

# **Electric Service Requirements (ESR)**



**2011-12**

**Portland General Electric**

*Remember: Call Before You Dig (Call 811)*

# Common Errors

## (Resulting in a "Turn-Down" for Electric Service)

### Overhead

- **Weatherhead or Point of Attachment (POA) too Low.** The weatherhead or POA for PGE's service drops are required to meet clearances listed in Table 5-1.
- **No Mast Guy.** Masts extending more than 2' above roof require guying (or if service drop length is over 100') (Figure 7-7)
- **Service Drop (POA) Attached to Fascia Board.** Service drops are not allowed to be attached to the Fascia board (fascia's loosen over time) (Figure 5-3, Reference 8)
- **Meter Base or Weatherhead in Wrong Location.** Meter base and weatherhead not in correct location (Figure 5-3, Reference 5, Note a) (Call for meter spot).
- **Wrong Style Meter Base Installed.** PGE accepts the "ring" style meter socket only. The "ringless" style meter socket is not approved. (Section 3.4.1)

### Underground

- **No Pull String in UG Conduit(s).** Pull strings are required in all PGE conduits (Section 6.1)
- **Shallow Trench.** PGE requires a minimum trench depth of 36" (Figures 6-1 & 6-2).
- **Conduit Connects to the Wrong K/O on the Meter Base.** Only the left K/O can be used on a 200A meter base. 320A bases can use any of the bottom K/O's (Figure 7-1, Note b).
- **UG Kick Pipe Must be Straight and Plumb.** No bends are allowed between the meter base and the ground (Figure 7-4).
- **Unapproved Meter Location.** Meter must be an approved location (call for meter spot).
- **Meter Base too Close to Gas Meter.** The minimum distance between the meter base and a gas meter is 3' (Figures 5-6 & 7-2).
- **Wrong Style Meter Base Installed.** PGE accepts the "ring" style meter socket only. The "ringless" style meter socket is not approved.

***(Continued on inside of back cover)***

This 2011-12 edition of the Electric Service Requirements booklet supersedes all previous editions. The purpose of this booklet is to aid you in getting electric service from PGE.

You will note a number of changes from the previous edition. Some of these changes were caused by updates made in the National Electrical Code. Others were caused by further standardization by Portland General Electric, and some others were caused by revisions to the Electric Utility Service Equipment Requirements Committee (EUSERC) Standards (EUSERC is a voluntary organization which strives to standardize electric utility requirements).

All changes since the last publication will be marked with a revision bar. 

The new requirements in this booklet will be enforced on any installation made after April 1, 2011.

It is strongly recommended that Portland General Electric be consulted to resolve any questions concerning the requirements in this booklet. We will do our best to meet your needs for electrical service in an economical and acceptable manner. This booklet may require different electrical equipment specifications than previously accepted in Portland General Electric service areas.

Construction lead time varies with workload. Please contact a PGE Service Coordinator at one of our company offices as early in your construction process as possible.

## **Service Requirements Committee**

## Summary of Changes to 2011-12 Service Requirements Book

### Section 1 General Requirements

- 1.17 Power Quality (page 5)
  - Added PGE's maximum voltage distortion limits.
- 1.18.2 PGE's Maximum Voltage Unbalance (page 5)
  - New section
- 1.19.1 Emergency or Standby Generators
  - Added sentence on closed transition transfer switch.
- 1.19.4 Net Metering
  - Revised requirements for lockable disconnect switch.
- 1.19.5 Small Power Production
  - Added "...PGE will designate the metering location and type of metering."
- 1.19.6 Solar Payment Option
  - New section.

### Section 3 Services

- 3.3 Point of Delivery (page 12)
  - Revised language for point of delivery for residential customers.

### Section 4 Temporary Construction Services

- 4.3 PGE Gold Temporary Services (Enhanced Service) (page 18)
  - Added paragraph regarding additional costs for excavation near existing pad mounted transformers.

### Section 5 Clearances

- Table 5-1 Minimum Clearances for Service Drops (page 30)
  - Revised table to match current clearances shown in PGE's T&D Construction Standards.

### Section 6 Underground Requirements

- Section 6.3 Conduit (page 41)
  - Added paragraph on the use of high density polyethylene (HDPE) duct.

### Section 10 Commercial, Industrial, and Large Residential Services (800A or less)

- Section 10.6.4 Current Transformer Cabinets (page 79)r.
  - To first "bullet" added sentence about having no connections in any current transformer cabinet to supply any other meter.
- Figure 10-12 Current Transformer Cabinet -- 800 Amperes Maximum (page 83)
  - Added note requiring factory installed hinges on all CT cabinets.

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## Definitions

**ANSI** - American National Standards Institute.

**Backfill** - Materials such as sand, crushed rock, or soil that is placed to fill a trench.

**Bushings** - Plastic or nylon rings that attach to the ends of conduit to protect the electrical cable from sharp edges.

**Bypass** - A method which allows for service continuity to the Customer while the meter is removed for test or inspection.

**Current Transformer** - A transformer that reduces the Customer's load current by a known ratio to a secondary metering current that is within the capacity of the meter.

**Current Transformer Meter** - A meter that requires current transformers because its current capacity is not as large as the Customer's current load.

**Customer** - The individual responsible for requesting electrical service from PGE.

**Direct-burial Cable** - Electrical cable that is suitable (approved by a recognized testing laboratory) for direct burial in the ground without using a conduit system.

**Direct-connect Meter** - Meter that is energized to line voltage and carries all the load current. Also called a self-contained meter. No current transformer or voltage interface is used.

**Drip Loop** - The loop formed by the customer conductors that connects to PGE's service drop. The conductors are formed in a downward "loop" so water will not enter the customer's service mast (weather head).

**Elbow** - A bend in a conduit having a small radius change in direction, also referred to as a "standard radius". Small or standard radius bend elbows are not allowed for PGE conductors (see Sweeps).

**EMT** - Electric Metallic Tubing

**EUSERC** (Electric Utility Service Equipment Requirements Committee) An association of utilities and manufacturers that creates standard designs for the interface between the electric utility's service and the Customer's facility. PGE is an active member of EUSERC.

**Fault Current** - Maximum available current under bolted short circuit conditions.

**Grounding** - Grounding of Customer equipment must be in accordance with latest issue of NEC (Article 250 Grounding). Code enforcement agencies may require ground connection to be visible when inspection is made. However, for safety reasons, top of ground rod should be flush or below ground level in permanent application.

**IMC** - Intermediate Metallic Conduit.

**Lead** - The horizontal distance from the surface of the pole to the point of entry of the anchor into the ground.

**Manual Link Bypass** - Bypass facilities requiring the physical act of placing links across line and load bypass studs (see bypass) provided in the meter socket.

**Manufactured Home** - A factory-assembled structure or structures, site specific and transportable in one or more sections. These structures are designed to be used as a dwelling with a permanent foundation (see [Section 9, Manufactured and Mobile Home Service](#)).

**Meter** - A device that measures and records the summation of electrical energy over a period of time.

**Meter Base** - The mounting device consisting of jaws, connectors, and enclosure for socket-type meters. The meter base is also referred to as a meter socket.

**Meter Base Ring** - A metallic ring that secures the meter to the meter base and can be sealed by PGE.

**Meter Pedestal** - A commercially built pedestal that contains a meter base and Customer disconnect switches.

**Mobile Home** - A factory-assembled structure or structures transportable in one or more sections, that is built on a permanent chassis and designed to be used as a dwelling without a permanent foundation.

**Modular Home** - A factory-assembled structure or structures transportable in one or more sections, that is built on a permanent chassis and designed to be used as a dwelling with permanent foundation.

**NEC** - Most recent publication of the National Electrical Code adopted by the state.

**NESC** - Most recent publication of the National Electrical Safety Code adopted by the state.

**NFGC** - Most recent publication of the National Fuel Gas Code.

**Open Wire Secondary** - Three conductors individually supported on insulators on the pole crossarm.

**OSHA** - Occupational Safety and Health Administration.

**OUCC** - Oregon Utility Coordinating Council

**Overhead Service** - Electric service supplied to the Customer from PGE utilizing overhead conductors.

**Plumb** - To have the sides and front of Customer installed equipment and conduit perfectly vertical from both the front and side views.

**Point of Attachment** - The location where PGE's overhead service lateral attaches to the Customer's structure.

**Point of Delivery** - The point where the power company's circuit connects to the customer's system.

**Primary** - Over 600 volts.

**Power Factor** - The cosine of the angle, expressed as a percent, between voltage and current. Also, the ratio of the active power to the apparent power.

**Power-Leg** - On a 4-wire, 3-phase, delta connection, the conductor having the phase-to-ground voltage of 208V on a 120/240V service is called the “power-leg” or “wild-leg”. This is marked with an orange colored dot or tape.

**PVC Conduit** - Commonly referred to as plastic conduit. A gray colored schedule 40 PVC conduit approved for use in electrical installations.

**Qualified** - Having been trained in and having demonstrated adequate knowledge of the installation, construction, or operation of lines and equipment and the hazards involved, including identification of and exposure to electric supply and communications lines and equipment in or near the workplace.

**Readily Accessible** - A roof is considered as readily accessible if it can be casually accessed through a doorway, window, stairway, or permanently mounted ladder by a person on foot who neither exerts extraordinary physical effort nor employs special tools or devices to gain entry per the NEC.

**Secondary** - 600 volts and under.

**Safety Socket**- Device consisting of manual link bypass facility and a circuit closing nut and bolt assembly which will de-energize the meter socket while the meter is removed for test or inspection.

**Self-contained** - See direct-connect meter.

**Select Backfill** - Material used to bed and cover conduit or direct-buried cable. It consists of materials that pass through a 3/4” sieve and contain no sharp or foreign objects.

**Service Entrance Conductors** - Customer owned conductors connecting to the customer’s service equipment from the service drop or service lateral.

**Service Trench** - Trench provided by Customer for service lateral.

**Service Lateral** - Conductors from PGE’s system (e.g., pole, pedestal, vault, transformer) to the customer’s house or customer owned service pole.

**Single-Family Service** - Service furnished to Customers for domestic purposes in single-family dwellings.

**Single-Phasing** - Loss of 1-phase on a 3-phase service (running on 2-phases).

**Socket** - Mounting device consisting of jaws, connectors, and enclosure for socket-type meters.

**Sweeps** - A bend in the conduit that has a factory formed large radius change in direction. (See Table 6-1 Notes)

**Switchboard** - A large panel or assembly of panels which contain buses, current transformers, meter switches, and protective devices.

**Test Block Facilities (TBF)** - An assembly used to de-energize a self-contained meter socket without disconnecting electric service to the Customer.

**Test Switch** - A device used by PGE to isolate the meter from current transformers.

**UL** - Underwriters Laboratory

**Underground Service** - see Service Lateral

## Portland General Electric Company Offices

**Portland  
Central Service Center** 3700 SE 17th Ave  
Portland, OR 97202

**Oregon City  
Line Crew Center** 209 Warner-Milne Road  
Oregon City, OR 97045

Serves: Portland (West of I205), Oregon City, Milwaukee, Gladstone, Clackamas (West of I-205 and South of Hwy 224), West Linn, Redland, Beaver Creek (area North of Canby and Mulino)

**Gresham  
Eastern Service Center** 1705 NE Burnside Street  
Gresham, OR 97030  
Serves: Gresham, Portland (East of I-205), Sandy, Welches, Rhododendron, Government Camp, Estacada, Carver, Boring, Damascus, Eagle Creek, Wood Village, Troutdale, Fairview, Corbett, Clackamas (East of I-205 and North of Hwy 224)

**Wilsonville  
Line Crew Center** 9480 SW Boeckman Road  
Wilsonville, OR 97070  
Serves: Tigard, Sherwood, Tualatin, Durham, Lake Oswego, Wilsonville

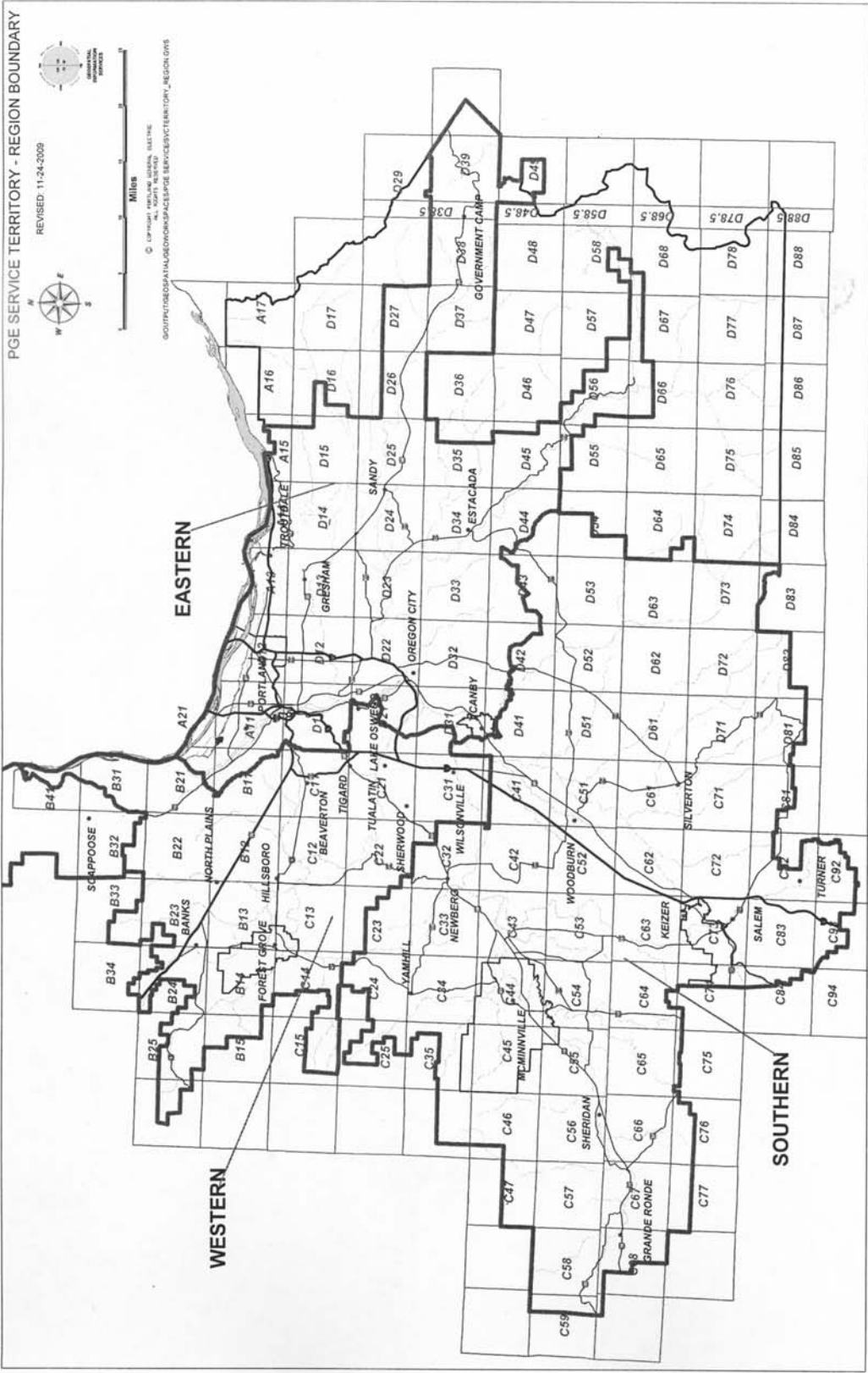
**Sunset  
Line Crew Center** 4950 NW 235th Avenue  
Hillsboro, OR 97124  
Serves: Beaverton, Hillsboro, Cornelius, North Plains, Banks, Manning, Gaston

**Service Coordinators (all areas listed above)** .....503-736-5450  
Fax 503-736-5451 or -5452

**Salem  
Southern Service Center** 4245 Kale Street NE  
Salem, OR 97305  
Serves: Salem, Keizer, Turner, Silverton, Brooks, Woodburn, Mt. Angel, Aurora, Donald, St. Paul, Molalla, Colton, Hubbard, Gervais, Newberg, Dundee, Yamhill, Carlton, Lafayette, Sheridan, Willamina, Grand Ronde, Amity, Dayton, and area South of Canby and Mulino  
**Service Coordinators (Southern Region)**.....503-463-4348  
Fax 503-463-4308

**Customer Service (all locations)** .....1-800-542-8818 or 503-228-6322  
**Tree Trimming (all locations)** .....1-800-542-8818 or 503-736-5460  
**To Locate Underground Wires** (Oregon Utility Notification Center) Call 811 or 1-800-332-2344, for the Portland Metro area call 503-246-6699  
**Emergencies and Outages (24 hours)** .....1-800-544-1795 or 503-464-7777

Service Area Map



### PGE and PacifiCorp Commercial Underground Network District Portland, Oregon

