



Purpose and Scope

This gas design standard describes the requirements for any gas meter room inside any building. Local jurisdictions may have adopted codes or ordinances relating to customer-owned and maintained facilities that could require consideration when designing a gas meter room. Compliance with California Public Utilities Commission (CPUC) requirements is mandatory. For PG&E gas meter locations, the applicable codes and regulations are described in Gas Design Standard J-15, "Gas Meter Locations."

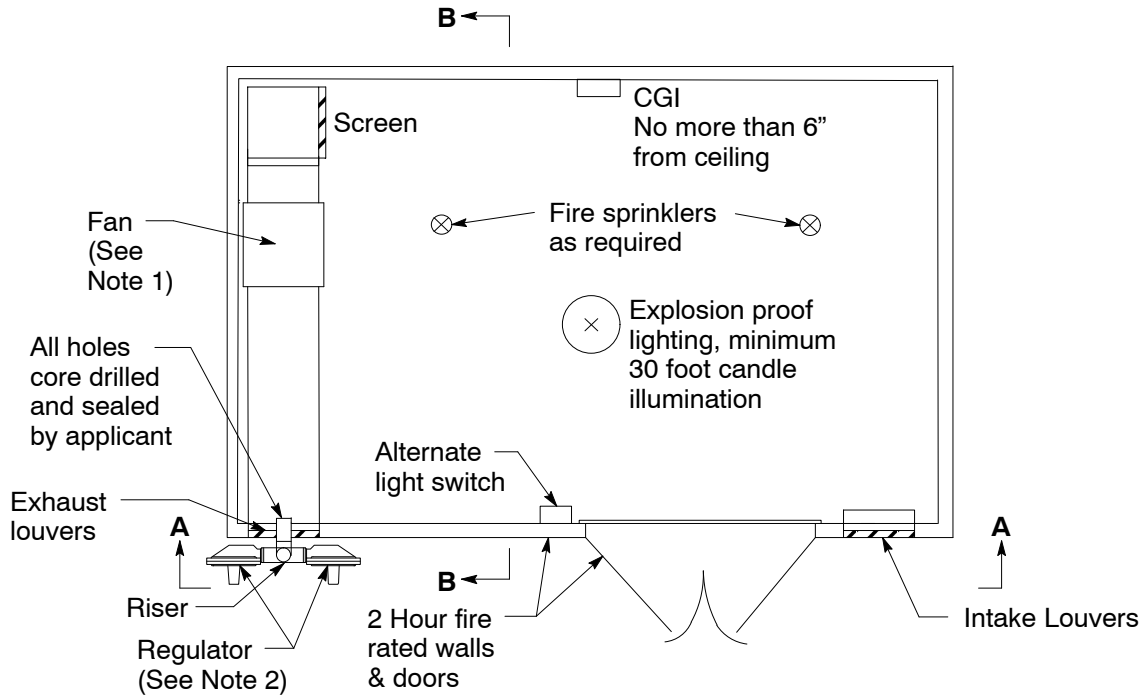
General Information

1. A gas meter room is a space within a building that is solely used to house natural gas metering equipment.
2. **The preferred gas riser, meter and regulator location is outside and adjacent to the building being served.** On an exception basis, gas meters and regulators may be installed in a specially designed gas meter room. However, PG&E will not install a gas meter in a gas meter room unless all of the following conditions have been met:
 - A. The applicant has specifically applied to install the gas meter in a specially designed room.
 - B. The applicant's request is accompanied by an explanation detailing the reasons why the presence of some condition associated with the property itself makes it impossible to locate the gas riser, regulator and meter outside the building OR that such location would deny the applicant a substantial benefit of property ownership enjoyed by other similarly-situated properties and that the approval of this exception would not constitute a special privilege to this applicant which has been denied to similar applicants in other locations.
 - C. PG&E must concur that the unique attributes of this property render it impossible to locate the riser, regulator and meter outside the building and that approval of the proposed meter room is reasonable and safe and does not constitute a grant of a special privilege or advantage.
 - D. PG&E and the applicable planning/building department must approve the design in advance of any construction.
 - E. The applicant has recorded a covenant substantially in the Covenant Agreement which provides that the applicant or its successors in interest will maintain the meter room as approved by PG&E in good and serviceable condition, will provide access to PG&E or its agents at all times, and will not use the meter room for any other purpose (e.g. storage).
3. A meter room may not be used as a storage area.
4. It is the responsibility of the applicant to design, construct, and furnish the gas meter room and related materials to meet the gas meter room requirements that are described in this document, and in accordance with the California Building Code, including means of egress and those provisions to safeguard the health and safety of all personnel. The minimum room dimensions will be unique for each project based on the meter, regulator, and manifold requirements necessary to serve each load. Applicant gas service and meter installation arrangements are subject to PG&E's review and approval.
5. A covenant must be placed on the deed of property ensuring that successive property owners will adhere to the requirements in this standard. The covenant will be prepared by the PG&E land department and recorded on the deed of property prior to the installation of the gas meters. The covenant will state that PG&E has the right to suspend or terminate gas service if the conditions of this standard are not upheld. In addition, the covenant will state the owner is responsible for complying with gas tariffs. Any deviation in the form of the Covenant Agreement must be approved by the PG&E land department prior to installing of the gas meters.
6. The covenant confirms the applicant's financial responsibility when a relocation of PG&E facilities is required; e.g. relocating a meter set from a basement under the city sidewalk.

7. The covenant will provide that PG&E has the right to terminate service if ever PG&E determines, through regular inspection, information or otherwise that the terms of this standard have not been upheld. The following list describes examples of some but not all situations that violate the terms of this standard:
 - A. The fan is not in constant operation or does not turn on with the lights.
 - B. The lights are not operational.
 - C. The combustible gas indicator (CGI) is not signed-off or up-to-date.
 - D. The room is not vapor-tight.
 - E. The room is not clear of storage.
8. Gas meter room location and piping must conform to all current federal, state, and local codes including [Code of Federal Regulations 49 \(CFR. Part 192\)](#), "[Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards.](#)" and the National Fuel Gas Code (NFPA 54).
9. PG&E requires all applicant installed electrical equipment in the room be classified as Class I, Division 1, Group D pursuant to NFPA-70, National Electric Code.
10. Do not locate or place any electric devices or electrical connections for services such as cable television or telecommunications within the gas meter room. Under no circumstances will this requirement be waved.
11. All electrical wiring and conduit that pass through a gas meter room must conform to the National Electric Code Article 501.
12. The customer must provide lighting for the gas meter room, with a minimum 30 foot-candle illumination.
13. No foreign pipe (i.e., drain lines, domestic water, etc.) or ducts are permitted to be located in or routed through the gas meter room.
14. Gas meter room(s) must be designed to prevent entrapment of gas. Mechanical ventilation to the outside atmosphere is required.
15. The requirements of this standard must be met when a customer houseline is added to an existing gas meter room or gas meter set within a building.

General Service Requirements

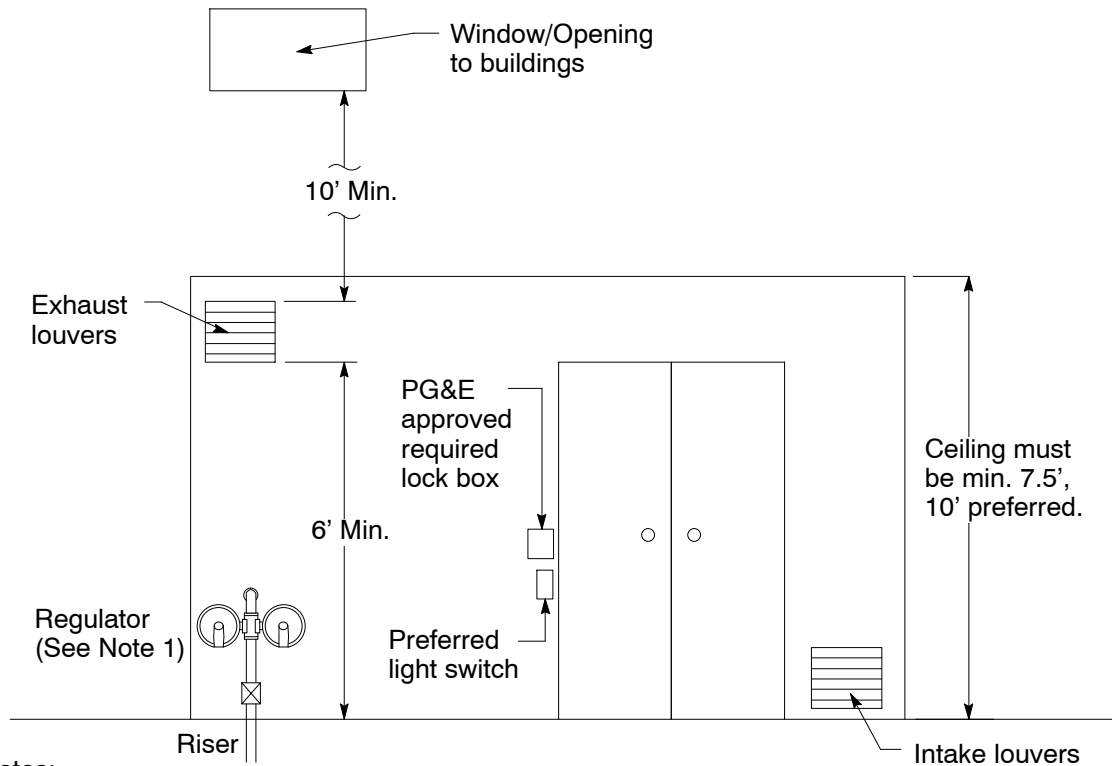
1. Service shut-off valves must be installed and comply with the following:
 - A. Each new service or replacement service must have a readily accessible shut-off valve that is preferably located outside, above ground on the gas service riser.
 - B. If it is necessary to locate the riser inside a building, or an existing riser valve is otherwise inaccessible, then a curb shut-off valve must be installed at the customer's expense in a readily accessible location in accordance with Gas Design Standard A-43.2, "Curb Valve Installations, Distribution Systems."
2. Service Riser Locations
 - A. Service risers must not be installed inside buildings or meter rooms, except where special circumstances prevent outside installation. The installation of an inside riser may be justified at the discretion of the local PG&E senior gas engineer. PG&E must grant prior approval for any gas meter design/location where settlement or subsidence issues have been identified in any geotechnical report.
 - B. Examples of situations where inside risers are considered:
 - (1) A location with insufficient clearance between the building and the property line to safely locate the riser outside of the building.
 - (2) A building with the meter room located inside of a basement or half basement, where an outside riser at ground level would enter the room at an excessive height.
 - (3) An inner city urban redevelopment building with inadequate space for an outside riser.
 - (4) A designated historical building where modifications needed to locate the riser outside are not permitted.
 - (5) Sidewalk Basements - when the service passes through a sidewalk basement to the meter location on private property. Sidewalk basements are basement spaces built underneath a city sidewalk, in front of the foundation wall of a building. The PG&E land department must review and verify the applicant has sufficient rights for PG&E equipment to be in a sidewalk basement prior to the installation of the gas meters.
 - C. Existing service risers inside of buildings or meter rooms may be repaired with a plastic insert in accordance with Gas Design Standard A-90, "Plastic Main and Service Installation."



Notes:

1. Fan can be mounted anywhere in the exhaust duct.
2. Regulator vents to be piped outside when regulators are approved to be installed inside room.

Figure 1
Plan View



Notes:

1. See Natural Gas Regulator Requirements 3.A.(1), Page 6.

Figure 2
Front Outside Elevation - A

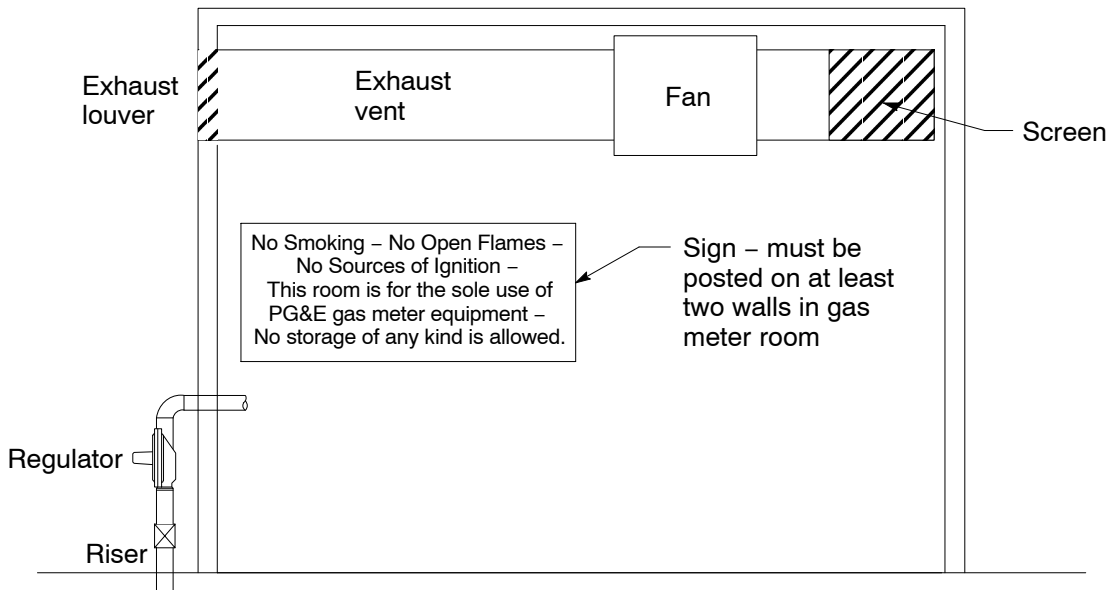


Figure 3
Cross Section - B

Meter Room Location Requirements

The following is a list of gas meter room locations that will be approved by PG&E for situations where the customer's building occupies all of the property that is owned by the customer (i.e., zero lot line) and the construction of an alcove is not possible. Option 1 is preferred and successive options will only be considered when the previous options are not possible:

1. A meter room that is accessible from a public right-of-way at all times. The gas meter room is located at an above grade location designed and constructed with walls, ceiling, and floor that are vapor-tight to prevent the migration of gas to the building's interior. The gas meter room has doors that open to the outside of the building.
2. A gas meter room that is located adjacent to an outside building wall inside the customer's building and constructed with walls, ceiling, and floor that are vapor-tight to prevent the migration of gas to the building's interior. This gas meter room is also located at grade level with a door that opens to the inside of the building. These doors shall be vapor-tight to prevent the migration of gas to the building's interior.
3. A customer's building's basement meter room that is adjacent to an outside wall and constructed with walls, ceiling, and floor that are vapor-tight to prevent the migration of gas to the building's interior.
4. A sidewalk basement meter room is not acceptable without a written approval from the municipality and PG&E.

Natural Gas Meter Room Design Requirements

1. Fire rated walls must have a minimum 2-hour fire rating, or as specified in the California Building Code for Group H, Division 1 occupancies.
2. All entry and exit doors must be rated commensurate with the rating of the wall. Doors that open to the inside of the building must be vapor-tight to prevent the migration of gas to the building's interior.
3. The applicant/customer must consult with local PG&E service planning personnel to obtain the required gas meter room dimensions. Door dimensions and access must be approved by PG&E on a case-by-case basis.
4. No floor drains are permitted within a natural gas meter room.
5. If the applicant/customer's building is equipped with a fire sprinkler system pursuant to NFPA-13 standard for the installation of sprinkler system, the applicant/customer must also install fire sprinklers inside of the gas meter room.
6. Only explosion-proof lighting fixtures are to be installed in a gas meter room and these must meet the requirements of the NFPA-70: National Electric Code for Class I, Division 1, Group D locations.

7. It is preferred to mount the light switch outside the room next to the entry door. Explosion-proof light switches must be installed if such switches are to be located inside of the meter room. These switches must meet the requirements of the NFPA-70: National Electric Code for Class I, Division 1, Group D locations.
8. No electrical receptacles (i.e., outlets) are permitted within a gas meter room.
9. The applicant/customer must furnish ladders or platforms inside of the gas meter room as required for a tiered meter configuration.
10. The floor-to-ceiling height inside of the meter room must be a minimum of 7.5 feet. The preferred height is not more than 10 feet.
11. Doors into gas meter rooms must be provided with approved signs. The signs must state that the room contains flammable gas.
12. Signs must be posted on at least two walls within the room stating "No Smoking – No Open Flames – No Sources of Ignition - This room is for the sole use of PG&E gas meter equipment – No storage of any kind is allowed".
13. A lock box, acceptable to PG&E, containing a door key to the gas meter room door must be installed by the applicant/customer and such lock boxes must be located near the gas meter room door.
14. The applicant/customer is responsible for core-drilling, sealing, waterproofing, and maintaining a vapor tight seal on any wall, ceiling, or floor where:
 - A. Inlet natural gas piping enters the building and/or the gas meter room.
 - B. Natural gas regulator relief vents exit the gas meter room and the applicant/customer's building.
 - C. Conduits containing wiring for the gas meter (and appurtenances) enter the gas meter room.

Gas Meter Room Ventilation Requirements

Applicant must submit the designs and calculations, stamped and signed by a licensed professional mechanical engineer, demonstrating that the ventilation for the gas meter room satisfies the following requirements:

1. Ventilation must be provided in accordance with the Mechanical Code and one of the following:
 - A. Continuous ventilation introducing fresh air at six air exchanges per hour.

OR

 - B. A combustible gas detection system, interlocked with an automatic ventilation system that will provide fresh air at six air exchanges per hour upon activation of the detection system. The gas detectors must be set at 20% Lower Explosive Limit (LEL) (or 1.0% concentration of natural gas in air). The instructions for the combustible gas detection system are found below in Requirements for Customer-Owned Equipment, Item 5.
 - The formula for the gas room air exchange calculation is:
minimum fan air flow rate (cfm) = room volume (cf) x 6 air changes per hour / 60 minutes per hour
(where cfm = cubic feet per minute, cf = cubic feet.)
Pressure drop values (e.g. louver, screen and duct elements) must be included in the design and calculations.
2. To ensure complete air exchange the low-fresh air intake and the high-exhaust air duct must be at opposite corners within the room. Exterior louvers must be in a low-fresh air and high-exhaust air configuration as far apart as practical and ensure no recirculation. The bottom of the high-exhaust air louver will be over the travel way at least 6' above the finish outside grade.
3. Mechanical fans and all other electric devices must be explosion proof and meet the requirements of the NFPA-70: National Electric Code for Class I, Division 1, Group D locations.
4. Mechanical fans and detection equipment must be continuously monitored in case of failure. Alarms for trouble and failure must be installed in accordance with NFPA-72, National Fire Alarm Code.

Natural Gas Regulator Requirements

1. Natural Gas Regulators

Typically PG&E will install natural gas service regulators and overpressure protection devices outside of a meter room. Applicants/customers who want to install gas service regulators and overpressure protection devices inside of a meter room must provide PG&E with the written justification as part of the application. The preferred gas riser, meter and regulator location is outside and adjacent to the building being served. On an exception basis, gas meters and regulators may be installed in a specially designed gas meter room. PG&E must approve all gas meter and regulator installations and the gas meter room design in advance of any construction. If acceptable to PG&E, the following additional conditions apply:

- A. Each gas service regulator installed within a building must be located as near as practical to the point of the service line entrance into the meter room, and as specified by PG&E.
- B. PG&E will specify materials and designs for any overpressure protection devices needed, as outlined in Items 2 and 3 below.

2. Regulator Vent Lines

- A. Regulators and any additional overpressure protection equipment installed indoors must be vented to the outdoors. The customer is required to provide holes (penetrations) through walls or ceilings for these vents. In rare situations where the meter room location is not adjacent to an outside wall, the customer is required to install the vent piping from the meter room to the outside wall (PG&E will determine pipe size and location). PG&E will be responsible for connecting the vent piping to the regulator or overpressure protection device.
- B. PG&E will position gas regulators to minimize the length of the regulator vent lines and to ensure adequate venting capacity.
- C. PG&E will specify regulator vent lines, in accordance with Gas Design Standard H-93, "Regulator Vent Lines – Above Ground," when required.

3. Regulator Vent Locations

- A. Service regulator vents must terminate in a safe outside location that complies with the following criteria:
 - (1) The regulator vent must not terminate near any sources of ignition or openings into the building. The regulator vent must be 36 inches horizontally from sources of ignition and openings into the building, and this clearance area will extend 10 feet above and 36 inches below the regulator vent termination.
 - (2) A minimum lateral distance of 8 feet from a forced air intake. This includes the intake vents for the gas meter room.
 - (3) Within any location that is under display platforms or show windows in commercial buildings, including any permanent, elevated, display floors or platforms associated with the window.
 - (4) Within any location that is under building overhangs, where the overhang is likely to direct venting gas into a building opening.
- B. Vents for all natural gas regulator and gas monitor diaphragm equipment must terminate above a reasonable flood level. Regulator vent extensions must be separate lines, terminated so they are protected from the rain and provided with screened fittings to prevent insects and other debris from entering the vent.
- C. Vent locations must have final approval by PG&E.

Requirements for PG&E-Owned Equipment**1. Natural Gas Metering**

Electrical grounding or bonding to PG&E's metering facility piping or equipment or to customer-owned house lines inside of the meter room is not permitted.

2. Land-Line Cable and Conduit

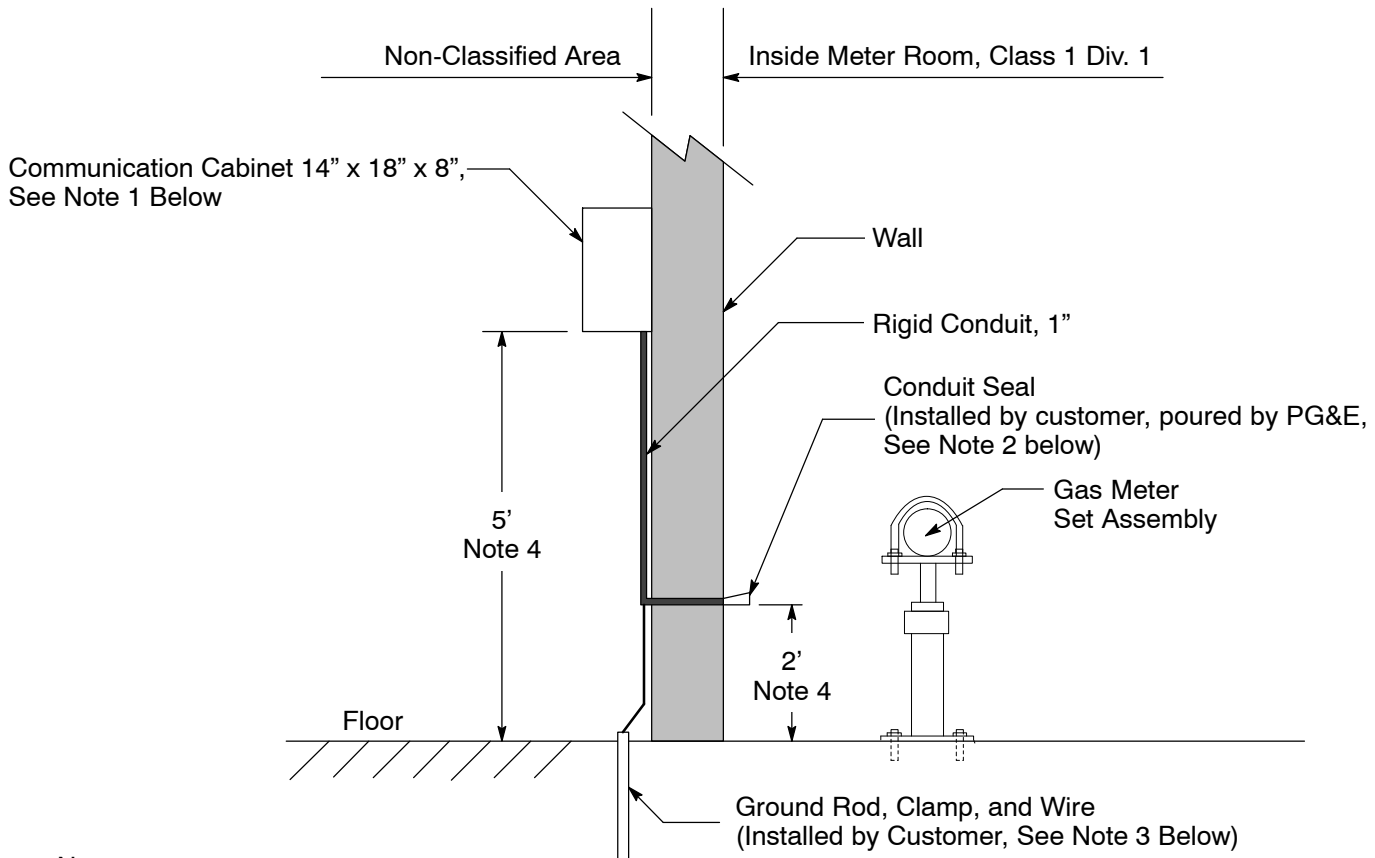
Customers with an estimated average use of 10,000 therms per month or more are required to install, own, and maintain a nominal 1" diameter conduit and a telephone cable. PG&E's requirements for the conduit are described below.

- A. Applicant/customer must extend the conduit and telephone cable from the closest telephone service location (i.e., outdoor "general purpose" area) to a location specified by PG&E that will be at or near the gas metering facilities. The maximum allowable distance from the telephone service location to PG&E's gas meter is 50 feet.
- B. Conduit must terminate within 3 feet of the gas meter location.
- C. Applicant must install a conduit seal, inside the gas meter room, within 18 inches of the boundary where the conduit enters the gas meter room. There must be no conduit fitting between the boundary and the seal. PG&E will pour the conduit seal.
- D. Applicant/customer is responsible for all charges and costs associated with installing the telephone facilities necessary to provide telephone service for PG&E's gas metering facilities which are to be used for PG&E's purposes.
- E. PG&E is responsible for establishing telephone service and for the ongoing telephone service charges for gas metering purposes.

3. Additional Equipment Needed to Support Gas Meters

Consideration must be given to the design requirements for:

- A. Volume pulse output connections.
- B. Electronic correctors.
- C. Power for gas meters. If AC power is required for PG&E equipment, the applicant must provide an outlet termination (with a lockable disconnect switch) located in the outdoor "general purpose" area, as noted in Item 2 above (also see Figure 4).



Notes:

1. Cabinet must be large enough for ac outlet, AC/DC converter, EC modem, and customer pulse board.
2. Install conduit seal where conduit exits wall.
3. Ground rod with clamp must be 5/8" in diameter and 8' long. A #12 AWG insulated green ground wire connects ground rod to the communication cabinet.
4. Dimensions are for guidance only. Final design must be approved by PG&E.

Figure 4
Gas Meter Room
Electric Enclosure and Conduit Arrangement

4. SmartMeter System

PG&E's SmartMeter Advanced Meter Reading system uses radio frequency technology to transmit meter reads automatically from the gas module. Applicants must make provisions for SmartMeter requirements to ensure that the SmartMeter Advanced Meter Reading system can operate properly. Consult with PG&E for current requirements.

Some, but not all, installation limitation requirements for SmartMeter gas module include:

- A. Module must be mounted at least 3" away from the wall in case of metal siding or foil insulation.
- B. Module must be installed with a spacer on surfaces other than plaster and wood.
- C. Module must be located at least 6" away from pipes, conduit, electrical wires, and other metal objects.
- D. Module must be located at least 4" vertically and 3" horizontally from other modules.
- E. Module must be located at least 2" below plaster or metal grid ceiling.
- F. Module, direct mount or remote, is installed above grade level.
- G. A remote module must be installed for any gas meter in a basement.

Requirements for Customer-Owned Equipment

1. All customer-installed gas equipment must be installed downstream of the service delivery point. The service delivery point is defined as the gas supply point where PG&E's facilities connect to the customer houseline as follows:
 - A. For residential and small commercial meter sets, the service delivery point is the point where the male threads of the applicant's houseline connect to the female threads of PG&E's gas service tee fitting.
 - B. Because some commercial and industrial installations do not have service tees installed, the gas supply service delivery point is located at the first weld or fitting after the PG&E-installed bypass valve downstream of the meter.
2. Customer-installed equipment must not connect to utility facilities or obstruct the operation or serviceability of PG&E's piping, metering, and pressure regulating equipment. Customers are responsible for maintaining all customer facilities downstream of the service delivery point.
3. For multiple gas meter installations where the gas meters are supplied by means of a manifold, any installation of a customer automatic gas shut-off device must be installed downstream of the service delivery point for each meter.
4. Where customers elect to install an automatic shut-off device, all piping, valves, or other piping components must be installed downstream of (i.e., after) the gas supply delivery point.
5. When a combustible gas indicator (CGI) device and controller are installed, the following are required:
 - A. A gas sensor must be installed no more than 6" from the ceiling of the gas meter room.
 - B. The design and installation of all such detection devices and systems must be done in accordance with and comply with the NFPA-72, National Fire Alarm Code.
 - C. The controller must be installed outside of the gas meter room and be located near to the gas meter room door.
 - D. All wiring and piping of the transmitter to the controller must meet the requirements of NFPA-70, National Electric Code for Class I, Division 1, Group D locations.
 - E. An audible alarm and flashing strobe light must be included as a part of the controller system. This alarm system must continue to be operational until the condition that has triggered such an alarm has been determined and is manually reset.
 - F. The controller must have the capability to display readings of the percentage of the LEL readings from inside of the gas meter room.
 - G. The customer must maintain and calibrate the combustible gas indicator device and all related systems per the manufacturer's recommendations. An up to date inspection card will be mounted on the wall, just inside the door, signifying the gas detection device has been calibrated and is working accurately.
 - H. The light switch will continuously and fully engage the fan when turned on.

Access to Meter Room

Applicant must make provisions to allow PG&E access to the gas meter room for emergency response, meter reading, system testing, inspection, and maintenance, in accordance with [Gas Rule 16, "Gas Service Extensions."](#)

Target Audience

Design, engineering, estimating, field services, M&C crews, gas T&R, general construction

Definitions

NA

Acronyms and Abbreviations

AC: alternating current
 AWG: American wire gauge
 cfh: cubic feet per hour
 CFR: *Code of Federal Regulations*
 CPUC: California Public Utilities Commission
 DC: direct current
 EC: electronic corrector
 EFV: excess flow valve
 G.O.: CPUC General Order
 LEL: lower explosive limit
 NFPA: National Fire Protection Association

Compliance Requirement/Regulatory Commitment

NA

References

Curb Valve Installations, Distribution Systems	A-43.2
Gas Service and Mains in Plastic Casing	A-75
Plastic Main and Service Installation	A-90
Prefabricated Risers	A-91
Design Requirements for Company-Owned Gas Regulating Systems Serving Customers	H-15
Regulator Vent Lines – Above Ground	H-93
Gas Meter Locations	J-15
Meter Guard Design and Installation Arrangement	J-95
Precast Concrete Vaults & Pits	K-10.1
Precast Boxes 24" x 36", 30" x 48", and 30" x 60"	K-42
Single Meter Enclosure for Domestic Gas Meters	K-51
Corrosion Control of Gas Facilities	O-16
Vault Inspection Procedure	S4446
Gas Service Extensions	Gas Rule 16
Electric and Gas Service Requirements (Greenbook), Gas Service	Section 2
Code of Federal Regulations, Transportation of Natural Gas	49 CFR 192
CPUC General Order 112-E, Latest Edition	G.O. 112-E
California Code of Regulations	Title 24 CCR2, 4, 9,
National Fire Protection Association	NFPA-13, 54, 70, 72, 497

Appendices

NA

Attachments

NA

Revision Notes

Revision 03 has the following changes:

1. Item 15 added to General Information.
2. Added Figures 1, 2, and 3.
3. Item 10 of Natural Gas Meter Room Design Requirements, removed "maximum of 10 feet" high ceiling and revised to say "the preferred height is not more than 10 feet".
4. This document is part of Change 66.

Asset Type: Gas Transmission and Distribution

Function: Design

Document Contact: Gas Design Standard Responsibility List