

Wildfire Mitigation Plan Mammoth Lakes July 17, 2019



Energy for What's Ahead®



Community Resilience and Preparedness



Make an emergency plan today & practice it!

We all have a role in resiliency and preparedness

“Preparedness is everyone's job. Not just government agencies but all sectors of society -- service providers, businesses, civic and volunteer groups, industry associations and neighborhood associations, as well as every individual citizen -- should plan ahead for disaster. During the first few hours or days following a disaster, essential services may not be available. People must be ready to act on their own.”

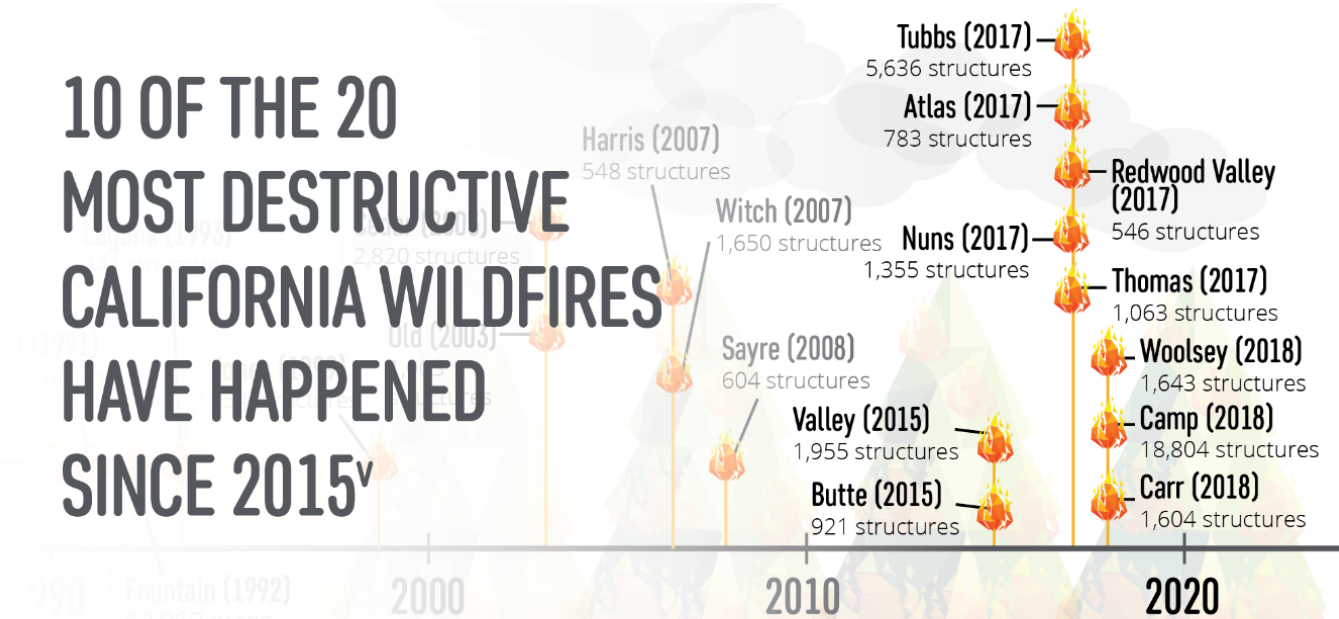
-California Offices of Emergency Services

California's Wildfire Risk

Year-Round Fire Season: Changes to California's climate means that the traditional notion of a fire "season" no longer exists

Hazardous fuel is building up: 10M acres of land contain ready -to-burn kindling from nearly 147M trees that have been killed or weakened by drought and bark beetle infestation

**10 OF THE 20
MOST DESTRUCTIVE
CALIFORNIA WILDFIRES
HAVE HAPPENED
SINCE 2015^v**



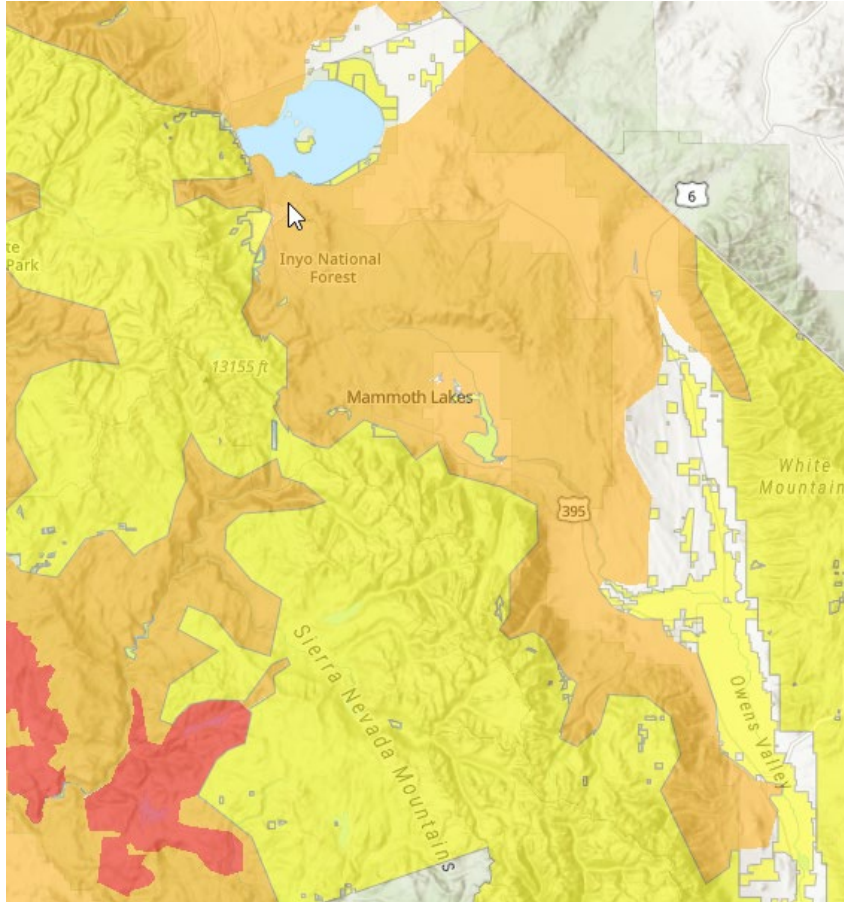
Source: [http:// www.fire.ca.gov /communications/downloads/ fact_sheets/Top20_Destruction.pdf](http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Destruction.pdf)

Local Community High Fire Risk Area Map

Approximately 1/3 of SCE's 50,000 square mile service area is located in HFRA.

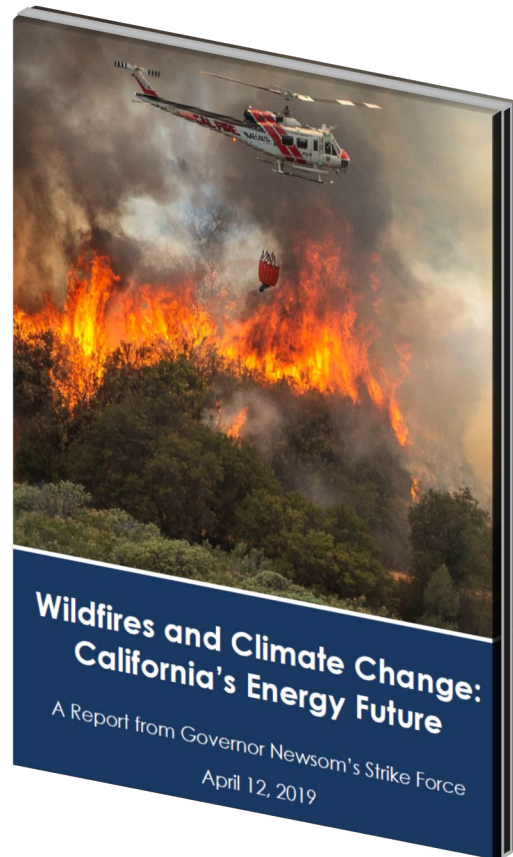
What makes up SCE's HFRA?

A combination of historical map boundaries (based on past fire management and response experiences), CAL FIRE's Fire Hazard Severity Zone (FHSZ) maps, and most recently the CPUC High Fire Threat District map are used to inform SCE's High Fire Risk Areas.



* Areas within SCE's service area that continue to be designated as HFRA and are in the process of being evaluated to determine whether they remain as HFRA

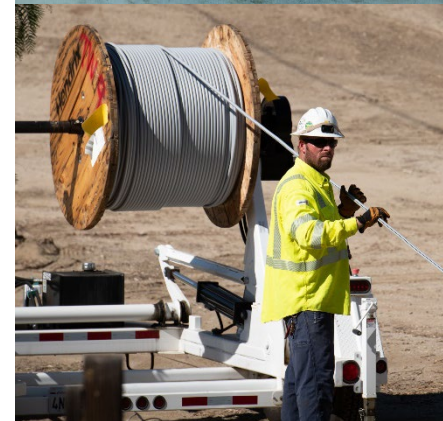
Governor's Strike Force Report



- Preventing and responding to catastrophic wildfires
- Renewing California's commitment to clean energy
- Allocating responsibilities for wildfire cost
- Strengthening utility market regulation

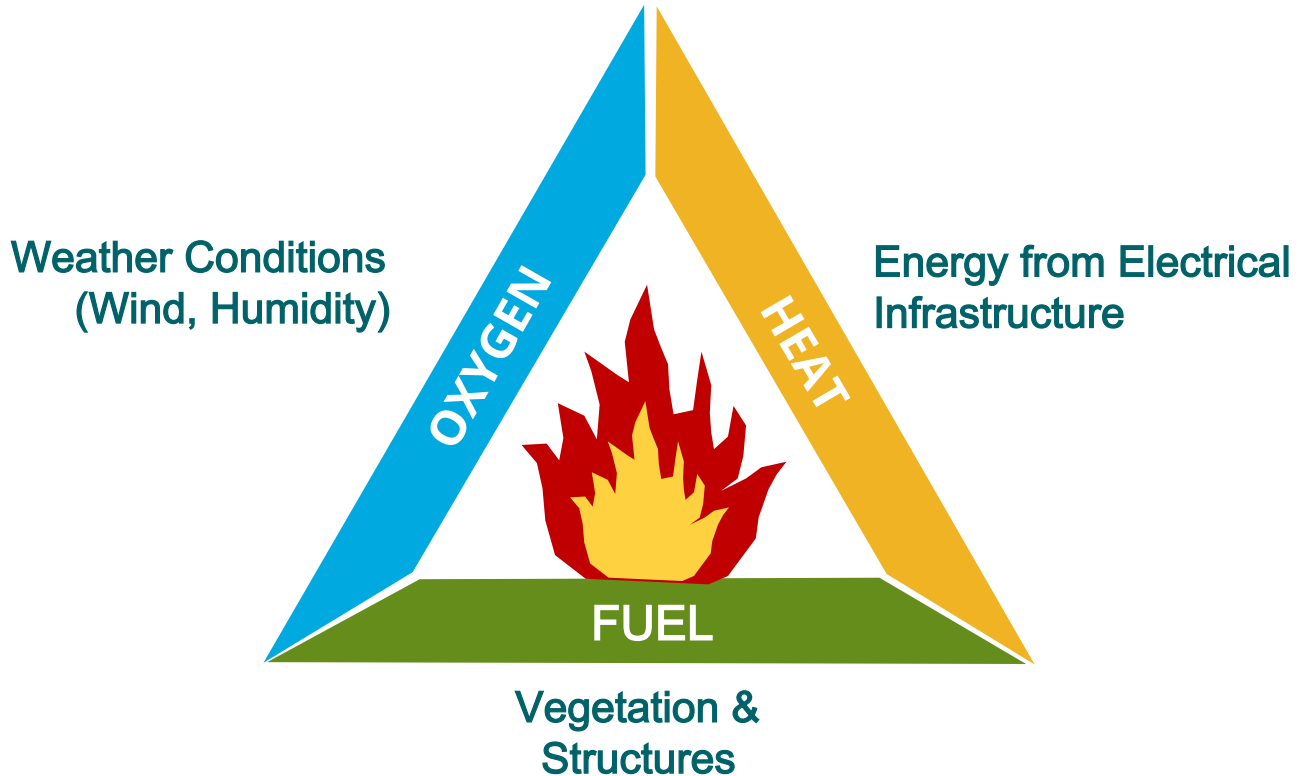
Objective of SCE's Wildfire Mitigation Plan

1. Protect public safety
2. Implement the plan to further reduce the risk of potential wildfire-causing ignitions associated with SCE's electrical infrastructure
3. Implement measures that further harden SCE's electric system against wildfires and improve system resiliency
4. Enhance wildfire suppression efforts by improving fire agencies' ability to detect and respond to emerging fires in coordination with utility emergency management personnel
5. Effectively communicate with customers, community groups, and other stakeholders about how to prevent, prepare for, and mitigate the effects of wildfires



Mitigation Strategy based on Fire Science

Eliminating any side of the fire triangle can prevent ignitions



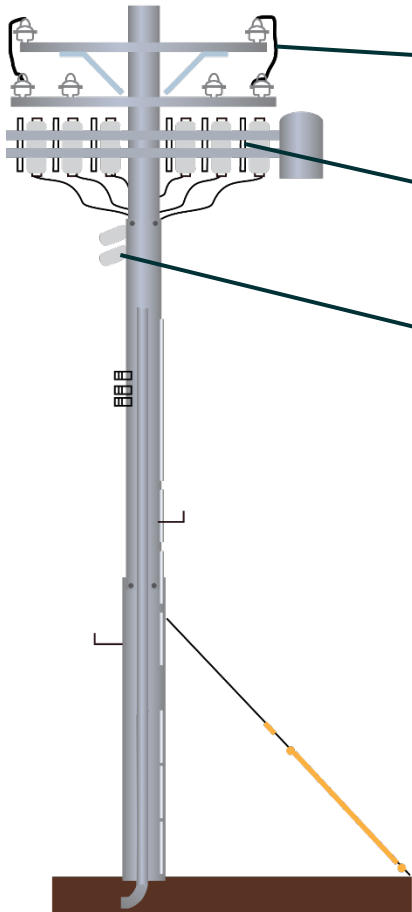
Scope of SCE's 2019 SB 901 Wildfire Mitigation Plan

OPERATIONAL	Inspections	<ul style="list-style-type: none"> Enhanced overhead inspections (EOI) on transmission and distribution structures in HFRA Various existing inspections (poles, switches, circuits, relays, etc.) Infrared, Corona scanning and high definition (HD) imagery
	Public Safety Power Shutoff (PSPS)	<ul style="list-style-type: none"> Effective communications and engagement with emergency services, customers and communities
	Situational Awareness	<ul style="list-style-type: none"> Weather stations and HD cameras
	Vegetation Management	<ul style="list-style-type: none"> Hazard tree removal (trees beyond traditional trim zone) Vegetation removal at poles LiDAR surveying for transmission, supplemental inspections in HFRA SCE plans to implement a 12 -ft tree clearances from distribution power lines in high fire areas to ensure annual growth will not encroach on compliance distances.
INFRASTRUCTURE	Covered Conductor	<ul style="list-style-type: none"> Circuit miles of covered conductor in HFRA
	Undergrounding	<ul style="list-style-type: none"> Evaluation of certain distribution lines in HFRA for potential undergrounding.
	Other Infrastructure Mitigations	<ul style="list-style-type: none"> Various system hardening activities (e.g., composite poles, current limiting fuses (CLFs), remote automatic reclosers (RARs), Fast Curve settings) Studies, evaluations and pilots of alternative technologies

¹Per SCE's Grid Safety & Resiliency Program (GSRP)

Infrastructure - System Hardening Elements

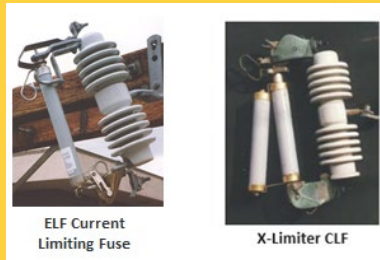
Hardened System



Covered Conductor



Fast-Acting, Current Limiting Fuses (CLF)



Reclosers



Enhanced Overhead Inspections (EOI)

Enhanced Overhead Inspections Identify Potential Risks

- In less than 5 months, our crews completed detailed ground-based inspections of **400,000+** distribution and transmission structures in HFRA
- Deploying helicopters and drones equipped with Infrared, Ultraviolet, LiDAR and HD image scanning to perform aerial inspections of our facilities in HFRA



SCE's helicopters are equipped with software and high-tech cameras, like the one shown above, to find potential risk undetectable to the human eye

Undergrounding

SCE views undergrounding as part of our portfolio of mitigation measures, but there are important trade-offs that require careful deliberation at the California Public Utilities Commission



Benefits

- Can reduce frequency of outages during storms
- Can reduce risk of wildfires caused by electrical infrastructure
- Can improve neighborhood aesthetics
- Can present fewer hazards for wildlife

Drawbacks

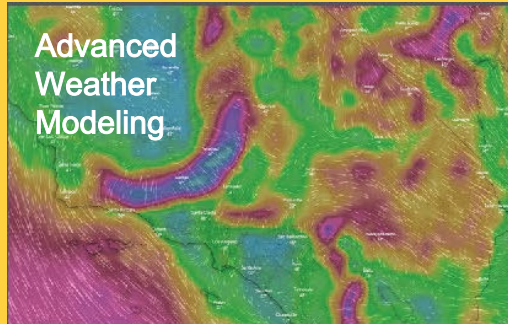
- Cannot be visually inspected
- Require longer service interruptions to perform repairs and maintenance
- Can take much more time to design, install, and obtain easements and permits
- Cost: ~\$3 million per mile (~\$430,000 per mile for covered conductor), which will lead to higher customer rates

Situational Awareness Capabilities



Weather Stations

- Hi-Res Data
- Local Weather



Advanced Weather Modeling

- Better Forecasting
- Advanced Warning



Fire Monitoring Cameras

- High-Definition
- Remote-controlled

Situational Awareness Center

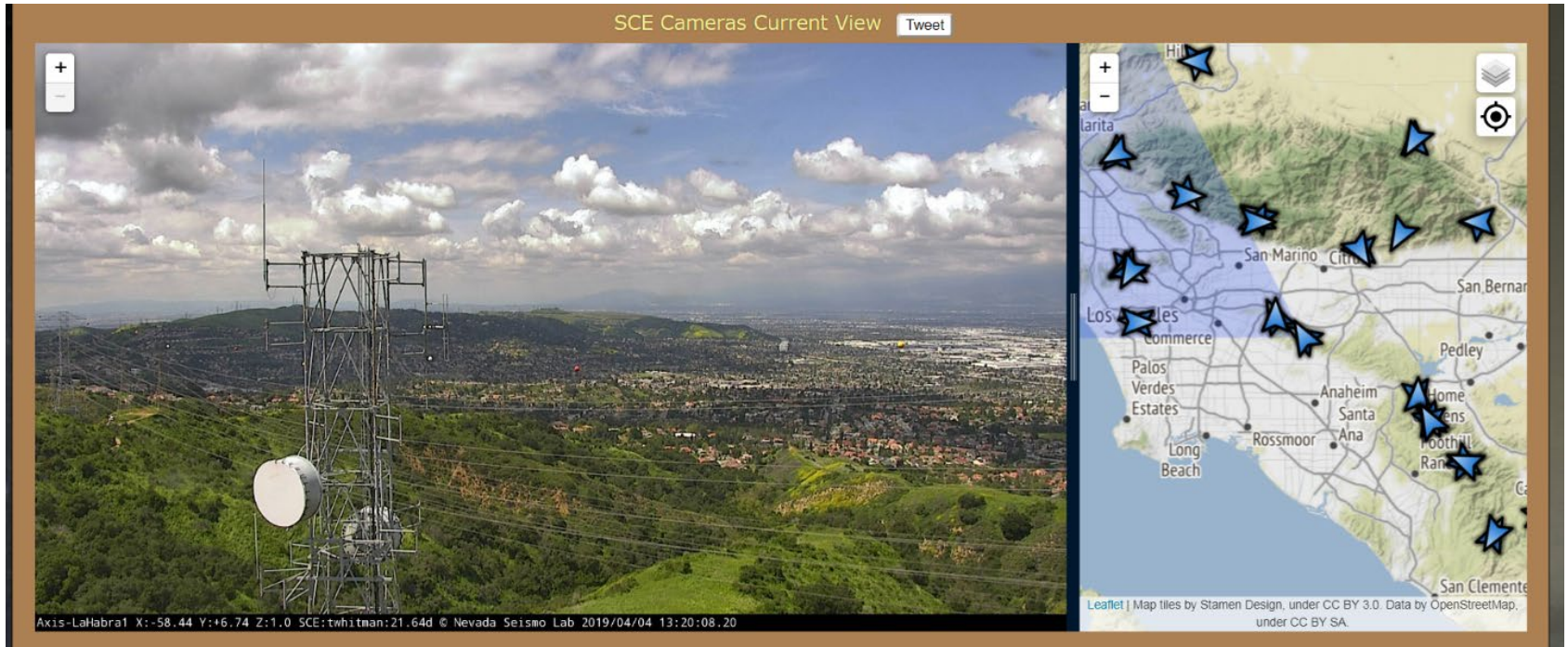
- SCE meteorologists
- 24/7 monitoring



Wildfire HD Camera

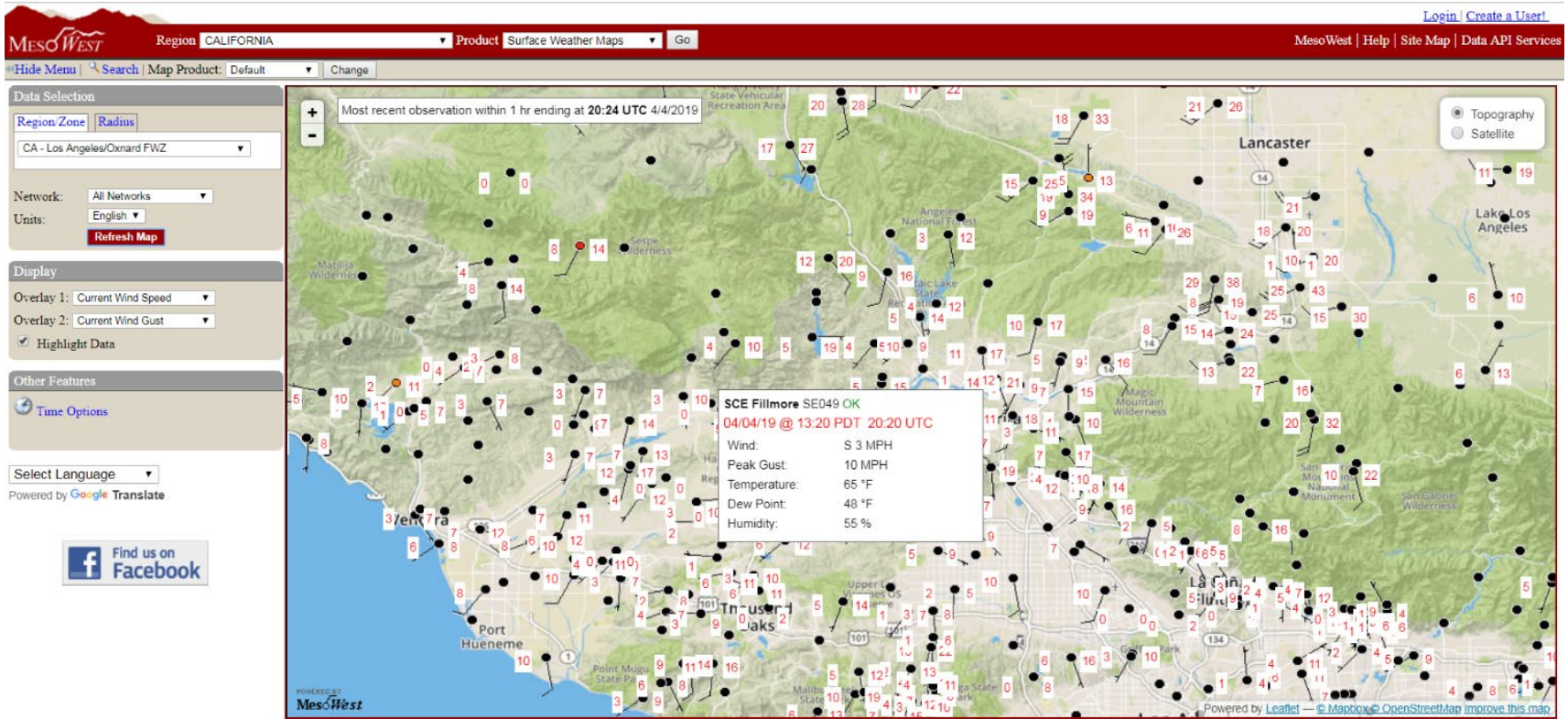


Wildfire HD Camera



www.alertwildfire.org

Weather Stations



mesowest.utah.edu

Vegetation Management



- 20+ in-house certified arborists
- 800+ pruning contractors with 60 more crews added June/July 2018
- ≈ 900,000 trees inspected annually
- ≈ 700,000 pruned per year;
400,000 trees in high fire risk areas

2019

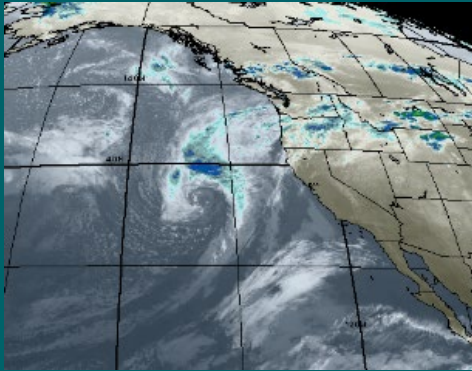
- Continue to remove dead, dying, diseased trees in HFRA
- Remove additional **7,500** which pose a fall-in or blow-in risk to SCE electrical facilities in HFRA
- SCE has implemented a 12-ft tree clearance from distribution power lines in high fire areas to ensure annual growth will not encroach on compliance distances.

Public Safety Power Shutoff (PSPS)

- De-energization to prevent ignitions from powerlines
- Used during **extreme fire conditions**
- Primarily impacts circuits in high fire risk areas
 - Other circuits in non -high fire risk areas may be impacted if transmission lines are de -energized
- Red Flag Warning **alone does not** mean a PSPS will be called
- Actual frequency of PSPS events will depend on various weather and environmental factors
 - Decision will be made with most accurate assessment of real - time information and situational awareness data

PSPS Decision Points

Decision points include but are not limited to:



- SCE Meteorologists forecast **strong wind** conditions in service territory
- SCE Fire Scientist assessment **of fire potential** to include consideration of **weather** and **fuels**



- Real-time observations from qualified personnel monitoring for **hazardous conditions** in the field

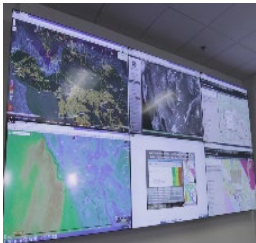


- Impact of de-energizing circuits on **first responders** and **essential services**

* Erratic or sudden onset of conditions may prevent the input from real-time observations or consultation with first responders

PSPS Ideal Timeline

4-7 DAYS
AHEAD



Forecast
Weather &
Fire
Conditions

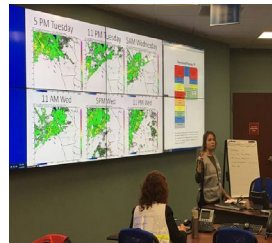
3 DAYS
AHEAD



SCE Incident
Management
Team activated

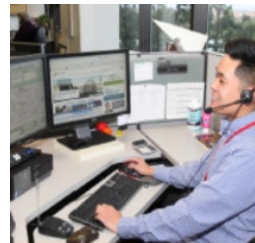
County
Operational
Areas informed
of potential
activation

2 DAYS
AHEAD



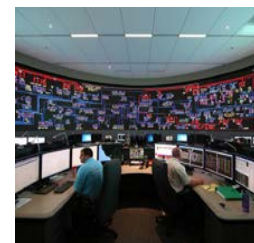
1st Notification
PSPS Possible
sent to agencies
and customers

1 DAY
AHEAD



2nd
Notification
PSPS
Possible

POWER
SHUTOFF



3rd
Notification
Power
Shutoff

POWER
RESTORATION



4th
Notification
Power
Restored
After
Inspection

PLANNING AND MONITORING

OUTAGE

*Erratic or sudden onset of conditions may impact our ability to provide advanced notice to customers.

Community Resilience and Preparedness

Power Outages Can Occur for Many Reasons

- Maintenance
- Emergency Repairs
- Requests from Fire Agencies
- Natural Disasters

Have a Plan and Be Prepared

- Be Informed
- Plan Ahead
- Take Action



Useful Information

- Update Customer Contact Information <https://www.sce.com/outagealerts>
- Information on SCE Wildfire Mitigation Plan www.sce.com/wildfire
- Twitter - [@sce](https://twitter.com/sce)
- Facebook – www.facebook.com/sce
- Fire Cameras- www.alertwildfire.org
- Weather Stations – mesowest.utah.edu
- CPUC Wildfire Maps Information - www.cpuc.ca.gov/wildfiresinfo/
- Fire Preparedness - calfire.ca.gov/fire_protection/fire_protection_be_prepared
- Red Cross Emergency Preparedness
www.redcross.org/get-help/how-to-prepare-for-emergencies.html
- FEMA Emergency Preparedness –



Thank you