

The Camp Fire

Disaster Recovery

Disaster Mitigation

Presented by
Alan Thompson - W6WN

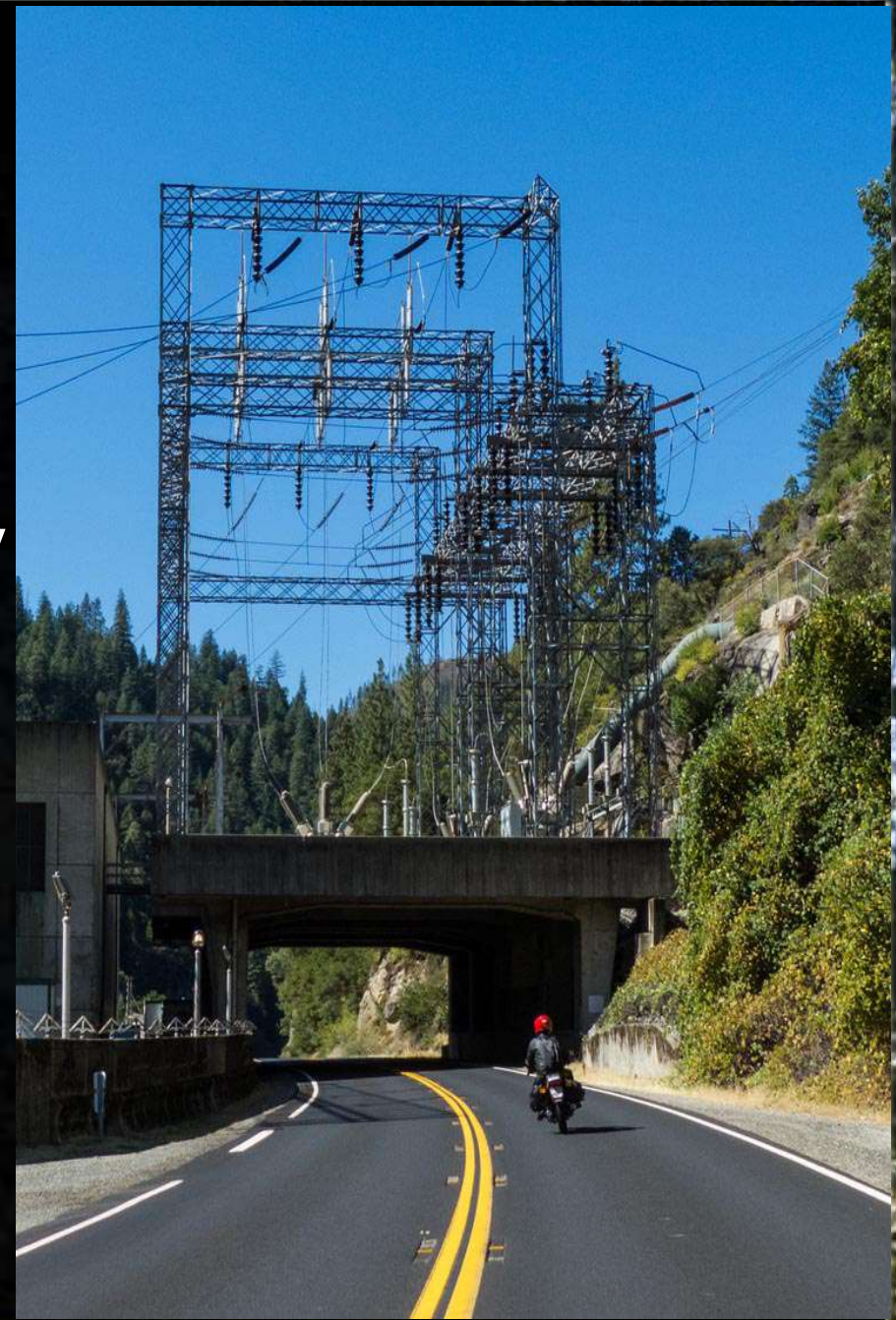


Camp Fire Statistics

- 153,336 Acres Burned
- 18,800 Buildings Destroyed
- 50,000 Residents Displaced
- \$11 ~ \$13 Billion Damage Estimate
- 86 Lives Lost

Tuesday -11/06

Pacific Gas and Electric (PG&E) notifies 70,000 customers that it may cut electricity



Wednesday -11/07

PG&E contacts
owner of Pulga
requesting access



6:33 AM - 0 hr 0 min

Fire under 115
kilovolt power lines
first reported by
PG&E Worker



6:43 AM - 0 hr 10 min

First Cal Fire units
arrive on site



6:45 AM - 0 hr 12 min

Capt. Matt
MacKenzie, First
Responder on site



6:51 AM - 0 hr 18 min

Firefighters try to reach fire over steep terrain through narrow canyon



7:05 AM - 0 hr 32 min

Officials identify
possible 2nd fire
ignition site near
Pulga



7:14 AM - 0 hr 41 min

Air tanker
resources alerted
but could not
deploy



7:23 AM - 0 hr 50 min

First evacuation order issued for Pulga



Butte County Sheriff ✓

@ButteSheriff

Follow

EVACUATION ORDER: Due to a fire in the area, an evacuation order has been issued for the town of Pulga. If assistance is needed in evacuating, call 9 1 1.

[#ButteSheriff](#)

7:23 AM - 8 Nov 2018

70 Retweets 41 Likes



2 70 41



Nancy Springer @Bdmspringer · 8 Nov 2018

Replying to @ButteSheriff @CALFIRE_ButteCo

Praying they get it contained fast and all are safe!

1 1 3

1 more reply



john @john11862663 · 8 Nov 2018

Replying to @ButteSheriff

What's percentage of containment?

1 1 1



7:35 AM - 1 hr 02 min

Fire enters town of
Concow



7:46 AM - 1 hr 13 min

Fire enters town of
Paradise



8:41 AM - 2 hr 08 min

Flames reported at
Feather River
Hospital



Firefighters fought to help residents escape



8:43 AM - 2 hr 10 min

Officials issue
evacuation alerts
for 10 zones in
Paradise



8:45 AM - 2 hr 12 min

First major traffic
jam reported on
Pentz Road



9:17 AM - 2 hr 44 min

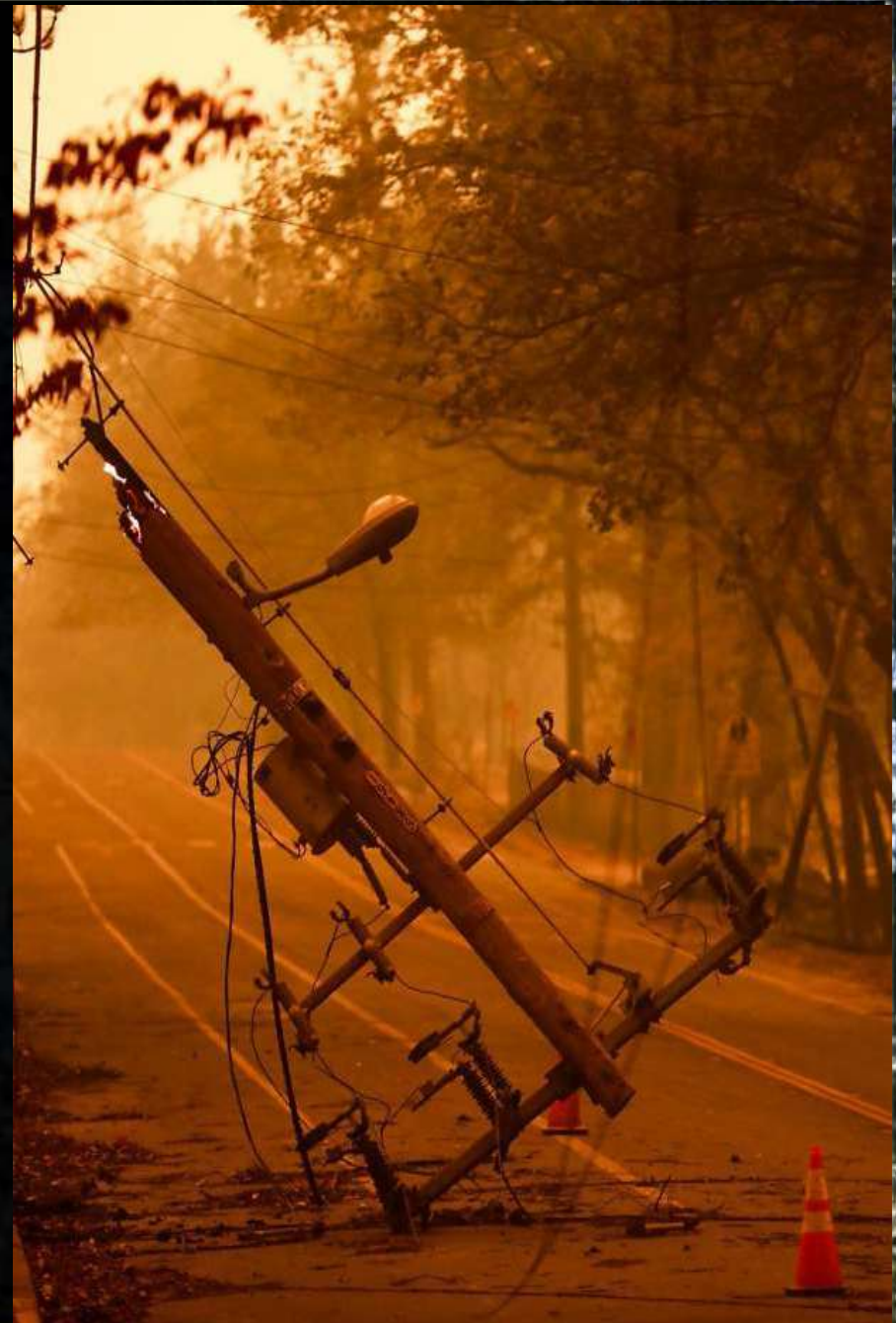
Fire reaches parts of Central Paradise.

Full-scale evacuation orders issued.



9:46 AM - 3 hr 13 min

Thousands of
PG&E customers
lose power
throughout Butte
County due to fire

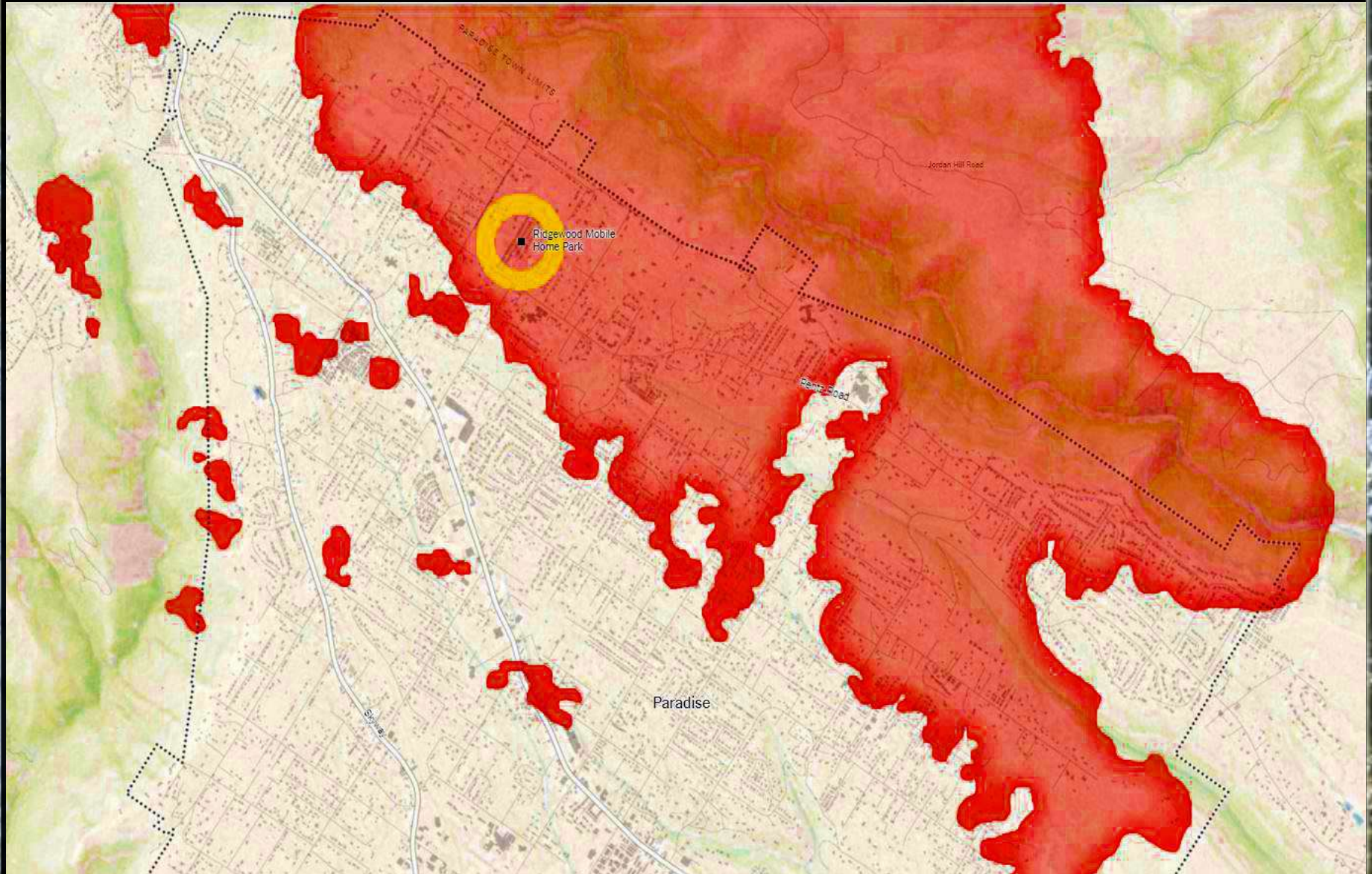


10:15 AM - 3 hr 42 min

Paradise residents
report losing cell
phone service



10:45 AM - 4 hr 29 min



10:55 AM - 4 hr 29 min

Skyway converted to one-way road



2:30 PM - 7 hr 57 min

Evacuation orders issued for all of Paradise, Magalia and surrounding areas

Paradise

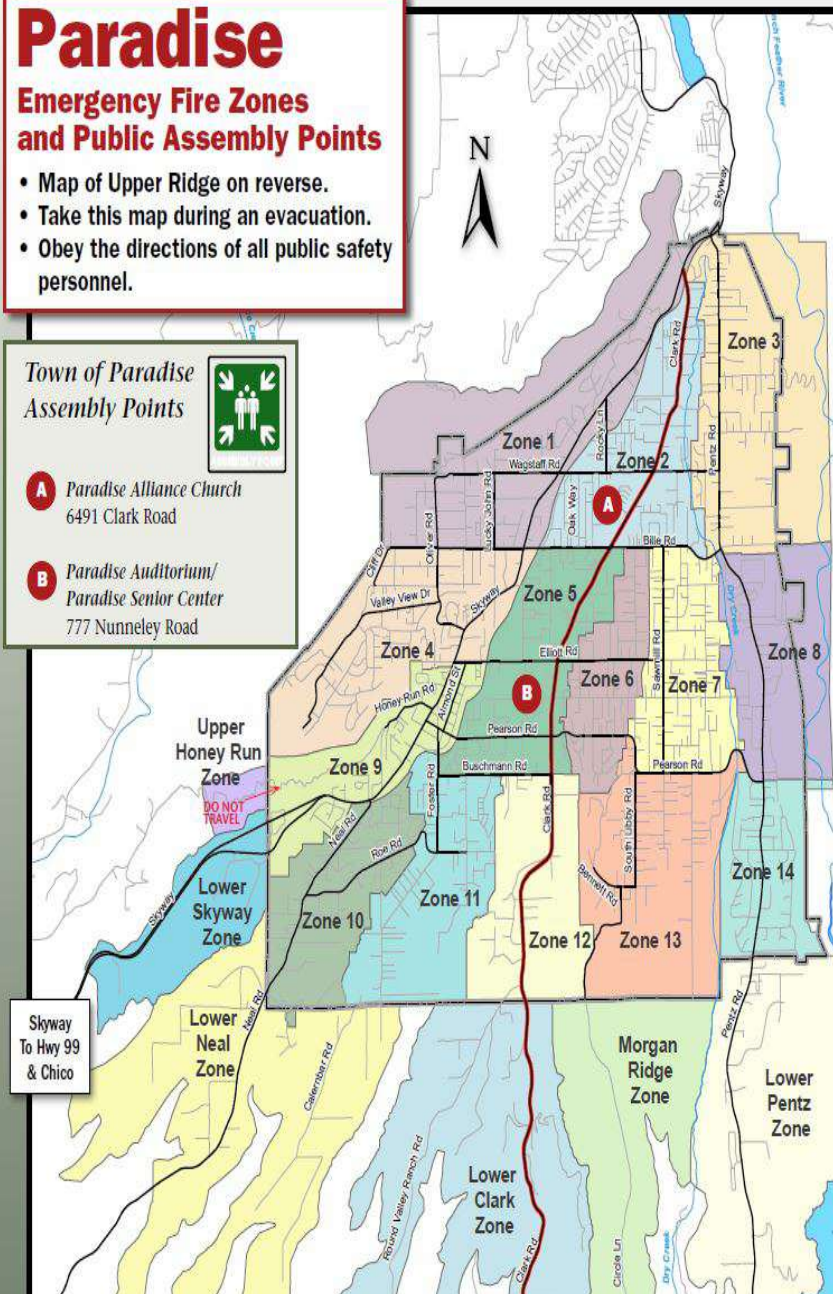
Emergency Fire Zones and Public Assembly Points

- Map of Upper Ridge on reverse.
- Take this map during an evacuation.
- Obey the directions of all public safety personnel.

Town of Paradise Assembly Points



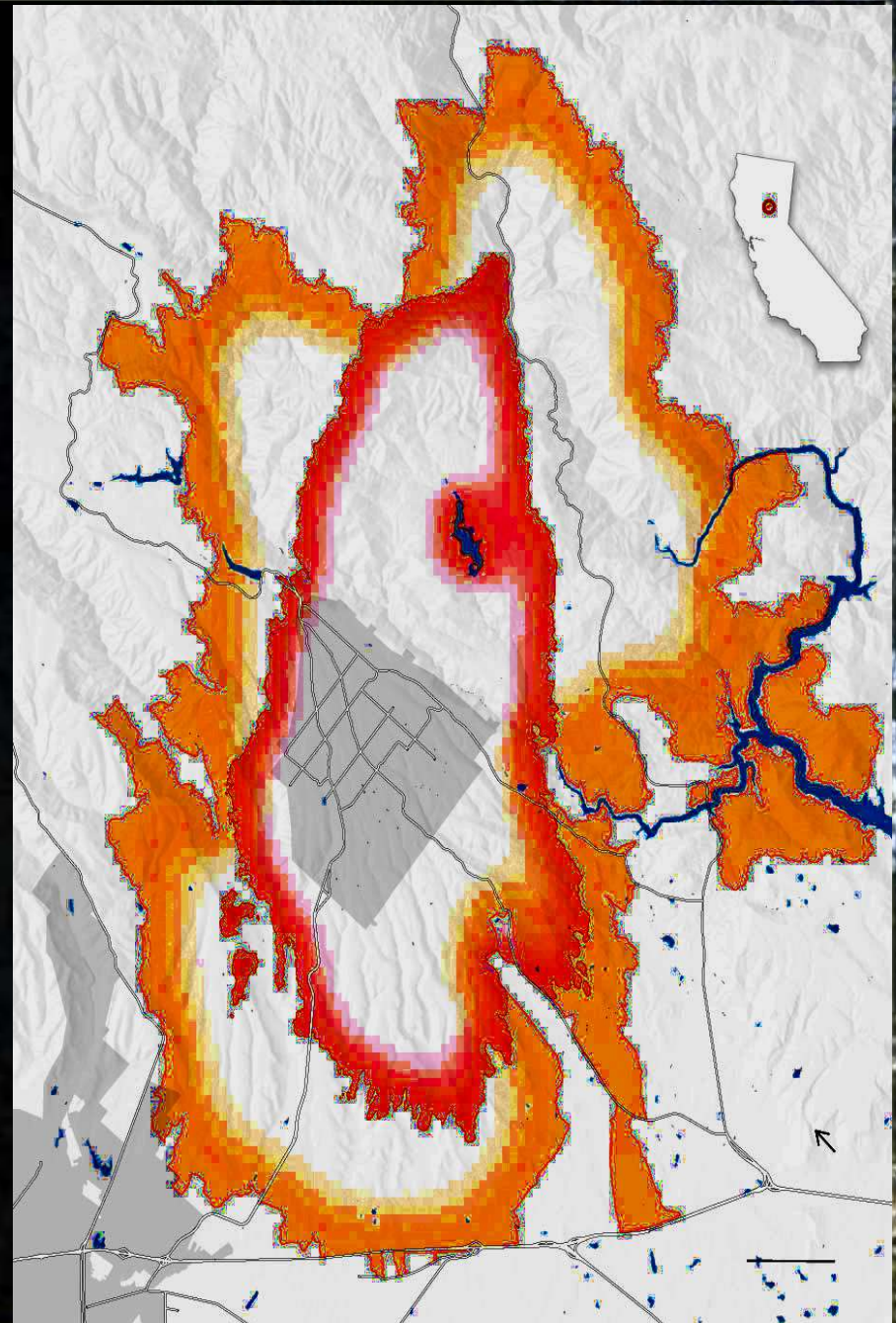
- A** Paradise Alliance Church
6491 Clark Road
- B** Paradise Auditorium/
Paradise Senior Center
777 Nunneley Road



6:00 PM - 11 hr 27 min

Camp Fire
Perimeter

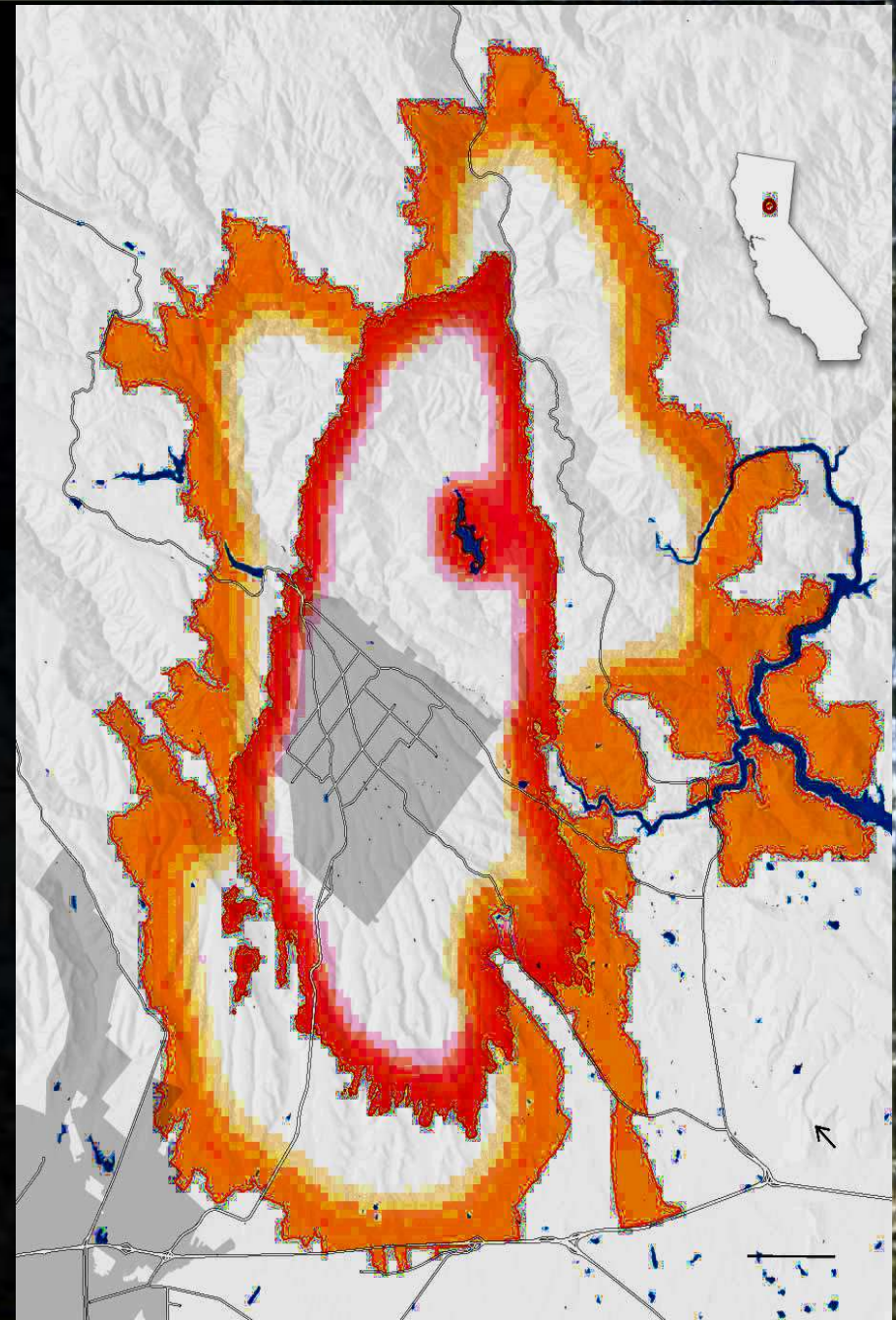
(Red Border)



11-08 to 11-25

**The Camp Fire
Final Perimeter**

(Orange Border)



Aftermath



Abandoned Cars Along Skyway



Abandoned Cars Along Skyway



Abandoned Cars Along Skyway



Fire Temps Up To 1,400°F



Abandoned Car in Cemetary



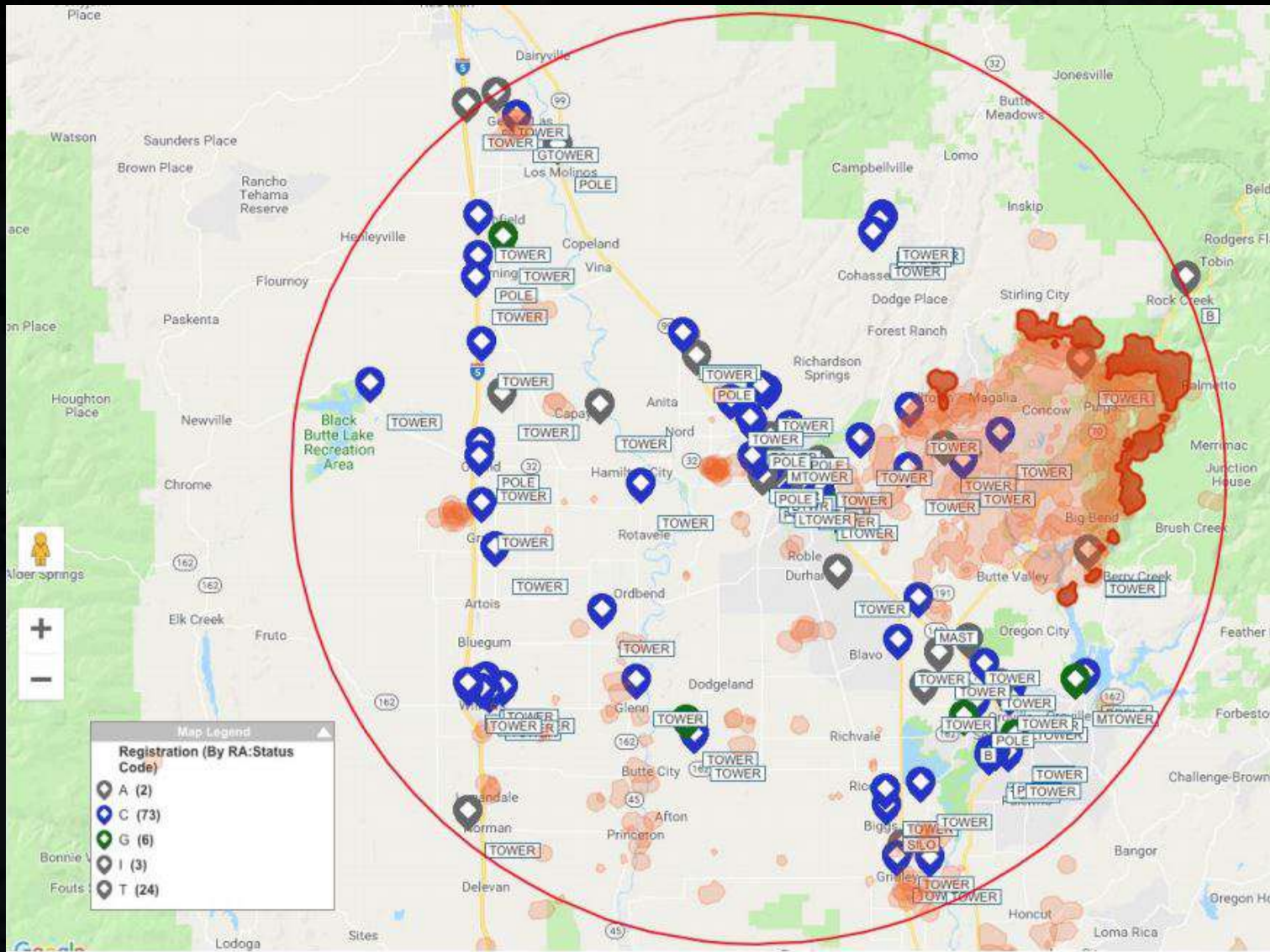
DR Priorities

- Account for Survivors and Search for Victims
- Clear Roadways
- Remove Dead Trees and Power Lines
- Make Area Safe For Emergency Responders
- Restore Electricity
- Restore Communications

Restore Communications

- Portable COWs, COLTs, SatCOLTs and MCTs
- Restore Power and Wired and Fiber Internet
- Replace Damaged and Destroyed Equipment
- Install Portable and Fixed-position Satellite Internet Back-haul Systems

Area Cell Phone Towers



AT&T Emergency COW



AT&T Emergency satCOLT



Verizon Emergency MCT



androidcentral

Verizon Emergency MCT



Restore Communications

**Satellite Internet Back Haul
Installations For T-Mobile**

**Saturday, Nov. 17th 2018
thru**

Wednesday, Nov. 21th 2018

T-Mobile Internet Back Haul



Verizon Portable Satellite



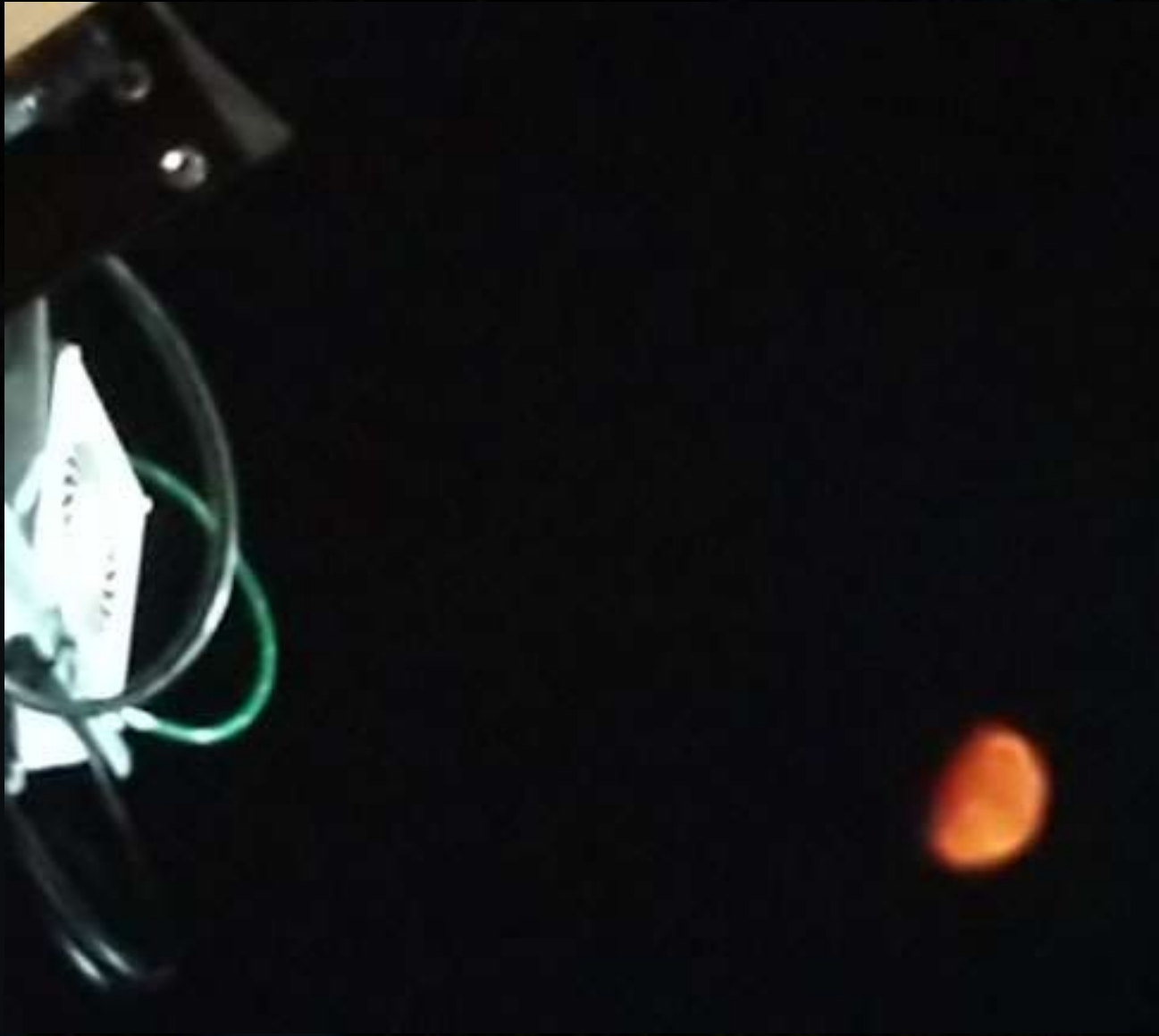
T-Mobile Night Install



T-Mobile Night Install



Paradise Moon Shot



Feather River Hospital



Feather River Hospital



Feather River Hospital



Tamper-proof Outlet Cover



Fake Cell Phone Tree and Branch



Feather River Hospital



Evacuation Failures

- ~ 38,700 people lived in the affected areas
- Only four main roads in and out of area
- Zone Evacuation Plan instead of “all at once”
- Some inbound lanes initially reserved for emergency traffic only
- Evacuations not ordered for 4 zones-until citywide order was issued after area had already burned
- Many residents in Concow and Paradise were simply unable to evacuate before fire arrived

Communications Failures

- Emergency alerts failed to reach 94% of residents in some areas and, at a minimum, the failure rate was 25%
- Alerts and evacuation orders sent using **CodeRED** System. Only ~ 25% of area residents had opted into **CodeRED**
- **CodeRED** messages reached 16,683 phones but failed to reach another 10,869
- **Wireless Emergency** and **Amber Alert** systems not used
- Police calls reached 4,855 phones but did not reach 4,099
- 1,000s of **911** calls swamped two operators on duty.
- By 11 AM, phone and Internet service was virtually wiped out. Authorities reverted to bullhorns to urge evacuations

A Single Point of Failure

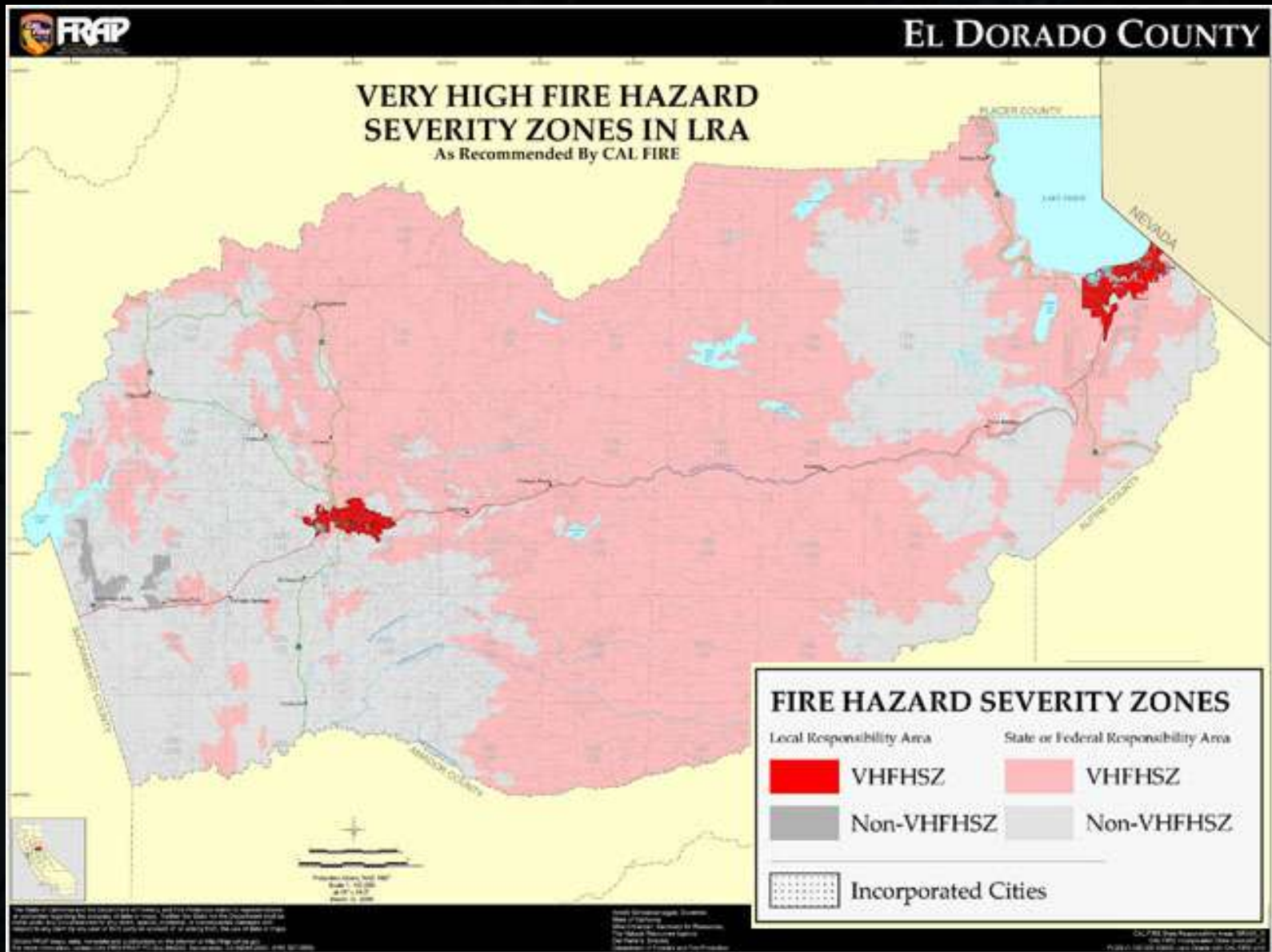
- More than half of U.S. households -- and more than 70 percent of adults renting their homes -- rely on cell phones¹
- 17 cell towers were disabled on Nov 8, and most were disabled within the first four hours of the fire
- Surviving towers became overloaded by traffic
- 66 cell towers were damaged or put out of service during the first two weeks of the fire
- Cell towers not required to have backup electricity
- Cell towers not required to have backup Internet

¹ Survey results from the U.S. Centers for Disease Control

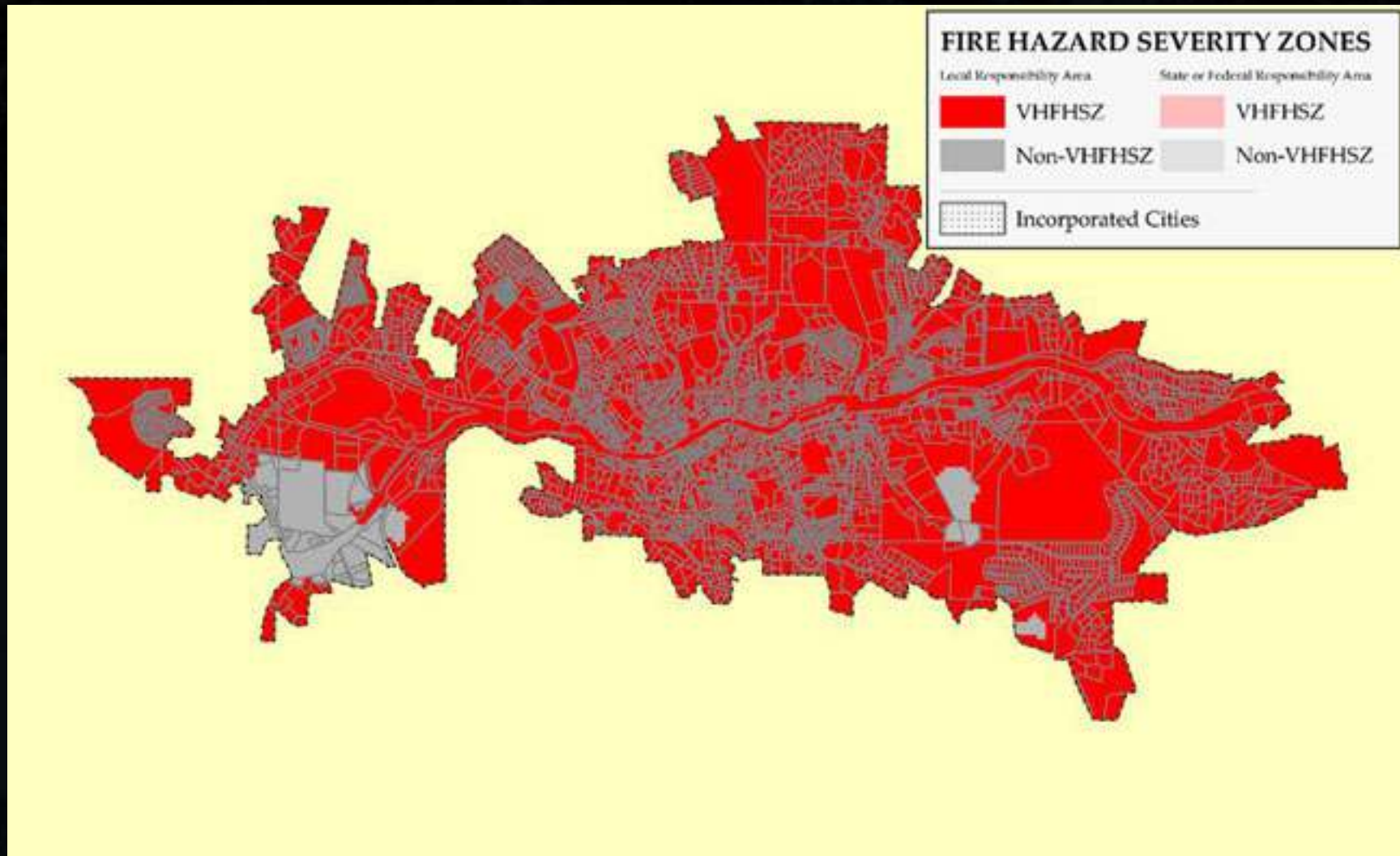
Our Communities At Risk

- 187 California communities within “**Very High Fire Hazard Severity Zones**”
- Auburn, Colfax, Grass Valley, Nevada City, Placerville and Jackson are in “**Very High Fire Hazard Severity Zones**”
- Nevada County is in the “Top Five” California counties at highest risk
- Many counties have **CodeRED** but opt-in rates low
- **Amber Alerts** limited to 90 characters

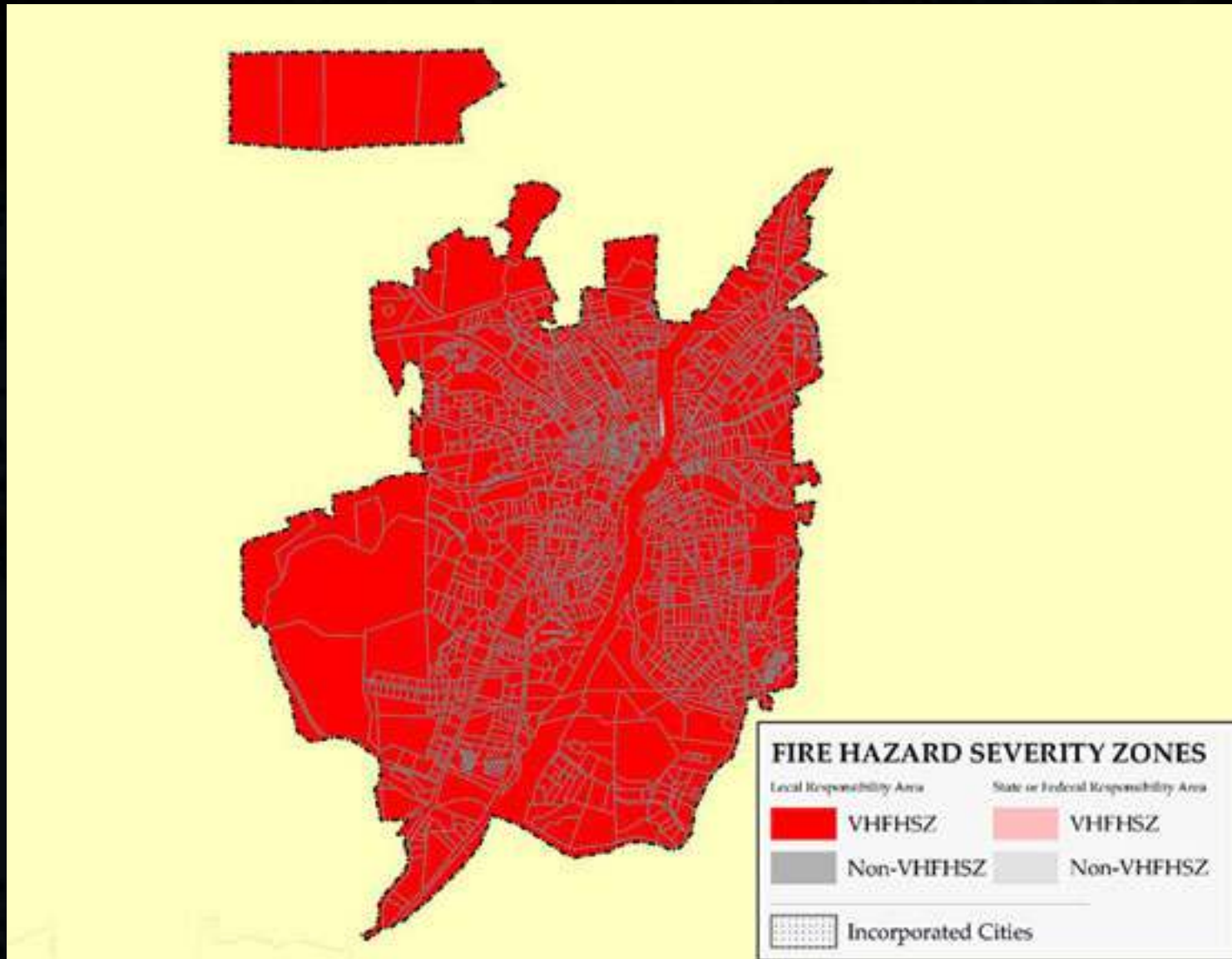
El Dorado County At Risk



Placerville At Risk



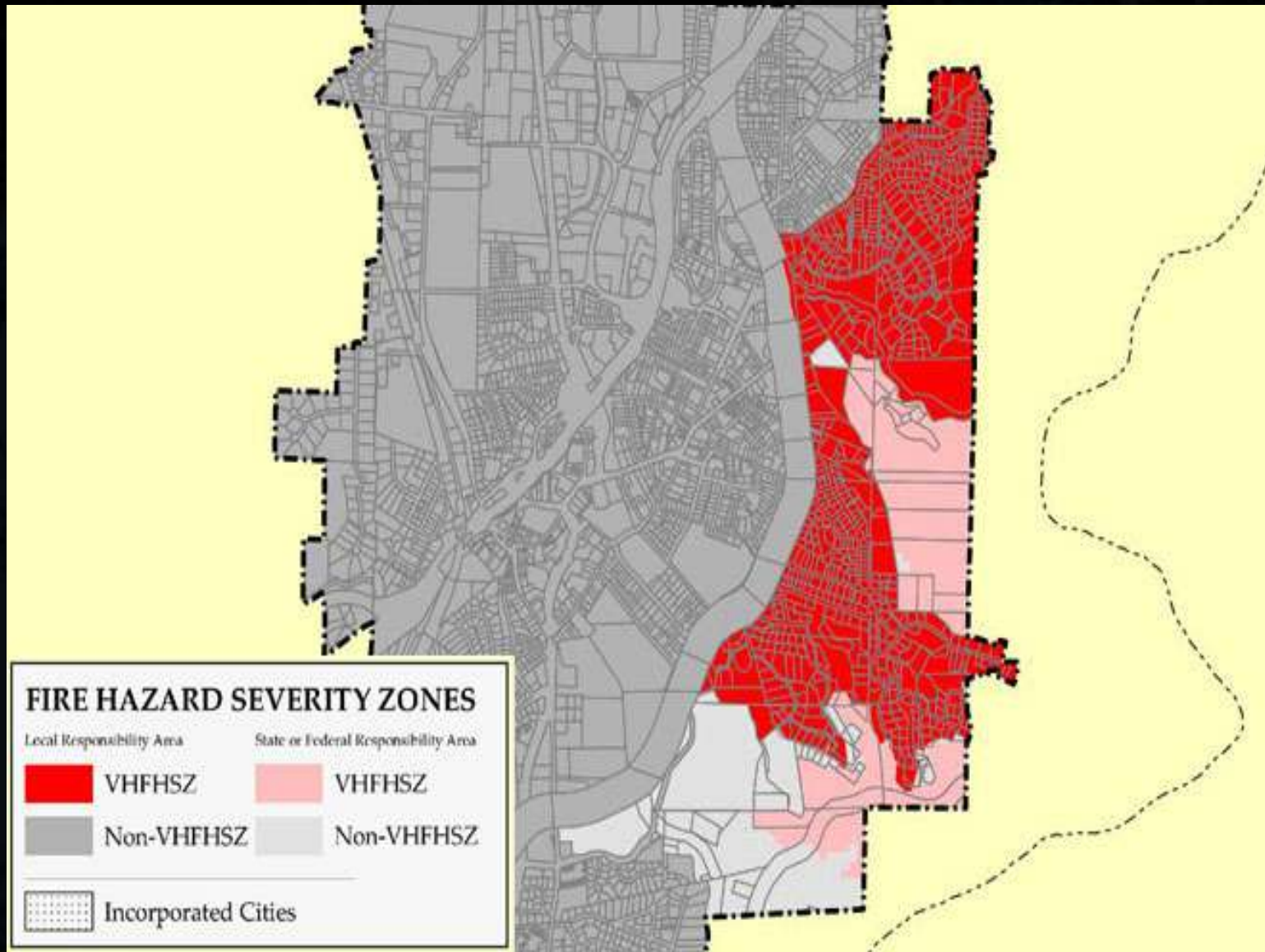
Nevada City At Risk



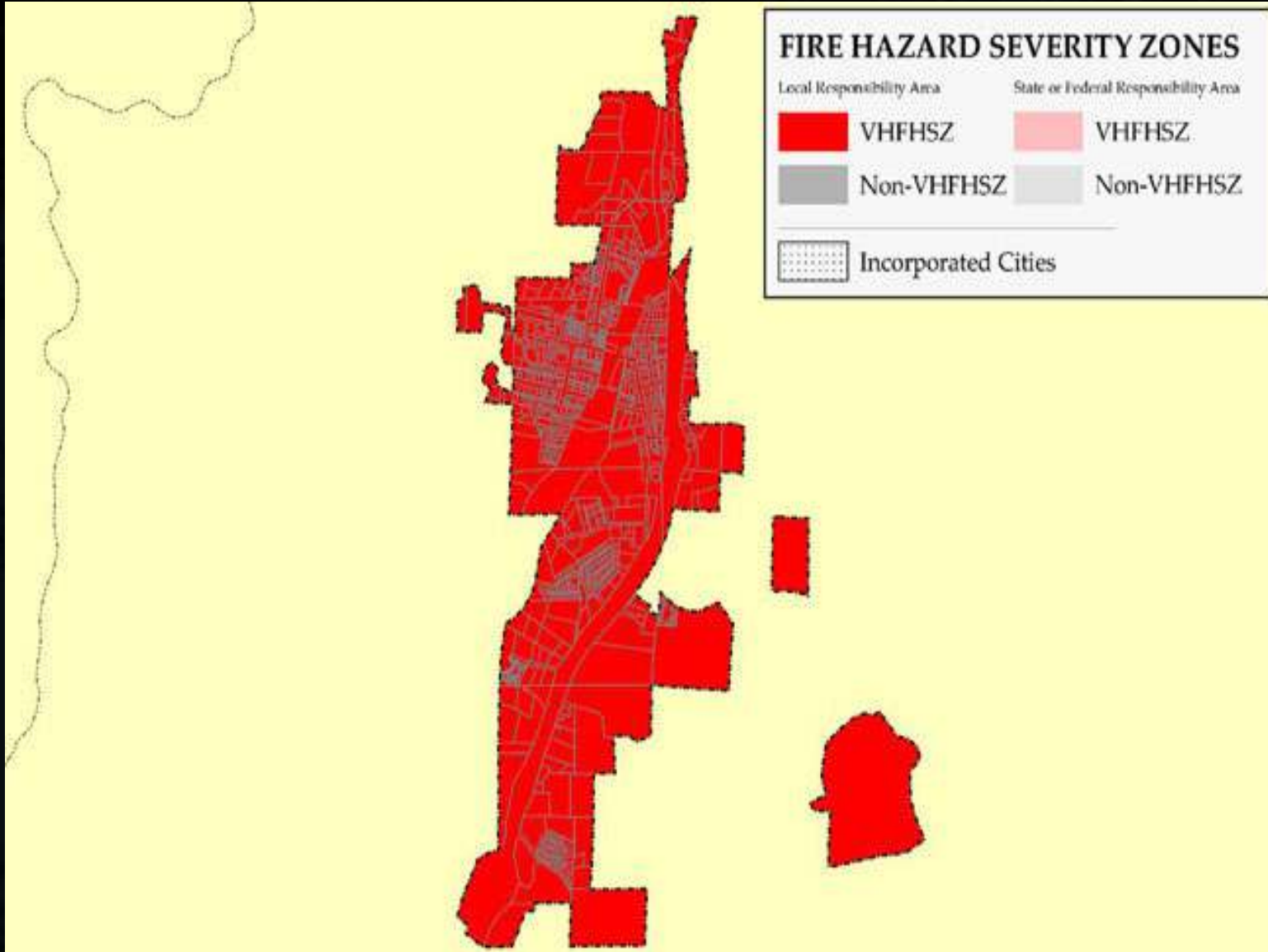
Placer County At Risk



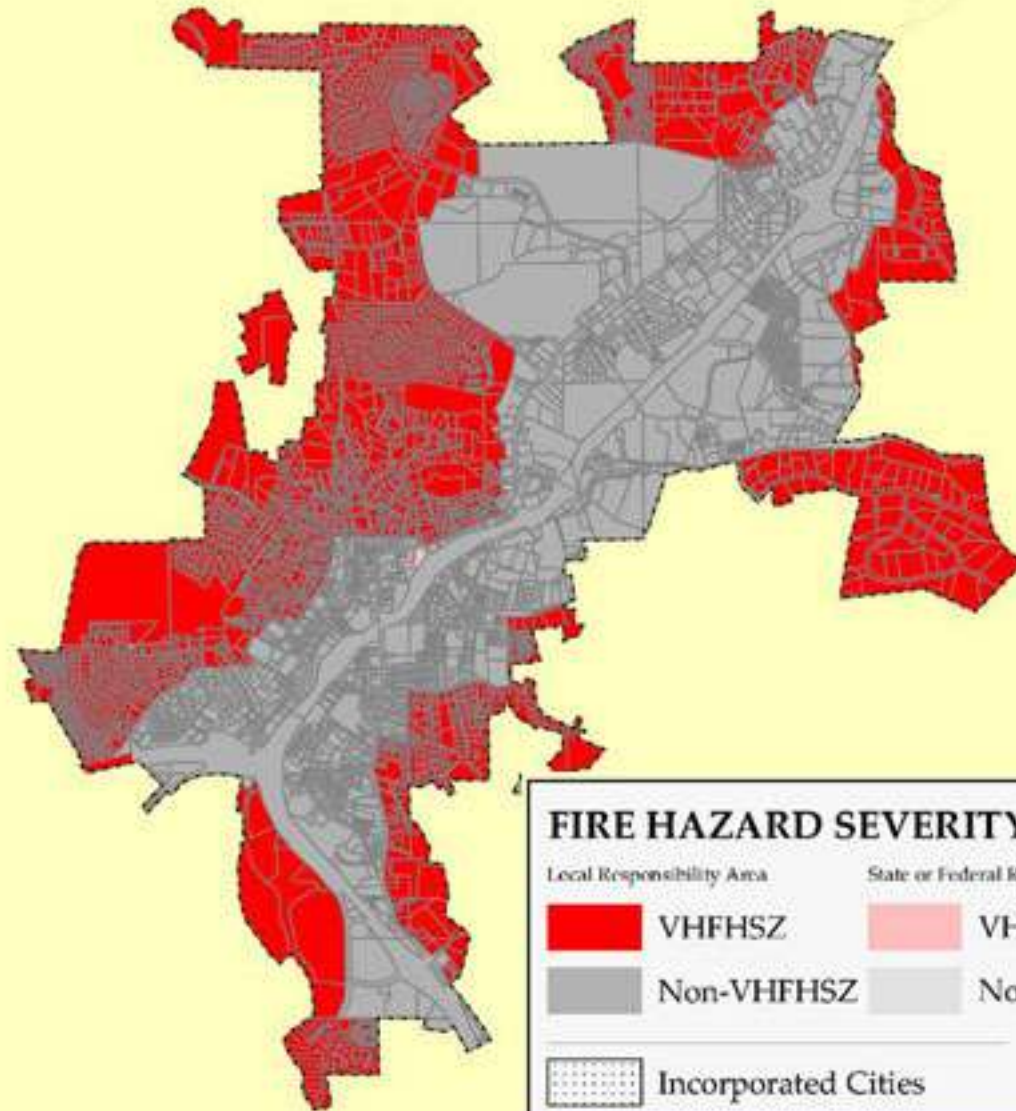
Auburn At Risk



Colfax At Risk



Grass Valley At Risk



Factors Putting Us More At Risk

- More than half of us still haven't signed up for official evacuation alerts.
- We don't practice our escape routes – or perhaps there aren't any.
- Parked cars crowd narrow streets.
- Too few of us have “to go” 72-hour Survival kits.
- We're overly reliant on vulnerable WiFi, cable TV and cell phones to deliver life-saving information.

Disaster Mitigation

- Emergency Communications must be universal and accessible to everyone
- Cities can do more to keep streets clear and help with evacuations, but you should be prepared to save yourself
- Everyone should have a 72-hour survival '**To Go**' kit, and keep gas tanks at least half full
- Families should write out an emergency plan, discuss it with family members and even do practice runs

Emergency Communications

- Land Lines and Cell Phones
- Commercial Cable and Off-air TV and Radio
- Internet / Social Media
- Infrared Cameras
- Sirens / Audible Warning Devices
- Wireless Emergency Alert and Amber Alert Systems
- “Neighborhood Radio Watch”

Neighborhood Radio Watch

- Family Radio Service (FRS)
- General Mobile Radio Service (GMRS)

Family Radio Service (FRS)

- Cheap and Freely Available
- No Test Required
- No License Required
- Max Power 2 Watts/Fixed Antennas
- Only Handi Talkies Available
- Cannot Use Repeaters
- 14 Channels – from 462.5625 to 462.7250
- Can Communicate w. GMRS Radios

General Mobile Radio Service (GMRS)

- Cheap
- No Test Required
- License: \$70/10 Yrs./Covers Whole Family
- Max Power 50 Watts/Antenna Options
- Handi Talkies and Mobile Radios Available
- Can Use GMRS Repeaters
- 30 Channels – From 462.5625 to 467.7250
- Can Communicate w. FRS Radios

Neighborhood Radio Watch

- Radio Relay International
- CERT Affiliations: Fire/Police Departments
- Churches, Schools, Scout Troops, Civic Organizations
- Ham Radio Clubs Can Lead The Effort

Epilog



References And Resources

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more...

