## PG&E Public Safety Power Shutdown, an Overview

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## **Topics for tonight**

1. What is the PG&E Public Safety Power Shutoff (PSPS) Program?

**Cupertino ARES/RACES** 

- 2. What is the risk to Cupertino?
- 3. And, it if does happen, what will we do?



### The following is the PG&E presentation on their

**Community Wildfire Safety Program** 

This is provided here for completeness on this topic.





### **Community Wildfire Safety Program**



### REAL-TIME MONITORING AND INTELLIGENCE

- Coordinating prevention and response efforts by monitoring wildfire risks in real time from our Wildfire Safety Operations Center
- Expanding our network of PG&E weather stations to enhance weather forecasting and modeling
- Supporting the installation of new high-definition cameras in high fire-threat areas



### NEW AND ENHANCED SAFETY MEASURES

- Further enhancing vegetation management efforts to increase focus on vegetation that poses a higher potential for wildfire risk
- Conducting accelerated safety inspections of electric infrastructure in high fire-threat areas
- Disabling automatic reclosing of circuit breakers and reclosers in high fire-risk areas during wildfire season
- Proactively turning off electric power for safety (Public Safety Power Shutoff) when gusty winds and dry conditions combine with a heightened fire risk

### SYSTEM HARDENING AND RESILIENCY

- Installing stronger and more resilient poles and covered power lines, along with targeted undergrounding
- Upgrading and replacing electric equipment and infrastructure to further reduce wildfire risks
- Working with communities to develop new resilience zones to provide electricity to central community resources during a Public Safety Power Shutoff event

Following the wildfires in 2017 and 2018, some of the changes included in this presentation are contemplated as additional precautionary measures intended to further reduce future wildfire risk.

## Public Safety Power Shutoff (PSPS)



Source: California Public Utilities Commission

- Beginning with the 2019 wildfire season, we are expanding our Public Safety Power Shutoff program to include all electric lines that pass through high fire-threat areas – both distribution and transmission.
- The most likely electric lines to be considered for shutting off for safety will be those that pass through areas that have been designated by the CPUC as at elevated (Tier 2) or extreme (Tier 3) risk for wildfire.

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Following the wildfires in 2017 and 2018, some of the changes included in this presentation are contemplated as additional precautionary measures intended to further reduce future wildfire risk.

# Why Everyone Should Be Prepared

PG&E's energy system relies on power lines working together to provide electricity across cities, counties and regions.

This means power may be shut off, even if you do not live or work in an area experiencing extreme weather conditions.

While the most likely electric lines to be considered for shutting off for safety will be those that pass through high fire-threat areas, any of PG&E's more than 5 million electric customers could be impacted and should be prepared.



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## **Public Safety Power Shutoff Criteria**

We will call a Public Safety Power Shutoff when gusty winds combine with a heightened fire risk. We monitor conditions across our system and evaluate whether to proactively turn off electric lines.

While no single factor will drive a Public Safety Power Shutoff, some factors include:

A RED FLAG WARNING declared by the National Weather Service



LOW HUMIDITY LEVELS generally 20% and below

FORECASTED SUS

FORECASTED SUSTAINED WINDS GENERALLY ABOVE 25 MPH AND WIND GUSTS IN EXCESS OF APPROXIMATELY 45 MPH, depending on location and site-specific conditions such as temperature, terrain and local climate



**CONDITION OF DRY FUEL** on the ground and live vegetation (moisture content)



ON-THE-GROUND, REAL-TIME OBSERVATIONS from PG&E's Wildfire Safety Operations Center and field observations from PG&E crews

# PSPS Event Notifications

Extreme weather threats can change quickly. Our goal, dependent on weather, is to provide customers with advance notice prior to turning off power. We will also provide updates until power is restored.

### Timing of Notifications (when possible)

~48 HOURS before electricity is turned off

~24 HOURS before electricity is turned off

JUST BEFORE electricity is turned off

DURING THE PUBLIC SAFETY OUTAGE

### **ONCE POWER HAS BEEN RESTORED**

### City/County/Agency Notifications



We will make every attempt to provide notice in advance of notifying customers through:

- · Phone calls/emails to primary contacts
- Automated notifications to send alerts through multiple channels
- Provide customer alerts to share via channels, such as city or county website, Nixle, Nextdoor and Reverse 911

### **Customer Notifications**

We will attempt to reach customers through calls, texts and emails. We will also use social media and keep local news and radio outlets informed and updated.

Following the wildfires in 2017 and 2018, some of the changes included in this presentation are contemplated as additional precautionary measures intended to further reduce future wildfire risk.

# Working to Restore Power

We will only restore power when we are certain it is safe to do so. We expect to be able to visually inspect the system for damage and restore power to most of our customers within 24 to 48 hours after extreme weather has passed.

WEATHER	PATROL &	ISOLATE &	RESTORE	NOTIFY
ALL CLEAR	INSPECT	REPAIR DAMAGE	POWER	CUSTOMERS
After the extreme weather has passed and it's safe to do so, our crews begin patrols and inspections.	Crews visually inspect our electric system to look for potential weather-related damage to the lines, poles and towers. This is done by vehicle, foot and air during daylight hours.	Where damage is found, crews work to isolate the area so other parts of the system can be restored. Crews work safely and as quickly as possible to make repairs.	Once it is safe to energize, a call is made to the PG&E Control Center to complete the energization process. Power is then restored to customers.	Customers are notified that power has been restored.

## Because extreme weather can last several hours or days, for planning purposes, we suggest customers prepare for outages that could last longer than 48 hours.

Following the wildfires in 2017 and 2018, some of the changes included in this presentation are contemplated as additional precautionary measures intended to further reduce future wildfire risk.



## **Working With Our Customers to Prepare**



Reaching out to approximately 5 million customers and asking them to update their contact info at pge.com/mywildfirealerts



Holding answer centers and open houses (as needed) in advance of and during wildfire season

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Mailing postcards to customers that do not have contact information on file



Providing tenant education kits to Master Meter customers

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Conducting additional outreach to customers in high fire-threat areas through direct mail, preparedness checklist and email campaign



Placing calls and doing additional outreach to Medical Baseline and Medical Baselineeligible customers in high fire-threat areas

	ADS	
=		-

Launching broad public safety advertising campaign



Continuing to share information through pge.com/wildfiresafety



Partnering with community leaders, first responders and public safety authorities around PSPS preparedness and coordination



Engaging with organizations for our customers who have specific needs to explore ways we can partner

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### **Preparing for Public Safety Power Shutoffs**

The threat of extreme weather and wildfires continues to grow. Start preparing your plan using the checklist below:

### PLANNING BASICS:

- Update your contact information Visit pge.com/mywildfirealerts or call us at 1-866-743-6589.
- Keep a hard copy of emergency phone numbers on hand
- Build or restock your emergency supply kit Stock supplies to last a week — include flashlights, fresh batteries, first aid supplies, food, water and cash.
- Designate an emergency meeting location
- Practice manually opening your garage door





### We welcome your feedback and input

For questions regarding PG&E's Community Wildfire Safety Program, please direct customers with questions to:

- Call us at 1-866-743-6589
- Email us at wildfiresafety@pge.com
- Visit pge.com/wildfiresafety



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- 1. A closer look at the risk areas
- 2. Where does the power come from?
- 3. How does the power get here?



## **Fire Threat Map** *CPUC, January 2018*

Maps are produced by the California Public Utilities Commission

- 1. Tier 1 Tree mortality high hazard zones.
- 2. Tier 2 Elevated risk\*
- 3. Tier 3 Extreme risk\*

\*Risks (including likelihood and potential impacts on people and property) are from utility associated wildfires



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## Fire Threat Map, Bay Area

Public Utilities Commission, January 2018



## Fire Threat Map, Cupertino

Public Utilities Commission, January 2018



## What is the risk to Cupertino?

### 1. A closer look at the risk areas

- Only a small portion of Cupertino, consisting of mountain terrain, is in Tier 2.
- Some unincorporated County areas for which Cupertino has some 'influence' is in the Tier 2 zone.
- 2. Where does the power come from?



### PG&E's electric system

PG&E's electric system is designed and built to deliver safe, reliable power to customers in Northern and Central California. PG&E produces or buys its power from a mix of conventional and renewable generating sources, which travel through our electric transmission and distribution systems to reach our customers.

#### PG&E-owned generators

PG&E's electricity is generated by many producers. The process starts with a diverse mix of generating sources. PG&E's generating plants make electricity by hydropower, gas-fired steam and nuclear energy.

#### 3 Out-of-state generators

We also buy electricity for our customers from sources outside of PG&E's area, which is transmitted across several states.

#### 2 Independent generators

PG&E acquires electricity from over 400 plants owned by independent power producers or qualified facilities, and sold to PG&E for resale to our customers.

#### 4 Transmission system

Electricity is carried over the bulk electric grid, a "network" of high-voltage transmission lines that connect power plants to substations, and link our system to neighboring ones.

#### 5 Substations

Substations are critical junctions and switching points in the electric system, connecting the transmission system to the distribution one. Substations use transformers to lower the voltage of electricity.

#### distribution system to the customer – industrial, commercial, agricultural or residential.

Individual services or "drops" connect the

7 Individual services

#### 6 Distribution system

The distribution system links the transmission system and most customers. It includes: main or "primary" lines and lower voltage or "secondary" lines, which deliver electricity either overhead or underground; distribution transformers, which lower voltage to usage levels; and switching equipment to permit the lines to be connected together in various combinations and patterns.

## Where does the power come from?

### All Power Stations



California

## Where does the power come from?

### Major Power Stations

• The top about 2	o 5 power g 20% of the s	enerating state's ge	g plan enerat	ts in CA produce ed power.		Spastá Spastá
Туре	Plant			Location	MW	1 mi zhan ()
Natural Gas	atural Gas Moss Landing Power Plant Moss Landing, CA 2		2,802.0			
Nuclear Diablo Canyon Power Plant		San Luis Obispo County	2,240.0	Oroville		
Natural Gas	Natural Gas AES Alamitos LLC Gas Power Plant Long Beach, CA		Long Beach, CA	2,025.0		
Natural Gas	Ormond Beach	Gas Power P	Plant	Oxnard, CA 1,516.0		The Geysers Sacramento
Natural Gas	AES Redondo LL	_C Gas Powe	r Plant	Redondo, CA 1,343.0		Cosumper
· · · · · · · · · · · · · · · · · · ·					Pittsburg	
		Greater	% of			San Francisco Altamont
Туре	CA Total (MW)	Bay Area**	CA total	Locations		
Natural Gas	28,035.0	7,383.0	26%	Moss Landing, Pittsburg	, Antioch	Heims
Hydro	6,235.6	2,444.6	39%	Shasta & Oroville Dams		Moss Landing
Solar	6,158.0					
Wind	4,081.0	576.0	14%	Altamont Pass, Livermo	re	
Nuclear	2,240.0					Topaz
GeoThermal	1,457.0	926.0	64%	The Geysers (East of Clo	verdale)	Diablo Canvon & Tehachapi
Thermal	1,286.0					La Paloma SAlta OSEGS
Biomass	615.6	45.4	7%	various		Castaic
Coal	55.0					Ormond Beacher Los Angeleuntainview Desert
Grand Total	50,163.2	11,375.0	23%			AES Redondo
**Greater the geogr	Bay Area totals aphic location o	are rough f California	estimate 's major	es and are based on power stations.		AES Alamitos San Gorgonio Calenergy
$\mathbf{W}$	$\mathbf{\Lambda}$	$\sim$	~		L	ocation of some major power stations in California Nuclear, O Gas, OHydroelectric, OWind, OSolar, OGeothermal
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# How does the power get here?

## 1. Very simplified view...

- North County dams and geothermal plants Output
   North Bay Area substations
- Altamont Pass Wind Farm Substation
  Fremont Substation
- Moss Landing Detcalf Energy Center D San Jose, Monta Vista Substation, others



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## What is the risk to Cupertino?

### **Conclusions?**

- Only a small portion of Cupertino, consisting of mountain terrain, is in Tier 2, and some unincorporated County areas are in Tier 2 and 3.
- ~65% of our power comes from natural gas plant fairly close to us, with the Moss Landing plant being the largest
- ~20% comes from hydroelectric (Shasta + Oroville Dams)
- ~8% from geothermal sites (*The Geysers* up north)
- There is very little power generation within Santa Clara Valley.
- Power for the Bay Area primarily comes from areas outside of our urban environment, with many of those areas subject to Tier 2 and Tier 3 risk factors.
- Thus PG&E's statement...

"While the most likely electric lines to be considered for shutting off for safety will be those that pass through high fire-threat areas, any of PG&E's more than 5 million electric customers could be impacted and should be prepared."

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## Has PG&E Triggered a PSPS?

### ... YES

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- June 6<sup>th</sup>, 2019: NWS issued a Fire Weather Watch for the Sacramento Valley and Northern San Joaquin Valley.
- June 7<sup>th</sup>: NWS Sacramento upgraded their Fire Weather Watch with a *Red Flag Warning*. Decision made by PG&E Officer-in-Charge to de-energize.
- June 8<sup>th</sup> 0615: de-energization complete; impacted Napa, Yolo, and Solano counties consisting of 22,000 customers.
- PG&E crews found five instances of wind-related issues, including damage to PG&E service drops and a branch in contact with a power line that PG&E had proactively de-energized.
- June 9<sup>th</sup>: restored all power by 1800.
- Read the report here: <u>PG&E Public Safety Power</u> <u>Shutoff (PSPS) Report to the CPUC</u>



## What Sonoma County recommended

Sonoma County Gazette, July 14, 2019

- Identify backup charging methods for phones; keep hard copies of emergency numbers
- Plan for any medical needs like medications that need to be refrigerated or devices that require power
- Plan for the needs of pets and livestock
- Build or restock emergency kits with flashlights, fresh batteries, first aid supplies and cash
- Designate an emergency meeting location
- Know how to manually open garage doors
- Ensure any backup generators are ready to safely operate
- Identify the unique needs of your family and loved ones in the area for your emergency plan

The Power of Being Prepared, and additional steps customers can take to prepare for wildfire season and Public Safety Power Shutoffs, visit <u>prepareforpowerdown.com</u>.

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INFO: tel: 1(866) 743-6589 or visit pge.com/wildfiresafety

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## So, what's your conclusion?



### What could we be asked to do?

Almost everything we would do during an earthquake we could end up doing during a PSPS event.

- 1. Monitor the CARES Emergency Net (TAC 1) for updates
- 2. Work with the CCC D.O.C. on staffing, field assignments, tasks, other
- 3. Support the EOC with emergency communications
- 4. Perform Infrastructure Safety Assessments
- 5. Make field observation reports
- 6. Staff ARKs, Fire Stations, pass reports from the community
- 7. Pass ALT911 Reports to County Comm
- 8. Shelter communications if the city opens one
- 9. Shadow City staff
- 10. CCC checks of individuals with Access & Functional Needs

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## If a PSPS did occur here, what is the plan?

### Before the Event, minimally make sure ...

- 1. your family is prepared for a PSPS event and knows what to do.
- 2. your Go-kit is current. Think Earthquake; everything you have for an earthquake also applies to a PSPS event.
- 3. you verify your go-kit contains ...
  - Working AM Radio, Battery-powered (Radio Cupertino, 1670 AM)

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- Car power adaptor cell phone charger
- HT/mobile radio backup power and car power adaptor
- 4. your car always has at least  $\frac{1}{2}$  tank of gas (best generator in town!)
- 5. you have at least one wired (not cordless) home phone
- 6. If you are a **PG&E customer**, sign up for the PG&E alerts... pge.com/mywildfirealerts



## If a PSPS did occur, what is the plan?

# During the Event (assuming it goes 5 days), this is roughly what we might expect (depends on how long a PSPS event lasts):

PS-2 days: PG&E issues a notice that a PSPS will occur in 48 hours

- PS-1 day: Cupertino EOC activates; OES activates CARES; we are directed to monitor, wait for direction from the EOC; scheduled nets for information sharing.
- PSPS: Power Shut-down occurs. CCC receives briefing from the EOC, DOC. CARES provides periodic updates on the net.
- PS+2 day: CARES conducts periodic net check-ins.
- PS+3 day: Cell towers, home VoIP phone systems start to fail. CCC asked to take on specific field assignments: ARKs, Fire Stations, ALT911.

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- PS+4 day: <same>; weather conditions begin to improve
- PS+5 day: PG&E re-energizes. CCC starts de-mobilization per the D.O.C.

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## **Closing thoughts**

- The difference between a PSPS and an Earthquake is that we will know a PSPS is coming.
- Intuitively, the risk of all power lines that come into the Bay Area from all directions being shut down at the same time is not high.
- A large wildland fire event in forested, elevated terrain where transmission lines pass through could result in portions of the Bay Area experiencing a PSPS.
- If you haven't prepared for an Earthquake, now is a good time to start with preparations for a PSPS event.



## References

- 1. Community Wildfire Safety Program (<u>https://www.pge.com/pge\_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/CWSP-Informational-Webinar-Deck.pdf</u>)
- 2. Public Safety Power Shutoff Policies and Procedures (<u>https://www.pge.com/pge\_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/Public-Safety-Power-Shutoff-Policies-and-Procedures.pdf</u>)
- 3. CPUC Fire Safety Rulemaking Background (<u>https://www.cpuc.ca.gov/firethreatmaps/</u>)
- 4. List of power stations in California (<u>https://en.wikipedia.org/wiki/List of power stations in California</u>)
- 5. Energy Maps of California (https://www.energy.ca.gov/data-reports/energy-maps-california)
- 6. California Electric Transmission Line interactive maps (<u>https://cecgis-caenergy.opendata.arcgis.com/datasets/260b4513acdb4a3a8e4d64e69fc84fee\_0</u>)
- 7. PG&E Public Safety Power Shutoff (PSPS) Report to the CPUC (https://www.pge.com/pge\_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/PSPS-Report-Letter-06.21.19.pdf)
- 8. On-line Weather Stations (<u>https://mesowest.utah.edu/</u>)
- 9. PG&E Cameras (<u>http://www.alertwildfire.org/</u>)

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10. CPUC Utility De-Energization Reports http://cpuc.ca.gov/deenergization/



## Thank you Any Questions?



