

# 2022 WILDFIRE MITIGATION PLAN UPDATE

**Southern California Edison's Wildfire Mitigation Plan** outlines strategic measures to continue reducing the possibility of an ignition due to our utility infrastructure. Our highest priority is to protect our customers, communities and employees in high fire risk areas. The 2022 annual update builds upon a wildfire mitigation portfolio that is meaningful, cost-effective and reduces the wildfire threat. We continue to make progress in installing covered conductor, undergrounding overhead conductor and implementing cutting-edge technologies to help predict the wildfire threat. Our grid hardening work continues to reduce Public Safety Power Shutoffs (PSPS) in high fire risk areas, particularly in frequently impacted communities. Last year, the implementation of the wildfire mitigation plan cost \$1.66 billion and the company expects to spend approximately the same amount this year.

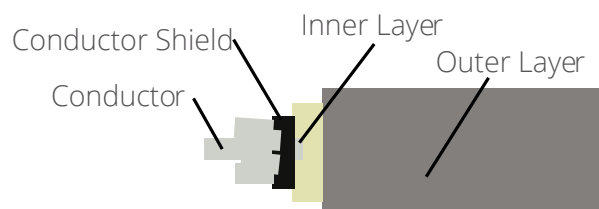
## IN 2022, WE LOOK FORWARD TO MAKING SIGNIFICANT PROGRESS IN THE FOLLOWING KEY FOCUS AREAS:

- An enhanced, comprehensive grid hardening strategy anchored in advanced risk modeling and analytics.
- Continuation of risk-informed inspection, repair and replacement programs and comprehensive vegetation management with an updated risk-prioritization methodology, particularly in high fire risk areas.
- Deployment of improved technology, data and risk analytics capabilities in addition to increased situational awareness and response.
- Augmented activities for PSPS mitigation, resilience and community engagement, particularly on behalf of underrepresented groups and our access and functional needs (AFN) customers.
- New mitigations to address risks associated with transmission lines and secondary conductors (i.e., service lines that provide electricity to homes and businesses).

### GRID DESIGN & SYSTEM HARDENING

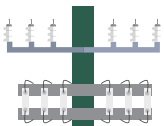


SCE continues to make improvements to its electrical system to make the grid more resilient in high fire risk areas, improving reliability and reducing wildfire risk.



### COVERED CONDUCTOR (INSULATED WIRE)

- The insulated material covering the bare wire significantly reduces the possibility of the power line arcing or sparking if contact occurs with an object like a tree branch or metallic balloon.
- We plan to install an additional 1,100 miles of covered conductor in 2022. SCE expects to have replaced more than 4,000 circuit miles or approximately 40% of the overhead distribution lines in high fire risk areas by the end of 2022.

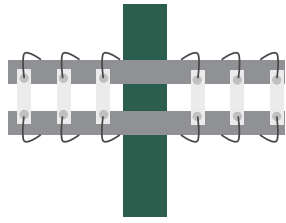


### FIRE-RESISTANT POLES

- We are installing a mix of composite poles and wooden poles with fire-resistant wrap, which reduces the risk of damage to poles during an emergency and allows us to restore power safely and more quickly to customers.

## PROTECTIVE DEVICES

- Fast-acting fuses interrupt electrical current more quickly and reduce risk of ignitions when there is an electrical fault, such as when a tree falls on a power line during high winds. We plan to install or replace fuses at 350 locations in 2022.
- We are also installing remote-controlled sectionalizing devices to segment or isolate portions of circuits during PSPS events to minimize the number of customers impacted.
- Since 2018, SCE has been installing fast curves on circuits in high fire risk areas. SCE blocks automatic reclosers and implements fast-curve settings to mitigate wildfire risk during certain severe weather and fire threat conditions, such as red flag warnings.



## GRID DESIGN & SYSTEM HARDENING (CONTINUED)

### MICROGRIDS

- Microgrids, or self-contained electric grids, can operate while either tied to the larger electric system or “islanded” (separated) from it.
- Partnered with San Jacinto High School for a microgrid resiliency pilot and the second pilot site at a school in the Rialto Unified School District will be available in 2022.



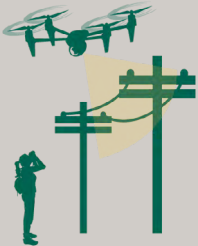
### RAPID EARTH FAULT CURRENT LIMITER (REFCL)

- REFCL detects when a single power line has fallen to the ground and almost instantly reduces the energy released.
- If REFCL is deployed with covered conductor, asset inspections and vegetation management activities, the combined risk reduction potential can be close to that of undergrounding. SCE is evaluating this technology and, depending on the results, may transition to using REFCL on a wider scale in the future.

### UNDERGROUNDING

- Undergrounding wires can reduce the frequency of outages during storms and also reduce the risk of wildfires caused by electrical infrastructure, although it can take longer to construct and be more costly and difficult to maintain and repair.
- For certain locations that pose very high risks based on potential fire spread, burn history, limited exit routes and extreme wind speeds, SCE is evaluating the use of undergrounding and additional technology solutions.

## HIGH FIRE RISK-INFORMED INSPECTIONS



**SCE annually inspects its overhead transmission, distribution and generation equipment in high fire risk areas to identify potential safety hazards. We prioritize the highest-risk structures identified by our advanced risk model as well as equipment in targeted areas based on emergent fire weather conditions, such as dry fuels.**

- Ground inspections by field crews and aerial inspections using drones and helicopters are conducted to obtain a 360-degree view of our equipment, where possible, for any needed maintenance, repair or replacement.
- We plan to inspect 150,000 distribution assets and 16,000 transmission assets in 2022.

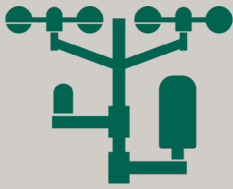
## VEGETATION MANAGEMENT



**We continue our efforts to inspect, trim and remove trees to prevent vegetation from coming into contact with electrical equipment and potentially sparking a fire. Tall trees that could potentially fall into power lines beyond our standard pruning zones are also assessed and mitigated.**

- SCE inspects 1.5 million trees across the service area annually and typically trims 900,000 of those trees. More than half are located in high fire risk areas.
- In 2022, we plan to assess hazard trees on at least 330 circuits in high fire risk areas and mitigate them if deemed unsafe.

## SITUATIONAL AWARENESS



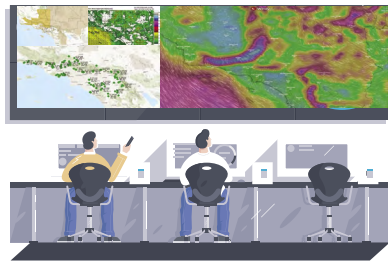
The size of our service area in high fire risk areas and its diverse terrain requires a network of weather stations and wildfire cameras to monitor location-specific, real-time conditions that help inform operational decision-making.

## WEATHER STATIONS



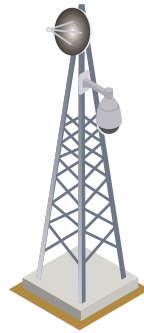
- Weather stations provide wind speed, humidity and temperature data that is updated every few minutes. The data allows more targeted de-energizations during PSPS events and is accessible to the public at [sce.com/weatherstations](https://www.sce.com/weatherstations).
- We plan to install at least an additional 150 weather stations and will also begin targeting transmission lines for a total of more than 1,600 weather stations by the end of 2022.

## WEATHER AND FIRE SPREAD MODELING TECHNOLOGY



- We have also added machine learning capabilities at 64 weather station locations to improve our wind speed forecasts; up to 500 additional locations are planned in 2022.
- We have increased our computing power to be able to model the atmosphere at a higher resolution in order to produce more granular weather forecasts for improved PSPS decisions.
- We plan to implement fire spread modeling technology in the near future as it will help determine the impacts wildfires will have on our customers and the communities we serve.

## WILDFIRE CAMERAS/SATELLITE WILDFIRE DETECTION

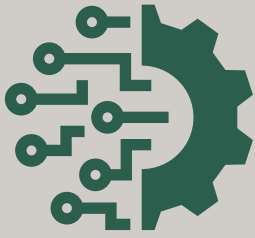


- We are exploring the use of artificial intelligence-based technology to detect wildfires. It uses satellite imagery in conjunction with SCE's high-definition camera system at [alertwildfire.org](https://www.alertwildfire.org). It may also alert fire agencies about possible ignitions if the pilot is successful.
- We plan to install at least an additional 10 cameras in 2022. The cameras pan, tilt, zoom and perform 360-degree sweeps approximately every minute.

## AERIAL FIRE SUPPRESSION



- A Quick Reaction Force of the world's largest fire-suppression helicopters consisting of two Coulson-Unical CH-47 helitankers, Sikorsky-61 helitanker, Sikorsky-76 command-and-control helicopter as well as a mobile retardant base.
- The fleet saw 433 hours of flight time, making 1,836 total drops, 493 of them at night, which amounted to 2.6 million gallons of water and 123,000 gallons of fire retardant.
- Partnered with the LA County Fire Department, Orange County Fire Authority and Ventura County Fire Department to expand their firefighting capabilities.



## NEW TECHNOLOGIES

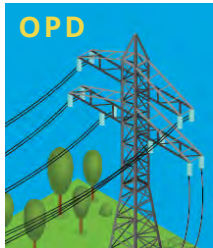
SCE is always developing new approaches and collaborates with other utilities, academia and the energy sector to make our communities safer. Here are emerging technologies that we will continue to study, develop or advance in 2022 that will complement our existing suite of wildfire mitigations.

Technologies such as Early Fault Detection (EFD) and Distributed Fault Anticipation (DFA) help detect potential electrical equipment issues early so we can make repairs before the equipment fails. Open Phase Detection (OPD) can sense when electrical equipment fails and take action to prevent potential ignitions.



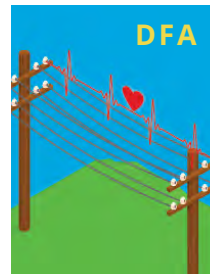
### EARLY FAULT DETECTION (EFD)

EFD uses radio frequency sensors placed on power poles to “listen” for abnormal radio frequency signals on power lines that indicate potential problems, such as frayed power lines.



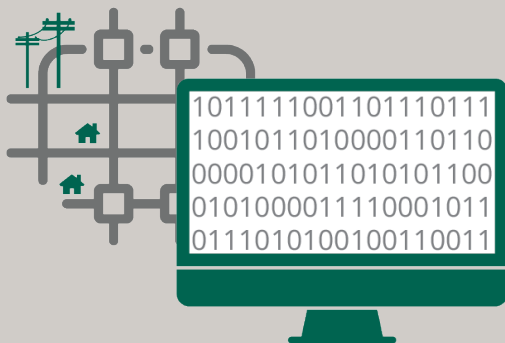
### OPEN PHASE DETECTION (OPD)

OPD can sense when a power line breaks or separates and turns off the power before it even falls to the ground.



### DISTRIBUTED FAULT ANTICIPATION (DFA)

DFA reads and monitors current and voltage signatures on circuits to better predict potential problems. These units are installed inside our substations and provide valuable data to also aid with reducing repeated events.



## ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

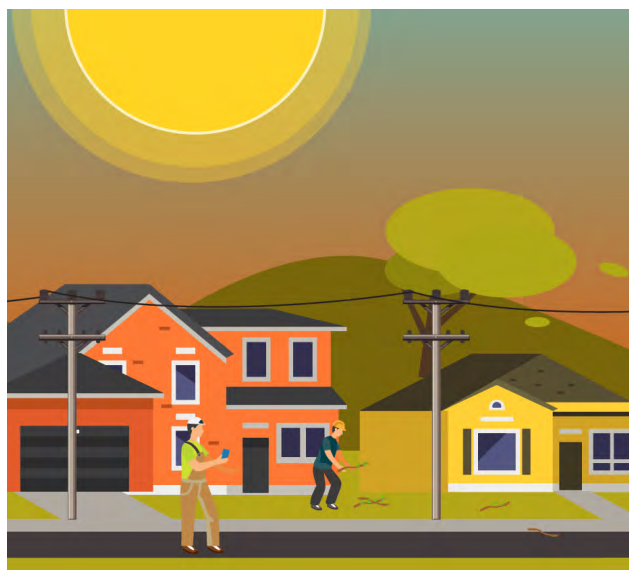
We use computer software that leverages artificial intelligence and machine learning to review high-quality images of our equipment captured during inspections to automatically identify equipment that may need maintenance, repair or replacement with more accuracy and speed.



## PUBLIC SAFETY POWER SHUTOFFS

While PSPS remains a tool to mitigate wildfire risk during extreme fire weather conditions, we recognize that these outages are difficult for our customers. We continue to reduce the size, frequency and duration of PSPS events as more wildfire mitigations are implemented, but PSPS remains a tool of last resort to reduce the risk of significant wildfires.

- With work completed last year, the company estimates that customers on the most frequently impacted circuits experienced more than a 70% reduction in total PSPS outage time based on 2021 weather and fuel conditions.
- During the November 2021 high-wind PSPS event, SCE discovered tree branches that had fallen on insulated wire (covered conductor) while the power line was energized at the time. Since the wire has a protective covering or insulation, these strikes did not cause a fault or cause the circuit to arc or spark. The wire performed as designed, reduced the risk of wildfire and customers did not experience an outage.
- After PSPS events, SCE crews have found equipment damage and tree branches contacting power lines without insulated wire, which could have ignited fires, illustrating the importance of shutting off the power as a tool of last resort and installing insulated wire to continue reducing these outages.



- We are actively engaging with customers, particularly the Access and Functional Needs community, so they are prepared for PSPS events and other outages. Community Resource Centers and Community Crew Vehicles are also available to support customers during PSPS events.
- We continue to offer rebates on portable backup battery solutions, hotel discounts and other programs to help customers during PSPS and emergencies. We will also provide no-cost backup batteries with solar charging capability to eligible income-qualified customers who rely on medical equipment and live in a high fire risk area.

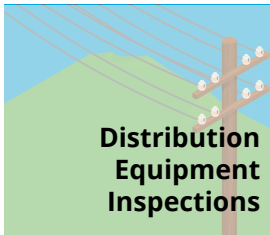
To learn more about wildfire safety and PSPS, visit [sce.com/wildfire](https://www.sce.com/wildfire).



# Wildfire Mitigation Activities PROGRESS UPDATE

## 2021 Year-End Progress Report

Data as of 12/31/21



**Distribution  
Equipment  
Inspections**

2021  
Completed/Target  
**179,600/163,000**  
inspections

✓ **110%**  
completed

Completed  
Since 2018  
**764,000+**  
inspections

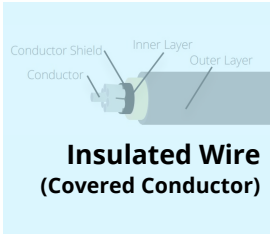


**Transmission  
Equipment  
Inspections**

2021  
Completed/Target  
**20,800/16,800**  
inspections

✓ **124%**  
completed

Completed  
Since 2018  
**106,900+**  
inspections

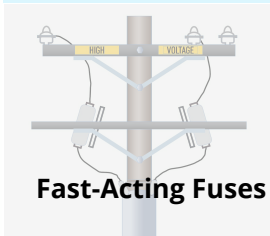


**Insulated Wire  
(Covered Conductor)**

2021  
Completed/Target  
**1,500/1,000**  
circuit miles installed

✓ **150%**  
completed

Completed  
Since 2018  
**2,900+**  
circuit miles installed



**Fast-Acting Fuses**

2021  
Completed/Target  
**350/330**  
fuses installed or  
replaced

✓ **106%**  
completed

Completed  
Since 2018  
**13,300+**  
fuses installed or  
replaced



**Hazard Tree  
Management**

2021  
Completed/Target  
**131,400/120,000**  
trees assessed

✓ **110%**  
completed

Completed  
Since 2018  
**359,900+**  
trees assessed



**Weather  
Stations**

2021  
Completed/Target  
**400/375**  
weather stations  
installed

➔ **107%**  
completed

Completed  
Since 2018  
**1,460+**  
weather stations  
installed



**High-Definition  
Wildfire Cameras**

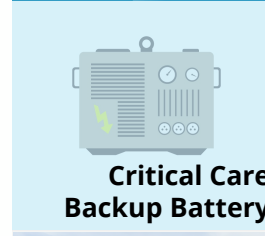
Cameras currently provide  
visibility to about 90% of our  
high fire risk areas (HFRA)  
and the planned additional  
cameras in 2022 and beyond  
will increase coverage to  
nearly all of HFRA

Completed  
Since 2018  
**166**  
cameras installed



**Aerial Fire  
Suppression  
Resources**

SCE contributed \$18 million to support the creation of  
a quick reaction force of aerial firefighting assets  
across counties in SCE's service area to coordinate  
and reach wildfires in their early stages. These unique  
water and fire retardant dropping helitankers have  
the capability to operate day and night.



**Critical Care  
Backup Battery**

2021  
Completed  
**6,000/3,600**  
batteries provided  
to eligible customers

✓ **167%**  
completed

Completed Since  
July 2020  
**6,740+**  
batteries provided  
to eligible customers



**Community  
Resource Centers**

**64**  
sites  
available



**Community Crew  
Vehicles**

**8**  
vehicles  
available