

2017 - 2018 Electric & Gas Service Requirements (Greenbook) Overview

INTRODUCTION

The *Greenbook* contents and standard documents are updated regularly to provide users with the most current information possible. In conjunction with this effort, the 2016 *Greenbook* was reviewed and revised in its entirety by the Greenbook Committee. As a result of this review, major and minor revisions were made throughout the 2017 - 2018 *Greenbook*. These revisions include using simplified language, eliminating duplicate wording and figures, and providing updated and additional information. This “Overview” lists the major or noteworthy edits made to the 2017 – 2018 *Greenbook*. Users can reference this information to review those edits. Minor edits to the *Greenbook*, including grammatical changes, are **not** noted here.

NOTE: These revisions are effective the day the 2017 – 2018 *Greenbook* is published.

GENERAL INFORMATION

Cover

The date on the front cover reflects the 2017 – 2018 edition of the manual. Since updated editions of the *Greenbook* are published during the middle of the year a new date format has been used to reemphasize to users that the requirements are still in effect next year until a new version has been published.

The back cover contains information for contacting Underground Service Alert (USA) and describes the USA color-code identifiers.

Preface

Included information on page ii, that is also found in section 1.4. Changes in Requirements. In summary, PG&E may revise its design and construction documents relating to applicant service requirements between updates to this manual and that the design and construction document in effect on the date the applicant’s service design is approved and signed-off by the PG&E supervisor determines the requirements that the design must meet. If the applicant does not fulfill obligations under the extension agreement, PG&E may, at its discretion, cancel the agreement (see Provisions Form 62–0982, Section 20). PG&E can then request another review of the design before approving construction activities.

ENGINEERING AND SERVICE DOCUMENTS

NOTE: Users can find the most current versions of PG&E electric and gas service documents and engineering documents, located in Appendix B and Appendix C, online at www.pge.com/greenbook.

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The *Greenbook* includes engineering documents required to perform the work described in this manual. The requirements for installing gas and/or electric service facilities are specified in the engineering documents that are in effect **on the date that PG&E approves the service design**. Typically, that is when PG&E provides the customer with a confirmation of gas and/or electric service.

The significant changes in this edition of the *Greenbook* are listed by section and Appendix on the following pages.

MAJOR CONTENT CHANGES

Section 1 General

- Added new information to subsection 1.10. *Underground Electric Lines and Gas Pipelines*, that when any new vegetation is planted, ensure that a minimum of 5 feet is maintained from underground gas utilities. Please refer to PG&E's Guide to Safe Landscaping Near Gas Pipelines for helpful information about the types of trees and plants that are safe for areas near gas pipelines.

Section 2 Gas Service

- Updated item B.1. in subsection 2.2.1. *Establishing New Gas Service*, that written details for required clearances in meter set assemblies are also included in the drawing. (Meter locations are subject to PG&E approval).
- Updated item B.4. in subsection 2.2.1. *Establishing New Gas Service*, that PG&E will not pressurize a system that has not received final design approval and passed all inspections.
- Added new note 3. for Figures 2-2, 2-3, and 2-4 stating; Some jobs may require bell holes with larger dimensions and trench shoring.
- Updated subsection 2.3.3. *Curb Valves*, with updated information for notes 1 through 3 in item A.
- In subsection 2.4.2.A.1. *Approved Meter Set Locations (In Order of Preference)*, information was included to consult with your local Service Planning office for guidance on alcove's and lighting, wiring, foreign pipes, or other facilities are not allowed in the alcove.
- Moved the communications enclosure 12" away from the electric conduit to show the minimum required clearance in Figure 2-19 *Electric and Gas Meter Set Separation Dimensions and Clearances*.
- Changed the title of item 2.4.2.F. *Requirements for Gas Meter Cabinets Gas Meter Rooms, Enclosures, and Closets*. New requirements have been added to note 1.

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- A disclaimer has been added to 2.5. *Applicant-Owned and Installed Gas Service Piping (e.g., Houseline), Valves, and Automatic Shut-Off Devices*, that PG&E reserves the right to suspend service until applicant-owned equipment is removed from PG&E meter-set assemblies.

Section 3 Electric Service: Underground

After 3.3.9. *Providing a Service-Termination Facility*, the following reference information was added; NOTE: See new service and current transformer (CT) installation requirements in Section 5, "Electric Metering: General," Subsection 5.2.4., "Requirements for Installing Secondary Terminations (0–600 Volt) in Metering Equipment Requiring CTs," on Page 5-4.

Section 4 Electric Service: Overhead

- No changes.

Section 5 Electric Metering: General

- After 5.1. *Scope*, the following reference information was added; NOTE: See new service and current transformer (CT) installation requirements in Section 5, "Electric Metering: General," Subsection 5.2.4., "Requirements for Installing Secondary Terminations (0–600 Volt) in Metering Equipment Requiring CTs," on Page 5-4.
- The requirements in item F. of 5.2.3. *Applicant Responsibilities*, has been updated. Meter panels rated less than 500 kW are no longer required to install a ½" conduit for the phone line. The previous rating was 200 kW. This requirement is still in effect for meter panels rated 500 kW or greater. The associated ampacity rating for these panels has also been updated accordingly.
- Added a new subsection 5.2.4. *Requirements for Installing Secondary Terminations (0–600 Volts) in Metering Equipment Requiring CTs*, describing the construction requirements for installing secondary terminations at customer switchboards or meter panels when 600 V metering CTs have not been installed.
- Removed the location and exception in subsection 5.3.2., *Prohibited Meter and Service Equipment Locations*, prohibiting new or upgraded meter panels on bedroom walls. This location, bedroom walls, is not preferred but now allowed.
- In Figure 5-2 *Electric and Gas Meter Set Separation Dimensions and Clearances* subsection located in 5.4.3. *Meter Set Clearance Requirements*, the communications enclosures have been moved 12" away from the electric conduit to show the minimum required clearance.

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- Added information to 5.4.4. *Working Space*, that elevated platforms in flood plains or other areas must be approved by the local metering department.
- Added requirements to Table 5-2 *Working Space Dimensional Requirements*, in subsection 5.4.4. *Working Space*, for wall-mounted metering equipment inside closets.
- Updated Figure 5-5 *Preferred Location of Conduits for Indoor and Outdoor Meter Panels and Switchboards*, to show a Minimum Working Space Height. The conduit and its routing has also been modified.
- Updated subsection 5.5.1. *Properly Identifying and Marking Meters*, with examples describing acceptable and unacceptable permanent markings. The acceptable marking have been further classified as preferred and non-preferred.
- Modified subsection 5.6.2. *Installing Non-Allowed and Unauthorized Customer Equipment*, to include PG&E-approved meter socket adapters used for residential solar (i.e., photo-voltaic) generation systems are also exempt and now allowed.
- Made extensive updates to subsection 5.6.3. *Fire-Pump Connections*, to require the fire pump service disconnect and switchboard or meter panel be located in the same electrical room as the main service equipment. The disconnect and metering equipment are not allowed in a separate room or building. The various options for installing a fire pump service have been described in detail. New Figure 5-8, *Fire-Pump Equipment Location and Service Connection Options*, has been included.
- Clarified the requirements in subsection 5.7.1. *Main Service Disconnects*, indicating that PG&E requires the main disconnect to be located with transformer-rated metering equipment and does not allow the disconnect to be located in another location. Also that this is not a requirement for self-contained metering equipment.
- Provided new information in subsection 5.10.1. *Specific Interconnection Requirements for Services Up to 600 Volts*, that a nonfusible ac disconnect switch may be installed if the generation is connected to a dedicated, alternative generation breaker that came manufactured (e.g., solar ready) with the meter panel.

Section 6 Electric Metering: Residential

- Designated live-work buildings with 2 or more units also require test-bypass facilities for the common and tenant area meter panels. This is in subsection 6.2.2. *Test-Bypass Facilities*.

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Section 7 Electric Metering: Commercial, Industrial, and Agricultural

- Throughout this section clarification that Applicants must install only one set of service-entrance conductors or load conductors in the metering equipment. Also one set of conductors means one conductor per phase.

Section 8 Electric Metering: Direct Access

- No changes.

Section 9 Electric Metering: Components

- No changes.

Section 10 Electric Switchboards: 0 Through 600 Volts

- Updated item B in subsection 10.3.4. *Standard Switchboard CT Compartment, 0 Amps Through 1,200 Amps, Single-Phase or Three-Phase, 3-Wire Service*, to ensure that openings in the barrier and clearances to the outer edges do not exceed 3/8 inch. Use non-conductive fasteners to attach the barrier.
- Updated item B in subsection 10.3.5. *Standard Switchboard CT Compartment, 0 Amps Through 1,200 Amps, Three-Phase, 3-Wire and 4-Wire Services*, to ensure that openings in the barrier and clearances to the outer edges do not exceed 3/8 inch. Use non-conductive fasteners to attach the barrier.
- Added new Figure 10-3 *Bus Drilling Detail*, to subsection 10.3.5. *Standard Switchboard CT Compartment, 0 Amps Through 1,200 Amps, Three-Phase, 3-Wire and 4-Wire Services*.
- Updated item H in subsection 10.3.6. *Standard Switchboard CT Compartment, 1,001 Amps Through 3,000 Amps, Single-Phase or Three-Phase, 3-Wire Service*, to ensure that openings in the barrier and clearances to the outer edges do not exceed 3/8 inch. Use non-conductive fasteners to attach the barrier.
- Updated item G in subsection 10.3.7. *Standard Switchboard, CT Compartment, 1,001 Amps Through 3,000 Amps, Three-Phase, 4-Wire Service*, to ensure that openings in the barrier and clearances to the outer edges do not exceed 3/8 inch. Use non-conductive fasteners to attach the barrier.
- Updated item G in subsection 10.3.8. *Standard Switchboard CT Compartment, 3,001 Amps and Larger, Three-Phase, 3-Wire Service*, to ensure that openings in the barrier and clearances to the outer edges do not exceed 3/8 inch. Use non-conductive fasteners to attach the barrier.

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Section 11 Electric Switchboards: 601 Volts Through 25,000 Volts

- Clarified item A. in subsection 11.3. *Specific Requirements for High-Voltage Switchboards*, that the voltage disconnect switch handle must be visible when the outer door of the switchboard is opened.
- Updated item L. in subsection 11.3. *Specific Requirements for High-Voltage Switchboards*, that three neutral lugs, that accept a wire range between #6 to #10, should be provided in the PT section
- Added new requirement in item R. of subsection 11.3. *Specific Requirements for High-Voltage Switchboards*, to apply a label to the PT disconnect switch, stating “Meter & PT Disconnect Switch. Does Not De-Energize Load.”
- Added new requirement in item V. of subsection 11.3. *Specific Requirements for High-Voltage Switchboards*, stating that an interlocking system is required to ensure the PT disconnect is locked open fully before the PT compartment door can be opened and entered.
- Added phase to ground and phase to phase minimum clearances to Figure 11-6 *Typical, High-Voltage Metering Enclosure, 17,001-Volt Through 25,000-Volt Service*.

Appendix A Acronyms and Glossary

- Added a new definition to Appendix A: Acronyms and Glossary. “*Service Delivery Point (Electric Supply)*”: The point where PG&E’s service drop wires/conductors connect to the applicant’s service-entrance conductors for an overhead service. For an underground service, either the point where PG&E’s service cables/conductors connect to the applicant’s electric meter panel, switchboard, or service termination equipment; or the point where PG&E’s service cables/conductors connect directly to applicant’s service-entrance conductors.

Appendix B Electric and Gas Service Documents

- The title for Utility Bulletin TD-6999B-005 has been changed to, “*Virtual Net Energy Metering Installations*”, This document also has updated requirements.
- The title for Utility Bulletin TD-6999B-048 has been changed to, “*Requirements for Line Side Interconnections for Distributed Generation*”. This document also has updated requirements.
- Added new document, TD-6301B-001, “*Installing 600 Volt Current Transformers*”.
- Added new document, TD-2424B-002, “*New Construction Requirements for Installation of Secondary Terminations in Customer Panels Requiring Current Transformer (CT) Installation*”.

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- An updated revision for TD-2999B-030, “*Technical Requirements for Electric Service Interconnection at Primary Distribution Voltages*”, has been included.

Appendix C Electric and Gas Engineering Documents

- New documents or updated revisions for the following engineering documents has been included in the Greenbook manual;
 - A-93.3 Excess Flow Valves
 - 013109 Corrosion Resistant Ground Rods and Ground Rod Clamps
 - 015251 Connectors for Insulated Cables Underground Distribution Systems
 - 025055 Requirements for Customer-Owned Poles
 - 028028 Secondary Electric Underground Enclosures
 - 038193 Minimum Requirements for the Design and Installation of Conduit and Insulated Cable
 - 052521 Electrical Service Requirements for Mobile Home Developments
 - 054712 Permanent Wood Post Installation Underground Electric Service
 - 057521 Pad-Mounted Transformer Installed Indoors
 - 058087 Agricultural Overhead Service 300 HP or Less
 - 060559 Disconnect Switch Requirements For Distributed Generation Customers
 - 062000 Primary Electric Underground Enclosures
 - 062288 Underground Conduits
 - 063422 Landscape Screen for Pad-Mounted Transformers
 - 063927 Methods and Requirements for Installing Residential Underground Electric Services 0–600 V to Customer-Owned Facilities
 - 063928 Methods and Requirements for Installing Commercial Underground Electric Services 0–600 Volts to Customer-Owned Facilities
 - 065374 Overhead and Underground Panel Board Construction
 - 066211 PG&E-Approved Electric Distribution Materials Manufacturers
 - 076268 Painting of PG&E Electric Distribution Pad-Mounted and Subsurface Equipment