

Section 6 Electric Metering: Residential

6.1. Scope

This section provides specific information for residential metering that is *not* covered by the basic requirements in [Section 5](#), “Electric Metering: General.”

6.2. Residential Electric Service: Specifications and Requirements

Pacific Gas and Electric Company (PG&E) typically provides electricity for residential and commercial applicants served on a domestic rate schedule with 3-wire, 120/240-volt, single-phase, 60-hertz (Hz), alternating current (ac) service. However, the Company is able to supply 3-wire, 120/208-volt, single-phase, 60 Hz, ac service at some locations. ***This service is limited to a service-entrance rating of 200 amperes.*** Applicants should contact their local PG&E service planners and ask about the type of services that are available for their specific locations.

NOTE: See the “2008-2009 Service Planning Contact Information” at the front of this manual on Page iv for specific contact numbers listed by area.

6.2.1. Service Classes

The 125-ampere rated panels are classified as Class 100. The 225-ampere rated panels are classified as Class 200.

6.2.2. Test-Bypass Facilities

For single-phase residential installations, test-bypass facilities may be provided, but are not required. However, test-bypass facilities ***are*** required for the following installations.

- Service Class 320 meter or residential meter panels that are larger than 200 ampere, 120/240 volt, single phase, 3-wire.
- Three-phase meter panels.

6.3. Residential Electric Metering Pedestals

Residential electric meter pedestals, as shown in Figure 6-1, “Residential Electric Metering Pedestal,” below, must have a minimum rating of 100 amperes and must meet the requirements specified in the *Electric Utility Service Equipment Requirements Committee (EUSERC)* manual, Drawing 307.

For authorization to attach telephone and cable television terminating facilities to the post, contact your local PG&E service planner.

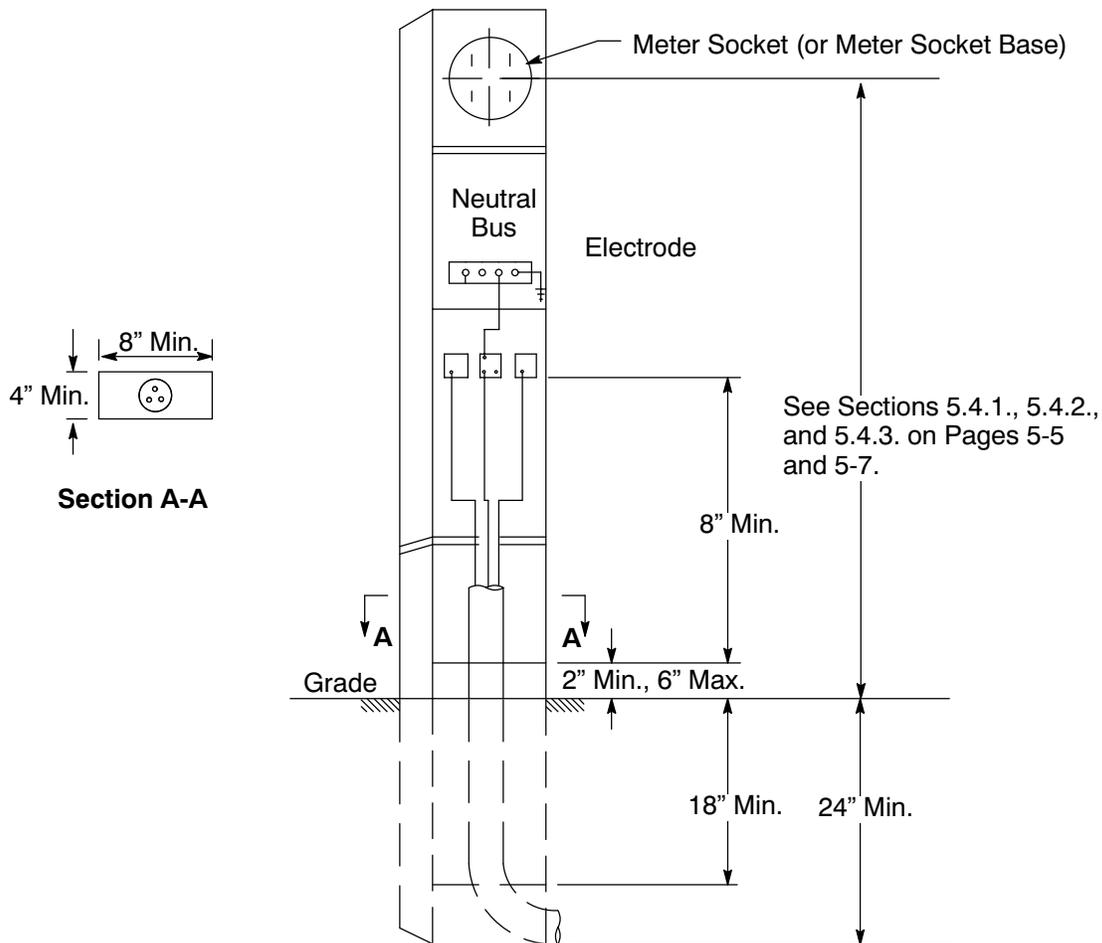


Figure 6-1
Residential Electric Metering Pedestal

6.3.1. Installing a Transient Voltage Surge Suppressor (TVSS), or Similar Device, at Meter Sockets

Applicants must *not* install a meter-adapter surge suppressor, or any similar interface device, between meter sockets and the electric revenue meter. This type of installation compromises the applicant’s electric service. PG&E personnel will remove surge suppressors or similar interface devices and leave them on the applicant’s premises if they are discovered.

6.4. Meter Locations

An applicant must consult a PG&E service planner during the initial construction phase of his or her project to determine the appropriate meter location and to ensure that adequate space is provided for the meter. PG&E must review and approve all meter installations *before* the meters are installed.

When meters are installed in a confined or enclosed area, applicants must ensure that they design a way for PG&E personnel to read the meters from the *outside* of the enclosures (e.g., window, opening).

The following four, lettered paragraphs provide location requirements that are applicable to residential metering.

- A. Locate the meters and metering equipment in outdoor, unfenced areas *or* mount them on, or recess them in, an exterior building wall. Do *not* mount metering equipment on, or recess metering equipment in, single family residences or inside garages.
- B. Locate the meters and metering equipment in a meter room that is accessible through an outside doorway.
- C. For a multifamily or residential building, locate the meters and metering equipment in a meter room or other acceptable location. Typically, an acceptable location will be on the ground floor or basement level of the building. The installation must be accessible directly from a public area.

An applicant who is planning to install metering equipment on any floor above the ground floor in a multistory building must contact a PG&E service planner as early as possible during the initial stages of the project. PG&E must approve of any equipment location that is above the building's ground level.

NOTE: In large, multifamily, multistory residential buildings (generally over 75 feet high), PG&E may, at its option, approve grouped meter locations on one or more upper floors.

- D. Locate electric meters in the same general area as gas meters when designing single-family residences. See [Section 2](#), "Gas Service," for clearance specifications.

6.4.1. Installing Utility Services to Mobile Homes

- A. Typically, PG&E will *not* supply utility services and/or metering facilities to mobile homes that are located or set up in any area, including a mobile home park, where utility service facilities are attached directly to the mobile home *except* under the following circumstances.
 1. The mobile home is fixed in place (e.g., no running gear or wheels). The mobile home must *not* be capable of movement.
 2. The mobile home is installed on a foundation system as described in [State of California Title 25, Division 1, Chapter 2, Article 7, Section 1333](#), "Foundation Systems."

B. PG&E will make an **exception** and install utility services to a location where mobile homes may be moved, including mobile home parks, under certain, specific conditions.

1. The mobile homes must be served by meter pedestals or other Company-approved services **and** the meter facilities must be installed at a fixed location.
2. Applicants are responsible for connecting their mobile homes to those fixed locations and to the meter pedestals or other utility facilities.

See Document [052521](#), “Electric Service Requirements for Mobile Home Developments,” for more information and for specifications. This PG&E document is included in [Appendix B](#) “Electric Underground Service Documents,” and also in PG&E’s *Electric Underground Construction Manual*, Volume 1.

6.5. Services

6.5.1. Single Meter: Underground Service

A. Services, 0 Through 225 Amperes, Single Phase

Figure 6-2, “Typical Underground Service-Termination Enclosure, Combination Meter-Socket Panel (Residential, 0 Through 225 Amperes),” on Page 6-5, illustrates a single, underground, residential, single-phase, meter panel (i.e., 4 terminal for a 120/240-volt service and 5 terminal for a 120/208-volt service).

NOTE: For details about the dimensions of Figure 6-2, see [Section 9](#), “Electric Metering: Components.”

The numbered items below describe the applicant’s requirements when designing these types of underground services.

1. Design the socket and enclosure for underground service conductors.
2. Ensure that enclosures designed for either overhead or underground service entry meet all of the requirements for **both** types of service.
3. Ensure that all cable-termination lugs are suitable to use with both aluminum and copper conductors. The lugs must be compatible with a range of conductor sizes.

The **minimum** conductor size for services up to 125 amperes is #6 American wire gauge (AWG) to 1/0 AWG. The **minimum** conductor size for services rated from 126 amperes to 225 amperes is 1/0 AWG to 250 thousand circular mils (kcmil).

4. Use separate, independently supported, service-termination lugs that extend from the socket, and connect to it, using a bus bar. Provide a minimum radial clearance of 1-1/2 inches between the hot bus terminals and the ground or neutral services.

5. Ensure that the socket enclosure has a separate lug in the sealable section. Use this lug exclusively for terminating PG&E's neutral conductor. If the neutral terminal is insulated from the enclosure, PG&E will provide the applicant with a bonding screw or jumper.
6. Ensure that the applicant-owned wiring that extends from the distribution section (i.e., branch circuits) does **not** pass through the sealable section(s).
7. Locate the applicant's service-grounding electrode conductor outside of the sealable section and design it to permit the applicant's grounding system to be isolated easily from PG&E's neutral, when necessary.

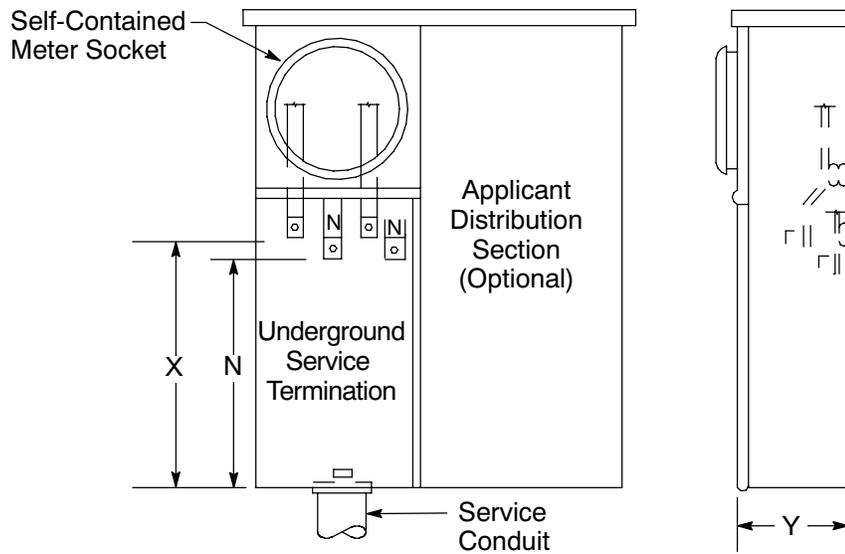


Figure 6-2
Typical Underground Service-Termination Enclosure, Combination Meter-Socket Panel
(Residential, 0 Through 225 Amperes)

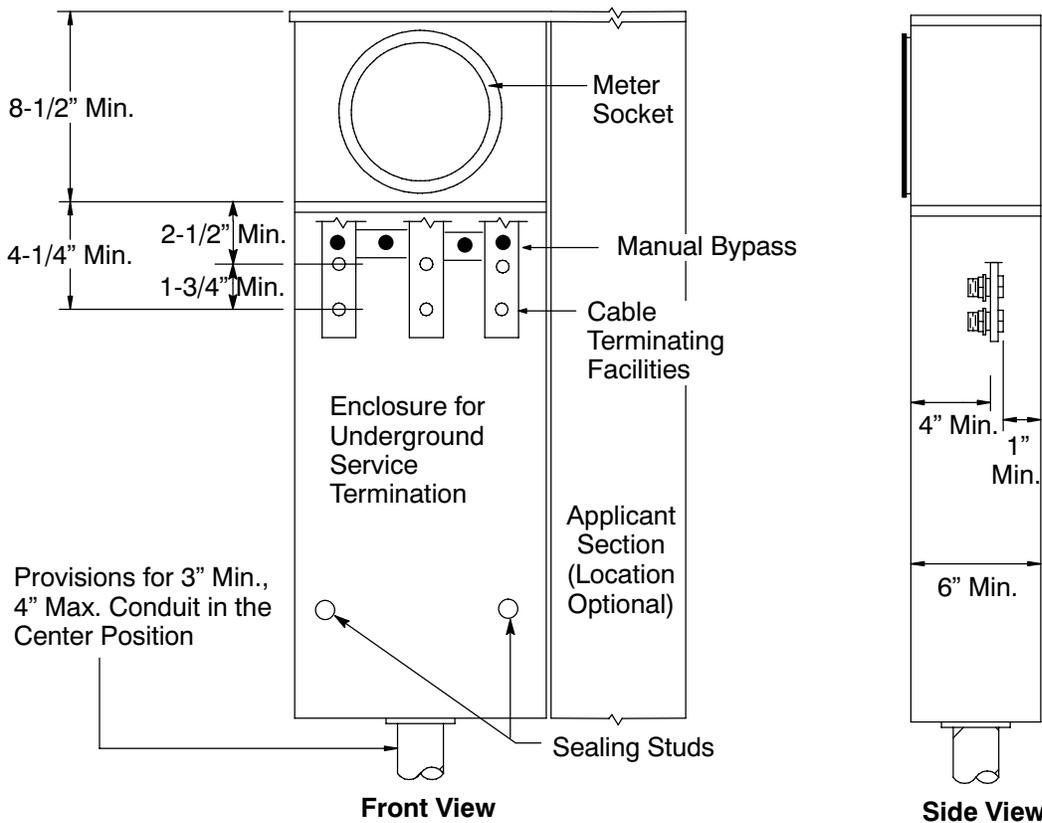
Table 6-1 Residential (0 Through 225 Amperes) Enclosure

Rating in Amperes	X Minimum Dimension	Y Minimum Dimension	N Minimum Dimension	Conduit Range
	(In Inches)			
Up to 125	8	4	6	3
126 to 225	11	5-1/2	8-1/2	3

B. Services, 226 Amperes Through 320 Amperes, 120/240 Volts, Single Phase, Residential

Figure 6-3, “Typical Service-Termination Enclosure, Combination Meter-Socket Panel for a Class 320 Meter (Residential/Commercial, 120/240-Volt, 226-Ampere Through 320-Ampere Service),” below, illustrates a single, underground, residential, single-phase, 120/240-volt, Class 320-ampere meter panel. Applicants must ensure that this panel:

1. Conforms to the requirements for underground-fed, 320-ampere metering equipment.
2. Is designed with test-bypass facilities and has provisions for using manual bypass links.
3. Is marked with either a rating of “320 Amperes Continuous” or “400 Amperes Maximum (320 Amperes Continuous).”



**Figure 6-3
Typical Service-Termination Enclosure, Combination Meter-Socket Panel for a Class 320 Meter
(Residential/Commercial, 120/240-Volt, 226-Ampere Through 320-Ampere Service)**

C. Services, 201 Amperes Through 400 Amperes, 120/208Y Volts, Three Phase

Figure 6-4, “Combination Meter and Current-Transformer Cabinet, Underground Service (201 Amperes Through 400 Amperes),” below, illustrates a single-metered, underground, residential, three-phase meter panel.

NOTE: For details about the dimensions of Figure 6-4, see [Section 9](#).

Applicants must ensure that their service-entrance conductors meet the following requirements.

1. The conductor must include the lugs required to connect the service-entrance conductors to the load side of the current transformer’s mounting base.
2. The conductor must enter the current-transformer cabinet at or within 2 inches of the top or bottom and leave the cabinet *either* at or within 2 inches of the top or bottom of the opposite end of the cabinet *or* enter and exit at or within 2 inches of the same end of the current-transformer cabinet. Route the conductor carefully when using this option.

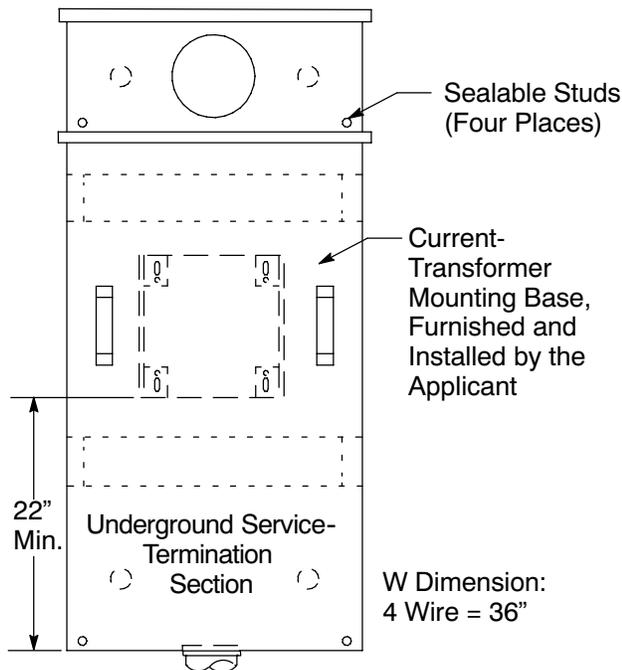


Figure 6-4
Combination Meter and Current-Transformer Cabinet, Underground Service
(201 Amperes Through 400 Amperes)

D. Single-Phase Services, 400 Amperes Through 600 Amperes, 120/240 Volts and Three-Phase Services, 400 Amperes and Above, 120/240 Volts or 120/208Y Volts, With Current Transformers

Applicants *must* consult their local PG&E service planners when single-phase services exceed 400 amperes. Applicants may need to install three-phase service to conform to PG&E’s [Electric Rule 2](#), “Description of Service,” requirements.

Figure 6-5, shown below, illustrates a “Typical Underground, Separate-Bused, Current-Transformer Cabinet and Safety-Socket Meter Box Assembly, 120/240-Volt, 400-Ampere Through 600-Ampere Service” and meter panel.

NOTE: For details about the dimensions of Figure 6-5, see [Section 9](#).

Applicants must ensure that their service-entrance conductors meet the following requirements.

1. The conductor must include the lugs necessary to connect the service-entrance conductors to the line and load sides of the current-transformer mounting base and to the load side of the termination facilities in the underground, service-termination pull box.
2. The conductor must enter the current-transformer cabinet at or within 2 inches of the top or bottom and leave the cabinet *either* at or within 2 inches of the top or bottom of the opposite end of the cabinet *or* enter and exit at or within 2 inches of the same end of the cabinet. *Applicants must ensure that the conductor is routed carefully when using this option.*

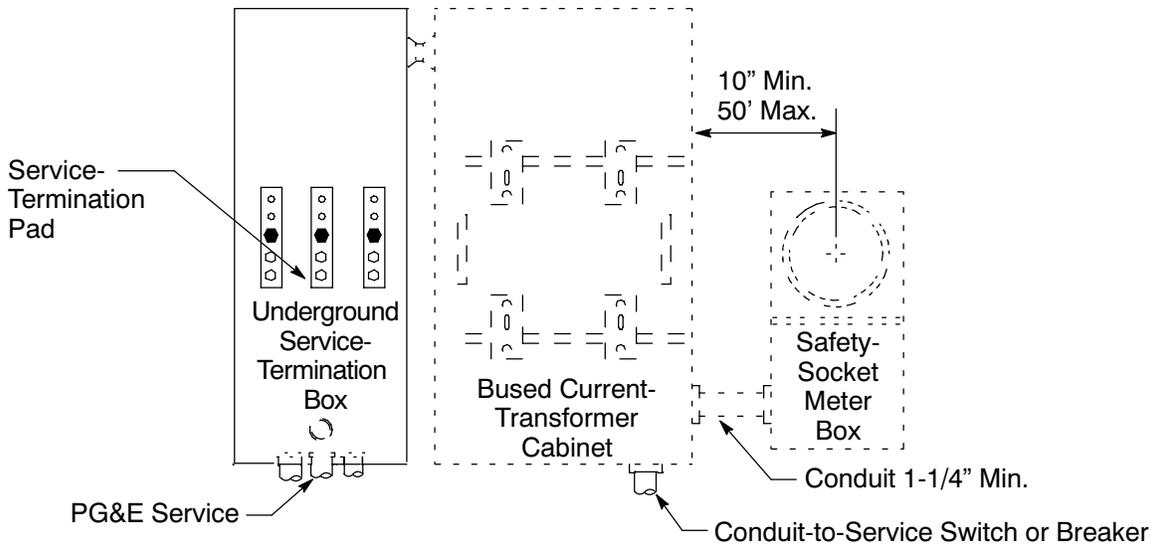


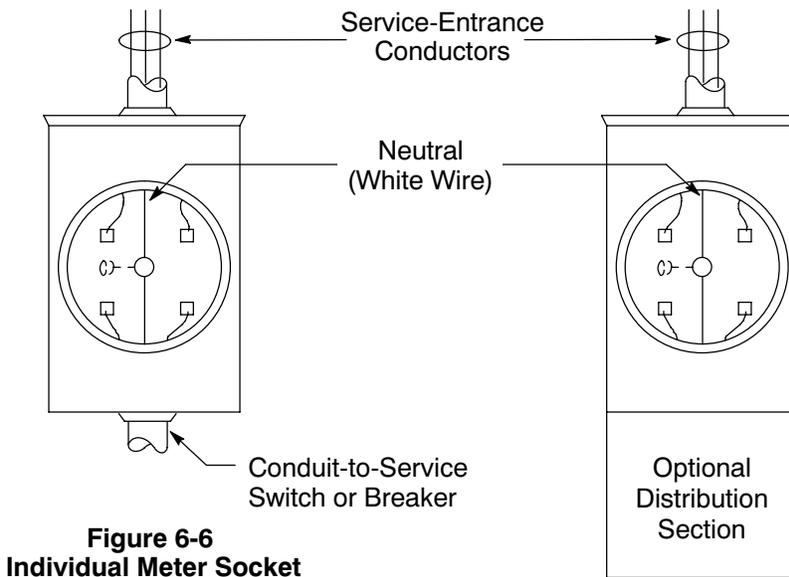
Figure 6-5
Typical Underground, Separate-Bused, Current-Transformer Cabinet and Safety-Socket Meter Box Assembly, 120/240-Volt, 400-Ampere Through 600-Ampere Service

6.5.2. Single Meter: Overhead Service

A. Services, 0 Through 225 Amperes, Single Phase

Figure 6-6, “Individual Meter Socket,” and Figure 6-7, “Combination Meter Socket Load Center,” both shown below, illustrate the 4-terminal, 120/240-volt and 5-terminal, 120/208-volt overhead service and meter panel.

Enclosures designed for a combination of overhead and underground conductors must meet *all* of the requirements for both types of conductor entry.



**Figure 6-6
Individual Meter Socket**

**Figure 6-7
Combination Meter Socket Load Center**

B. Services, 226 Amperes Through 320 Amperes, 120/240 Volts, Single Phase

Applicants must ensure that the 320-ampere, 120/240-volt panel is marked with either a rating of “320 Amperes Continuous” or “400 Amperes Maximum (320 Amperes Continuous).”

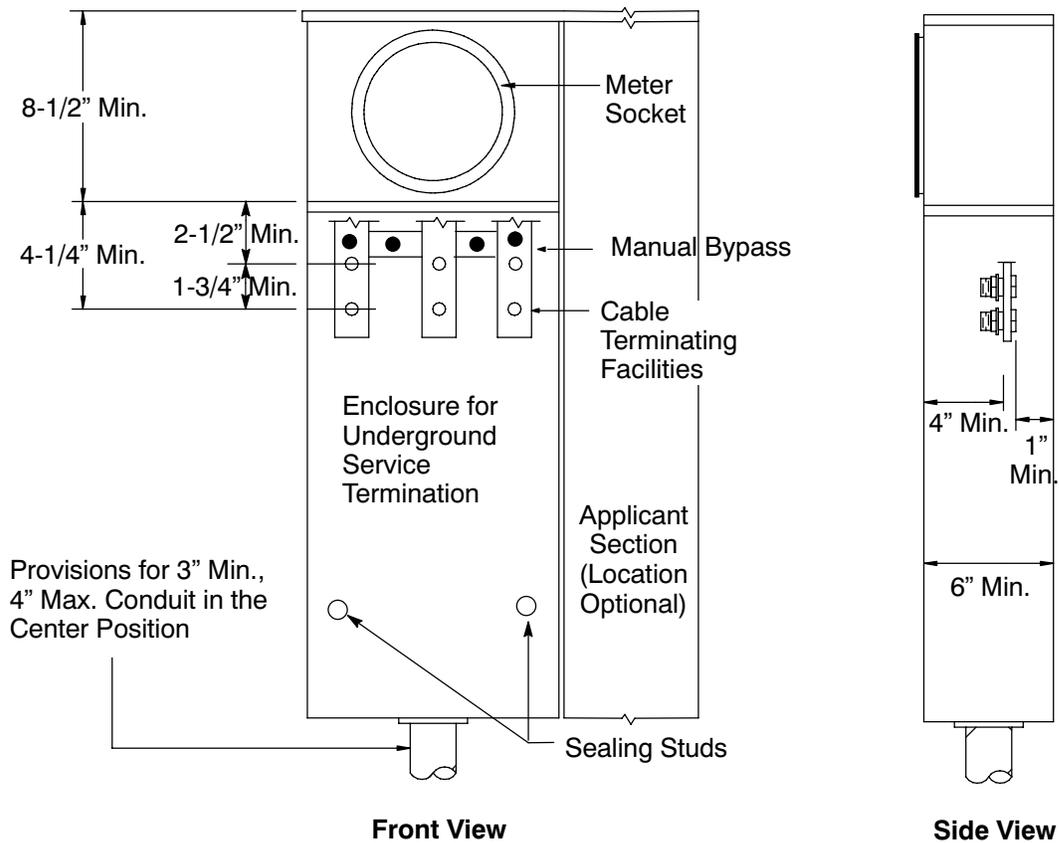


Figure 6-8
Typical Service-Termination Enclosure, Combination Meter Socket Panel for a Class 320 Meter
(Residential/Commercial, 120/240-Volt, 226-Ampere Through 320-Ampere Service)

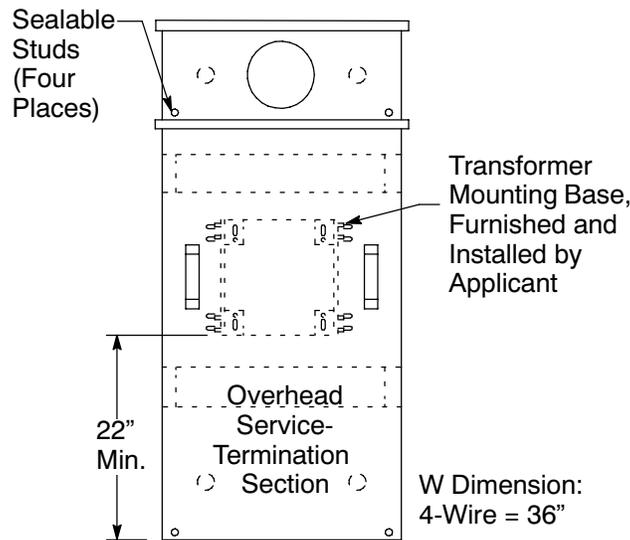
C. Services, 201 Amperes Through 400 Amperes, 120/208Y Volts, Three Phase

Figure 6-9, “Overhead-Fed Combination Meter (201 Amperes Through 400 Amperes),” below, illustrates a single-metered, overhead, residential, three-phase service and meter panel.

NOTE: For details about the dimensions of Figure 6-9, see [Section 9](#).

Applicants must ensure that their service-entrance conductors meet the following requirements.

1. The conductor must include the lugs required to connect the service-entrance conductors to the load side of the current transformer’s mounting base.
2. The conductor must enter the current-transformer cabinet at or within 2 inches of the top or bottom and leave the cabinet *either* at or within 2 inches of the top or bottom of the opposite end of the cabinet *or* enter and exit at or within 2 inches of the same end of the cabinet. *Applicants must ensure that the conductor is routed carefully when using this option.*



**Figure 6-9
Overhead-Fed Combination Meter
(201 Amperes Through 400 Amperes)**

D. Services, 401 Amperes Through 600 Amperes, 120/240 Volts, Single Phase and Services, 401 Amperes and Above, 120/240 Volts or 120/208Y Volts, Three Phase, With Current Transformers

Applicants *should* consult with a PG&E service planner before installing single-phase services that exceed 400 amperes. Applicants may need to install three-phase service to conform to PG&E's [Electric Rule 2](#) requirements.

Figure 6-10 shows a single, overhead, residential, single-phase or three-phase service and meter panel with current transformers. Applicants must ensure that their service-entrance conductors meet the following requirements.

NOTE: For details about the dimensions of Figure 6-10, see [Section 9](#).

1. The conductor must include the lugs required to connect the service-entrance conductors to both the line and load sides of the current transformer's mounting base and to the load side of the termination facilities in the underground service-termination pull box.
2. The conductor must enter the current-transformer cabinet at or within 2 inches of the top or bottom and leave the cabinet *either* at or within 2 inches of the top or bottom of the opposite end of the cabinet *or* enter and exit at or within 2 inches of the same end of the cabinet. *Applicants must ensure that the conductor is routed carefully when using this option.*

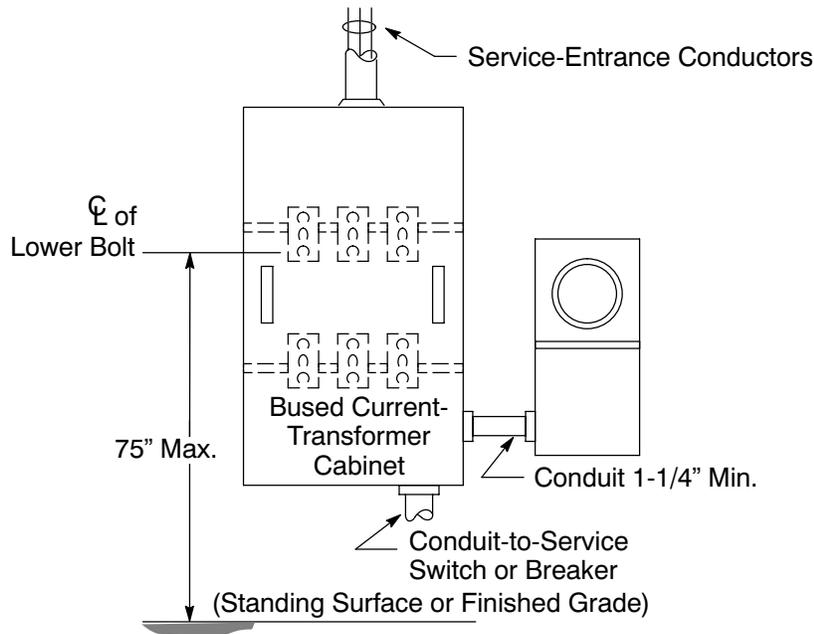


Figure 6-10
Overhead-Fed, Separate-Based, Current-Transformer Cabinet and Meter Box
(401 Amperes and Above)

6.5.3. Multiple Meters

PG&E requires grouped, single-meter installations for multifamily residential buildings.

This requirement excludes row-type condominiums where each unit is considered a single-family residence and is metered individually. Row-type condominiums must meet the applicable metering requirements described in the following subsections.

A. Grouped-Meter Installation Ampacity Ratings

The ampacity rating of a grouped-meter installation must be as described below.

1. For multimeter installations with two to six meter sockets, the ampacity rating must be *either* the ampacity of the service-entrance conductors *or* the ampacity of the main service disconnect, when one is installed.
2. For multimeter installations with seven or more meter sockets, the ampacity rating must be the ampacity of the main service disconnect rating.

B. Grouped Meter-Socket Spacing and Socket Blank-Off Covers

PG&E requires a 7-1/2-inch horizontal and 8-1/2-inch *minimum* vertical center spacing between meter sockets. The Company will provide and install nonconductive, meter-socket, blank-off covers *before* energizing the meter panels with vacant meter sockets. PG&E will *not* energize meter panels and sockets unless blank-off meter covers are installed.

C. Individual Meter Sockets With Wiring Gutters

PG&E will accept meter sockets with wiring gutters, as shown in Figure 6-11, "Meter Sockets With Wiring Gutters," on Page 6-14, only when applicants either are updating and/or adding on to existing installations.

PG&E will accept individual meter sockets in combination with a wiring gutter *only* for an applicant's service-entrance conductors and *only* when unmetered service-entrance conductors and metered-load conductors are *not* installed in the same conduit, raceway, or wiring gutter.

To conserve space and lower equipment costs, applicants should consider installing a combination multimeter, as described in Subsection 6.5.3.D., "Combination Multimeter Information," on Page 6-14. Or, applicants could install a meter trough, as described in Subsection 6.5.3.E., "Meter Trough Installations," on Page 6-17.

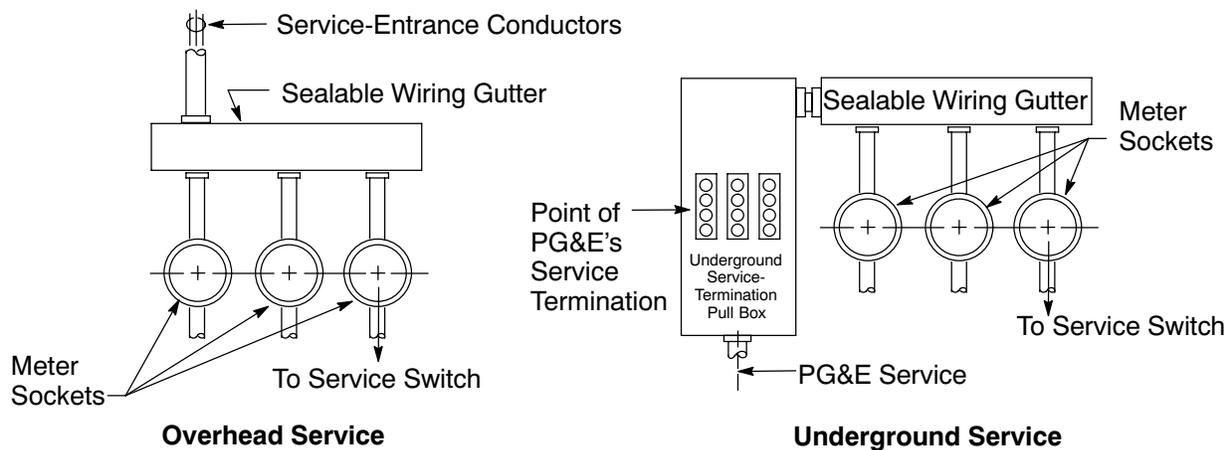


Figure 6-11
Meter Sockets With Wiring Gutters

D. Combination Multimeter Installation

A combination multimeter installation consists of the following equipment.

- A main switch (if one is installed or required by local jurisdiction)
- Unmetered wiring gutter
- Multiple meter sockets
- An appropriate number of circuit breakers

See [Section 5](#), “Electric Metering: General,” Subsection 5.7., “Main Service Disconnects and Switching Sequences,” on Page 5-13, for more information on disconnects and switches.

Examples of PG&E-approved, combination, multimeter installations are illustrated in Figure 6-12, “Typical, Manufactured, Combination, Multimeter Installation: Seven Meters or More,” on Page 6-15, and Figure 6-13, “Clearances for a Typical, Manufactured, Combination, Multimeter Installation,” on Page 6-16.

Applicants must ensure that all multimeter installations meet the following requirements.

1. Individually meter multiple apartments in one building. Separate metered and unmetered conductors.
2. Use factory (or factory-equivalent), harness-style wiring *or* bus between the unmetered wiring gutter and the line terminals of each meter socket. Harness-style wiring or bus also must be used between the load terminals of each meter socket and the line side of the corresponding circuit breaker.

3. Ensure that the panels are designed to permit any individual meter socket block or jaw assembly to be replaced. Applicants must **not** mount more than two meters on a single, removable panel. Removable meter-panel covers must **not** exceed 6 square feet in area.
4. Ensure that the panel's design and construction meets the clearance requirements provided in Figure 6-13 and in Table 6-2, "Dimension Specifications for Multimeter Installations," on Page 6-16.
5. Increase Dimension B, shown in Figure 6-13 on Page 6-16, by the amount that the main switch door, including the operating handle, reduces the clearance when opened 90°.
6. Ensure that panels are removable so that PG&E personnel can perform wiring inspections.

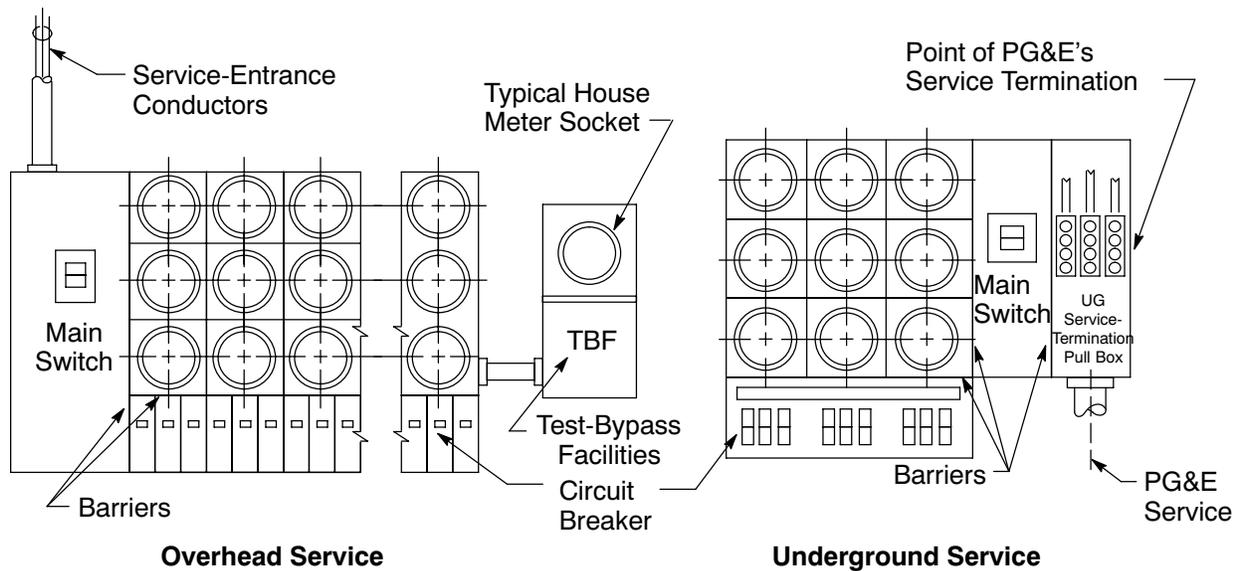


Figure 6-12
Typical, Manufactured, Combination, Multimeter Installation: Seven Meters or More

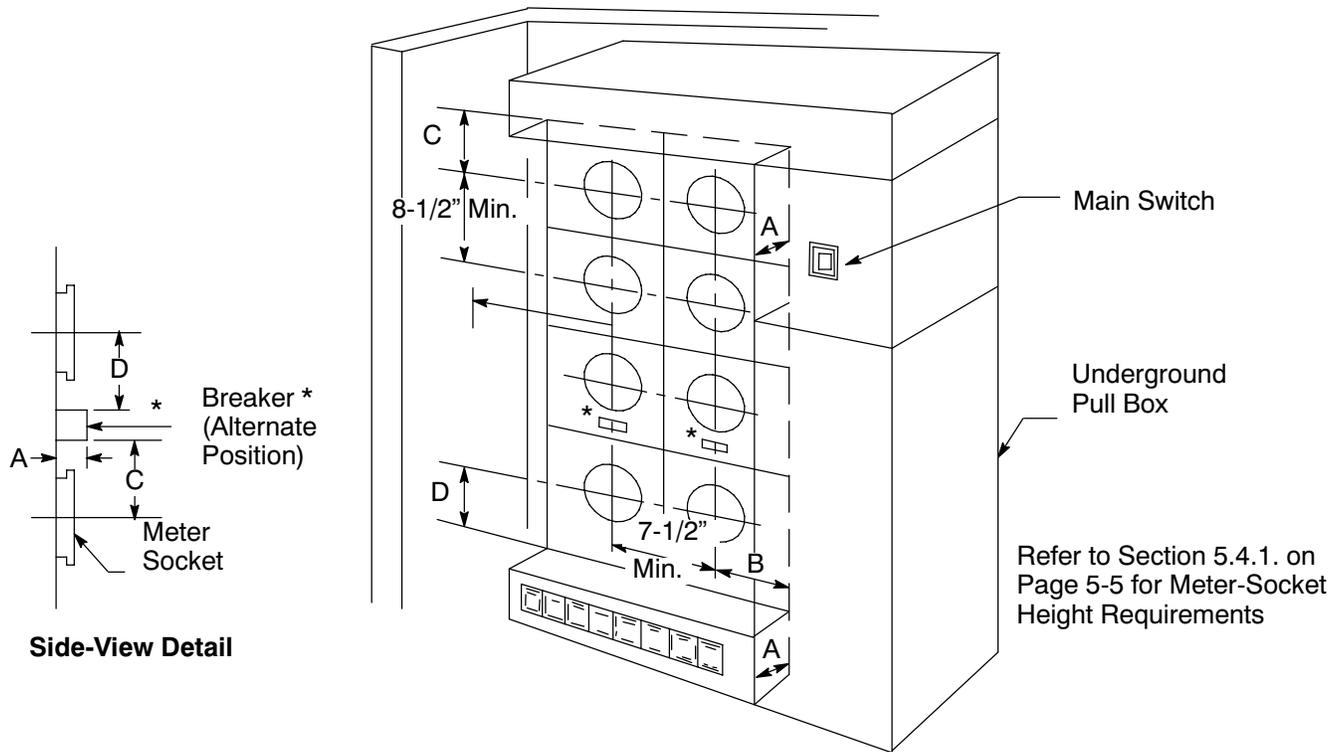


Figure 6-13
Clearances for a Typical, Manufactured, Combination, Multimeter Installation

Table 6-2 Dimension Specifications for Multimeter Installations

A—Protrusions (in Inches)	B	C	D
	All Measurements Are Minimum Dimension in Inches		
0 (No Protrusion)	3-3/4	4	4-3/4
Greater Than 0 to 1-1/8	4-1/4	4	4-3/4
Greater Than 1-1/8 to 2	4-1/4	4-1/4	6-1/4
Greater Than 2 to 4	6-1/4	4-1/4	8
Greater Than 4 to 11 Maximum	6-1/4	10	8

E. Meter Trough Installations

PG&E accepts meter trough installations using ring-type sockets only for reconstructing and adding to existing installations. In addition to meeting the general requirements for meter sockets, applicants must ensure that meter troughs meet the following general requirements.

1. Where there are four, five, or six sockets in one trough, the incoming service conductors must terminate on a main bus that is supported independently of the socket jaw assembly.
2. The panel design must permit individual, meter-socket blocks or jaw assemblies to be replaced individually. Applicants must *not* mount more than two meters on a single, removable front panel.
3. Metered and unmetered conductors must be separated, clearly showing that the entire load is being metered.
4. The panels must be removable so that wiring inspections can be performed.

Figure 6-14, below, and Figure 6-15, on Page 6-18, illustrate meter trough installations served by underground or overhead service.

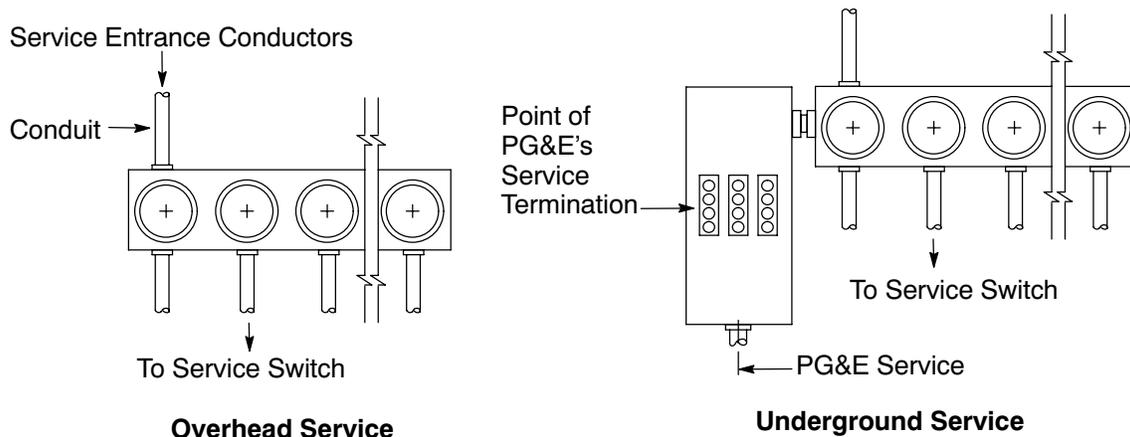


Figure 6-14
Horizontal Meter Trough Installation: Six Meters or Less

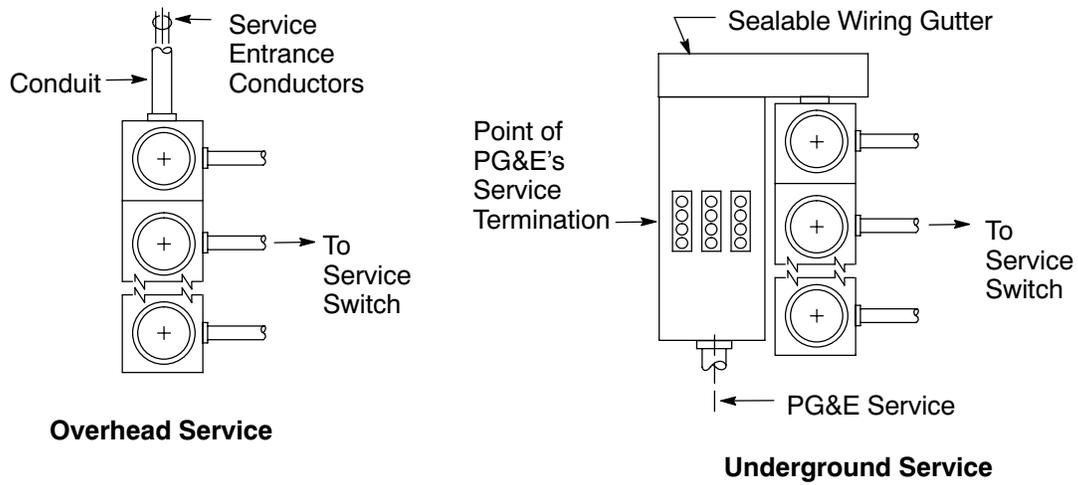


Figure 6-15
Vertical Meter Trough Installation: Five Meters or Less