can be a crime, in the exigency of the situation officers generally just issue a warning. Officers been known to ask these people who their next of kin are so they can be notified after their death.

Are there any changes in evacuation laws that could motivate people to better heed mandatory evacuation order?

### **Who orders mandatory evacuations?**

State government has the authority to declare an emergency, bolstering the state's resources to respond, according to the California Emergency Services Act. The governor has the right to make orders and regulations to protect life and property, and also has a right to exercise all police power in the state.

Additionally, state law provides that a local emergency can also be proclaimed by a city or county, or by a designated local official (Gov. Code Section 8630). County sheriffs normally lead local evacuations while the California Office of Emergency Services (Cal OES) support and assist the local authorities based on their own emergency plans.

What are the legal consequences for ignoring a mandatory evacuation in California?

Mandatory evacuations are forced, or directed evacuations. While it's up to the government to decide whether or not to use resources to enforce mandatory evacuations during an emergency, there is a California law that provides that ignoring a mandatory evacuation a criminal offense.

Anyone who violates any orders or regulations stated in the Emergency Services Act can be found "guilty of a misdemeanor and, upon conviction thereof, shall be punishable by a fine of not to exceed one thousand dollars (\$1,000) or by imprisonment for not to exceed six months or by both such fine and imprisonment." (Gov. Code Section 8665).

There are also laws giving federal, state and local authorities the right to close designated areas during a natural disaster to keep people out. Any person who enters a closed off area or remains in an area after being ordered to evacuate can be found guilty of a misdemeanor (Penal Code Section 409.5).

Additionally, Penal Code Section 148(a) states, any person who willfully resists, delays, or obstructs any public officer, peace officer, firefighter or an emergency medical technician while they are trying to do their job, can be punished by a fine of \$1,000 or by imprisonment in a county jail for up to a year.

While these laws are available during mandatory evacuations they are rarely used or enforced. According to Law Practice Today, a publication from the American Bar Association (ABA), there have been issues with authorities who have enforced such laws in the past. After Hurricane Katrina, several authorities were sued for false arrest, wrongful imprisonment and civil rights violations in the course of enforcing mandatory evacuation orders. There have also been allegations of excessive use of force during mandatory evacuations.

There are few comprehensive evacuation statistics for individual fires. According to the National Fire Protection Journal, a study of the 2003 Cedar Fire in Southern California concluded that "almost all of the 22 civilian deaths occurred when people tried to evacuate at the last minute."

In the Blue Cut Fire in San Bernardino County in 2016, a U.S. Forest Service spokeswoman told the Associated Press as many as half of the 35,000 households ordered to evacuate failed to do so.

Fire science studies indicate that at every big wildfire, about 10 percent of residents stay behind. An additional 25 percent are in the "wait and see" category: They linger after the call, and when they finally evacuate ahead of the oncoming flames, it's far riskier than if they had left early.

Evacuation research specific to wildfires is limited. Most North American research has tended to focus either on modeling the evacuation process or on understanding the feasibility of alternatives to evacuation in the United States. However, two quantitative studies examined the wildfire evacuation decision process in Montana and New Mexico, and several qualitative



studies focusing on broader questions of public wildfire response, suggest a number of reasons why individuals in North America may choose to stay and defend their property. Many of these reasons relate to attributes of the suggested protective action, including:

- **Self-efficacy:** concerns about late or limited evacuation options, and evacuating animals, particularly livestock.
- **Response efficacy:** a belief the property was relatively safe due to either the nature of the property (irrigated fields) or prior mitigation actions that had been undertaken.
- **Individual traits or characteristics:** personal beliefs related to a desire to protect the property or a sense of personal responsibility for one's property and a culture of self-reliance and desire to make one's own decisions.

## **Appendix A**

### OES Statewide Alert and Warning Guidelines

After the 2017 and 2018 disastrous fire seasons, state and local officials realized that not all jurisdictions were prepared to issue emergency alerts or did not understand how they should be issued. These issues combined to cause many individuals during our recent devastating wildfires to fail to receive the necessary alerts or information necessary for them to take action to protect their property and lives. As a result, the Legislature passed SB 833 (Chapter 617, Statutes of 2018) requiring the Governor's Office of Emergency Services (Cal OES) to prepare and release voluntary statewide alert and warning guidelines. These guidelines provide local government with "best practice" procedures on how emergency alerts and warnings should be sent to the public. The guidelines are voluntary and the procedures and practices that are ultimately employed and undertaken is still the responsibility of local government.

In addition to requiring the development of voluntary alert and warning guidelines, SB 833 also authorized Cal OES to impose conditions on applications for voluntary grant funding programs that would require applicants to operate alert and warning systems that are consistent with these guidelines.

A comprehensive alert and warning program is a critical component to a community's ability to effectively respond to emergencies. With recent disasters in California highlighting the differences and inconsistencies among various alert and warning programs across California, emergency management leadership representing California's Standardized Emergency Management System (SEMS) identified the need to establish statewide guidelines for the purpose of enabling and encouraging consistent application of alert and warning best practices, procedures, and protocols.

“It is the intent of the Legislature that, in the event of another catastrophe, like the 2017 firestorms, every tool be used to alert and warn all members of the public in the affected area.”  
“The Legislature finds and declares that the safety of local communities requires designated alerting authorities to ensure they have multiple operators, adequate testing and training, and functional equipment and software. It is therefore the intent of the Legislature that, to the extent designated alerting authorities have difficulty acquiring or maintaining adequate alert and warning resources, those designated alerting authorities may consult with the Office of Emergency Services on best practices to achieve those goals.”

The Statewide Alert and Warning Guidelines were developed in collaboration with a group of local, state, federal and tribal partners as part of the Standardized Emergency Management System (SEMS) Technical Group, through the SEMS Alert and Warning Specialist Committee.

The Guidelines provides guidance and expectations for jurisdictions and designated alerting authorities implementing an alert and warning program within the State of California. Additionally, the document provides overarching direction to the sub-components of the statewide alert and warning system, including the State Emergency Alert System (EAS) Plan, sub-jurisdictional alert and warning programs, and local EAS and alert and warning plans.

The Statewide Alert and Warning Guidelines address the critical components of an effective and comprehensive alert and warning program, including: • Roles and Responsibilities; • When and How to Issue a Public Alert or Warning; • Methods and Technologies; • Messaging; • Alerting Coordination; • Training Requirements; and • System Testing and Exercise Requirements.

Local government officials typically have the most accurate and timely understanding of the situation, necessary protective actions, and potential adverse impacts of the incident. It is incumbent upon local officials to rapidly and adequately communicate to the public what is occurring and any steps or actions the public needs to take.

These actions could include but are not limited to: • Evacuation orders (Including evacuation routes, shelter info, key information, etc.); • Locations of points of distribution (for food, water, medicine, etc.); • Direction to move to higher ground; • HazMat incidents; • Red Flag warnings;

• Weather alerts; • Lockdown; and • Shelter-in-place guidance.

#### State Government Responsibility

The Guidelines state, “Recognizing that virtually all disasters emerge on a local level, the main public alert and warning responsibility of the state is to provide training, consultation, and guidance on alert and warning standards and best practices to local government entities. This includes establishing access to and utilizing available urgent communications tools, such as the federal IPAWS network. The state will work with Operational Areas to support their mass notification activities, and, when requested, serve as a back-up capability for the Operational Area. The state may need to issue public alerts under its own authority when an incident’s severity and breadth of impact threatens multiple operational areas. When the State issues an alert or warning, every effort will be made to coordinate with the impacted Operational Area(s) and possibly National Weather Service within the available timeframe prior to issuing a public alert and/or warning.”