

Appalachian Power Company Policy / Procedure No.16:
Performing Installation and Repair Work on Service Equipment

1) Statement of policy:

Work on Service Equipment including service conductors and metering presents its own set of challenges. This policy defines safe practices that shall be employed when executing this work.

The following safety practices are mandatory:

- Using proper tooling when installing a house knob.
- Wearing class 0 gloves when installing or removing meters when a meter base is energized or doing any work inside an energized meter base.
- Employees shall not climb or place a ladder against a temporary service pole, temporary service poles are only to be placed in truck accessible locations.
- When a customer has created a situation that poses a hazard to someone working to repair facilities, the customer shall rectify that situation before work commences. Where the situation cannot be made safe, it is permissible to leave the customer's facilities de-energized until unsafe conditions are rectified.

2) Discussion:

House Knob Installation:

Determining an ideal location for a service house knob can be somewhat limited due to the placement of customer installed entrance cable. There are several decisions that one should consider before attempting this task:

- Is the wire holder being installed in a material capable of holding the tension of the wire?
- Are the ladder and other tools being used to complete the task available and in good operating condition?
- Are you using the correct tools to complete the task?
- What alternative methods can be utilized to make the task safer and easier?

The house knob is designed to withstand 150 in/lbs torque during and after installation. Applied forces greater than 150 in/lbs may cause failure during installation and thus create an unsafe condition. One simple way to control the possibility of over torque on the knob during installation is to drill a pilot hole before attempting to install the device.

Since it is not practical to use a torque wrench for installation, the suggested method to install a residential screw type house knob is to use a cordless drill equipped with an installation adapter. The adapter is provided by the manufacturer and designed for the particular house knob being installed. Alternatively, a deep well multi-point 1-9/16 inch socket driven by a cordless drill may be used for the installation. This procedure will

reduce the physical demands on the employee and eliminate the violent movement that he/she may encounter if the knob fails during installation.

PIPE Requirements:

Service and secondary voltage levels are capable of inflicting serious injuries on workers who accidentally contact energized terminals or conductors. In addition, a flash caused while working on energized secondary equipment can be very energetic and dangerous to anyone in the vicinity. Service facilities are subject to a variety of environmental and other factors which can compromise operational and safety features designed into them.

To be prepared for the unexpected, for work which may require employees in close proximity to energized secondary voltages, employees shall wear a minimum of class 0 gloves. This includes, but is not limited to installing or removing meters or any work or inspection inside a meter base including taking voltage or current readings.

Temporary Service and Customer Set Poles:

It is impossible to accurately determine the depth of a pole set by a party unaffiliated with Appalachian Power or the integrity of its installation; therefore, employees shall not climb or place a ladder against a temporary service pole.

Technicians, Servicicers or others involved in counseling customers on these installations shall insist that any new temporary service or other customer set pole be installed in a truck accessible location. Should you be assigned an order to work on a temporary service and you find that the only way to work on that service is from a ladder placed against the pole, you shall return that order to the scheduling authority who should contact the customer to have the pole moved.

For existing service poles in a non-truck accessible location, the employee shall perform a shake test on the pole by pushing hard against the pole at the highest point the employee can reach and attempt to move the pole in all four directions before attempting work from a ladder placed against the pole. The employee shall also do a thorough inspection of the pole itself for deterioration both above and below the ground line. Provided that the installation is substantial, customers may replace existing service poles in place, employees involved in this sort of installation shall insist that the customer provide a quality product before they consider working the pole from a ladder. Customer set poles shall not be climbed under any circumstance.

Customer Equipment Hazards

When the customer has created a hazard, our first priority will be to make the scene safe. It may be necessary to delay the start of work until daylight hours in order to fully evaluate alternatives and discuss any inherent hazards. The customer will be expected to fully participate in the resolution of the problem by making arrangements for any electrical work that is their responsibility as well as associated electrical inspections. The

urgency of restoring service and a strong desire to help the customer cannot subvert our commitment to working without exposing our employees to risk.

Common examples of customer created hazards are:

- Meter bases enclosed within rooms and walls
- Abnormal amounts of debris or encumbrances in the work area
- Roofs constructed under overhead service drop wires
- Footers or slabs installed over underground conductors
- Code violations regarding construction standards or clearance requirements
- Meter bases placed too high or too low. Code requires the meter base be installed no more than six feet and no lower than four feet above the ground.

When an outage precipitated by these problems occurs, the APCo servicer is placed in the difficult position of trying to safely restore service in the presence of hazards that should be corrected by the customer. We cannot allow a strong sense of customer devotion and need to help the customer cause us to rush, lose focus, or work unsafely.

It is especially difficult to mitigate the hazards associated with this work when lighting is not adequate. Employees must allow themselves adequate time to select the safest remedy by considering all the alternatives. At all times, the provisions of the “AEP Guide for Electric Service and Meter Installations” Must be followed regarding meter location and relocation of service / meter equipment, etc.

Some examples of conditions needing to be addressed by the customer or their electrician are:

- Relocation of a meter base into an accessible location
- Establishing a new service attachment point for an overhead service
- Providing safe access to a service entrance conduit that is penetrating and above a sloped roof
- Installing conduits under concrete slabs to protect buried conductors
- Customer has built or planted something over an underground service
- Non-truck accessible temporary service poles
- Meter bases mounted too high or too low to comply with code requirements

3) Definitions:

House Knob Installation Adapter: The square plastic tool provided in each box of house knobs provided to aid in the proper installation of house knobs.

4) Attachments:



The orange installation tool shown above is readily available from stores and can be fitted to a cordless drill, these devices are provided with a box of house knobs, newer tools are deeper and easier to use. When a drill is not available, a punch or Yankee drill (shown above on right) can be used to produce a pilot hole in most materials.

Always self brief before starting and include ladder safety, PPE / PIPE, body positioning and jobsite conditions.

Guide for Electric Service and Meter Installations - September 1, 2004

Introduction- All customer owned equipment shall be installed in accordance with the requirements of the latest revision of the National Electrical Code (NEC), or of any Federal, State, County or Municipal laws or statues that may be in effect for governing electrical installations in the area where the installation is made. Compliance with these requirements does not absolve the Customer from the obligation to install and maintain wiring and equipment in a safe condition; also, the Company does not accept any responsibility for the quality or condition of the Customer's wiring or equipment.

4.03 Installation and Responsibility

It is necessary for the protection of the Customer that all work, wiring, and apparatus be installed and maintained in a safe manner by a licensed electrician or qualified party. The Customer, in accepting service from the Company, assumes full responsibility for the safety of the wiring and apparatus, which the Customer installs.

8.04 Relocation of Service and Meter Equipment

Whenever it becomes necessary to relocate the service entrance and meter equipment of an existing installation, the Company shall be consulted before such work is begun.

5) OSHA / Safety Manual References:

Safety Manual:

G4.01: Tools/equipment shall be inspected prior to use and used only if they are appropriate for the task and in good working order. Defective tools/equipment shall be removed from service, until properly repaired.

G4.09: Each work location shall have a process in place to document that tools modified or fabricated at the site are evaluated by qualified person as adequate for intended use and approved by management. Pipe or other extensions shall not be used on any tool handle to increase leverage, unless the tool is specifically designed for use of such extension and authorized by supervision.

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E1.20: Insulating gloves in accordance with Electrical Table 2.02, with protectors, approved eye protection, and clothing as defined in General Section rule 1.20, shall be worn when checking voltage and/or installing, connecting, disconnecting, changing, or removing: (1) any meters, (2) instrument transformers or any other metering equipment that are not completely isolated from energized conductors, (3) test links on energized meter test blocks, or (4) test leads to energized metering circuits.

6) Date Adopted: September 16, 2011