

EXHIBIT A

PGE POLE ATTACHMENT SPECIFICATIONS

1. SCOPE

This exhibit covers Portland General Electric (PGE) specifications and requirements for Licensee Attachments to overhead facilities, including, but not limited to, distribution and transmission poles and towers (“PGE Facilities”). These Specifications may be subject to change from time to time.

2. OBJECTIVES

PGE Attachment Specifications were developed to meet the following concerns:

- A. **Safety of Electrical and Communications Workers and the Public**
 - Clearance between power and communications
 - Climbing Space clearance

- B. **Structural Integrity of the Pole and System Reliability**
 - Factors affecting loading and moment

- C. **Environmental Degradation of the Pole**
 - Penetration of protective barrier

- D. **Loss of Use**
 - Finite space available for Attachments

3. REFERENCE STANDARDS

The Licensee shall meet or exceed the minimum requirements of the National Electric Safety Code (NESC). Nothing in this document or any other PGE document shall relieve the Licensee of meeting any of the grounding, loading, strength, clearances, climbing or working space requirements of the NESC. In addition, the Licensee shall also be responsible for meeting all Oregon Public Utility District (OPUC) and State of Oregon rules regarding electrical and communication line design, construction and maintenance.

4. DEFINITIONS

Access by Qualified Worker - All work within the supply area, or work that requires an object or piece of equipment to be brought within 10 feet of a primary conductor, shall be performed by qualified PGE personnel or qualified PGE contractors.

Attachment - Any piece of Equipment that occupies space and/or affects the structural integrity of the pole will be considered an Attachment. Any and all Licensee

Attachments are subject to the Facilities Attachment Agreement. Attachments include, but are not limited to:

- messenger strand
- conduit or risers not on PGE brackets
- span guys
- anchors (per Anchor Schedule in Exhibit C)
- service drops
- mainline
- overlash (i.e., any conductor that is overlashed on an existing conductor after the initial permit)
- a configuration of equipment attached to the pole that includes one or more of the following: power supplies, amplifiers and terminal boxes or other similar equipment

The Licensee shall apply for a PGE Pole Attachment Permit that describes each piece of Equipment supported by the pole. Abandoned Equipment or hardware will continue to be considered an Attachment until removed, unless otherwise specifically approved in writing by PGE.

PGE considers certain configurations to be single Attachments, even though they may involve multiple contacts with the pole. These are limited to the following:

- False Dead End for Slack Span (ref. Figure 25)
- Pole Framing - Dead End Pole with Guy, when off of a common bolt (ref. Figure 26)
- Straight Line Construction, a.k.a. Typical Pole Attachment (ref. Figure 27)
- Side Guy (ref. Figure 28)
- Right Angle Corner, a.k.a. 90-Degree Corner (ref. Figure 29)
- Pole to Pole Guy (ref. Figure 30)
- Sidewalk Anchor & Guy (ref. Figure 31)
- Double Dead End (ref. Figure 32)
- Fiberglass Arm (ref. Figure 33)
- T-Lead, a.k.a. Branch Strand Termination, a.k.a. Dead End with Through Pin (ref. Figure 34)
- Multi-cable Run - initial permit/installation only (ref. Figures 35 and 36)
- Power supply (ref. Figure 37)

Other configurations may be considered to be multiple Attachments. These include, but are not limited to, the following:

- Cross Over at Pole (ref. Figure 38) = **2 Attachments**
- Alley Arm, a.k.a. Extension Arm (ref. Figure 39) = **1 Attachment, + 1 Attachment per conductor on the Arm**
- Cross Arm (ref. Figure 40) = **1 Attachment, + 1 Attachment per conductor on the Arm**
- Mid-Span Crossover (ref. Figure 41) = **1 Attachment, assessed to the**

nearest PGE pole

Basic Pole - PGE's basic pole is a 40-foot, Class 4 pole (ref. Figure 1). Annual rental rates for overhead Attachments were established using the 40-foot, class 4 pole as a basis.

Climbing Space - The space necessary to provide a clear path for a worker while climbing a pole, as noted in the NESC. The Climbing Space allows a worker to safely pass equipment to get to any point on the pole. A clear climbing space of 30 inches x 30 inches between communications service drop cables must be provided, for ensuring adequate clearances on the pole for safe ascent and descent by line personnel (ref. Figure 24). This space must extend 40 inches above and below the limiting cables. The space can rotate every 6 feet.

Communications Space - The vertical space on a pole, typically between the elevations of 20 and 23 feet above ground level, used for communications Attachments.

The Communications Space on certain poles is completely occupied. If a Licensee wishes to attach to a fully occupied pole, it may request that PGE install a taller pole and charge the Licensee for the cost of that pole replacement.

Pole Ownership - PGE is the sole owner of all of its transmission and distribution poles, and nothing in this Agreement shall provide any ownership interest to the Licensee.

Separation Space - The vertical space on a pole separating the Supply Space and the Communications Space. The Separation Space is intended to provide a safe working clearance for workers in the Communications Space and shall, at a minimum, maintain 40 inches of clearance between the Supply Space and the Communications Space.

Supply Space - The vertical space on a pole that is occupied by the electric supply conductors and/or hardware. The Supply Space is measured from the top of the pole and typically extends down to the 26' 4" elevation above theoretical ground level on a 40' pole.

5. GENERAL ATTACHMENT REQUIREMENTS

5.1 Pole Attachment Permit

Installers making Attachments on behalf of the Licensee must keep a copy of the authorized PGE Pole Attachment Permit(s) in their possession at the job site during the construction/ installation. Failure to do so may result in PGE sanctions for Unauthorized Attachment as listed in Exhibit C, and/or a PGE-issued stop-work order.

5.2 Cable and Guys

Communications lines shall be attached to the same side of the pole as the power neutral conductor. If the power neutral conductor is on a primary crossarm,

communications cables shall be installed on the road face of the pole.

Communications lines that would otherwise pass within five feet of a pole shall be attached to the pole, as required by the NESC.

Communications lines shall be tensioned or guyed in a way that does not alter the angle of existing structures or change the sag characteristics of power conductors.

Communications guys may be attached to PGE anchors upon written consent, provided the anchor has sufficient unused strength to support the Attachment. The Licensee shall pay a per-Attachment fee to PGE for attaching to an existing anchor (ref. Exhibit C, the Fee Schedule). An auxiliary eye may be used upon written approval when the existing thimble eye of the rod is fully occupied and the anchor has remaining capacity available to support additional loading. The Licensee must supply PGE with nominal cable diameter and maximum cable tension properties, for loading calculation. If the existing anchor cannot support an additional guy Attachment, then the Licensee must provide a new anchor in compliance with the NESC.

Where existing guys are bonded, the new guys must be bonded. Where existing guys are insulated, the new guys must be insulated.

5.3 Pole Drilling

All Attachments shall make use of pre-drilled holes, unless specific authorization has been granted on the Attachment permit.

Field-drilled holes, when permitted, shall be treated with a 2% copper naphthenate solution or other PGE-approved preservative.

5.4 Equipment Mounting

Through-bolt ends shall not protrude more than 2 inches beyond the nut on the other side of the pole. Attachments to steel poles shall be bolted or welded. Banding Attachments to steel poles is permitted with written authorization from PGE (ref. Figure 8-13). Galvanized surfaces damaged during attachment shall be re-coated.

5.5 Risers

Communications cables transitioning from overhead to underground shall be mounted in riser conduits. An individual service conductor may be attached directly to the pole, contiguous to the pole ground (if present).

Communication risers shall be installed on the pole face (ref. Figure 3). All risers except for power supply risers shall be installed in conduit and mounted on 12-inch (minimum) standoff brackets to provide a minimum 5-inch clearance from the pole. Existing standoff brackets shall be used when available. If new brackets are needed,

the communications company shall provide and install brackets approved by PGE. Brackets shall be spaced 5 feet apart, with the lowermost bracket no lower than 8 feet above ground line (ref. Figure 4).

Communications risers shall not be installed on PGE poles where a PGE riser with a diameter of 6" or greater is present.

Power risers for pole-mounted communication power supplies must be installed high enough to ensure that the 40-inch separation space is maintained between the bottom of the drip loop and the top of the communications space (ref. Figure 5). In no case shall the bottom of the drip loop be lower than the lowermost piece of pole hardware in the supply space. Maximum power riser diameter is 1-1/2 inch. Pole-mounted power supplies shall be designed for 120 volt, 15 amp single-phase service.

Electric service for any equipment that is not a self-contained pole-mounted power supply shall be provided by a PGE-installed underground service pedestal or overhead service drop.

5.6 Enclosures

Communications enclosures shall preferably be pedestal mounted. Minimum clearance from the enclosure to the pole shall be no less than 3 feet and shall be at least 4 feet when conditions permit (ref. Figure 6). If pole mounted, enclosure shall be on the road face of the pole, unless otherwise approved by PGE. Enclosure shall be mounted on standoff brackets to provide a minimum 5-inch clearance from the pole. Maximum pole-mounted enclosure size is 26 inches wide x 36 inches high x 16 inches deep. All enclosures shall be identified by owner and unique ID number, with the identifying tag discernible from the ground. All metallic enclosures shall be effectively grounded.

A 3-foot zone is allocated for mounting communications enclosures. This zone extends from 14 feet to 17 feet above ground line (ref. Figure 5). Enclosures that extend to within 6 inches of the curb face or could be contacted by ordinary vehicles using the traveled way must have at least 15 feet of clearance from their lowest point to the road. No more than one power supply enclosure per pole is permitted.

Battery pack power supplies and power supplies that may be supplied by portable generators during outage conditions must be equipped with feedback voltage protection to prevent power from the unit being routed back into PGE's system.

5.7 Grounding

Conductive communications messengers shall be bonded when PGE pole grounds are present. The pole ground shall not be cut or damaged when connecting attaching entity grounds (ref. Figure 7).

If a ground is needed and no PGE pole ground is available, the attaching entity may install their ground and extend a #6 solid soft drawn copper ground wire for connection to PGE's neutral. All work within the supply area or within 10 feet of a primary conductor shall be performed by qualified PGE personnel or qualified PGE contractors. Licensee may contact PGE Distribution Services for assistance. Cost for this work shall be determined on an each-case basis.

WARNING: Possible death or injury can result if a ground wire is disconnected. PGE's neutral and grounds can be a return path for significant voltage.

5.8 Banners and Decorative Attachments

PGE supports local activities that promote neighborhood beautification, cultural and historical events, community spirit, and public involvement. Such banners and decorative attachments (ref. Figures 8-13) are subject to a separate PGE Policy & Application for Banners and Decorative Attachments. Contact PGE Utility Asset Management for assistance.

6. IDENTIFICATION OF EQUIPMENT

Licensee shall clearly mark and identify all of its Equipment attached to PGE Facilities at each pole, using a method pre-approved by PGE. Licensee must contact PGE Utility Asset Management to present its proposed identification method. The identification method should follow these guidelines:

Where Installed - Licensee shall clearly mark and identify with a tag all Equipment attached to PGE Facilities. Licensee shall place a tag at each pole.

When Installed - Licensee shall place the tag at the time of the initial attachment. Additionally, Licensee shall tag all existing Equipment within 12 months of the effective date of this Agreement, or within a mutually agreeable timeframe. In the event Licensee acquires another entity's Equipment, or enters this Agreement with existing Equipment on PGE Facilities, Licensee shall properly identify the newly acquired Equipment in a manner consistent with Licensee's approved identification method within 12 months or within a mutually agreeable timeframe.

Information on Tag - The tag shall bear the Licensee's company name and local emergency telephone number (e.g., in case of a car-hit pole).

Lettering on Tag - The lettering on the tag shall be of a color and size that allow identification from the ground without optical aids.

7. CLEARANCE REQUIREMENTS

7.1 Distribution Clearances (at Supports)

A *minimum* clearance of 40 inches must be maintained between the bottom of the supply space and the top of the communications space. Supply equipment includes, but is not limited to, neutral and secondary clevises, bare and insulated secondary wires, guy hardware and equipment platforms (ref. Figures 14 - 17).

If the primary and neutral conductors are mounted on a crossarm at the same level

and there is no other supply equipment mounted below the primary arm, then the minimum clearance between the supply conductors and the communications space is 10 feet (ref. Figure 18).

7.2 Distribution Clearances (at Midspan)

Midspan clearance between the supply space and the communications space *at any point* in the span cannot be less than 30 inches from secondary/service/neutral conductors and 5' 3" from primary conductors (ref. Figures 19 & 20). Midspan clearances are measured based on the final unloaded sag at the maximum operating temperature of the supply conductors.

7.3 Transmission Clearances

Clearances on transmission poles that have no distribution underbuild will be stipulated on the Attachment permit.

7.4 Streetlight and Traffic Signal Clearances

Streetlights and traffic signals may be mounted in the separation space or below the communications space, provide certain minimum clearances are met.

When mounted above communications cable, a minimum of 12 inches of clearance must be maintained between the top of the communications space and the bottom of the streetlight drip loop. A minimum of 20 inches of clearance must be maintained between the top of the communications space and the bottom of the streetlight bracket (ref. Figure 21).

When the streetlight is mounted below the communications space, a minimum of 20 inches of clearance must be maintained between the bottom of the communications space and the top of the streetlight bracket. A minimum of 40 inches of clearance must be maintained between the bottom of the communications space and uncovered streetlight conductors. Streetlight conductors are considered "uncovered" unless cabled together and covered in a common insulated jacket. Energized streetlight conductors passing through the communications space will have a protective molding installed (ref. Figure 22).

7.5 Service Entrance Clearance

Communication service drops shall have a minimum 40-inch clearance from PGE's service drops at the pole, and a minimum 12-inch clearance at any point in the span down to their point of attachment at the customer's service entrance (ref. Figure 23).

7.6 Clearance from Support Structures

A minimum of 3 feet (4 feet when available) of clearance must be maintained from the supporting structure to any other structure. Non-PGE equipment shall maintain a minimum of 5 feet of clearance from any PGE supporting structure. Any equipment not meeting this clearance requirement must be permitted and attached to PGE's

structure. In no case will clearances be less than those required in NESC.

8. POLE REMOVAL

The following steps and conditions shall apply when removing old poles from the field:

8.1 Pole Butts

The entire butt of the old pole shall be removed. DO NOT partially pull the butt, cut it off and leave a remaining portion in the ground.

8.2 Hardware

Remove all associated hardware, including anchors and ground rods, with the old pole.

8.3 Landscaping

Fill and compact the hole from the removed pole to eliminate future settling. Restore landscaping, ditches, streets and sidewalks to surrounding quality.

8.4 Remnant poles

Remnant sections of pole (excluding the pole butt) may be left in the field when arrangements have been made for transfer to property owners. Do not leave sections that have been supplementary treated within the last 12 months, or that have been treated through the MITC-Fume process.