

CHAPTER 2

Residential Electric Service General Information

Definitions

For the purpose of electric service installation, Clark Public Utilities defines a **single-family residence** as a structure that is:

- ▶ Located on a lot zoned for residential use.
- ▶ Approved for occupancy as a permanent, single-family residence by the local governing agency or agencies.

A mobile or **manufactured home** is considered a single-family residence if it meets the above criteria, and:

- ▶ Is permanently located on a foundation.
- ▶ Has all wheels and axles removed.
- ▶ Meets all other requirements of a manufactured home placement permit as required by the local governing agency or agencies.

An **outbuilding** is a stand-alone structure that is located on residential property and is *not* a living space. Typical outbuildings are barns (agricultural buildings), pump houses, garages, shops and storage sheds. Services to single-family residential use outbuildings are required to satisfy all requirements found in this handbook, the **National Electric Code (NEC)** and at the local inspecting office.

Subdivisions and **short plats** with three or more residential building lots require a subdivision design from a Clark Public Utilities approved design firm. Call our Construction Services department at (360) 992-8558 for additional information on subdivisions and short plats.

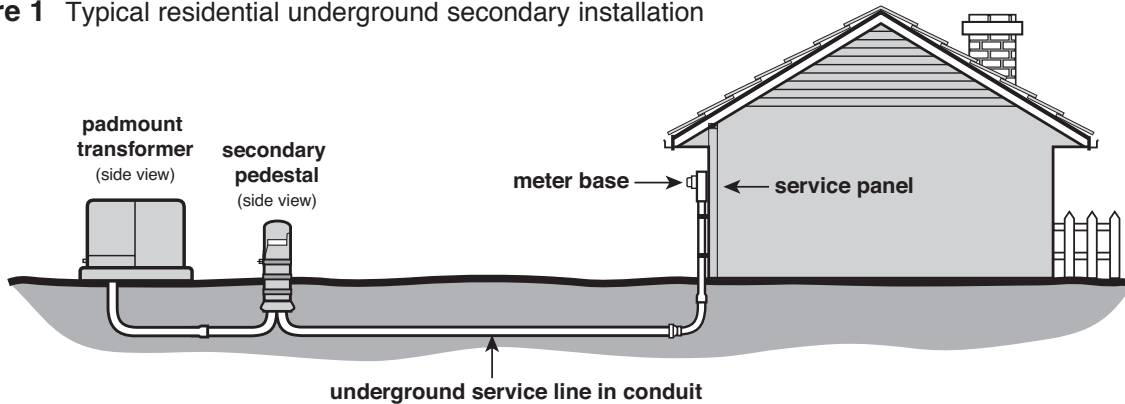
Service installation responsibilities

Installing a new electrical service to a residential structure is a cooperative effort between the customer and Clark Public Utilities in which both share responsibility.

Clark Public Utilities is responsible for:

- ▶ Designing an electrical service based on Clark Public Utilities' construction standards that best suits the customer's needs.
- ▶ Applying for right-of-way trenching and crossing permits within Clark County unincorporated (see customer responsibilities within city limits), and all crossings of state highways. Fees for these permits will be added to the customer's Clark Public Utilities construction bill.

Figure 1 Typical residential underground secondary installation



- ▶ Connecting the inspected and approved service.
- ▶ Setting the electric meter in a customer-installed and maintained meter base.

Customer is responsible for:

- ▶ Requesting electrical service and establishing an electric account.
- ▶ Hiring a utility-approved electrical contractor to supply and install all required primary (high voltage) electrical equipment based on the utility-provided electrical design. See **Chapter 4, Primary Line Extensions** for more information.
- ▶ Obtaining right-of-way trenching and crossing permits inside any city limits.
- ▶ Notifying the underground locating service center and other utilities of the project *before* any digging or excavation.
- ▶ All trenching related to the installation.
- ▶ Installation of secondary service including meter equipment, secondary pedestal (as required), conduit and conductor (**Figure 1**).
- ▶ Terminating the conductors in the meter base.
- ▶ Maintaining electrical equipment safety clearances for both existing and new installations of primary and secondary equipment.
- ▶ Obtaining electrical wiring permits and inspections from state or local **municipalities**.
- ▶ Maintaining electrical equipment on the customer (load) side of the meter. See **Ownership and maintenance responsibilities** below.
- ▶ Keeping the meter base accessible to Clark Public Utilities personnel.

Ownership and maintenance responsibilities

Once the new service passes electrical inspection, is backfilled by the customer and has been energized by the utility, Clark Public Utilities assumes ownership. The utility is then responsible for repairing and maintaining the secondary electric service from the utility **source** to the meter.

All electrical equipment and wiring on the customer (load) side of the meter (including service entrance conduit of an underground service, and the **service mast** of overhead services) is owned and maintained by the customer. The customer is responsible for facilitating any necessary repairs or changes to the meter base, CT **enclosure**, weatherhead and electrical panel.

Electrical system types

Clark Public Utilities' electrical system consists of both overhead and underground facilities. If the power system is overhead, a series of poles similar to **Figure 2** will be visible. If the power system is underground, facilities like those in **Figure 3** will be found.

After the initial request for service has been processed, a representative from Clark Public Utilities will advise the customer of the source for the new electric service. This source facility will be one of the following:

- ▶ Pole-mounted **transformer**
- ▶ Padmounted transformer
- ▶ **Secondary pedestal**

NOTE: Existing utility poles without transformers may also be a source that requires the installation of an overhead transformer. Costs for additional facilities will be added to the customer's Clark Public Utilities construction bill.

Starting the installation process

Setting up an account

A billing account will be established at the time the customer calls to request new electric service or completes and submits the **New or Altered Electric Service Worksheet** found on page 55 in the appendix of this handbook.

Figure 2 Overhead facilities

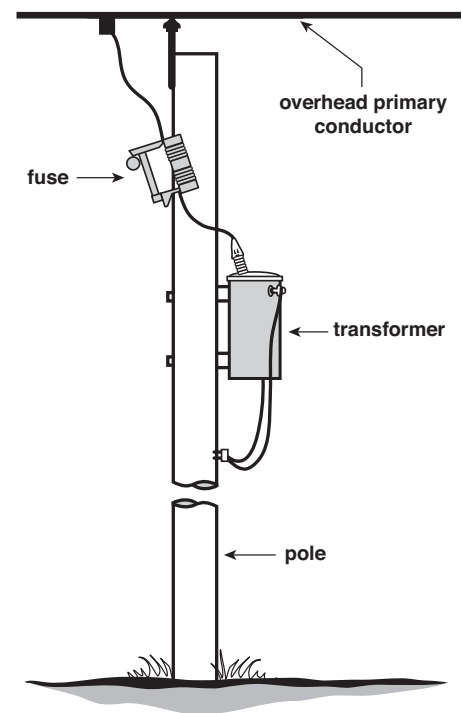
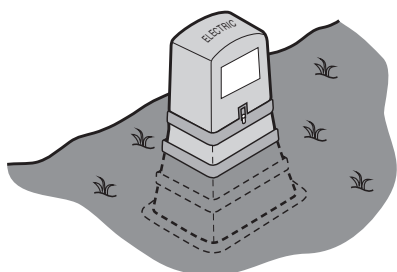
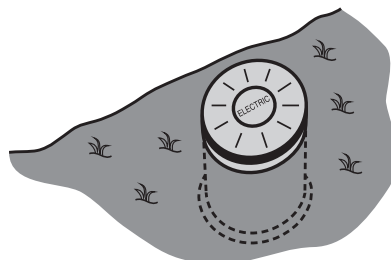


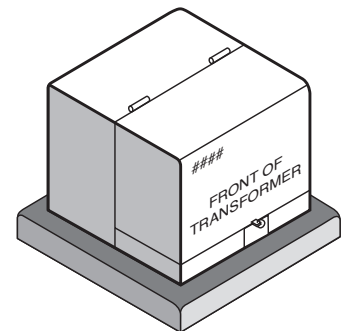
Figure 3 Underground facilities



secondary pedestal
(new style)



secondary pedestal
(old style)



padmount transformer

Construction Services can be reached at (360) 992-8558. The Construction Services representative will ask for billing information and the address for new service. If a job will require a **temporary service**, the Construction Services representative can discuss the appropriate options. See *Chapter 6, Temporary Services* for more information.

The following questions will help determine the best electrical design to suit the customer’s needs:

- ▶ What is the **Assessor’s Parcel Number (APN)**?
- ▶ What type of residential building will this electrical service serve (home, barn, shop, etc.)?
- ▶ What is the building’s square footage?
- ▶ What type of electrical or gas appliances will be installed (furnace, heat pump, air conditioning, water heater, etc.)?
- ▶ What size service panel will be installed?
- ▶ When will the service be ready for connection?

Service voltage

The utility offers 120/240 volt, 3-wire systems for single-phase residential service. Customers who are interested in a residential three-phase service can contact Clark Public Utilities’ Construction Services department at (360) 992-8558 for more information.

Service sizes

Clark Public Utilities offers several service sizes for single-family residential structures and outbuildings. The service size required depends upon the size of the home and the power requirements of the equipment being installed.

Table 1 explains the common service sizes.

Service less than 200 amps

Table 1 Common service sizes

| Voltage | Ampere Rating | Typical Use |
|---------|--------------------|--|
| 120/240 | Less than 200 amps | Common for shops and other outbuildings |
| 120/240 | 200 amps | Small and medium size homes (most common service size) |
| 120/240 | 320 or 400 amps | Large or medium size homes with an additional residential structure (shop, barn, etc.) |
| 120/240 | Over 400 amps | Very large homes with additional residential structures |

A single-family residence may have a service panel that is sized less than 200 amps. In these cases, the utility will provide a design requiring a service line and meter base that is sized to provide up to 200 amps of service.

Selecting a meter base location

The meter base and associated devices (CT enclosure, etc.) must be attached to a permanent fixed structure that contains the load being served (such as a house). This location is to remain accessible to Clark Public Utilities and meet all of the following requirements:

Approved meter base and CT enclosure locations are:

- ▶ Outside.
- ▶ On the ground floor, with the center of the meter 5 to 6 feet above finished grade (5 feet preferred).
- ▶ On the front one-third of the home, closest to normal public access.
- ▶ In an area that is *not* subject to being fenced-in. Patios, decks, porches, breezeways and backyards are not approved new service locations.

These approved locations allow Clark Public Utilities to:

- ▶ Read the meter in a cost-effective manner.
- ▶ Maintain the ***metering equipment*** efficiently.
- ▶ Disconnect the electrical service quickly in case of emergency.

NOTE: See *Chapter 5, Residential Meter Installation* for more information.

Trenching

The customer is responsible for digging the electric service trench, installing a continuous conduit run and the service conductor (wire). The customer backfills and compacts the trench after required inspections have taken place. The exception is trenching that occurs within public right-of-way or on property not owned by the customer. **Only licensed and bonded contractors, hired by the customer, may perform work within the public right-of-way or on neighboring property.**

For additional trenching information, see *Chapter 3, Underground Secondary Services* and *Chapter 4, Primary Line Extensions*.

Locating and notifying underground utilities

Locating existing underground utilities

State law requires that the customer call the underground utilities locating service at least two full business days (48 hours) before trenching or excavating to install new underground electric service. Customers within Clark County can call the national ***“Call Before You Dig”*** number, 811, or 1-800-424-5555. One call to

the locating service notifies all utilities that locates have been requested.

Underground electric distribution and service lines owned and maintained by Clark Public Utilities will be located. This service is free of charge.

The customer is responsible for facilitating locates of customer-owned underground electric lines installed behind the meter. **Table 2** shows the color code for marking the location of each utility.

NOTE: Any digging within 24 inches of location marks must be done by hand.

Table 2 Color codes for locating underground utilities

| Color | Underground Service |
|--------|------------------------|
| Red | Electric |
| Yellow | Gas, Oil, Steam |
| Orange | Telephone, Cable TV |
| Blue | Water |
| Purple | Reclaimed water |
| Green | Sewer |
| Pink | Temporary survey marks |
| White | Proposed excavation |

Notifying other utilities about new electric service installations

New construction typically involves the installation of telephone lines, cable television cables, and natural gas lines, as well as electric power cables. It is the customer’s responsibility to notify each utility about the intended electric service installation.

Joint use facilities

Joint use describes a group of utilities that share pole space or trenches in an effort to keep installation and maintenance costs lower for the customer.

Overhead joint use

Whenever an existing Clark Public Utilities power pole is replaced or an overhead service is converted to underground and the pole has joint users attached, the pole will be abandoned (left on site) to the remaining joint users on that pole. The utility has no authority to remove or relocate other utilities on the pole. It is the customer’s responsibility to contact all joint use utilities for conversion of their services and to coordinate the removal of the pole(s) **prior** to the beginning of the project.

Joint use trench

The customer may place telephone or cable television facilities in a trench with electric service conductors, providing the installation meets the requirements of Clark Public Utilities and all other parties sharing the trench. In certain cases, natural gas and water pipes may be installed in a common trench. See **Chapter 3, *Underground Secondary Services*** for additional trenching information.

NOTE: Sewer lines, water mains and storm drainage systems are not allowed in a joint trench with Clark Public Utilities' electric service lines.

Conduit

All new underground electric services to a single-family residence require a continuous run of 3-inch, schedule 40, PVC, gray, electrical conduit from the Clark Public Utilities source to the customer's meter base. Services over 400 amps may require a larger conduit to be installed. A utility representative will advise on the size of conduit required.

Customer-owned electric services on the customer (load) side of the meter fall under the jurisdiction of the Washington State Department of Labor and Industries or the City of Vancouver. Contact the local governing office for additional information on the conduit requirements for customer-owned electric services.

Work clearances around transformers

A minimum of 10 feet of clear, level, working space is required in front of a padmounted transformer, three feet from the back and sides. This allows utility personnel enough room to perform transformer switching (rerouting of high voltage power) and maintenance. Landscaping, fences and other obstructions must not encroach on these ***clearances***.

Additional information about clearances around padmounted equipment and transformer placement can be found in **Chapter 4, *Primary Line Extensions***.

Electrical work on the customer side of the meter

All electrical equipment and wiring on the customer (load) side of the meter (including the service mast of an overhead service) is owned and maintained by the customer. The customer is responsible for facilitating all repairs, upgrades or changes to customer-owned electrical equipment. Utility personnel are not allowed to perform any work on the customer (load) side of the meter base.

The homeowner may request a disconnection of service to allow electrical work inside their meter base or home. It is the customer's responsibility to ensure the project complies with all federal, state and local codes that apply. The local inspection agency requires that the customer obtain an electrical work permit prior to starting the project and that this permit is posted at the job site while the work is being done. All electrical work performed on customer equipment requires an electrical inspection from the inspecting agency with jurisdiction

(Washington State Department of Labor and Industries, or City of Vancouver). When adding load to an existing service the utility will disconnect the service and/or remove the meter allowing the customer or electrical contractor to make the final terminations inside a **self-contained** meter base, prior to the electrical inspection. After the work is complete, and has passed inspection, Clark Public Utilities will re-energize the service.

NOTE: Only authorized Clark Public Utilities personnel shall unlock, remove and re-install meters.

Modified services

If an existing service wire has to be removed, relocated or upgraded, the request becomes a “modified service” and requires review by the Engineering department. Charges may be applied for upgrades to services. The Construction Services representative will help determine if the job is a modified service request.

NOTE: Existing overhead services that are to be relocated or upgraded may require conversion to an underground service.

Cost for service

Charges vary depending on the location of existing electrical facilities, the size of service requested and the type of metering required. Following, is a brief description of the charges that may be applied to residential electric service requests. These charges are subject to change. Contact Clark Public Utilities’ Construction Services department at (360) 992-8558, email at construction@clarkpud.com, or visit our website www.clarkpublicutilities.com for verification of current charges. Electric service requests on file longer than six months will require updates to existing charges.

System development charge

This charge covers costs incurred by the utility to increase the capacity of the existing Clark Public Utilities electric distribution system. Charges are based on the panel size of the new service, or the added panel capacity of an altered service

Service panel changes and upgrades may also require payment of the system development charge.

Miscellaneous construction charges

New and upgraded services that require an extension of primary facilities or upgrades to existing secondary or primary facilities may have additional charges applied. These charges cover the costs of labor and materials used to modify the utility’s existing system when connecting additional services or load.

A utility representative will evaluate the job site and advise of any miscellaneous construction charges that may apply.

Residential current transformer (CT) metering charge

Services greater than 400 amps require CT metering. This type of metering system requires prior **approval** from a **Clark Public Utilities representative** and is available at an additional charge.

Temporary services

Un-metered builder's service (BDR)

This type of temporary service is only for use during the building of a single-family residential house and is not available for commercial developments, manufactured homes, multifamily structures, wells or outbuildings. This un-metered service provides electricity to run construction tools via two 120 volt (20 amp) and one 240 volt (20 amp) outlet. Clark Public Utilities will set a **builder's service (BDR)** at an existing or newly installed transformer, secondary pedestal or utility pole base.

The construction of very large homes that require more power or outlets than a BDR can provide, will require the installation of a metered temporary service.

Metered temporary service

This type of temporary service is metered and requires an electrical inspection prior to connection by Clark Public Utilities. The customer provides and installs the meter base, conductor and paneling as required by the local governing office. This service can be used for residential, commercial and multifamily applications.

NOTE: Please see *Chapter 6, Temporary Services*, for more information.

Permits

Clark Public Utilities will process and apply for all right-of-way trenching or crossing permits required for job sites within unincorporated Clark County. Fees for these permits vary depending on the requirements of the job site and will be added to the customer's construction billing. If the job site is within any city limits, it is the customer's responsibility to apply for and secure the required permits.

Visit our website, www.clarkpublicutilities.com, or contact a Clark Public Utilities representative regarding questions about construction fees or to access a listing of current charges.

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