



Pacific Gas and Electric Company (PG&E)

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Environmental and Energy Study Institute Briefing

Service Area

70,000

SQUARE MILES



Service Area Population

16 million
CALIFORNIANS

(That's 1 in 20 Americans!)

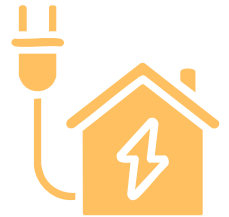


Electric Customers

APPROX.

5.8M

Customers



APPROX.

5.5M Electric
Meters

757 Substations



Distribution

(4kV, 12kV, 21kV, 34kV)

106,681

Circuit miles



Transmission

(60kV, 115kV, 230kV, 500kV)

18,466

Circuit miles





California's Energy Generation Mix

California has diverse forms of energy generation, including **natural gas, solar, nuclear, wind and energy storage.**

CALIFORNIA IS THE

4th

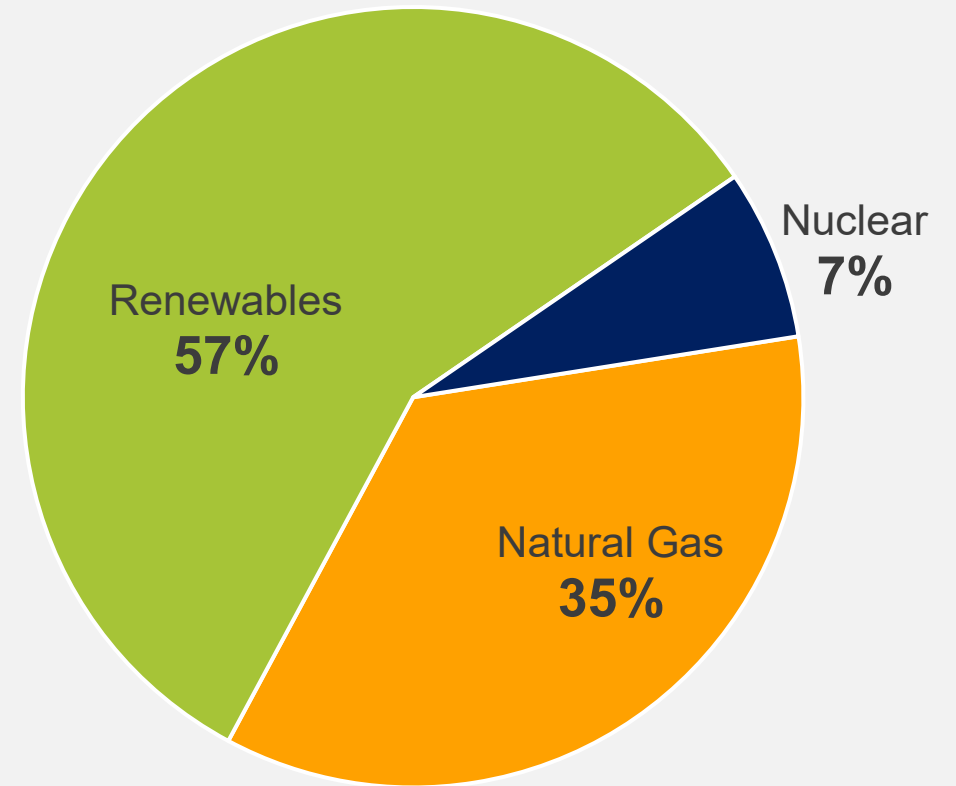
Largest electricity producer in the U.S.

2nd

Largest conventional hydroelectric power producer in the U.S.

Leading state with the most electric vehicles (EVs) and EV charging locations since 2016.

California's Energy Mix 2024



Source: US Energy Information Administration

Balancing Solar Supply with Peak Energy Demand

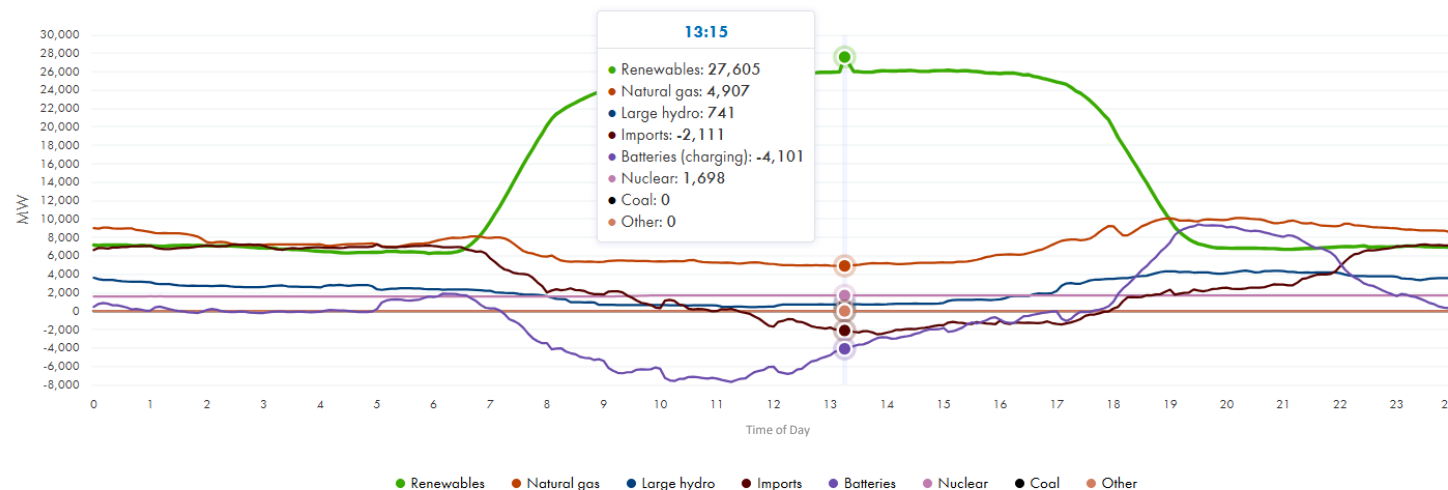


PG&E's duck curve illustrates the challenge of excess supply during midday and sharp peaks in the evening, when solar production declines just as residential consumption rises.

Supply trend

Power separated by resource, on a 5-minute average.

08/14/2025



During these peak periods, we often must rely on costly, fossil-based generation and export excess solar. Flexible demand technologies help balance supply.

Source: CAISO



The Future of Battery Storage



THIRD PARTY-OWNED
**Moss Landing
Power Plant:**

400MW

largest **lithium-ion**
battery energy storage
system in the world

**PG&E Moss Landing
Substation:**

182.5MW

TESLA MEGAPACK SYSTEM
largest **utility-owned**
battery energy system in
the world

MORE THAN

~1,200MW

battery energy storage projects

Currently under
PG&E contract = **>4GWh**

55,000

residential, business
and government energy
storage customers =
500MW

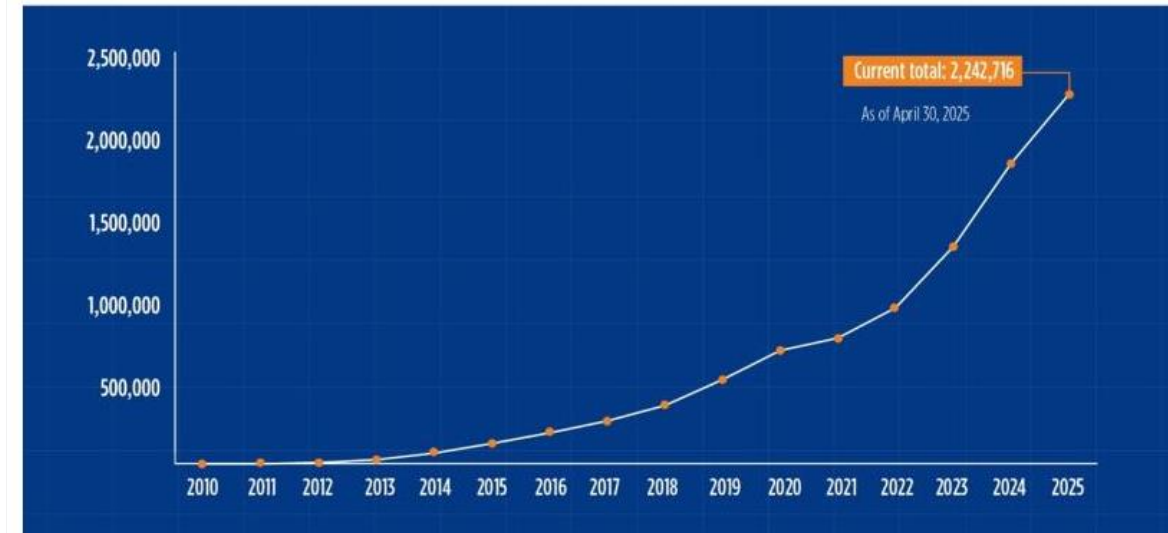


California's Electric Vehicle Future

The rapid acceleration of EV adoption not only represents one of PG&E's largest opportunities to lower emissions in the communities we serve but it is also projected to be the largest driver of load growth in our service area over the next 20 years.



Zero-Emission Vehicle Sales in California

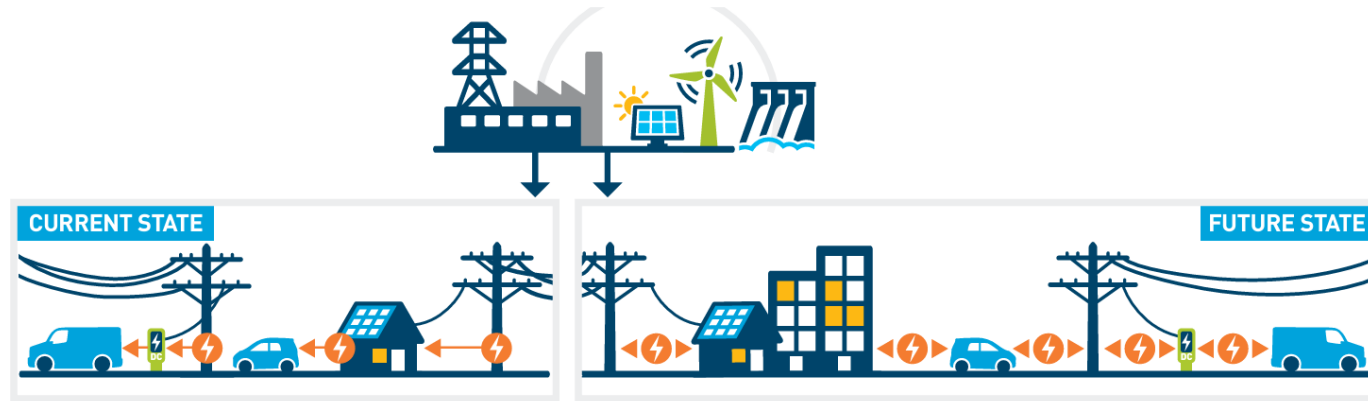


Source: California Energy Commission

740,000+ EVs in operation in PG&E's service area – about **1 in 8** of all EVs in the U.S. We expect to reach **~800,000 EVs by EOY**



EVs also offer the potential to balance our grid and add resiliency through bi-directional charging.



V1G / Uni-Directional Charging

Rates

Load that can be shifted via time differentiated rates to reduce or increase demand on the grid at certain times

Ex: [Residential EV TOU Rates](#), [Business EV Rate \(BEV\)](#), [Hourly Flex Pricing](#), [submetering](#)

Managed Charging

Load that can be actively shifted in response to grid conditions (Bulk system or distribution)

Ex: [Emergency Load Reduction Program \(ELRP\)](#) / [Virtual Power Plant \(VPP\)](#), EV Charge Manager

Bi-Directional Charging

Vehicle to Everything (V2X)

Power that can be exported from bidirectional electric vehicle systems (grid-tied installations and self-consumption)

Ex: [Vehicle to Home/Building & Vehicle to Grid \(V2G\)](#), [Vehicle to Microgrid](#)



Distributed Energy Resource Management System (DERMS)



In collaboration with Microsoft and Schneider Electric, PG&E's Flexible Service Connection is a bridge solution that helps customers with controllable loads to connect to the electric system without waiting for a service upgrade.

Our DERMS calculates the available energy supply one day in advance and automatically sends to customers so that they get the energy they need.

WITH FLEXIBLE SERVICE CONNECTION:

Customers Benefit

Customers experience quicker connections, more available energy and an improved utility partnership.

Capacity Increases

The distribution system unlocks available capacity, utilizes more of the grid and increases operational flexibility.

Energy Goals

Industry goals of timely energization, cost effectiveness and management of grid constraints are met.



The growth of AI and demand for data centers presents a challenge and opportunity for innovation.

Just as the energy system unlocks AI's potential, AI can transform the energy system by reducing risk, matching supply with demand, optimizing energy use, predicting and avoiding faults and serving as Distributed Energy Resources.

- New energy demand from data centers **allows PG&E to utilize more of our existing power infrastructure.** By **spreading the costs over more units of energy**, each customer's dollar can go further.
- We're working to serve **~10 GW** of new data center energy demand over the **next decade**, with **1.4 GW** currently in final design and **projected to come online between 2026 and 2030.**

Advanced Transmission Technology Investments

PG&E has invested in cost-effective, advanced technologies that **increase capacity on lines and decrease equipment fatigue** to help meet the challenge of growing transmission demand over the next 10-20 years.

- **Conductor Cushion Grips** – mitigate conductor fatigue due to vibrations from wind
- **High Temperature, Low Sag Conductor** – improves performance and cost savings
- Developing **Dynamic Line Rating (DLR) technologies** that aim to increase the thermal rating of transmission lines, improve capacity and efficiency and provide visibility into asset failures without compromising system reliability, asset health and safety.

Conductor Cushion Grips



High Temperature, Low Sag (HTLS) Conductor



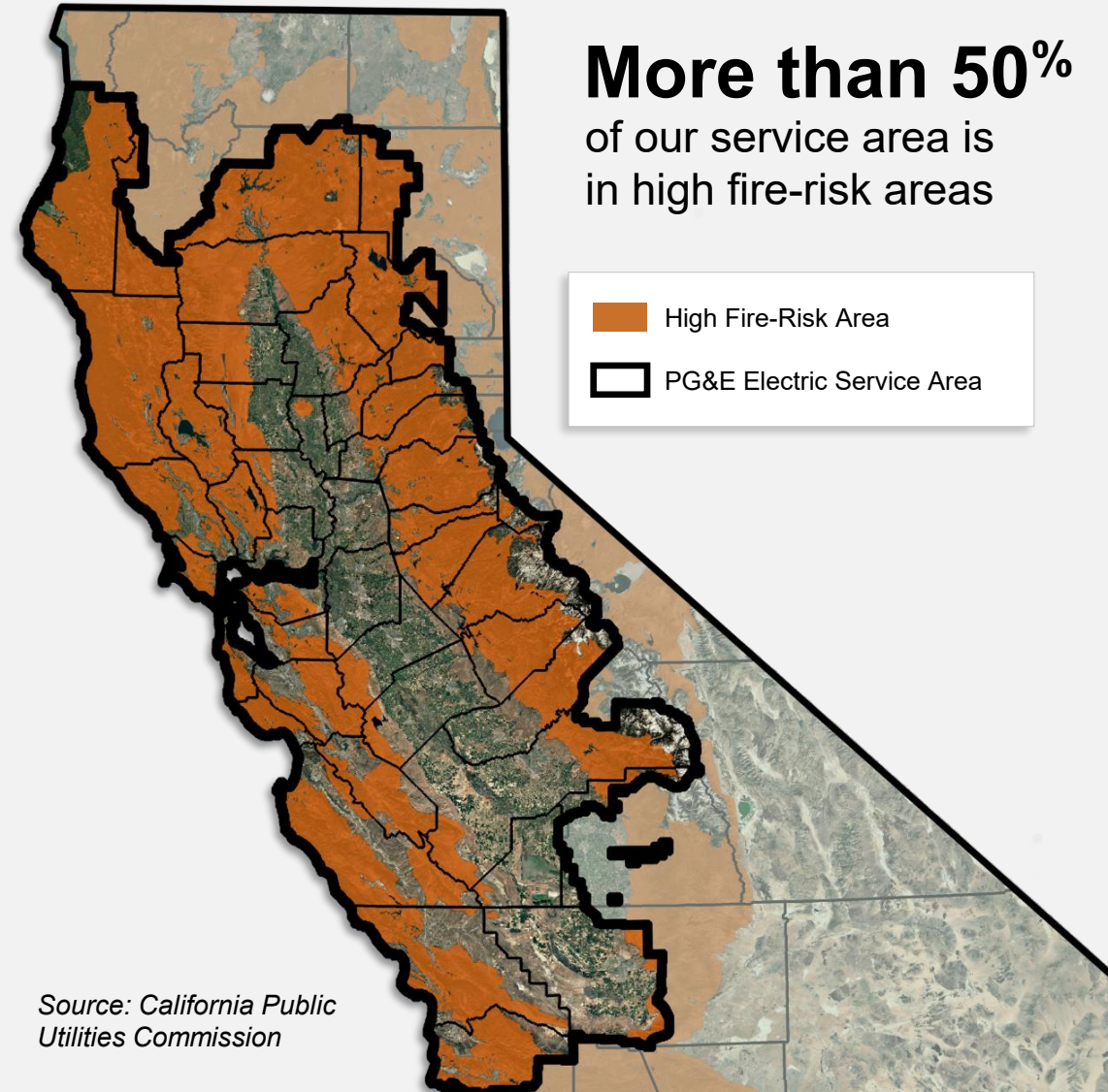


Responding to California's Wildfire Challenge

		PG&E SYSTEMWIDE	HIGH FIRE-RISK AREAS (HFRA)
Overhead	Electric customers served	5,800,000	532,000
	Distribution line miles	110,000	25,000
	Transmission line miles	19,000	5,000
Underground	Distribution line miles	29,000	4,000
	Transmission line miles	200	10

Values are approximate as of 4/1/2025.

Public

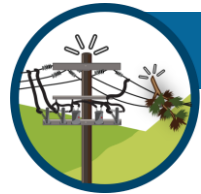


Layers of Wildfire Protection



Situational Awareness

- A** Advanced Weather Stations and HD Cameras



Operational Mitigations

- B** Dedicated Specialized Safety Teams
- C** Enhanced Powerline Safety Settings
- D** Public Safety Power Shutoffs



Resiliency Work

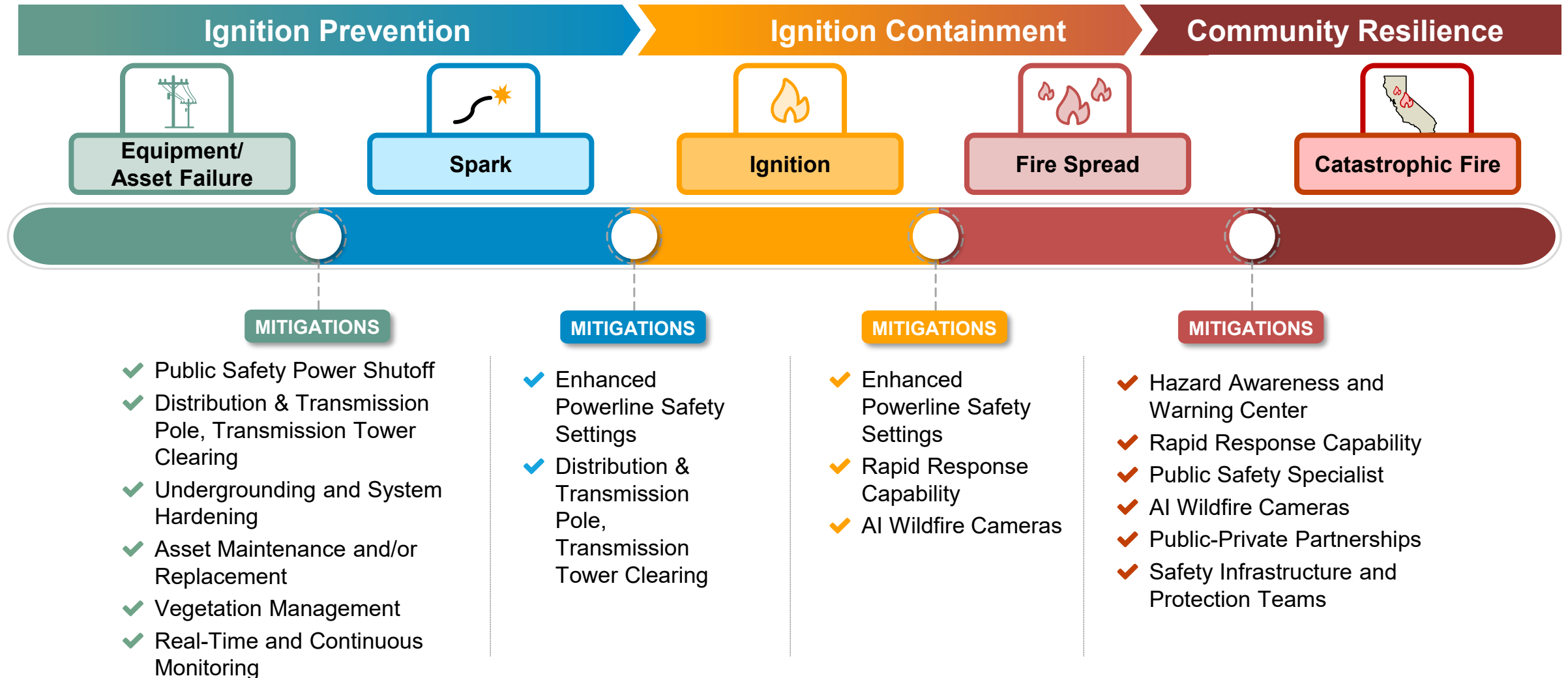
- E** Strengthened Poles and Powerlines
- F** Undergrounding
- G** Vegetation Management



For illustrative purposes only. Not to scale.

Reducing Exposure to Wildfire Risk

Wildfires from electrical equipment follow a common sequence. Interrupting that sequence is key.



PG&E's Aerial and Specialized Inspections (ASI) team utilizes cutting-edge drone and image technology to revolutionize the efficiency of system inspections. The ASI team creates precise data that informs standardized inspections to ensure safe, critical infrastructure.



INSPECTION METHOD:

Uncrewed Aircraft Systems (UAS)

Drones that produce high-resolution photos for review by experts.



INSPECTION METHOD:

Helicopters

Capture aerial photos as well as infrared and ultraviolet images.



Q&A



Thank You