Handling Gas and Electric Emergencies

A Reference Guide for Community Members

pge.com/firstresponder

CERT and SAR

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Mobile Command

PG&E's Emergency Dispatch

Phone number for CERT and SAR Only: 1-800-743-5002

DO

- Confirm that your dispatch called PG&E.
- Provide contact information (both agency and field personnel).
- Give closest address or nearest cross street.
- Describe nature of emergency.
- Provide relevant environmental factors
  Example: If windy, provide wind direction.

DON'T

- Don't bother with pole numbers (use address if available).

PG&E's First Responder Website

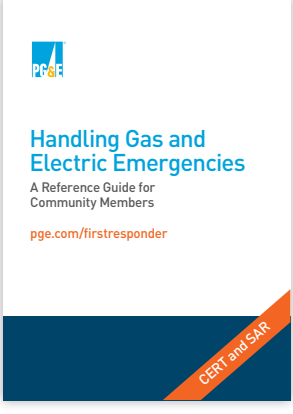
pge.com/firstresponder

First responder website

- Order free educational program materials
- View first responder event calendar

Ordering Reference Guides

To order more FREE Reference Guides, go to **www.pge.com/firstresponder**



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National pipeline mapping system (NPMS)

- View maps that include other pipeline operation facilities and infrastructure (e.g., natural gas, petroleum, oil, etc.).
- Download GIS shape files for use on GIS applications.
- Access pipeline operator contact information.

How to Reach Us

PG&E can help your agency prepare for incidents involving our utilities, provide locations of local infrastructure and schedule educational classes for your agency personnel.

Call 1-925-459-2141 or email agencyfirstresponder@pge.com.

Handling Natural Gas Emergencies

pge.com/firstresponder

PG&E's Natural Gas Delivery System

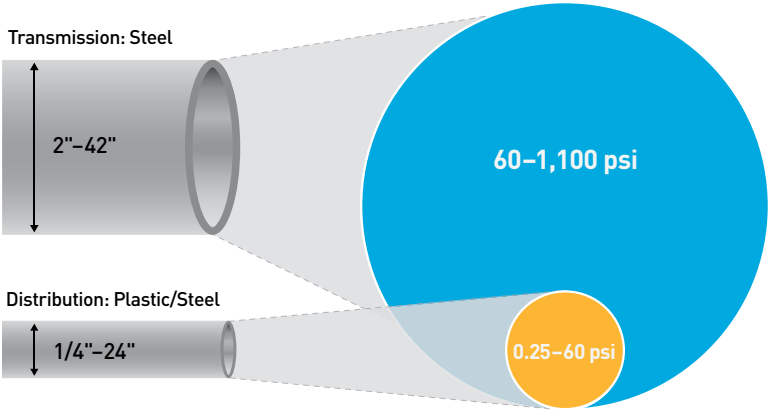
BY THE NUMBERS

TRANSMISSION
6,400 miles

DISTRIBUTION
42,700 miles

CUSTOMERS
4.4 million

Transmission versus Distribution



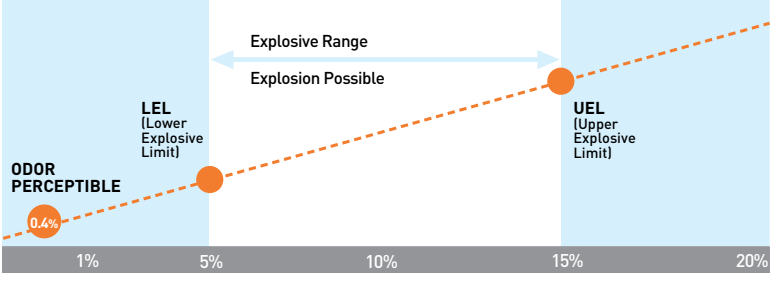
These represent general sizes and pressures.

Diameter and pressure are independent. That is, some smaller diameter pipelines operate at higher pressures and some larger diameter pipelines operate at lower pressures.

Some areas at or near our transmission storage facilities may have higher pipeline pressures.

Properties of Natural Gas

- Lighter than air (migrates upward)
- Ignition temperature: 1,100 °F
- Naturally odorless and colorless
- -50,000 PPM = 5% LEL
- Mercaptan (an odorant for natural gas) perceptible at 0.4% in air



Reactivity

Natural gas is stable. There are certain chemicals it does react with. In their gaseous states, oxygen-enriched atmospheres, fluorine and chlorine can all react with natural gas, creating the potential for an explosion.

Composition

Natural gas is a mixture of gases including methane, ethane and other chemicals. PG&E stores, transports and distributes gas within a pressurized system.

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Health hazards

Natural gas can cause asphyxiation by displacing oxygen in a confined area.

Complete combustion of natural gas creates	**Incomplete** combustion of natural gas can create
carbon dioxide (CO_2)	**carbon monoxide (CO)**

Symptoms of carbon monoxide (CO) poisoning:

- Headaches
- Nausea
- Dizziness
- Lethargy
- Flu-like symptoms

Ignition Sources

Common sources

- Vehicles, motors
- Power tools
- Radios, phones
- Doorbells, light switches
- Flashlights
- Automatic timers (e.g., exterior lights)
- Static electricity
- Motion detectors
- Garage door openers
- Synthetic turf

Beware of static electricity

Gas moving through a line creates static electricity. When the line is ruptured, the static is released.

When an unauthorized person squeezes the line to stop the flow of gas using crimping tools or clamps, that person's body becomes a grounding source.

Another common source of static electricity are shoes rubbing on doormats. **When responding to a gas-leak call, don't step on the doormat and don't ring the doorbell. Knock on the door frame instead.**

Gas Leak Detection

Sight

- Dirt being blown into the air
- Dead or dying vegetation
- Flames coming from the ground
- Continuous bubbling in puddles
- Construction/excavation equipment
- Signage or pipeline markings

Sound

Roaring sounds:

- **Transmission**—very loud (jet engine or locomotive)
- **Distribution**—loud from several hundred feet

Hissing and whistling sounds:

- Service and appliance releases

CAUTION! There may be no perceptible sound.

Smell

- Mercaptan odorant smells like sulphur, or rotten eggs.

CAUTION! Odor fade may occur.

Odor may fade if gas filters up through soil. Prolonged exposure to gas may diminish one's ability to sense the presence of the odorant. Odor may also be masked by other odors.

Odor fade can occur with new pipe when the odorant adheres to the surface of the pipe, effectively removing the odorant from the gas.

CAUTION! Some or none of these factors may be present. If unsure, do not approach area.

Call PG&E at 1-800-743-5002

Pipeline Signage and Markers

Transmission gas pipeline marker

Refer to identification phone number on paddle marker.

If there are no markings, contact PG&E Damage Prevention at 1-800-743-5002.

Gas facility markings

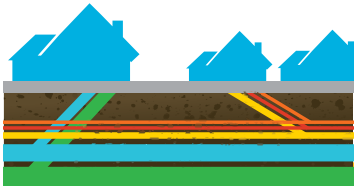
Public Awareness/Damage Prevention

You play a critical role in natural gas safety and can help by reporting any digging projects that do not have proper Underground Service Alert (USA) markings. Your awareness and actions can increase public safety in our communities. Below we have highlighted the ways you and your team can recognize and report unsafe digging projects.

What to look for on the work site

When you see an active digging project, look for markings.

Anyone planning to dig or plant must outline their proposed work area in white before calling 811 at least two business days before they dig. PG&E and other utilities will use colored utility flags, stakes or paint to mark underground lines.



COLOR CODE FOR MARKING UNDERGROUND UTILITY LINES

- PROPOSED EXCAVATION
- ELECTRIC POWER LINES, CABLES, CONDUIT AND LIGHTING CABLES
- COMMUNICATION, ALARM OR SIGNAL LINES, CABLES OR CONDUIT
- RECLAIMED WATER, IRRIGATION AND SLURRY LINES
- TEMPORARY SURVEY MARKING
- GAS, OIL, STEAM, PETROLEUM OR GASEOUS MATERIALS
- SEWER, STORM DRAIN
- POTABLE WATER

If you see a contractor or homeowner digging and there are no flags or markings, then call 1-800-743-5002.

Failure to follow safe digging practices may result in delays, injury, damage and civil penalties.

Shut off Valves—at the Appliance

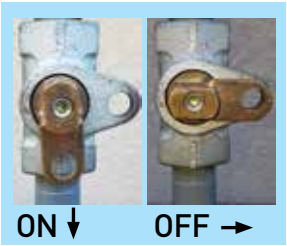
Shut off valves at the appliance when the signs of a gas leak exist—sight, sound, smell.

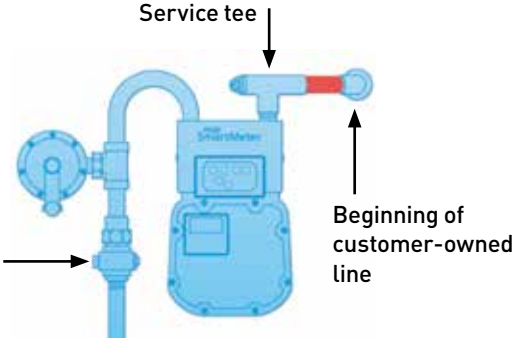
The gas supply must be shut off only if it is safe to do so. **ONLY** PG&E personnel should turn gas **ON**.

Shut off Valves—at the Meter

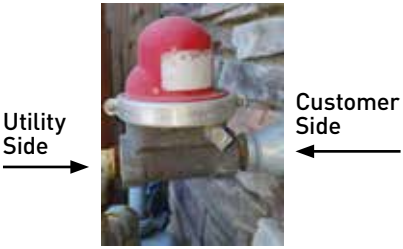
Shut off valves at the meter when the signs of a gas leak exist—sight, sound, smell.

The gas supply must be shut off only if it is safe to do so. **ONLY** PG&E personnel should turn gas **ON**.





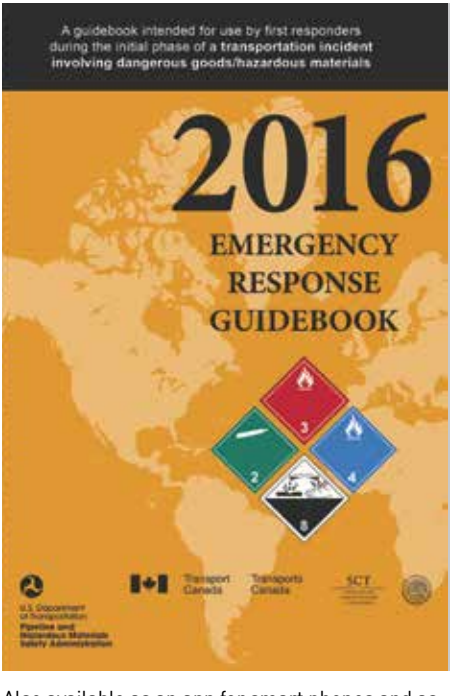
Install your earthquake valve gas shutoff device here



Minimum Evacuation Distances

Distribution gas leaks

Federal Department of Transportation's Emergency Response Guidebook recommends "as an immediate precautionary measure for flammable gases to isolate the spill or leak **at least** 330 feet (100 meters) in all directions."



Also available as an app for smart phones and as a downloadable PDF online.

Safety at the Scene

DO

- Secure the area and keep the public away
- If necessary, evacuate public to safe distance
- Confirm that PG&E has been contacted
- The gas supply must be shut off **ONLY** if it is safe to do so
- **ONLY** PG&E personnel should turn gas ON

You should turn off the meter from outside the building if you smell or hear gas or you see dials on the meter showing gas is flowing even though appliances have been safely turned off.

DON'T

- Don't extinguish a gas fire; let it burn because extinguished gas is invisible and may migrate near an ignition source
- Don't operate main shut-off valves
- Don't use unauthorized line stoppers or pipe squeezers to shut off gas supply
- Don't park over manhole covers, sewers or vaults

Handling Electric Emergencies

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PG&E's Electric Delivery System Map and Information

BY THE NUMBERS

TRANSMISSION
18,616 miles

DISTRIBUTION
141,700 miles

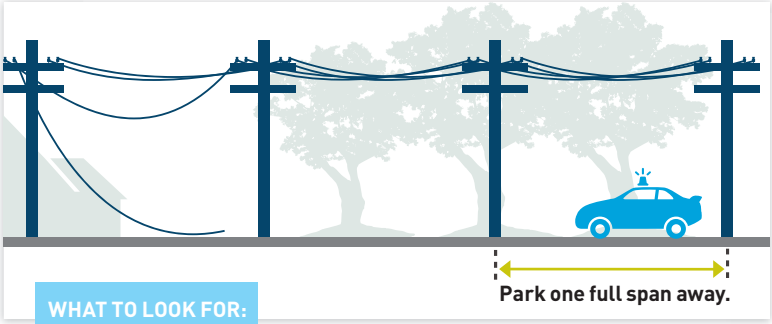
CUSTOMERS
5.4 million

Approaching and Securing the Site

- **CONFIRM** that dispatch has called PG&E.
- Examine your surroundings.
- Treat all utility lines as high voltage (power, cable, phone, etc.).
- Observe minimum safe distances (30 feet dry and 60 feet wet).
- If no reason to approach, stay far away and adopt defensive or nonintervention approach.
- Isolate and deny entry.

Parking response vehicles

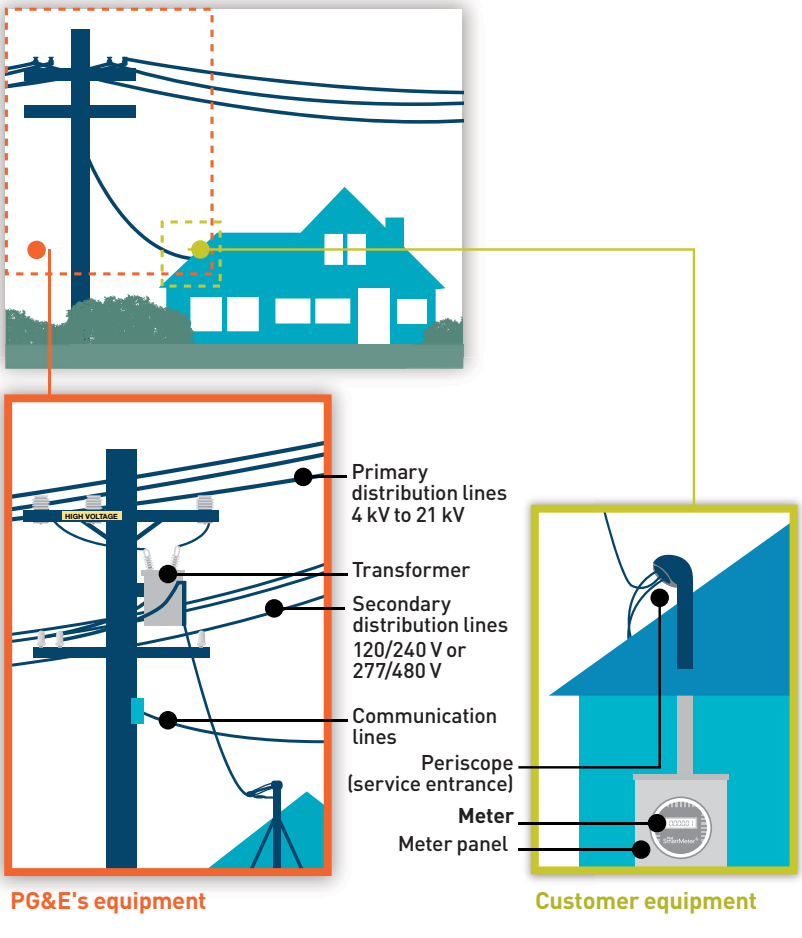
- Park a minimum of one full span (two poles) away from broken, downed or sagging lines.
- If possible, do not park under electric power lines.



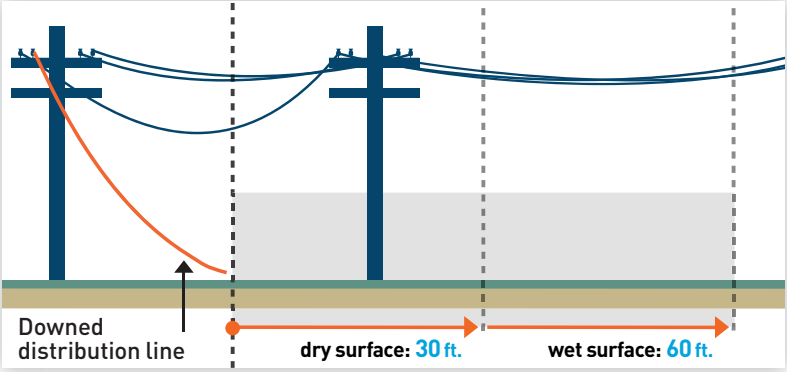
WHAT TO LOOK FOR:

- Overhead lines
- Wire ends
- Leaning poles
- Sagging lines

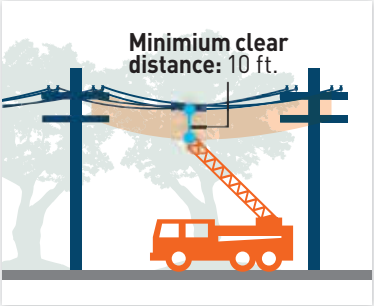
Distribution Utility Pole



DISTRIBUTION LINES: Minimum Distance from Electric Hazards

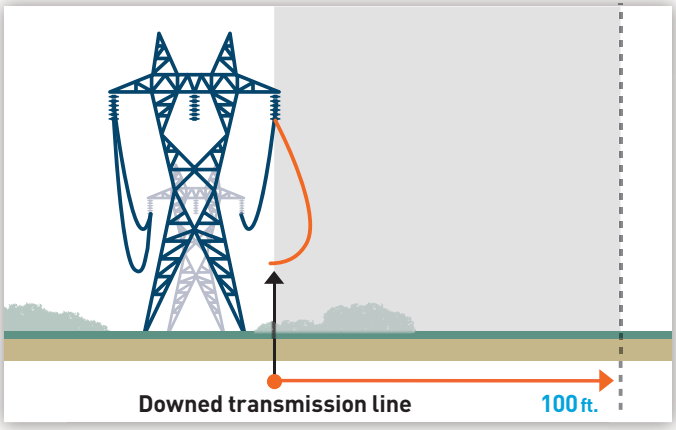


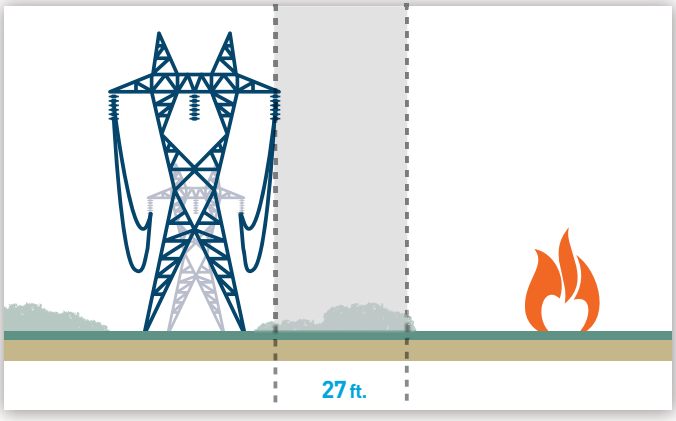
For safety purposes, PG&E recommends emergency responders stay 60 feet from downed distribution lines.



To avoid arc potential, do not get within 10 feet of electric power lines up to 50kV. A greater distance is required for voltages above 50kV.

TRANSMISSION LINES: Minimum Distance from Electric Hazards





BEWARE: Smoke from fire may increase arc potential. Remain a minimum of 27 feet back from transmission lines of 60 kV and above.

Touch Potential

An energized line can cause other conductive materials to be energized.

Don't touch anything that may have become energized.

- Treat all lines as energized.
- **CONFIRM** that dispatch has called PG&E.
- Keep public far back.
- Don't touch downed electric power lines or other potentially energized electrical equipment.
- Realize that utility lines, such as phone or cable, can also be energized.

Energized items may include:

- Other utility lines
- Vehicles
- Fences
- Ladders
- Trees
- People
- The ground

Conductive materials:

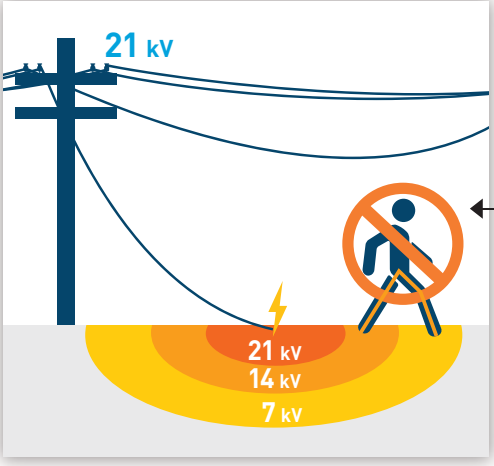
- Metal
- Water
- Human body
- Smoke
- Wood
- Rope

Step Potential

Step potential is created when current from a downed line makes direct contact with the ground, energizing the surrounding area. Electricity wants to travel from higher voltage to lower voltage in an effort to dissipate into the ground.

If near a downed line, avoid step potential.

- Keep ankles together and hop away from hazard, or
- Keep feet together and shuffle away (heels don't pass toes).
- For safety purposes, PG&E recommends emergency responders stay 60 feet from downed distribution lines.
- For safety purposes, PG&E recommends emergency responders stay 100 feet from downed transmission lines.



Electricty wants to travel from higher to lower voltage in an effort to dissipate into the ground.

The human body is a conductor.

IF NEAR A DOWNED ELECTRIC POWER LINE:

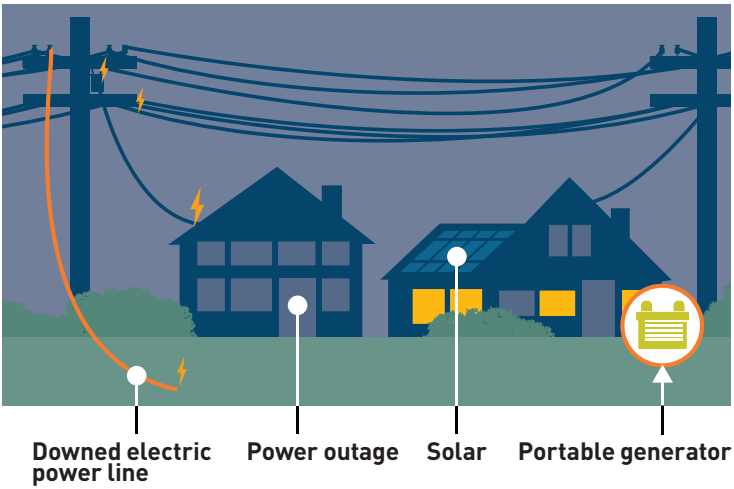
Keep ankles together and hop away from hazard.

OR

Keep feet together and shuffle away. (Heels don't pass toes.)

Generator and Solar Shutoff

Backfeed power from portable generator



Possible sources of backfeed power:

- Generators
- Solar panels
- Faulty wiring
- Electricity theft

Vehicle Collisions and Downed Lines

Potential threats scene assessment

- Don't attempt to move vehicle. Wait for PG&E.
- Be cautious of all downed lines.
- **CONFIRM** that dispatch has called PG&E.

Evacuating vehicles

If no threat to occupants, occupants should stay in vehicle until PG&E arrives and makes area safe.

- Vehicle versus pole
- Vehicle versus riser pole
- Vehicle versus surface-mounted equipment (pad-mounted transformer)
- Vehicle versus downed electric power lines

If threat exists (e.g., fire), instruct the occupants of the following before they get out of the vehicle:

Beware of touch potential

- **DON'T** allow occupants to touch the car and the ground at the same time. (Cross arms in front of body.)
- Tell occupants to keep ankles and feet together and hop out.

Beware of step potential

- Once occupants are out of the car, make sure they hop or shuffle away to a minimum of 30 feet (dry), 60 feet (wet).

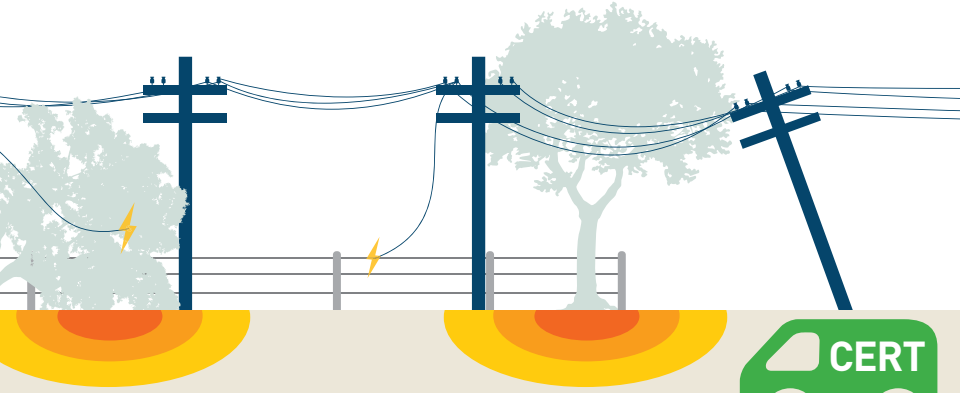
Safety at the Scene

DO

- Ensure your personal safety first
- Follow the communications protocols for your CERT group
- Notify PG&E right away if there is an electrical problem
- Treat all utility lines as energized
- Avoid lines on the ground, in trees or on vehicles
- Keep the public away from downed lines

DON'T

- Don't assume PG&E has already been notified
- Don't touch anything, even with gloves, sticks or tools



Vaults, Substations and Transmission Lines

- **Isolate and deny entry.**
- **Look up, look down and look around.**
- **Protect exposures.**
- **If possible stay uphill and up wind.**

Vault fires and explosions

- Call PG&E immediately.
- Don't enter vaults.

Substation fires and explosions

- Call PG&E immediately and wait for arrival.
- Don't enter a substation without PG&E present.
- Keep the public back (500 feet).

Transmission line fires

- Coordination with PG&E is **CRITICAL**.
- Keep back a minimum of 100 feet from lines touching soil.
- Don't direct water stream near electric power lines.

CAUTION!
Transmission right-of-ways may have subsurface facilities. Don't park heavy equipment in right-of-ways.

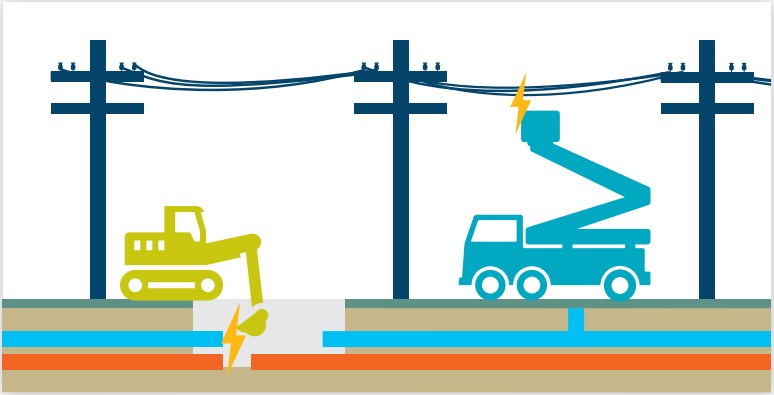
Construction Incidents

Damage to overhead lines

Equipment may be energized. The ground around equipment may be energized.

Damage to underground facilities

- Keep back a **minimum** of 30 feet (dry) to 60 feet (wet).
- Use extreme caution around excavation sites. Equipment and people may be energized. Do not touch anyone or anything that is in contact with electricity.



CAUTION! Other facilities may have been struck. Look for indications of underground utility markings to determine what else may be below ground.

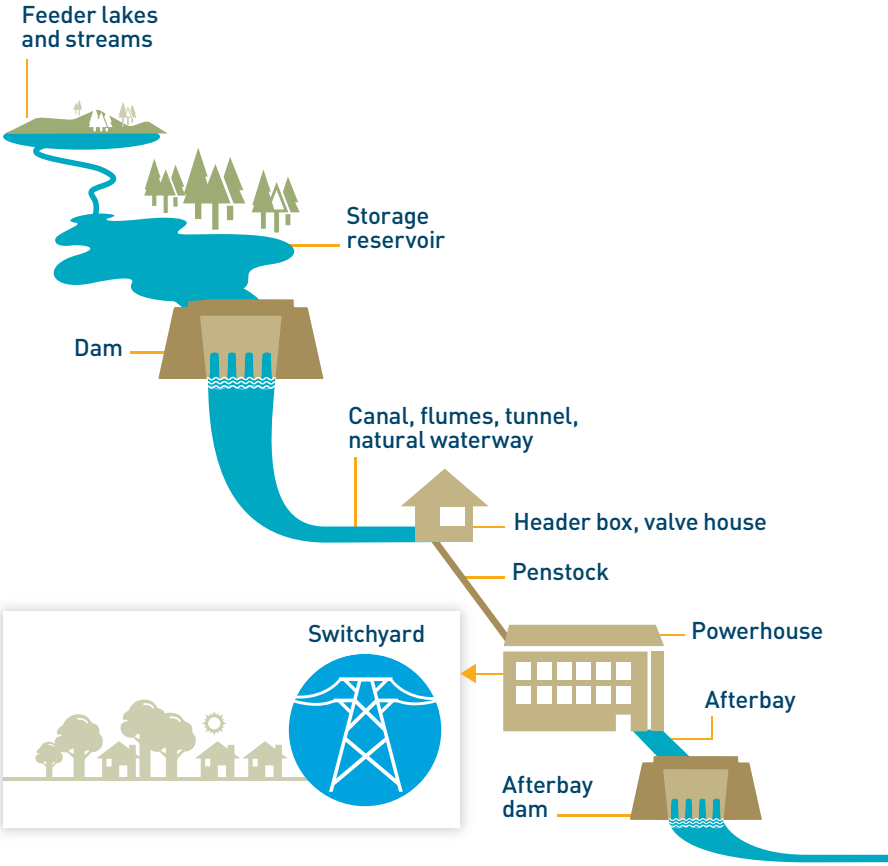
Dangers of Using Unauthorized Tools

PG&E does not support use of these tools on electrical hazards: hotsticks, voltage testers, rubber gloves or mechanical axes.

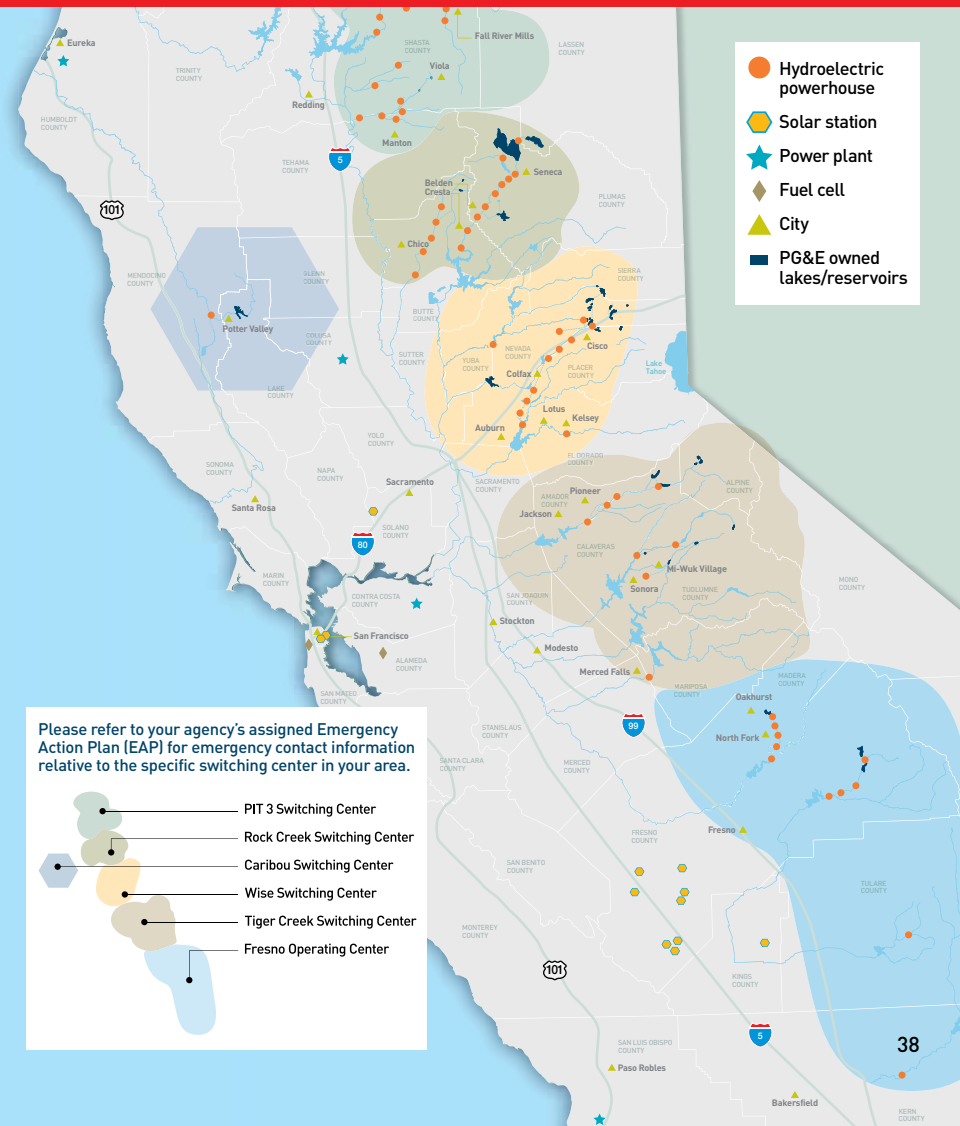
Don't touch energized lines or equipment with these tools. You must be a qualified electrical worker to come in proximity to or work on high voltage lines. Most emergency personnel don't have the right qualifications, equipment or rubber gloves to handle electrical hazards. The best thing a first responder can do is adopt a defensive or nonintervention approach until PG&E arrives.

Hydro/Electric Power Generation

PG&E's hydropower system produces reliable, renewable and clean energy for Northern California.



Hydro/Electric Power System Map



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Potential warning signs of a flood

- **Increased** water speed or depth
- Unusual amounts of **debris** in water
- Change in water from clear to **muddy**
- Unusually **cold** water temperatures

Don't drive into standing water or flooded roads.

NOTES:

Contact Information for Community Emergency Responders

As your partners in safety, we're always available to answer questions and assist in planned or urgent safety issues. Here's how to reach us:

For gas and electric incidents
1-800-743-5002
24 hours a day, 7 days a week

General information about PG&E's First Responders Safety program
1-925-459-2141
agencyfirstresponder@pge.com
pge.com/firstresponder

Safety at the Scene

Follow the communications protocols for your CERT group. Work out the details with your affiliated First Responder agency before an emergency.

Report incidents to PG&E at 1-800-743-5002.

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