SUMMARY

The Greenbook contents and standard documents are updated regularly to provide users with the most current information possible. In conjunction with this effort, the 2017 – 2018 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 2020 – 2021 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 2020 – 2021 Greenbook. Users can reference this information to review those edits. Minor edits to the Greenbook, including grammatical changes, are not described here.

NOTE: These revisions are effective on 10/14/2020.

Level of Use: Informational Use

AFFECTED DOCUMENT

2017 – 2018 Electric & Gas Service Requirements (Greenbook)

TARGET AUDIENCE

Anyone who uses the Greenbook

WHAT YOU NEED TO KNOW

1 Cover

1.1 The date on the front cover reflects the 2020 – 2021 edition of the manual. Since updated editions of the Greenbook are published during the middle of the year we would like to reemphasize that the requirements are still in effect next year until a new version has been published.

1.2 There are no new changes to the back cover.

2 Preface

2.1 Updated the Service Planning Office Contact and Inspection Desk Information.

3 ENGINEERING AND SERVICE DOCUMENTS

3.1 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.
3.2 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.

**MAJOR CONTENT CHANGES:** The significant changes in this edition of the *Greenbook* are listed by section and appendix, shown below.

4 **Section 1. General**

4.1 Changed the title of Subsection 1.5., “Additional Nonresidential (Commercial and Industrial) Service Information.”

4.2 Updated Subsection 1.6.4., “Installing Transformers,” to match Electric Rule 16, which states that when the applicant’s load requires a 75 kVA or greater transformer, as determined by PG&E, then a pad-mounted transformer must be installed. Also, applicants must provide space on their premises for the PG&E transformer when it serves only the applicant.

4.3 Added new Subsection 1.6.5., “Underground Service Extensions,” explaining that applicants must ensure that an underground service is installed, where required, to comply with applicable tariffs, laws, or as determined by PG&E.

4.4 Made extensive updates to Subsection 1.14., “Determining the Service Rating,” to describe how PG&E sizes its service based on ampacity ratings listed on the nameplate of the customer’s equipment. It also explains that a rating nameplate (label) is required. Examples of the labels are included. Another one of the numerous updates to this section is requesting Class R, Dual-Element, Time-Delay Fuses be used for agricultural services and limiting the main breaker size and the number and size of individual disconnects or fuses that can be installed.

4.5 Subsection 1.16., “Upgrading, Replacing, and Relocating Electric Facilities, or Adding Power Generation Sources,” was split into four subsections to separate and enhance the requirements of each subsection.

4.6 New Subsection 1.16.2., “Replacing Electric Facilities with Like-for-Like,” was added and the content was updated to explain the requirements when changing out an electric meter panel of the exact same ampacity.

4.7 Subsection 1.17.1., “Single-Phase Service,” was updated to align with Electric Rule 16.

5 Section 2. Gas Service.

5.1 Updated Item B.7. in Subsection 2.2.1., “Establishing New Gas Service,” to state that outside trenching agents are required to be certified to perform work on gas pipeline systems.

5.2 Updated Item A.1. in Section 2.4.2., “Gas Meter-Set Locations,” to allow two types of access: a preferred and a nonpreferred type.

5.3 Updated Figure 2-19, “Electric and Gas Meter Set Separation Dimensions and Clearances,” and the figure Notes, to allow customer conduit that is metallic, straight, and solid, without couplings, joints, or connections to run completely through the shaded area at 6 feet or higher above the gas meter regulator vent. The conduit must extend a minimum of 3 feet on either side of the meter set.

6 Section 3. Electric Service: Underground

6.1 Added, “Service riser conduit,” as another construction activity in Subsection 3.2.2., Item B, “Establishing Underground Electric Service Responsibilities.” Applicants are responsible for installing the service riser conduit when PG&E is selected to dig the service trench and install the service conduit.

6.2 Added new Item F. in Subsection 3.2.2., “Establishing Underground Electric Service Responsibilities.” Item F. explains that for projects using Horizontal Direction Drilling (HDD), applicants or their contractors must contact PG&E before work begins. Also, when applicants are using trenchless construction, they must take steps to prevent, inspect, identify, report, and address any cross bores that are created during the HDD process.

6.3 Added new Figure 3-2, “Service Conduit Layout–Top View,” and new figure Notes in Subsection 3.2.4., “Installing Equipment Pads,” to show the designated layout of conduits in pad-mounted service cable termination compartments.

6.4 Updated Subsection 3.3.3., “Installing Conduit for Underground Service,” to state that applicants must ensure that conduit is not installed in a trench at a depth greater than 60 inches. Also, applicants must provide the service riser conduit that extends from the conduit bend out of the ground and into the electric meter panel or service termination enclosure. The service riser conduit must be vertically straight and may not contain any couplings, offsets, or bends.

6.5 Updated Subsection 3.3.4., “Installing PG&E-Only Service Trenches,” to say that when installing 4-inch and 5-inch diameter conduit that requires a 36-inch vertical bend at the pole, transition the trench to a greater depth to accommodate for the larger radial bend. The top of the conduit bend must be between 2 inches to a maximum of 6 inches above grade.

7 Section 4. Electric Service: Overhead

7.1 Updated Subsection 4.6., “Attachment Structures (Periscopes),” to provide the allowed material for the mast. It can be constructed from steel, intermediate metal, or aluminum rigid pipe or conduit materials.
7.2 Updated Subsection 4.6.1., “Periscope Clearances and Bracing Requirements,” to state that the periscope (i.e., mast) height without bracing is limited to 30 inches above the roof where the service drop is installed through trees or where trees or tree branches may strike or cause unplanned loading on the service drop.

7.3 Added new Figure 4-40, “Illustration of a 15-Foot Clearance, Low-Growth Zone,” to Subsection 4.10.1., “General Requirements.”

7.4 Updated Subsection 4.10.2., “Planning Requirements,” to suggest that building plans indicate where overhead lines pass within the boundaries of the construction and landscape areas, as shown in Figure 4-40, “Illustration of a 15-Foot Clearance, Low-Growth Area,” on Page 4-27, and Figure 4-43, “Alternative Routes to a House Showing High-Voltage Lines and Tree-Clearance Zones,” on Page 4-29.

7.5 Updated Subsection 4.10.5., “Primary Overhead Distribution Poles in Commercial Orchard Installations,” with a requirement that applicants do not plant trees under or adjacent to primary overhead distribution lines. When discovering any new tree plantings, PG&E reserves the right to remove those trees in order to protect its facilities.

8 Section 5. Electric Metering: General

8.1 Updated Subsection 5.2.2., “Drawing Submittal Requirements for Metering and Service Termination Equipment,” to explain when customers must submit drawings depending on the type of service and the ampacity rating of the equipment being installed.

8.2 Added new Item L. in Subsection 5.2.3., “Applicant Responsibilities.” Item L explains that when applicants request an underground service, they must install the conduit and electric meter panel for PG&E’s underground service conductors.

8.3 Updated Item F. in Subsection 5.3.2., “Prohibited Meter and Service Equipment Locations.” Item F. now explains that meters are not allowed inside any single-family residence, multi-residential, or non-residential building, garage, or structure that does not have an electric meter room that meets all of the requirements described in Subsection 5.3.4., “Electric Meter and Service Termination Equipment Rooms.”

8.4 Expanded the requirements in most of the items located in Subsection 5.3.4., “Electric Meter and Service Termination Equipment Rooms.” This includes Item G, which provides approved methods for locking meter rooms and providing keys to them. Also added Figure 5-1, “Allowable Locations for Electric Meter Rooms,” and associated figure notes.

8.5 Updated Subsection 5.4.1., “Meter Heights,” Item B., “Communication Service and Meter Equipment,” to provide instructions when meter panels are installed on poles for 3rd party communication antenna and equipment, as well as the requirements for working space.
8.6 Updated Figure 5-3, “Electric and Gas Meter Set Separation Dimensions and Clearances,” as well as the figure Notes. The new information allows customer conduit that is metallic, straight, and solid, without couplings, joints, or connections to run completely through the shaded area at 6 feet or higher above the gas meter regulator vent. The conduit must extend a minimum of 3 feet on either side of the meter set. Also, for overhead service-meter panels and equipment, the horizontal clearance from above-ground downspouts and non-pressurized (i.e., gravity fed) wet facility sources can be reduced to 12 inches.

8.7 Updated the requirements in Subsection 5.4.4., “Working Space,” to include the types of surface material as well as new requirements for metering and service equipment installed in closets. Also added a new requirement that applicants must ensure the entire working space for multi-residential and nonresidential locations with either wall-mounted meter panels or pad-mounted, single-metered pedestals up to 200 amps has an improved surface that is constructed from the same material including concrete, stone pavers, asphalt, compressed gravel, or other approved surfaces. Native soil (dirt) is not an improved surface for the working spaces in these locations. Table 5-2 and Figure 5-6, Detail B. The Notes for Figure 5-6 were also updated.

8.8 Updated Subsection 5.4.5., “Barricades,” to describe when residential and nonresidential service termination and metering equipment is required to be protected. This information includes exceptions for when protection may not be required. Also, two detailed figures, figure notes, and a table were added.

8.9 Updated Subsection 5.5.1., “Properly Identifying and Marking Meters.” It describes the acceptable and unacceptable types of marking allowed by PG&E. Also, it includes a new Item E., describing allowed markings for temporary metering equipment.

8.10 Updated Subsection 5.6.3., “Fire-Pump Connections.” It now says that the preferred option (#1), to interconnect a fire pump switchboard or meter panel, is a dedicated tap section inside the main service switchboard.

8.11 Updated Subsection 5.7.1., “Main Service Disconnects.” This subsection requires applicants to place the main service disconnect switch adjacent to the meter(s), not more than 10 feet away, and within line of sight. This use to apply to only transformer rated equipment but now applies to residential and nonresidential applicants with single-phase or three-phase, self-contained or transformer-rated, service and metering equipment.

8.12 Updated Subsection 5.9.1., “Temporary Service Using Permanent Service Panels,” to allow two flat steel bars that are each a minimum of ¼ inch thick and 3 inches wide to be permanently cemented into the foundation and run vertically parallel with both sides of the meter panel. This is an alternative to constructing a permanent wall to support the meter panel.

8.13 Updated Item D of Subsection 5.10.1., “Specific Interconnection Requirements for Services Up to 600 Volts.” Item D has a new Figure 5-24, “SLD Manual Transfer Switch,” and figure Notes. The figure shows applicants how to interconnect a transfer switch with either portable or permanently installed backup generation equipment.
9 Section 6. Electric Metering: Residential

9.1 Updated Item C of Subsection 6.2.2., “Test-Bypass Facilities,” by adding a Note saying that single-family homes may be exempt if the elevator system has integrated safety features with a backup battery system acting as an emergency power supply.

9.2 Updated Item D of Subsection 6.3., “Meter Locations,” to further explain that in large, multifamily, multistory, high-rise residential buildings where the walking surface of the highest tenant-occupied floor is over 75 feet high, PG&E may, at its option, approve grouped meter locations on one or more upper floors.

9.3 Added new Subsection 6.4.3., “Single Meter: Combination Overhead and Underground Service Equipment,” with Notes and new Figure 6-10, “Combination Overhead-Fed or Underground-Fed Meter Panel (100 Amps−225 Amps, 1Ø),” showing an approved type of meter panel.

9.4 Updated Item C in Subsection 6.4.4., “Multiple Meters,” by including two new figures showing overhead and underground service and grouped-meter installations, with wiring raceway/gutters.

9.5 Updated Figure 6-15 “Clearances for a Typical, Manufactured, Combination, Multimeter Installation,” by adding new Notes.

9.6 Updated Table 6-2 to align this type of metering equipment with the working space requirements.

10 Section 7. Electric Metering: Nonresidential, Industrial, and Agricultural

10.1 There were no major or noteworthy updates to Section 7

11 Section 8. Electric Metering: Pedestals

11.1 Converted and created a brand new main section describing service and metering pedestals. Section 8 was previously titled “Electric Metering: Direct Access.”

11.2 Moved the pedestal figure and information from Subsection 6.3. to new Subsection 8.2., “Residential Electric Metering Pedestals.”

11.3 Moved the pedestal figure and information from Subsection 9.13. to new Subsection 8.3., “Nonresidential Single-Meter Service Pedestals, 100−200 Amps.”

11.4 Added dual meter pedestal figures, tables, and information in new Subsection 8.4., “Nonresidential Dual-Meter Service Pedestals, 200−400 Amps.”

11.5 Added dual meter pedestal figures, tables, and information in new Subsection 8.5., “Nonresidential Current Transformer Rated Pedestals, 400 Amps−800 Amps (Milbank).”
12 Section 9. Electric Metering: Components and Cable Terminating Facilities

12.1 Updated the title of this section by adding “…and Cable Terminating Facilities.”

12.2 Updated Subsection 9.7., “Bused CT Cabinet, 3-Wire Service, 201 Amps Through 400 Amps,” by adding new Item G. Item G states that CT cabinets rated for 600–800 amps are allowed only for VNEM and NGOM applications.

12.3 Added Item G to Subsection 9.8., “Bused CT Cabinet, 4-Wire Service, 400 Amps–800 Amps.” Item G states that CT cabinets rated for 600–800 amps are allowed only for VNEM and NGOM applications.

12.4 Updated Table 9-3, “Minimum Wall-Mounted Pull-Section Dimensions: Residential and Nonresidential, Single-Phase or Three-Phase,” to align with electric tariff and engineering requirements. The updated table states that wall-mounted, 800-amp, single phase services are no longer allowed. 800-amp services must be three phase and terminate in pad-mounted equipment.

12.5 Updated the Notes for Figure 9-14 to explain that lugs for terminating the customer’s ground wire (or other grounding conductors) must be located outside of the sealable section and must be designed to readily permit the customer’s neutral system to be isolated, when necessary, from the serving agency. Also, the ground buss, when provided, must be located at the rear of underground terminating enclosures (i.e., pull boxes and pull sections).

13 Section 10. Electric Switchboards: 0 Through 600 Volts

13.1 Updated Item I of Subsection 10.2., “General Requirements.” Item I explains that load conductors must not reenter or pass through a current transformer (CT) compartment or any PG&E sealed compartment or section. This is true even if the conductors are inside of a raceway.

13.2 Updated Item AC in Subsection 10.3.3., “Requirements for All Switchboard Service Sections.” Item AC explains that the barrier between sealed utility metering sections and the pull section can be steel or a glastic material. Glastic or other equivalent barrier is not preferred but may be acceptable.

13.3 Updated Subsection 10.3.3., “Requirements for All Switchboard Service Sections,” Figure 10-1, “Switchboard Wall Opening Between Sections,” to describe and show the maximum openings allowed.

13.4 Updated Subsection 10.3.4., “Standard Switchboard CT Compartment, 0 Amps Through 1,200 Amps, Single-Phase or Three-Phase, 3-Wire Service,” and Subsection 10.3.5., “Standard Switchboard CT Compartment, 0 Amps Through 1,200 Amps, Three-Phase, 3-Wire and 4-Wire Services.” The information explains that a clear, unobstructed workspace must be provided around the current transformer bus units as measured from the inside edge of the compartment access opening.
13.5 Added new Item D to Figure 10-2, “Standard Switchboard, CT Compartment, 0 Amps–600 Amps, Single Phase.” Item D limits single-phase switchboards to a maximum of 600 amps.

13.6 Added Items C, D, E, and F to Subsection 10.3.13., “Underground, Service-Termination Pull Section (Located Below Ground Level).” New Item F requires a water-drainage system to prevent water from accumulating in meter rooms.

13.7 Updated new dimensions in Detail A, “Cable Entrance Window,” for both Figure 10-20, “Additional Side or Back Switchboard Pull Section–High Entry,” and Figure 10-21, “Additional Side or Back Switchboard Pull Section–Low Entry.”

13.8 Updated Figure 10-21, “Additional Side or Back Switchboard Pull Section–Low Entry.”

13.9 Added Figure 10-22, “Arranging Conduit in the Termination or Additional Pull Section (Example of a Front View, High Back Entry),” and updated the Notes to explain the conduit entry layout in below-grade switchboards.

13.10 Updated Subsection 10.5., “Metering Transformer Compartments,” Item D, to ensure that load conductors do not re-enter or pass through a CT compartment even if the conductors are inside of a raceway.

13.11 Updated Figure 10-28, “Low-Profile Switchboard Service Section, With CT Compartment, for Underground Service,” and added information to the figure’s Note 1, which says the metering and CT compartments must not be recessed back into the switchboard. Also added a new Note 8, which says that low-profile switchboards installed in outdoor applications require an outer enclosure.

13.12 Updated Subsection 10.8., “Adding New Metering Equipment to Existing Switchboards,” by providing additional details in Table 10-4, “Adding Up Meter Section Ampacities,” and to Figure 10-35, “Existing Switchboard.”

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

14.1 Updated Item U to Subsection 11.3., “Specific Requirements for High-Voltage Switchboards.” Item U describes the requirements for the transparent inner safety barrier door.

14.2 Added a new Note 4 to Figure 11-1, “Primary Switchboard Termination Section Pad Detail.” Note 4 says to install a spare conduit only when required by PG&E.

14.3 Updated Dimension B in Figure 11-4, “Typical, High-Voltage Metering Enclosure: 2,400-Volt Through 17,000-Volt Service,” to show the measurement to the clear barrier door.

15 Appendix A. Acronyms and Glossary

15.1 No updates were made to Appendix A.
Appendix B. Electric and Gas Service Documents

16.1 Rearranged the documents in Appendix B into three categories: Miscellaneous Utility Documents, Utility Bulletins, and Utility Procedure. The documents have been numerically reordered in their respective categories.


16.6 Added Utility Bulletin TD-062288-B006, “Change in Required Material for Polyvinyl Chloride (PVC) Conduits, Couplings, Fittings, and Bends,” to express the new requirements for installing Schedule 40 PVC conduit and no longer allowing DB120 conduit.


16.8 Added Utility Bulletin TD-7001B-007, “Green Meter Adapter (GMA) for Customer Generation,” to Appendix B, which is available only in the online version of the Greenbook on www.pge.com/greenbook.

16.9 Added Utility Procedure TD-7106P-01, “Enhanced Vegetation Management Pre-Inspection Procedure,” to inform customers of the specific work PG&E performs in the Enhanced Vegetation Management (EVM) program to reduce vegetation-related risks to electric distribution and transmission facilities.

16.10 Added Footnote 1. to explain that noted documents are not in the hardcopy paper manual and are available only in the online version of the Greenbook on www.pge.com/greenbook.

17 Appendix C. Electric and Gas Engineering Documents

17.1 Added Gas Design Standard J-12.4, “Mobile Home/Manufactured Home Meter Set Installation.”

17.2 Added electric Numbered Document 027911, “Installation Details for Service to Pole Mounted Communication Equipment.” This document is available only in the online version of the Greenbook at www.pge.com/greenbook.

17.3 Added new electric Numbered Document 076249, “Virtual Net Energy Metering Installations.”

17.4 Added new electric Numbered Document 092816, “Wholesale Distribution Tariff (WDT) Interconnection Design Options for Primary Voltage Service.”

17.5 Added new electric Numbered Document 094670, “Supply Side Interconnection Requirements For Distributed Generation.”

17.6 Added new Note 3. to explain that specific documents which are clearly noted in Appendix C are not available in the hardcopy manual, but can be found only in the online version of the Greenbook at www.pge.com/greenbook.

End of Changes