



Residential Service Change

2016 California Electrical Code Based on the 2014 National Electrical Code
 Residential Electric Services: Single Phase, 120/240 volts only

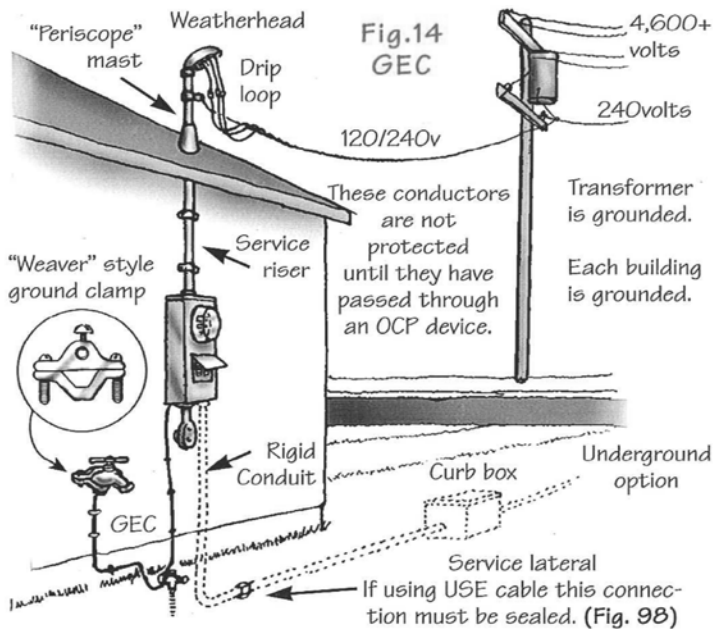
Notes	Item	Panel Amperage			
		100	125	150	200
Copper					
a	Conductors in Mast (copper)	4	2	1	2/0
c	Mast and Weatherhead (copper)	1 ¼"	1 ¼"	1 ¼"	1 ½"
a, b	Feeder to Sub-Panel (copper)	4	2	1	2/0
g	Sub-Panel Feeder Grounding Conductor (copper)	8	8	8	6
e, f	Grounding Electrode Conductor (copper)	8	8	6	4
	Water Line Bonding Conductor (copper)	8	8	6	4
	Gas Line Bonding Conductors (copper) See 250.80(b), #6 copper Recommended				
Aluminum					
a	Conductors in Mast (aluminum)	2	1/0	2/0	4/0
	Mast and Weatherhead (aluminum)	1 ¼"	1 ¼"	1 ½"	2"
a, b	Feeder to Sub-Panel (aluminum)	2	1/0	2/0	4/0
g	Sub-Panel Feeder Grounding Conductor (aluminum)	6	6	6	4
d	Underground Feeder Conduit	2"	2"	2"	2"

Notes:

- a. All conductors sizes are 75 degrees; see Table 310-16 for other approved sizes
- b. From Table 310-16, see exception #3 for sub-panel feeders which carry the total current supplied by the service.
- c. 1 ¼" minimum steel conduit per PG&E; no plumbing pipe, EMT, IMC, or PVC.
- d. 2" minimum rigid steel or schedule 80 PVC per PG&E.
- e. This conductor connects the steel or copper ufer or ground rod to the main panel ground-neutral buss in the main panel. This conductor cannot be spliced. #8 copper, if used, shall be enclosed within protective conduit to a ground rod with ground termination fittings or must be completely enclosed within the structure.
- f. If the grounding conductor is a rod, the grounding electrode conductor can be #6 copper, regardless of the service size.
- g. Separate grounding conductor not required if solid, continuous metal conduit installed as feeder raceway.

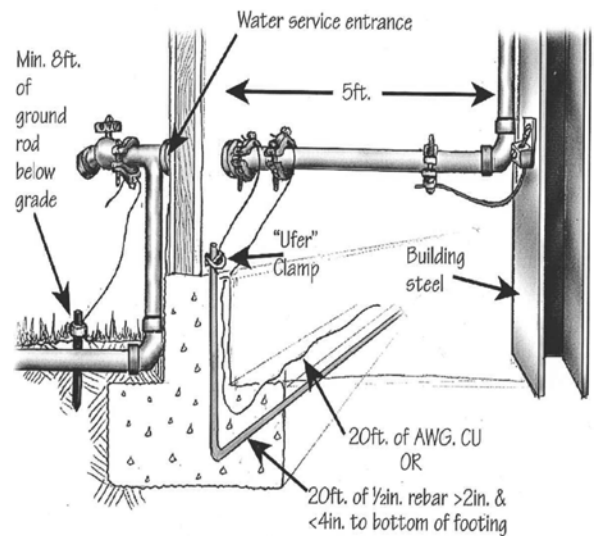
Electric Service Requirements

- The PG&E cable drop shall not be less than 10'-0" over walkways.
- The PG&E cable drop shall not be less than 12'-0" over driveways (including neighboring driveway).
- The PG&E cable drop shall not be less than 18'-0" over a public street.
- The cable drop shall be 18" minimum above roof when less than 6'-0" from mast to roof eave.
- The cable drop shall be 36" minimum above roof when over 6'-0" from mast to roof eave (4:12 or steeper).
- The cable drop shall be 8'-0" above roof when over 6'-0" from mast to roof eave (less than 4:12).
- The mast shall be braced if over 36" high.
- Approved weather head required.
- 18" of conductor required out of the weatherhead.
- The conductors out of weatherhead shall be arranged into a drip loop.
- The mast shall enter the main panel with a Meyers hub securely fastened to the panel.
- If the mast entry into the panel is a dry location, double locknuts may be used with a bond bushing on the interior.
- The panel shall be labeled by UL or other approved third party agency.
- The panel shall be labeled as "suitable for service equipment".
- The panel shall be an exterior panel for use in any exterior installation.
- The panel may be an interior panel if in an enclosed closet.
- The panel shall have 30" x 36" clear working space in front of the panel. No gas meters or other structures.
- The panel may be recessed in an existing exterior closet no deeper than necessary to install meter and close door.
- A main disconnect is required if over 6 circuit breaker handles.
- The circuit breakers shall be approved for the panel (see label on panel).
- The circuit breakers shall not exceed the conductor rating.
- 240 volt circuit breakers shall be molded case breakers with integral handle ties.
- Multi-wire circuits shall have handle ties on the breakers.
- Cable bundling over 12" requires reduction in ampacity of circuit breaker.
- Primary main panel grounding is to a ufer grounding electrode, if available.
- If no ufer is available, primary grounding is to a full length ground rod.
- If water line is used as a primary grounding electrode, at least 20' shall be visible in the ground and the Grounding Electrode Conductor (GEC) clamp shall attach to the water line in the first 5' entering the house.
- Bond water and gas lines to the main panel in all cases.



Special grounding provisions must be made at all boxes that contain unprotected service entrance conductors.

Fig. 15 Metal Water Pipe Portion of Electrode



Metal water pipe electrode ends 5ft. inside building.