Community Wildfire Safety Program GLENN COUNTY

May 2020





Meeting Purpose and Discussion Topics

MEETING PURPOSE

- Share progress on important work to prevent wildfires and reduce PSPS impacts
- Co-create solutions to local issues
- Partner to prepare for PSPS events in 2020

We understand how busy your teams must be responding to COVID-19 and appreciate your time

DISCUSSION TOPICS:

- 2020 PSPS IMPROVEMENTS
- **LOCAL PROJECTS**
- 30-YEAR WEATHER ANALYSIS
- **EVENT COORDINATION AND INFORMATION SHARING**
- ELECTRIC GRID OVERVIEW
- DISCUSSION



2020 PSPS Improvements



GOAL

Reduce the number of customers impacted by PSPS events by one-third compared to 2019

INITIATIVES

- Installing sectionalizing devices on the transmission and distribution systems capable of redirecting power and limiting the size of outages
- Developing **microgrids** that use generators to keep the lights on
- Conducting targeted undergrounding as part of system hardening



Restore customers twice as fast after severe weather has passed

- Adding more field crews to speed inspection of lines
- Expanding **helicopter fleet** from 35 to 65 for aerial line inspections
- Commissioning two new airplanes for aerial line inspections
- Utilizing infrared equipment to inspect at night



SMARTER FOR CUSTOMERS

Provide more communications resources

accurate/timely and additional

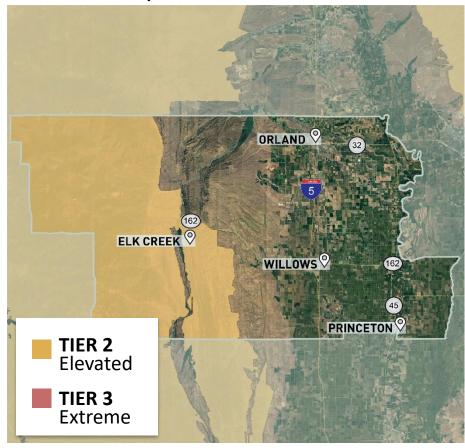
Deliver more assistance before, during and after a **PSPS** event

- Enhancing meteorology technology to pinpoint severe weather
- Bolstering website capacity
- Improving **customer alerts** and notifications
- Upgrading Community Resource Centers
- Improving coordination with local agencies and critical service providers
- Working with the California Foundation for Independent Living Centers and other **Community Based Organizations** to support vulnerable customers
- Making it easier for eligible customers to join the Medical Baseline program
- Expanding in-language communications



Glenn County Overview

CPUC High Fire-Threat District (HFTD) MapGlenn County





1,182 total overhead distribution miles 68 in Tier 2 | 0 in Tier 3 | 6% in HFTD



224 total overhead transmission miles 4 in Tier 2 | 0 in Tier 3 | 2% in HFTD



10 total substations



15,500 total customers served **200 (1%)** Customers in HFTD



700 total Medical Baseline Customers



100 total critical facilities



PG&E In Your Community

WILDFIRE SAFETY AND CUSTOMER SUPPORT PROGRAM EFFORTS



2019 COMPLET



2020 TARGET

Weather Stations Enhancing weather forecasting and modeling	5 STATIONS	1+ IN PROGRESS*
High-Definition Cameras Improving real-time monitoring of high-risk areas and conditions	2 CAMERAS	IN PROGRESS*
Community Resource Centers Provide basic power needs and up-to-date information	1 EXECUTED	N/A**
Sectionalizing Devices Separating the grid into small sections for operational flexibility	O DEVICES	1 DEVICE
System Hardening Stronger poles, covered lines and/or targeted undergrounding	O LINE MILES	O LINE MILES
Enhanced Vegetation Management Inspecting, pruning and removing vegetation	O LINE MILES	O LINE MILES

^{*}Locations identified on a monthly basis

^{**}County declined to pursue Community Resource Centers

Local Projects





Weather Stations

We're installing real-time tools to better understand how severe weather can impact our system and proactively respond to potential threats.

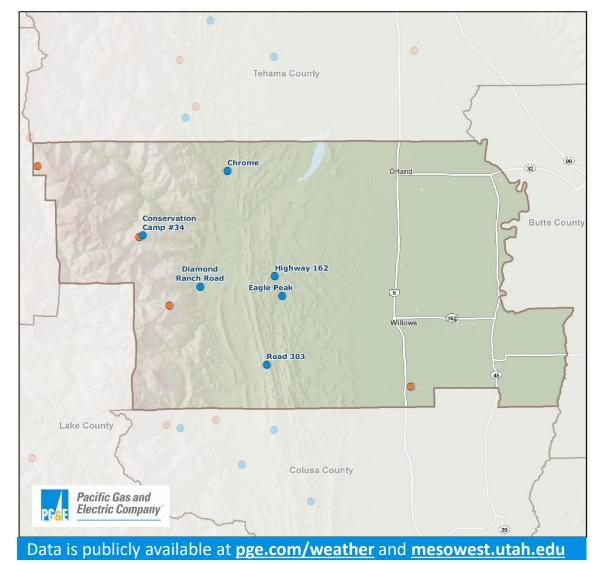
Targeting one station roughly every 20 circuitmiles in high fire-threat areas by 2022.

6

Weather stations installed to date

MAP LEGEND:

- PG&E Weather Station installed
- PG&E Weather Station planned
- Remote Automated Weather Stations (RAWS)
 within PG&E's service area





High-Definition Cameras

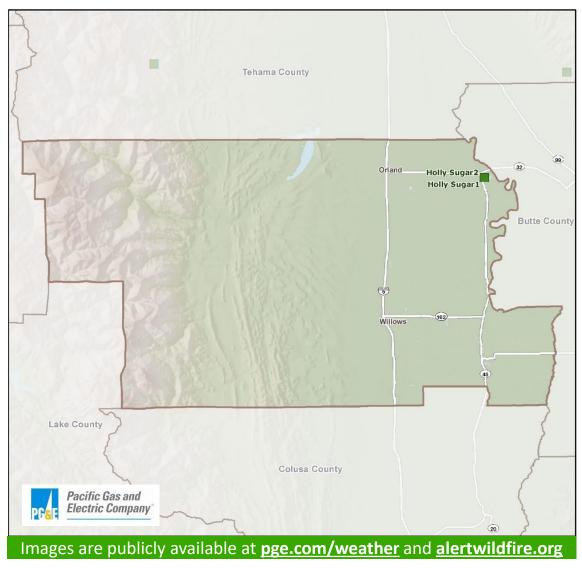
We're supporting the installation of new HD cameras in high fire-threat areas, which allow PG&E and first responders to monitor wildfires in real time.

This will increase our coverage to more than 90 percent of our service area by 2022.

2Cameras installed to date

MAP LEGEND:

- PG&E HD Camera installed
- PG&E HD Camera planned
- Non-PG&E Camera that looks into PG&E's service area



^{*}Two cameras overlap on Holly Sugar

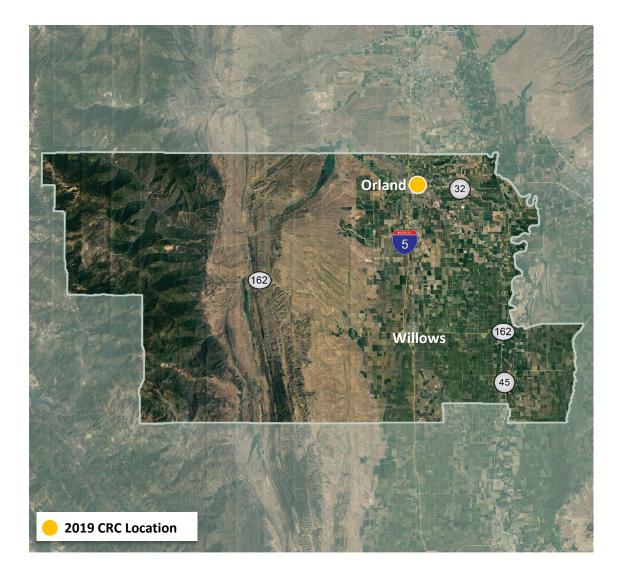


Community Resource Center (CRC) Locations

Our goal is to work together to identify and secure multiple CRC locations within each county/tribe in our service area.

Based on input from the County, we are not currently pursuing CRC locations in Glenn County.

During a PSPS event, locations will be made available on pge.com/pspsupdates and via social media, local news and radio.





Electric Power Supply Glenn County

Transmission lines carry high-voltage electricity over long distances, like the freeways of the electric system. The higher the voltage, the more power that line is carrying.

Electric Transmission Line

60 kV

115 kV

230 kV

500 kV

PG&E Facility

Substation

2019 Peak Load: 84 MW

This data is also publicly available at:

- www.pge.com/wildfiremitigationplan
- County Energy Commission (CEC) website: https://cecgis-caenergy.opendata.arcgis.com/





Local Sectionalizing

We're installing new sectionalizing devices to limit the number of customers impacted during a PSPS event.

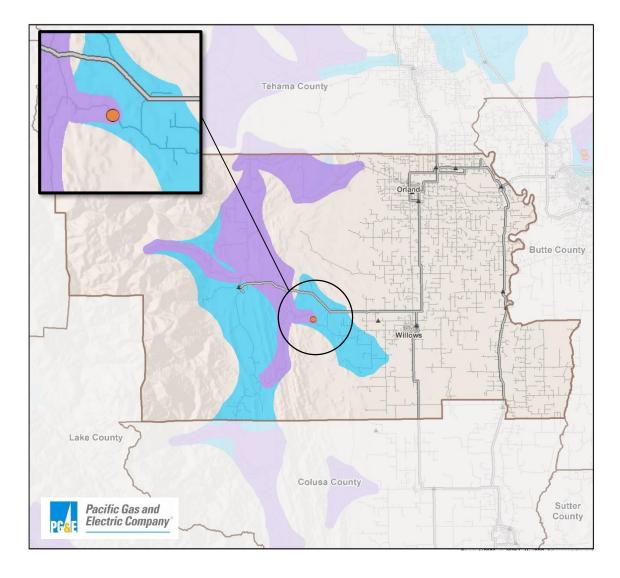


1 DEVICE

MAP LEGEND:

- Potential distribution sectionalizing device planned
- Area potentially removed from scope due to planned sectionalizing (distribution level event only)
- New area now in scope
- No change from 2019
- ▲ PG&E Substation

Note: Map reflects projects in planning and/or underway and is subject to change. Some data points may overlap.





System Hardening Overview

Our system hardening work involves:

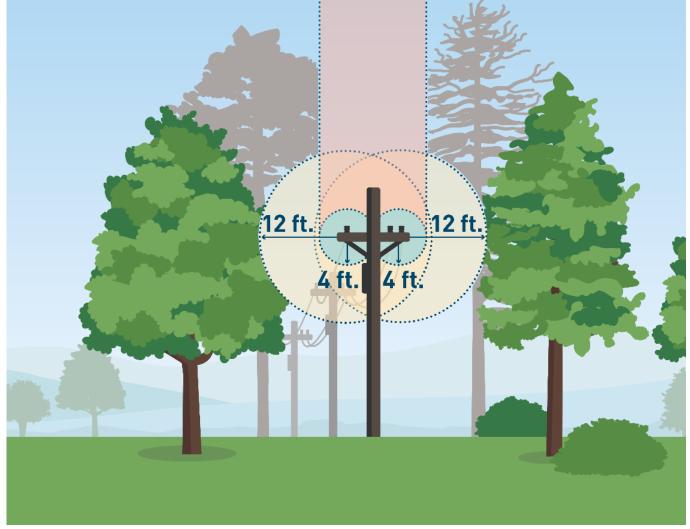
- Installing stronger and more resilient poles that will be set deeper in the ground to better withstand high winds.
- Re-framing poles to increase the separation of the conductors.
- Replacing bare conductors with larger, covered conductors.
- Installing more poles than previously needed to support the weight of the covered conductor and to meet new utility standards.
- No longer using trees to support PG&E infrastructure.
- Adding down guys and anchors to some poles to prevent leaning or falling.
- Targeted undergrounding of select overhead lines.





Enhanced Vegetation Work in Your Community

We are exceeding state vegetation and fire safety standards by addressing vegetation that poses a higher potential for wildfire risk to maximize the safety of our customers and communities.



30-Year Weather Analysis





30-Year Weather Analysis

PG&E analyzed 30 years of high-resolution data covering ~80 billion data points, as well as 26 years of wildfire data in our service area to help determine the average likelihood and frequency of a PSPS event.

The following weather model data points were analyzed:



Wind Speed



Dead Fuel Moisture (4 Types)



Wind Gust



Live Fuel Moisture



Temperature



Fosberg Fire Weather Index



Relative Humidity



National Fire Danger Rating

System Outputs (4 Main Outputs)



Precipitation

During an event, the meteorology model is updated and run 4x daily.

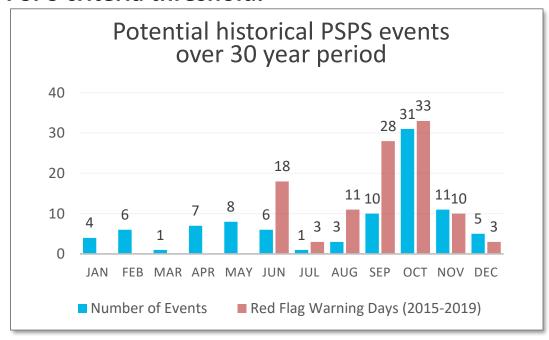
PG&E collaborates with the following agencies:

- ✓ National Weather Service
- Northern and Southern
 California Geographic Area
 Coordination Center
- ✓ External fire agencies
- San Jose State University Fire Weather Research Lab

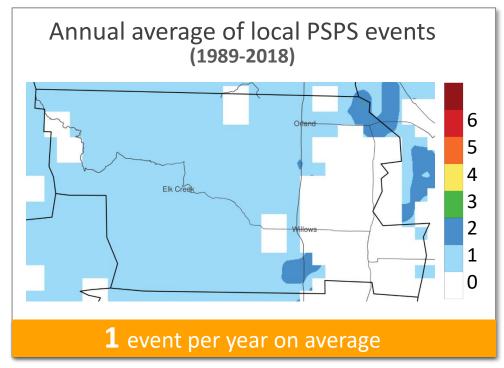


30-Year Weather Analysis Glenn County

The following is a conservative estimate of potential PSPS events in your community based on 30 years of data when Fire Potential Index (FPI) and Outage Producing Winds (OPW) met the PSPS criteria threshold.



NOTE: Additional factors are considered before turning power off for safety such as **red flag warning days** or **conditions on the ground during winter months.**



Event Coordination and Information Sharing





Emergency Operations Center (EOC) Coordination

PG&E will offer the following resources to support local EOCs during a PSPS event:



Local EOC Liaison can be embedded in a county or tribe's local EOC, upon request.



Agency Representative will be assigned to each county and tribe to act as a single point of contact during an event.



GIS Technical Specialist can be embedded in a county or tribe's local EOC upon request; remote support is also available, if preferred.



Third-Party Representative such as cities, counties, tribes, water agencies and telecom providers may request to send a representative to observe the PG&E EOC during a PSPS event.

YOUR LOCAL REPRESENTATIVES

Jeff Lee

Public Safety Specialist leads outreach to State and County OES and other emergency responders

Phone: 530-229-4753 | Email: Jeffrey.Lee@pge.com

Dan Blair

Local Public Affairs leads outreach to city/county elected and staff **Phone:** 530-592-5004 | **Email:** Dan.Blair@pge.com

Carl Schoenhofer

Local Customer Experience Division Lead leads outreach to PG&E community and customer groups/associations

Phone: 707-320-3201 | Email: Carl.Schoenhofer@pge.com

Reno Franklin

Tribal Liaison leads outreach to tribal groups **Phone:** 707-694-4783 | **Email:** Reno.Franklin@pge.com

Paul Moreno

 $\textbf{Media Rep} \ \text{serves as main point of contact between PG\&E and local media}$

Phone: 530-896-4290 | Email: Paul.Moreno@pge.com



In-Event Communications

Once PG&E's Emergency Operations Center (EOC) is activated, we will provide information through the following:



Regional Twice-Daily Briefings at the Local Level

- Hosted by Agency Representatives for counties and tribes.
- Event-specific information changes will be reviewed.
- Opportunity to resolve local issues and ask questions.



Once-Daily Cooperators Call

- Call will be 15-30 minutes and provide the latest high-level updates.
- Local and tribal agencies within the service area are welcome to join the call, as well as other public safety partners (i.e., telecom, water providers, transportation agencies, CCAs, etc.)

When possible, we will strive to provide timely information to emergency service agencies in advance of notifying customers.



Event-Specific Information

- Up-to-date information will be provided twice-daily at regular intervals.
- Information provided will include counties and tribes in scope, estimated time
 of de-energization, estimated time of restoration, number of Medical Baseline
 customers and number and types of critical facilitates in scope.



PSPS Agency Portal

The portal includes the following:

Before an Event

PSPS Planning Maps (GIS, KMZ)

Summary of Potentially Impacted Customers

List of Critical Customers (excluding Telecom)

List of Medical Baseline Customers

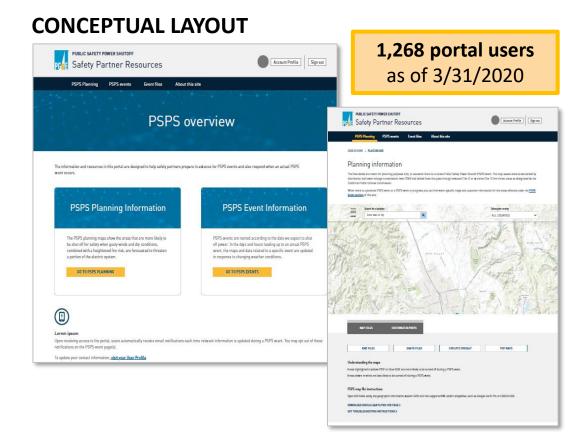
During an Event

Event-specific Information and Maps(GIS, PDF, KMZ)

Activated CRC Location Information

Summary of Affected Customers

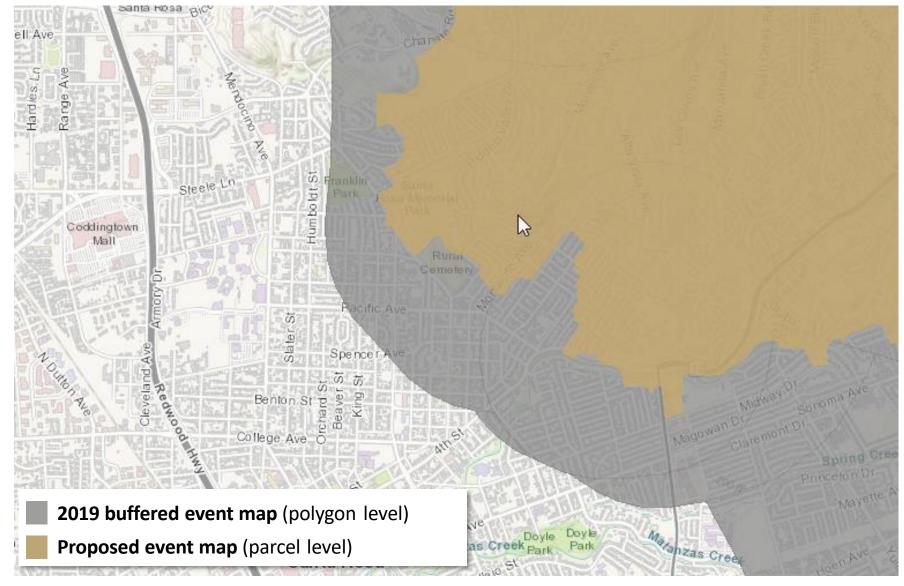
List of Medical Baseline and Critical Customers



NOTE: Though we are going to open the portal to all public safety partners (including telecom, water agencies and hospitals), not all partners will receive confidential customer data.



Sample PSPS Event Map Refinement





Community Resource Centers (CRCs)

CRCs provide customers and residents with a safe, energized, ADA accessible location with basic resources, as well as up-to-date information.

The following resources may be available:





Additional Support for Vulnerable Customers

PG&E is working with the California Foundation for Independent Living Centers (CFILC) to fund resources to help prepare for disasters and extended power outages.





Resources include:



Portable backup power



Emergency preparedness assistance



Accessible transportation



Hotel vouchers and food stipends



Medical Baseline application assistance



Application Process: The CFILC will determine who qualifies for resources. Medical needs and income will be taken into account.

Applications are available online or at Interdependent Living Centers (ILCs) and will be accepted at regional ILC locations.

Your regional CFILC location is: 1161 East Avenue, Chico, CA 95926



PSPS event specific AFN resources will be posted at pge.com/specialresources. Press releases, radio advertisements and leveraging our network of CBOs will also be used to communicate with vulnerable customers when possible during events.

Coordination of resources takes time. Individuals are encouraged to engage with their local ILC and plan before a PSPS event is imminent.



Sharing the Message and Next Steps

You can help your community take steps to prepare:



Encourage customers to update their contact info (Visit pge.com/mywildfirealerts or call 1-866-743-6589)



Inform customers that they may be **eligible for the Medical Baseline Allowance** (Visit **pge.com/medicalbaseline**)



Remind residents to participate in a **local Community**Wildfire Safety Program webinar (Visit pge.com/wildfiresafety)



Share preparedness messages through your **newsletter**, website or social media



Let us know about **other outreach opportunities** and ways we can partner



We want to coordinate with you on the following:

- Contact information
- Portal access
- CRC locations
- Critical facility information
- Event communications

Weather Deep Dive





Probability of Outage Producing Winds (OPW)

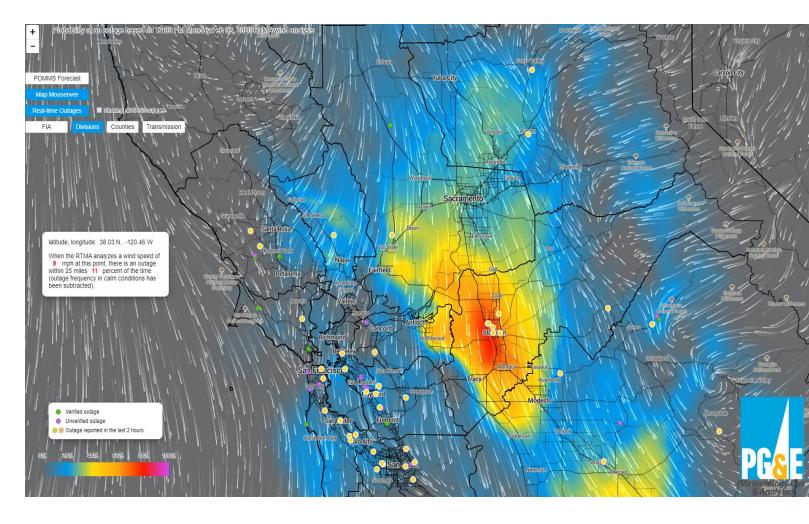
KEY TAKEAWAYS

Datasets/Model

- PG&E 30-year climatology
- Outage activity from 2008 (over 300,000 unplanned events)

Analysis/Results

- Wind speeds were extracted for each outage record per location per hour from climatology
- Numerous wind-outage model fits were tested
- Operational high-resolution model predicts the frequency of unplanned outages based on location-specific windoutage model





PG&E Utility Fire Potential Index (FPI)

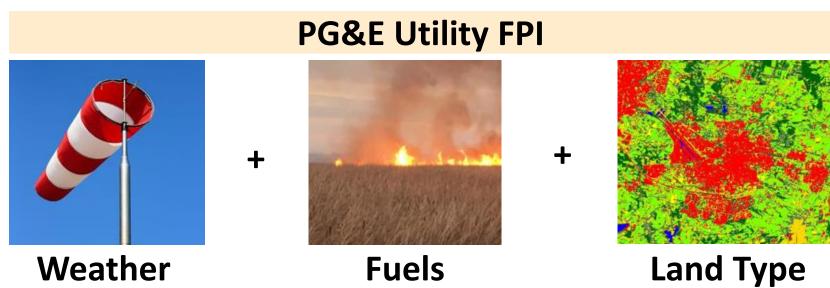
KEY TAKEAWAYS

Datasets/Model

- PG&E 30-year climatology
- Fire Occurrence dataset from USFS (1992 2018)

Analysis/Results

- Benchmarked FPI against agency and utility best practices
- Evaluated dozens of parameters to determine best predictors of large fires
- Constructed over 4,000 FPI model variants for predictive analysis
- PG&E FPI outputs the probability of large fire occurrence



Wind Speed, Temperature and Humidity

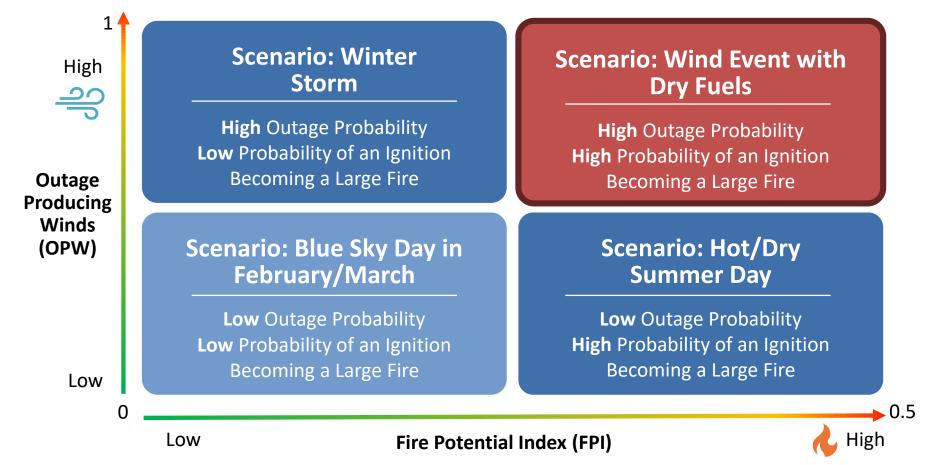
Dead Fuel Moisture and Live Fuel Moisture

Forest, shrub/brush or grass-land dominated



Integrating FPI and OPW Models

The **Utility Fire Potential Index** and **Outage Producing Winds Model** are used in unison to analyze what conditions existed during the most catastrophic fires in California history to forecast when ignitions are most likely to intensify into catastrophic fires.



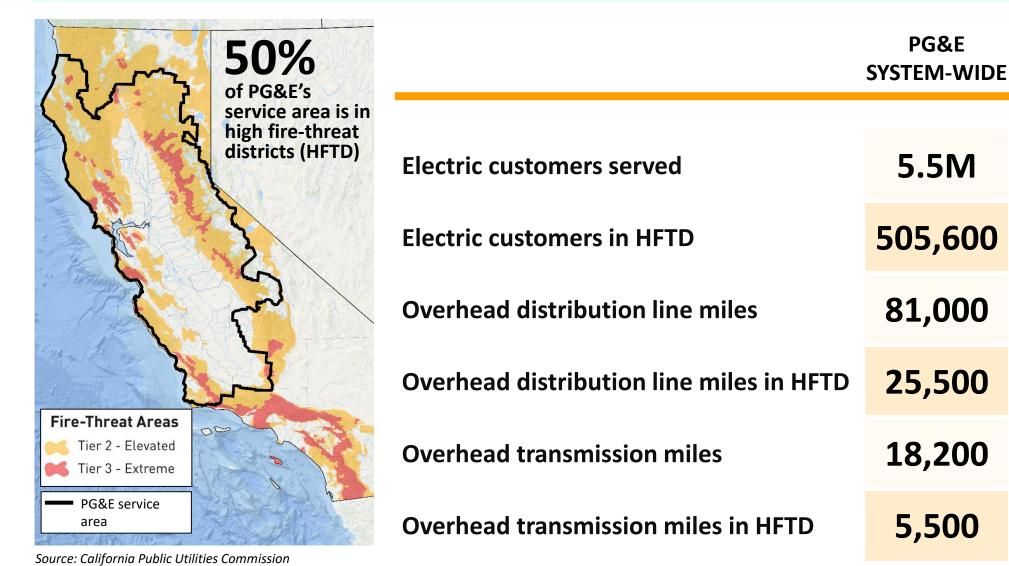


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Wildfire Risks Across PG&E's Service Area



Numbers are approximate

GLENN

COUNTY

15,500

200

1,182

68

224

4



Wildfire Mitigation Plan 2019 vs 2020 By the Numbers

PROGRAM	COMPLETE	TARGET	PROGRESS
SYSTEM HARDENING Stronger poles, covered lines and/or targeted undergrounding	171 LINE MILES	241 LINE MILES	65 LINE MILES
ENHANCED VEGETATION MANAGEMENT Inspecting, pruning and removing vegetation	2,498 LINE MILES	1,800 LINE MILES	811 LINE MILES
HIGH-DEFINITION CAMERAS Improving real-time monitoring of high-risk areas and conditions	133 CAMERAS	200 CAMERAS	27 CAMERAS
WEATHER STATIONS Enhancing weather forecasting and modeling	426 STATIONS	400 STATIONS	61 STATIONS
SECTIONALIZING DEVICES Separating the grid into small sections for operational flexibility	287 DEVICES	592 DEVICES	147 DEVICES
TRANSMISSION LINE SWITCHES Enabling targeted transmission outages to lessen downstream customer impacts	O DEVICES	23 DEVICES	20 DEVICES
COMMUNITY RESOURCE CENTERS Safe, energized locations for customers to receive basic resources and information	111 SITES ACTIVATED	201 SITES TARGETED	1 SITE READY

2019



Prioritizing Wildfire Mitigation Activities

PG&E prioritizes wildfire mitigation work by evaluating which circuits in our service area are at the highest risk for wildfire. This is a dynamic and ongoing process.

We look at three key factors when determining a circuit's risk for wildfire:

- Likelihood of an ignition
- How quickly a fire could spread in that location and potential impact
- How easy it is to get in and out of the area in the event of a fire

Working to include **PSPS likelihood** as an additional criteria

Circuits at the greatest risk for wildfire are prioritized for:

Inspections and repairs

Enhanced vegetation management

System hardening

NOTE: In some cases, PG&E made changes to the prioritization order of circuits based on other factors (i.e., environmental issues, safety, planned projects, geographic access and weather).



Undergrounding

The process for identifying priority circuits for undergrounding includes the following steps:



IDENTIFY overhead circuits with highest wildfire risk.



REVIEW of circuits by PG&E or contract staff specialized in electric systems, fire prevention and suppression, construction and environmental impact.



CONSIDER if elimination of high-risk assets is possible (including if customers or communities can be served through alternate means).



DETERMINE the most effective, timely and feasible approach. If undergrounding is not feasible, a hardened and/or relocated overhead system can be pursued.



CONFIRM chosen risk mitigation approach and design (asset elimination, undergrounding or hardened overhead) will reduce wildfire risk.

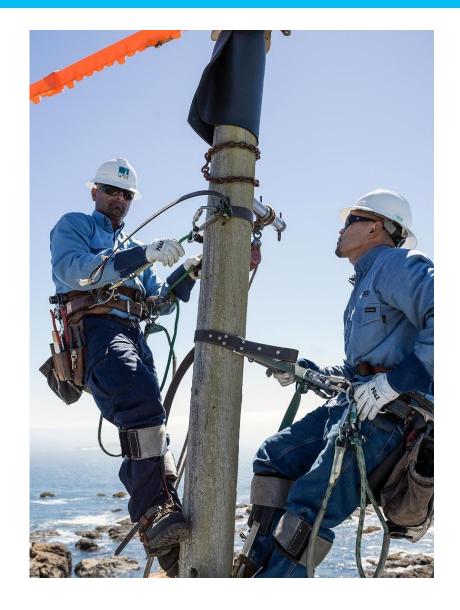
We will engage with local officials throughout this process to discuss decision factors and considerations. **Note that** undergrounding is a complex process that can take years to complete. We will continue to take immediate wildfire safety measures while work is planned.



Inspection Plans

Our updated System Inspections Program evaluates our electric infrastructure on an ongoing basis to find and fix potential risks to the safety and reliability of our system.

- Continuing in 2020, we will evaluate Tier 2 and Tier 3 areas more frequently, while infrastructure in nonhigh fire-threat areas will be inspected at least every six years.
- In 2020, we plan to inspect more than 15,000 miles of electric lines, which includes:
 - All lines in Tier 3 areas
 - One-third of all lines in Tier 2 areas
 - Additional line miles in non-high fire-threat areas





Microgrids – Community Microgrid Enablement Program (CMEP)

PG&E is exploring the ability to support communities and customers to **develop their own** multi-customer or community-level microgrids as a way to reduce PSPS impacts.

This may include **sponsoring enhanced technical support** for project development, **project tools** and in some cases, **one-time matching funds**.

To qualify for this program, microgrid projects must meet the following criteria:

- Serve areas that experienced a PSPS event in 2019
- Located in an area that could be safely energized during a PSPS event
- Serve one or more critical facility
- Supported by local governments and stakeholders

This program is currently under development and **pending approval by the California Public Utilities Commission (CPUC)**.





2019 PSPS Overview

EVENT DETAILS	JUNE 8 - 9	SEPT 23 - 26	OCT 5 - 6	OCT 9 - 12	OCT 23 - 25	OCT 26 - NOV 1	NOV 20 - 21
CUSTOMERS IMPACTED	~22,000	~49,000	~12,000	~735,000	~179,000	~968,000	~49,000
COUNTIES IN SCOPE	5	7	3	35	18	39	11
CRCs OPEN	4	8	2	33	28	77	34
PEAK WIND GUSTS	63 mph	58 mph	51 mph	77 mph	80 mph	102 mph	75 mph
DAMAGE/HAZARDS	5	4	2	116	26	554	15
AVG. OUTAGE DURATION AFTER ALL CLEAR	5 HRS	7 HRS	4 HRS	25 HRS	5 HRS	22 HRS	10 HRS
AVG. OUTAGE DURATION TOTAL	16 HRS	16 HRS	14 HRS	37 HRS	24 HRS	55 HRS	25 HRS

Note: All data is subject to change based on ongoing data reconciliation.



2019 PSPS Overview for Glenn County

EVENT DETAILS	OCT 9 - 12	OCT 26 - NOV 1	NOV 20 - 21
CUSTOMERS	~1,600	~40	~400
CRCs OPENED	1	0	0
CRC VISITORS	~5	N/A	N/A

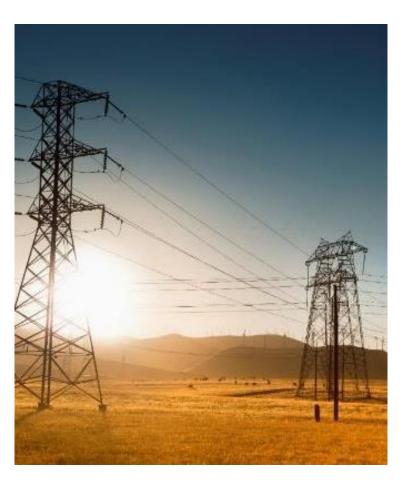
Note: All data is subject to change based on ongoing data reconciliation.



PSPS Transmission-level Criteria

As part of our wildfire risk monitoring, we will review transmission lines in the potentially affected area.

- While no single factor will drive a PSPS, some factors for a transmission-level event include:
 - Severity and duration of weather
 - Site-specific environmental conditions that increase wear
 - Age and condition of the asset
 - ✓ Status of recent repairs
 - Real-time field observations
- If it is determined that a transmission line might be de-energized for safety, PG&E works closely with the California Independent System Operator to assess the system impacts.



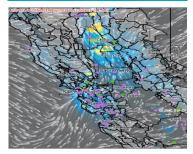


PSPS Decision Framework Summary

Distribution

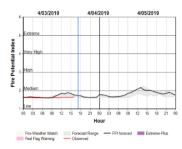
(i.e., below 60kV) and select 115 kV

Outage Producing Winds



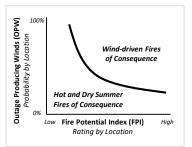
Localized quantification of outage probability based on 11-year outage history and 30-year climatology analysis

Fire Potential Index



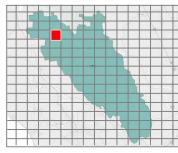
Calibrated to PG&E's service area using 30-year climatology, historical fire occurrence and fire spread modelling

Extreme-Plus Threshold @



OPW compared to FPI and normalized by location indicates a threshold for mitigating historical winddriven fires of consequence

Threshold Analysis



OPW vs. FPI analyzed at the 3 km x 3 km grid across all of PG&E's service area during a potential PSPS event

Safety Shutoff Decision



Decision is made at the meteorological impact area

Transmission

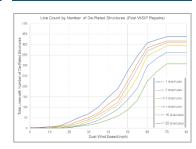
(i.e., 60/70kV, 115kV, 230 kV, 500 kV)

Asset Health



Risk assessed based on enhanced and accelerated inspections for all T-line structures in high fire-threat areas in Q4 2018 – Q2 2019

Wind Speed Threshold



Determined wind speed threshold based on repair history and asset conditions; most conservative rating assumed for an entire T-line

CAISO Coordination



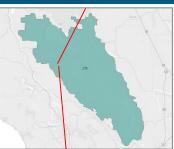
Real-time coordination studies with CAISO determine- direct and indirect impacts to grid integrity

Public Safety Impact



Grid stability and potential de-energization impacts considered (i.e., nonconsequential loss, generation loss)

Safety Shutoff Decision



Decision is made on a transmission line level that intersects within a weather footprint



Critical Facility Customers

PG&E provides certain critical facility customers* with advanced communication (where possible), prioritized restoration and other resources in advance of and/or during planned outages (e.g., Public Safety Power Shutoffs) and unplanned outages (e.g., winter storms).

Facilities Identified As Critical Include:



Emergency Services Sector (Police, Fire, Emergency)



Government Facilities Sector (Schools, Jails, Prisons)



Healthcare and Public Health Sector (Health Departments, Medical Facilities)



Energy Sector (Public/Private Utility Facilities)



Water and Wastewater Systems Sector (Water/Wastewater facilities)



Communications Sector (Communication Infrastructure)



Chemical Sector (Chemical Manufacturing, Maintenance or Distribution facilities)

Additionally, PG&E also considers
major local and national public
transportation centers (e.g., BART,
ferries and airports) as critical facility
customers which means they also
receive this additional support.

Critical Facility Identification & Agency Outreach

- PG&E has an existing process that identifies critical facility customers based on the criteria referenced above.
- Beginning in May, we will provide cities, counties and tribal governments with a list of all critical facility customers within their jurisdiction through our secure PSPS portal (excluding commercially sensitive customer data, including telecommunication facilities). Agencies will be encouraged to review and provide feedback to this existing list in alignment with CPUC criteria.

^{*}As defined by the California Public Utilities Commission in Public Safety Power Shutoff Decision 19-05-042.



Medical Baseline Program

What is Medical Baseline?

- The Medical Baseline Program provides financial assistance to residential customers that have special energy needs due to certain qualifying medical conditions.
- Eligible customers may receive a "standard" Medical Baseline quantity of approximately 500 kilowatt-hours (kWh) of electricity and/or 25 therms of gas per month, in addition to regular baseline quantities.

Who Qualifies for Medical Baseline?

A licensed medical practitioner must certify that a full-time resident in your home is:

- Dependent on life-support equipment used in the home.
- A paraplegic, hemiplegic, quadriplegic or multiple sclerosis patient with special heating and/or air-conditioning needs.
- A scleroderma patient with special heating needs.
- Being treated for a life-threatening illness, compromised immune system or other medical condition with special heating and/or air-conditioning requirements necessary to sustain the patient's life or prevent deterioration of the patient's medical condition.

Applying for Medical Baseline

- Complete the "Medical Baseline Allowance" application form. Forms can be found by visiting pge.com/medicalbaseline.
- Mail the completed and signed application form to:

PG&E Attention: Medical Baseline P.O. Box 8329 Stockton, CA 95208





Where to Go for Additional Information



DO WE HAVE YOUR CURRENT CONTACT INFORMATION?

pge.com/mywildfirealerts





WEATHER AND PSPS FORECASTING

Live weather information, a 7-day PSPS potential lookahead and images from PG&E's high-definition cameras deployed in high fire-threat areas.

pge.com/weather



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BACKUP POWER

Information on backup power options, safety tips, financing options, a marketplace to search major backup power retailers and more.

pge.com/backuppower





SAFETY ACTION CENTER

Information about wildfire risks and what customers can do before, during and after an emergency to keep their home, family or business safe.

safetyactioncenter.pge.com



PREPARING FOR OUTAGES

Tips for making a safety plan, building an emergency kit, planning for medical needs and more.

prepareforpowerdown.com





KEEP UP TO DATE
DURING A PSPS EVENT

pge.com/PSPSupdates





Additional Preparedness Resources



prepareforpowerdown.com

Statewide education and awareness resource, led jointly by PG&E, San Diego Gas & Electric and Southern California Edison at the direction of the CPUC

ready.gov

Disaster preparedness information from the U.S. Department of Homeland Security

readyforwildfire.org

CAL FIRE's wildfire preparedness website

cpuc.ca.gov/wildfiresinfo

Information on the CPUC's wildfire safety efforts

caloes.ca.gov

California Governor's Office of Emergency Services website

cafiresafecouncil.org

California Fire Safe Council website

noaa.gov

National Oceanic and Atmospheric Administration website