



Know what's below.  
Call before you dig.

## Section 1 General

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### Safety Alert

Contacting overhead or underground electric lines or equipment and natural gas pipelines can cause serious injury or death. Any part of a crane, scaffold, construction material, antenna, cable, rope, guy wire, or tool that touches an overhead electric line or penetrates an underground cable can become energized.

Penetrating an underground natural gas line with a backhoe or other tool can cause a violent explosion.

State law requires applicants to contact [Underground Service Alert \(USA\)](#) by dialing 811 at least 2 working days before excavation (weekends and holidays excluded). Ensure that you call USA when *planning* underground work, *before digging begins*, to allow adequate time for USA to determine the location of underground gas and electric lines or equipment. ***Failure to request identification of underground utility facilities before excavation begins can create the potential for an accident.***

First, the applicant must mark the excavation area with white paint. Then, USA will arrange for participating companies to mark the locations of their underground facilities at the worksite. This is a free service.

You can obtain additional information about USA services at the USA North website (<http://www.usanorth.org>).

### Arc-Flash Hazard Warning

All applicants or persons working on, working near, or observing others working on any PG&E facility will be exposed to potential arc-flash hazards and are required to wear flame resistant (FR) clothing. The requirement to wear FR clothing applies to everyone. Applicants and their personnel must be wearing FR clothing before being allowed access to perform work in and around PG&E facilities. Also, applicants and their personnel must ensure that they are wearing the appropriate level of FR clothing for the job they are performing. Please see [Appendix A](#) for a definition of facilities, and refer to the FR requirement letter in [Appendix B](#).

## 1.1. Purpose

**NOTE:** For the purpose of this manual, the word “applicant” is used generically to refer to the Pacific Gas and Electric Company (PG&E) customer, or to the person or persons representing the PG&E customer in the application/construction process, including a contractor, design consultant, or installer. The word “customer” will be used only when the word “applicant” is not applicable. Also, PG&E will sometimes be referred to as the “Company” throughout this manual.

This manual is a guide designed to help applicants establish gas and electric service. By reading the mandates published in this manual, applicants will understand not only the steps required to apply for service, but also the legal and safety requirements driving those steps. PG&E provides this manual to all gas and electric applicants, both in hard copy and online, in an effort to ensure that the Company can continue to deliver safe, uniform service.

In addition to the requirements found in this manual, applicants for gas or electric service must comply with all applicable [tariffs](#), as well as the rules and general orders set forth by the California Public Utilities Commission (CPUC). These orders include, but are not limited to:

- [General Order \(G.O.\) 95](#), “Rules for Overhead Electric Line Construction”
- [G.O. 112-E](#), “Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems”
- [G.O. 128](#), “Rules for Construction of Underground Electric Supply and Communication Systems”

Finally, applicants must comply with all other federal, state, and local regulations.

## 1.2. Permits and Inspections

Builders who are constructing new buildings or remodeling existing buildings must conform to the following guidance documents.

- A. The current provisions of city and county ordinances.
- B. Rules on file with, or issued by, the CPUC.
- C. Applicable rules and laws of the state of California, including the following three codes:
  - Plumbing codes
  - Mechanical codes
  - Electric codes

***Local and state ordinances require that applicants obtain the appropriate permits and final inspections before PG&E establishes services to any building or structure.***

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In areas where local ordinances governing gas or electrical installations do not exist, or where inspections provided by local jurisdictions for such installations are not available, the applicant must obtain written confirmation from a qualified person that the facilities meet the requirements specified in this manual.

PG&E will *not* establish gas or electric service until the gas piping or electric service facilities are installed satisfactorily.

PG&E's inspection process includes service requirements that are *not* governed by local or state codes. Parts of the applicant's installation may require approval by state, local, *and PG&E inspectors*.

### 1.3. "Application for Service" Form

An "Application for Service" is required for all new gas or electric services, as well as for relocating or rearranging existing services. There are two ways to obtain this "Application for Service" form. First, an applicant can contact the service planners at his or her local PG&E office to request a printed copy of the form. See the "2011 Service Planning Contact Information" at the front of this manual on Page iv for specific contact numbers listed by area. Or, applicants can download the form from PG&E's website as follows:

Electric Forms: <http://www.pge.com/tariffs/EF.SHTML#EF>

Gas Forms: <http://www.pge.com/tariffs/GF.SHTML#GF>

To obtain complete details about applying for service, go to PG&E's website: [http://www.pge.com/customer\\_service/new\\_construction\\_services/process\\_guide/step1/index.html](http://www.pge.com/customer_service/new_construction_services/process_guide/step1/index.html)

Applicants without Internet access should contact a local PG&E service planner to obtain additional details about requirements for their projects.

PG&E must have adequate lead time to process a hookup request and serve an applicant's connected load. Large-capacity gas meters, electric transformers, or other special equipment often require *several months lead time* to ensure a timely delivery from the manufacturer. An applicant should provide his or her local PG&E service planner with accurate load information and the date that the services are required as soon as possible. This gives PG&E time to make the necessary arrangements to complete the services.

Applicants must contact their local PG&E service planners when approved construction plans change, or when situations that affect PG&E's service arrangements occur during construction, so that mutually satisfactory, alternate arrangements can be made.

To assist PG&E in its goal to deliver safe, uniform service, applicants should use the following guidelines when transmitting electronic drawing files for architectural, mechanical, and civil site plans.

1. PG&E's electronic drawing tool is AutoCAD 2000, .DWG format. Ensure that submitted electronic drawings are readable using/compatible with AutoCAD, Release 12 (or newer).

**NOTE:** PG&E accepts the version of AutoCAD with the "Pack & Go" feature.

2. Send drawings on a USB drive, CD, or as an email-attached file.
3. Send drawings for large projects in a zipped format.
4. Use layering, if possible, and preserve the layering when transferring files to PG&E.
5. Save all drawings in model space instead of paper space.
6. Make drawing plans two dimensional, with the "Z" elevation at zero.
7. Ensure that any External Reference Files (Xref) or drawing updates maintain a consistent insertion point.
8. Include all related drawing files.

Please contact your local PG&E service planner if you have any questions.

PG&E is committed to complying with all federal, state, and local environmental laws, regulations, and rules. Applicants must provide PG&E with copies of permits that show environmental compliance requirements have been met when they submit an application for service. See the "[Applicant Responsibilities for Environmental Reviews for Service Requests](#)" letter for more information.

Applicants can obtain copies of the "[Applicant Responsibilities for Environmental Reviews for Service Requests](#)" letter from their local PG&E service planners, or access the letter online at [http://www.pge.com/includes/docs/pdfs/mybusiness/customerservice/startstop/newconstruction/app~resp\\_enviro.pdf](http://www.pge.com/includes/docs/pdfs/mybusiness/customerservice/startstop/newconstruction/app~resp_enviro.pdf)

Project permits or approvals may contain conditions that require or restrict certain service designs or construction activities by PG&E, applicants, agents, consultants, or contractors. The applicant must bring these conditions to PG&E's attention to ensure that the requirements or restrictions are included in the project design during the planning and construction phases. When submitting the service application, the applicant **must** provide PG&E with a written copy of any special conditions, identifying the requirements or restrictions that affect the project design and/or PG&E installation activities.

#### 1.4. Changes in Requirements

Some of the information contained in this manual is based on government codes and ordinances that are subject to change as determined by the governmental authority. PG&E does **not** assume responsibility for keeping information in this manual current with these government codes, ordinances, or other requirements. Applicants should consult the responsible governmental agency with questions about the applicability of any construction procedures or requirements.

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*PG&E may revise its construction documents relating to applicant service requirements between updates to this manual. Except when required by law, the version of the construction document in effect on the date the applicant's service design is approved determines the requirements that the design must meet. This rule applies as long as applicants complete approved projects in a timely manner. Specifically, if the applicant has not initiated construction within 12 months of PG&E's initial approval, the applicant must request another review and obtain final approval of the design before starting construction activities.*

Applicants are encouraged to contact PG&E *early in the planning stages* of their projects. By consulting with their local service planners, applicants are made aware of the current construction requirements *before* they initiate any design work.

Engineering and construction documents or requirements are incorporated into new editions of this manual; however, revisions are made periodically. Applicants can obtain revised engineering documents or requirements in two ways. These documents are available either on PG&E's Internet site at [www.pge.com/greenbook](http://www.pge.com/greenbook), or by contacting a local PG&E service planner and requesting copies.

## **1.5. Additional Commercial and Industrial Service Information**

Generally, this manual does *not* include information either about electric installations of more than 600 volts (V), or about large commercial or industrial gas loads. PG&E will provide the applicant with individual job-design specifications after the applicant requests service.

## **1.6. Design and Construction**

### **1.6.1. PG&E's Responsibilities**

PG&E is responsible for planning, designing, and engineering its service facilities and service laterals using PG&E's standards for design, materials, and construction.

### **1.6.2. Applicant's Responsibilities**

Residential, commercial, and industrial applicants for gas and/or electric extensions and services may select a contractor to design their facilities.

PG&E requires a clear path from existing distribution facilities to the location on the applicant's worksite where the services will be connected. Depending on the project, the applicant may need permits or approvals for these supply lines in order to comply with federal, state, and local requirements, regulations, and rules (including environmental laws). Local PG&E service planners can tell applicants about their available options for clearing supply lines, as well as any associated design and contract requirements for their projects.

Before designing their projects, applicants and/or their contractors must complete PG&E's "Application for Service" form, provide applicable construction plans, and submit any required project deposits to PG&E.

### **1.6.3. Providing Access to PG&E Facilities**

An applicant may be required to provide an access road across his or her property to a PG&E facility. The road needs to be accessible to PG&E at all times. The road must be constructed of a minimum 6-inch-thick gravel base, be at least 10 feet wide, and have a 30-foot radial hammer head turn-around area at the end of the road.

Do not place pad-mounted or subsurface facilities more than 15 feet away from an accessible road.

### **1.6.4. Installing Transformers**

PG&E will specify the type of transformer installations to be constructed on applicants' premises.

Applicants may contact their local PG&E service planners to obtain specific transformer requirements for their projects.

**NOTE:** *For reasons of safety and reliability*, PG&E does *not* allow applicants to install water sprinklers to cool off transformers.

PG&E's standard transformer installations for residential, commercial, and industrial services are described below:

1. A pole-bolted transformer in overhead areas when the applicant's load does *not* require a 75 kilovolt ampere (kVA) or larger transformer.
2. A pad-mounted transformer in underground areas or in an area with overhead facilities when PG&E determines that the applicant's load will require a 75 kVA or larger transformer.

## **1.7. Connecting and Sealing Services**

**1.7.1.** PG&E will provide standard service to applicants as described in the following two numbered items.

1. Establish service at one service delivery point, through one meter, and at one voltage class or pressure.
2. Design service to extend from the connection to the distribution facilities along the shortest, most practical, and most available route to the service termination facility or service delivery point, as determined by PG&E.

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**1.7.2.** The requirements for standard service are described in the following items.

1. Applicants can *not* connect house gas pipes or other applicant facilities to the plugged side of the gas service tee fitting. That fitting is for PG&E's use only.
2. Only authorized PG&E employees can connect or disconnect PG&E's gas or electric service to the building or structure.
3. Only authorized PG&E employees can tamper with or break PG&E seals placed on meters and associated service equipment.
4. Only authorized PG&E employees can remove, replace, or interfere with PG&E's meters, seals, connections, padlocks, or other locking devices.
5. Applicants must call PG&E if it is necessary to have either the service disconnected or the meter removed because of remodeling, alterations, or other activities.
6. Applicants must place service termination enclosures in PG&E-approved locations within buildings, such as meter and service rooms or similar areas.
7. Applicants must *not* locate service termination enclosures in the interior, inhabitable area of residences.
8. Applicants must ensure that all service and metering facilities are readily accessible.
9. PG&E must review and approve of all service and meter locations and arrangements before metering, service termination enclosures, or other utility service facilities are installed.
10. The applicant assumes the risk for any work performed without requesting PG&E's advanced approval. PG&E can charge the applicant if it is necessary to make changes to unapproved work.
11. An unauthorized connection to PG&E's gas or electric facilities, or to facilities used to provide utility services, may be a violation of the [California Penal Code, Section 498](#) and [Section 593c](#), and subject the person to damages pursuant to [California Civil Code, Section 1882](#), et. Sequitur. These sections address connecting to utility meters and facilities and diverting utility services. They specifically prohibit any person from tampering with, making, or causing to be made any connection or reconnection with property owned or used by the utility to provide utility service, without the utility's authorization or consent.
12. PG&E may require a service location to be closer to the distribution facilities in the following instances.
  - In areas where the nearest building is a considerable distance (i.e., 200 feet or more) from the property line.
  - If, in PG&E's judgment, there is a potential hazard between the property line and service location.

## 1.8. Access to an Applicant's Residence

**PG&E has the right to access Company facilities located on an applicant's premises at any time, for any purpose connected with furnishing gas and/or electric service.** These purposes include:

- Reading meters.
- Inspecting utility facilities.
- Making routine repairs.
- Performing maintenance and emergency work.
- Exercising any and all rights secured to PG&E either by law or under PG&E's tariff schedules, including [Electric Rule 16](#), "Service Extensions," and [Gas Rule 16](#), "Gas Service Extensions."

## 1.9. Overhead Electric Lines

[Cal/OSHA regulations, Title 8, Section 2946](#), require that minimum safe working distances be maintained from overhead electric lines. The regulations are shown in Table 1-1, "Minimum Safe Working Distances (Scaffolds, Equipment, Structures, and People)," and Table 1-2, "Minimum Safe Working Distances (Boom and Lifting Equipment)."

**Table 1-1 Minimum Safe Working Distances (Scaffolds, Equipment, Structures, and People)**

Nominal Voltage (Phase-to-Phase)				Minimum Required Clearance (Feet)
	600	—	50,000	6
over	50,000	—	345,000	10
over	345,000	—	750,000	16
over	750,000	—	1,000,000	20

**Table 1-2 Minimum Safe Working Distances (Boom and Lifting Equipment)**

Nominal Voltage (Phase-to-Phase)				Minimum Required Clearance (Feet)
	600	—	50,000	10
over	50,000	—	75,000	11
over	75,000	—	125,000	13
over	125,000	—	175,000	15
over	175,000	—	250,000	17
over	250,000	—	370,000	21
over	370,000	—	550,000	27
over	550,000	—	1,000,000	42

Contact a local PG&E service planner with any questions about working near overhead electric lines or about nominal voltage.

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## 1.10. Underground Electric Lines and Gas Pipelines

As mentioned earlier in this section, state law requires applicants to contact [USA](#) by dialing 811 at least 2 working days before excavation (weekends and holidays excluded). Applicants *must* call USA when planning underground work *before digging begins* to allow adequate time for USA to determine the locations of underground gas and electric lines or equipment.

USA will arrange for participating companies to mark the locations of their underground facilities at the worksite. There is no charge for this service. The applicant must mark the excavation area with white paint.

Applicants can obtain additional information about USA services at the USA North website (<http://www.usanorth.org>).

## 1.11. PG&E Safety Training Resources

PG&E wants to ensure that contractors and construction workers avoid electric and natural gas hazards by practicing basic safety rules. Please visit [www.pge.com/contractorsafety](http://www.pge.com/contractorsafety) for safety training materials to assist you in training your employees.

## 1.12. SmartMeter™ Program

PG&E's SmartMeter™ Program is part of a statewide effort driven by the CPUC to upgrade California's energy infrastructure with automated metering technology. The SmartMeter™ Advanced Meter Reading system includes the installation of a programmable, solid-state, electric meter and a gas module, installed on a traditional gas meter at each service delivery point to measure and record energy use.

PG&E may need to install additional equipment on customer buildings or premises to support the SmartMeter™ communication network. The SmartMeter™ Advanced Meter Reading system automatically collects electric and natural gas usage data from a home or business and transmits it via a secure wireless radio frequency (RF) communication network back to PG&E.

The SmartMeter™ Advanced Meter Reading system lets customers track energy use throughout the month which, subsequently, allows them to better manage their energy consumption and costs. The SmartMeter™ Advanced Meter Reading system allows PG&E to remotely read the meter without entering the customer's property and without interruption. In the future, the SmartMeter™ Advanced Meter Reading system will help improve customer service by providing PG&E the ability to pinpoint power outages and restore power faster.

### 1.13. Installing Excess Flow Valves (EFVs) on Residential Services

A utility excess flow valve (EFV) is a device installed in a gas service line at or near the main. An EFV is used to stop the flow of gas if the velocity of the gas passing through the valve creates a pressure difference across the valve that is greater than a specified design limit.

Typically, the valve operates when an excavator strikes and breaks the gas service line downstream of the valve, causing gas to be released quickly into the atmosphere.

The EFVs have a bleed-by mechanism, allowing some gas to travel past the valve. This gas is useful when resetting the system after the leak is repaired.

EFVs are installed as closely as possible at the location where the service and the main are connected to protect as much of the service as possible. The EFV is not activated by seismic movement. It is not likely that the EFV will be activated by a break in the gas line located downstream of (i.e., after) the utility riser shut-off valve and meter assembly.

EFVs are installed as standard equipment on all new and replaced gas services that meet the following criteria.

1. The system pressure does not drop below 10 pounds per square inch gauge (psig). The gas planning engineer will determine if the system meets this criteria.
2. The service is connected to a single residential applicant with only one meter.
3. The service is neither a branch service nor a service with a branch off of it.
4. The entire service is to be installed or replaced, not just a portion of the service.
5. The service installation or replacement is part of an engineered job.

EFVs are installed in compliance with [U.S. Department of Transportation](#) (DOT) requirements.

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## 1.14. PG&E Online (Website)

PG&E has an Internet website at [www.pge.com](http://www.pge.com). A series of topics and information is accessible from the website's home page.

### 1.14.1. **Electric and Gas Service Requirements Manual (aka Greenbook)**

*Greenbook* information is available on the Internet at [www.pge.com](http://www.pge.com). To access the *Greenbook* online, perform the following steps.

1. Select either the "For My Home" or the "For My Business" link on the PG&E homepage.
2. Find the "Customer Service" drop-down and click on [Building and Renovation Services](#).
3. Scroll down the page until you see the [PG&E Greenbook](#) link.

**NOTE:** Communicate and coordinate all gas and electric service arrangements through local PG&E service planners. As mentioned earlier in this section, PG&E documents may be updated independently of this manual; however, the service planners will provide applicants with the latest updated or revised information on request. Applicants *must* contact their local PG&E service planners to ensure that they are correctly interpreting and using the information found in the *Greenbook* and other governing documents.

### 1.14.2. **Rates and Tariffs**

Rate and tariff information is available on the Internet at [www.pge.com](http://www.pge.com). To access the "[Rates and Tariffs](#)" link, perform the first two procedural steps described in Subsection 1.14.1. above. Then look to the right of the screen under the "Additional Info" or "Additional Resources" heading and click on the "[Rates and Tariffs](#)" link. This opens the "Tariff Book" website, where you can select items including current gas and electric rate schedules, preliminary statements, rules, forms, advice letters, and more.

## 1.15. Determining the Service Rating

- 1.15.1. For installations supplying a single main disconnecting means (i.e., single main disconnect), the rating of the service to be supplied is the rating of the termination section, pull can, service section, or main service switch continuous current rating (typically, whichever is greater). If a rating is *not* provided for the termination section, enclosure, or facility, then the rating is determined by the maximum rating of the service disconnecting means.

- 1.15.2.** For installations supplying a premises without a single disconnecting means (e.g., a service with multiple disconnects), the service rating will be the rating of the electrical enclosure or service-termination section, pull can, or other service-termination enclosure where PG&E terminates and connects its supply facilities and conductors.
- 1.15.3.** If the termination section, enclosure, or facility is *not* rated, the rating of the service will be the aggregated maximum ratings of all the service disconnects.

### **1.16. Changing an Applicant's Approved Project**

An applicant *must provide written notice to PG&E* of any changes or plans to make material changes either in the amount or in the character of the gas and/or electrical load, equipment, or other facilities installed to supply gas and/or electricity to the applicant's premises, structure, building, or other facilities. For more information, applicants can review [Electric Rule 2](#) and [Gas Rule 2](#), both called "Description of Service," as well as [Electric Rule 3](#) and [Gas Rule 3](#), both called "Application for Service." PG&E requires this written information to determine the following factors.

1. The adequacy of the existing utility service and supply facilities.
2. The need to modify those facilities to meet and supply the changed load or equipment requirements. This includes changes in the character or nature of the applicant's previously approved gas and/or electric service.

Applicants must notify PG&E of any planned or intended changes in the load, character, or nature of the service required to supply the premises, structure, building, or other facilities. If an applicant fails to notify PG&E, and the changes exceed the capabilities of the installed utility service, metering, or other equipment and damage those facilities, the applicant is liable for all damages and resultant costs to PG&E.

Applicants must provide PG&E with written notice *immediately* when they make any material change either in the amount or character of the electric lamps, appliances, or apparatus installed on the premises to be supplied with electric energy.

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## 1.17. Standard Residential Service Voltage

The purpose of this section is to clarify PG&E's voltage requirements when applicants design residential services.

### 1.17.1. Single-Phase Service

Unless the applicant qualifies for a three-phase service, the service voltage for single-family residential homes, duplex homes, town homes, condominiums, or apartment buildings is **120/240 V, single phase**.

PG&E will **not** supply 120/208 V, single-phase service to residential structures or buildings unless **both** of the following conditions are met.

1. A 120/208 V secondary system is established near the location where the requested service would be supplied.
2. The rating of the disconnecting means (i.e., the main switch or main disconnect) or of the service entrance does **not** exceed 200 amperes (A).

### 1.17.2. Three-Phase Service

If PG&E determines that a **single** residential building or structure justifies a 75 kVA transformer, then installing three-phase service is an **option** for the applicant. This applies whether the applicant plans to wire the individual residential units in a single-phase or a three-phase configuration. If the applicant requests the three-phase option, he or she must provide space on the property for PG&E to install a dedicated transformer. For more information, see [Electric Rule 2](#).

If, based solely on PG&E's estimation, the electric service demand is greater than that which can be supplied by a single-phase, 100 kVA transformer, then PG&E **must** supply three-phase service. The applicant must provide space on the property for PG&E to install a dedicated transformer.

Other load limitations and requirements used to determine qualification for three-phase service are contained in PG&E's [Electric Rule 2](#).

Three-phase service is available in 208Y/120, 240/120, or 480Y/277 voltages. The appropriate voltage depends on the minimum load requirements and the maximum demand load permitted by PG&E's [Electric Rule 2](#).

### 1.17.3. Mixed-Use Projects

Mixed-use projects include both commercial and residential loads. When designing a mixed-use project where the use occurs in separate buildings, ensure that each facility is supplied by a separate transformer. This means that a three-phase transformer could supply the commercial unit(s) and a single-phase transformer could supply the residential units(s).

If the mixed-use occurs in the same building, a single transformer typically will be installed to supply the building. ***The size and selection of the transformer is based solely on PG&E's estimated demand load.*** The applicant must provide space on the property for PG&E to install a dedicated transformer.

In some cases, PG&E may determine that the commercial and residential loads must be supplied by separate transformers and service facilities, including meters and metering facilities. PG&E will make this determination based on the nature or anticipated operation of the nonresidential loads and how they may affect the services. The applicant must provide space for those service facilities on the property.

***Again, when developing mixed-use projects, the applicant must communicate and work closely with PG&E early in the design phase.***