

Appalachian Power Company Policy / Procedure No. 17:
De-energizing, Testing, & Grounding Facilities when Replacing Broken Poles

Policy Summary:

Damaged facility repairs present unique challenges to those engaged in this work, this policy provides procedural guidance for individuals facing specific repair tasks.

This procedure is based upon field experience and problems encountered while performing repairs. Specifically, this procedure stipulates the following:

- When the possibility exists that energized conductors attached to the damaged pole will be disturbed due to other operations during the replacement of the pole itself, all attached conductors must be de-energized, tested and grounded before that work commences.
- When a pole has been damaged and needs to be replaced, electrical facilities attached to the damaged pole shall be de-energized, tested and grounded during the conductor transfer portion of the replacement job.

1) Statement of policy:

All hazards at the job site shall be thoroughly reviewed before beginning service restoration work. Damaged poles do not possess the strength or stability of an intact pole. Extra precautions must be taken as damaged poles are replaced. Crews must recognize that intact poles have both columnar strength (the strength to support conductors and equipment) and torsional strength (the strength to resist twisting forces). These strengths are compromised when a pole is damaged.

The following additional precautions shall be taken by a crew involved in replacing a damaged pole:

- Before doing any work, the crew must establish positive control of the damaged pole and maintain that control throughout the job.
- When work is being done that will disturb the alignment of attached energized conductors, the conductors shall be de-energized, tested and grounded prior to commencing and during that segment of the job. Examples of this sort of activity are:
 - Securing the old pole prior to beginning replacement work
 - Setting the new pole in close proximity to the broken pole
- When a pole has been damaged and needs to be replaced, the electrical facilities attached to the damaged pole shall be de-energized, tested and grounded during the conductor transferring portion of the job.
- The person in charge may determine the need for all attached facilities to be de-energized, tested and grounded during other operations and must make liberal use of this hazard mitigation technique during the execution of a damaged pole replacement.

2) Discussion:

Vehicle impacts, trees falling and various weather events frequently break poles leaving them in a precarious and unpredictable state that requires additional precautions. A broken pole presents a number of stored energy hazards. Before any substantial work is begun, the crew must establish positive control of the broken pole or take actions to eliminate the uncontrolled release of stored energy contained in the pole.

Often, conductors and equipment attached to these compromised structures are left in an abnormal state and can impact clearances to the ground, other facilities and vehicular traffic. Significant structure impacts can compromise the strength of pole attachments and their ability to work as intended. Damage to hardware and attachments is difficult to observe and understand as repairs are being planned and performed. Energized lines and equipment on damaged poles are additional complications for employees tasked with making repairs in an often difficult situation. Crews must de-energize, tested and grounded conductors and equipment whenever the stability of their support system is compromised or if work is being performed that may alter their condition.

De-energizing the electrical sources does not eliminate all hazard concerns such as stored energy, conductor tensions or vehicles traveling near the work zone.

Note: The person in charge / first responder must work with local supervision and the DDC to determine if there is a more suitable time to replace the damaged pole and if there are switching opportunities to minimize the outage.

3) Definitions:

Positive Control: Control of a pole, conductor or equipment in a manner that maintains the item's position even when external forces act upon it.

4) Attachments:

5) OSHA / Safety Manual References

Safety Manual:

E 2.27 - Employees shall not attach or remove guy wires and/or conductors from a pole or structure until they are sure the pole or structure will withstand the altered stress.

E 2.32 – Conductors being strung in or removed shall be kept under positive control to prevent accidental contact with energized lines or equipment.

6) Date Adopted: September 16, 2011