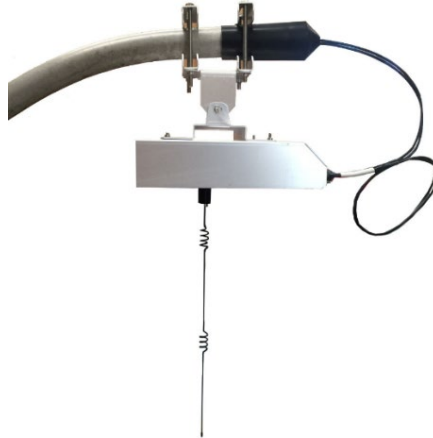


## AMI Repeater Antennas



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### 1. Scope

This standard covers the requirements for the installation of Advanced Metering Infrastructure repeater wireless antennas (“AMI repeaters”) on wood utility and metal streetlight poles. These antennas fall into two groups: those owned and operated by Landis+Gyr for Seattle City Light (SCL) and those owned and operated by Landis+Gyr for Puget Sound Energy (PSE).

As of 2020, PSE is replacing its outdated Automated Meter Reading (AMR) repeaters with more modern AMI repeaters. Make note that for the purpose of this standard, the expression “PSE AMI repeater” could also mean “PSE AMR repeater.” SCL has only ever installed AMI repeaters.

AMI repeaters are also known as AMI routers.

Some AMI collector wireless antennas share the same physical profile, RF output power, and mounting requirements as AMI repeaters. These collector antennas shall be installed according to this standard.

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### 2. Application

This standard provides direction to SCL crews, engineers, customers, and approved contractors for the installation of AMI repeaters in SCL service territory.

SCL AMI repeaters are used for the remote monitoring of electricity meters. These are identified with a unique ID number on an orange tag.

PSE AMI repeaters are used for the remote monitoring of gas meters. These are identified with a unique ID number on a green tag.

For requirements for spacing and locations of communications attachments on poles, as well as terms and definitions and other supplemental information, see SCL 0093.04.

Refer to SCL 0095.10 for installation of AMI collector wireless antennas.

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### **3. Requirements**

#### **3.1 Codes, Permits, and Approvals**

All necessary permits shall be obtained by the AMI repeater owner.

All installations shall meet or exceed all applicable structural, clearance, and provision of the latest revision of the National Electrical Safety Code (NESC), as well as SCL construction standards. In case of conflict, the most stringent requirement will prevail.

All proposed installations, modifications, or relocations shall be reviewed and have prior approval by the SCL Joint Use engineering unit.

#### **3.2 Service Voltage and Connection**

Service voltage to AMI repeaters shall be 120 V service provided with a 3/C #12 AWG wire.

If service is from an adjacent span, a triplex service wire shall be used, with one wire serving as the messenger/system ground.

All service connections shall be made using a parallel connector clamp.

When unit is to be mounted on a metal streetlight pole, the manufacturer will provide a power tap adapter at the photoelectric control base for 120 V service.

SCL shall make every reasonable effort to notify equipment owners of outages 24 hours in advance when possible. However, SCL reserves the right to disconnect power to installations without prior notice when necessary.

#### **3.3 Grounding and Bonding**

All conductive parts of the installation on the pole shall be bonded together and grounded to the SCL system neutral conductor.

Where a SCL system neutral conductor does not exist, one wire of the feeding triplex service wire shall be used to serve as the messenger/system ground.

#### **3.4 Equipment Mounting**

##### **3.4.1. General**

All work shall be performed by SCL crews or its approved contractors.

Only one AMI repeater shall be installed per location.

The maximum weight of the AMI repeater shall not exceed 50 lb.

AMI repeaters shall be installed only on poles where adequate clearance and climbing space is available. Instances where adequate clearance may not be available may include corner poles or poles with existing equipment in the supply space.

### **3.4.2. Mounting on Wood Poles**

AMI repeaters shall be installed in the supply space between the neutral and primary conductor, as shown in Figure 3.4.2.

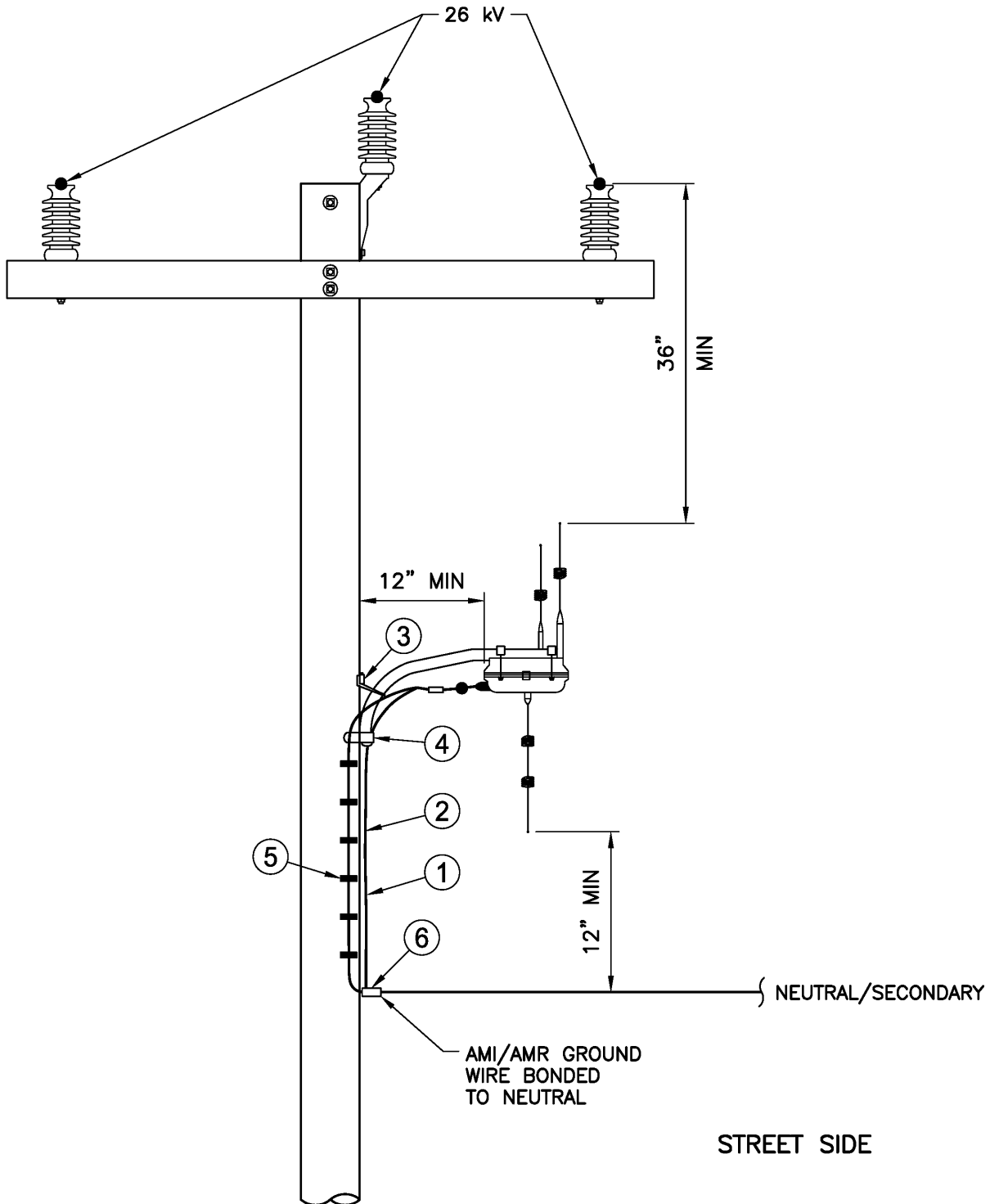
A 3-ft long bracket arm, with a 1-ft rise, shall be installed such that a minimum of 43 inches exists between the through-bolt of the bracket arm and the system neutral attachment, or the fiber optic cable, whichever is closest.

Bracket arms shall be installed perpendicular to the road, towards the street or right-of-way centerline.

Where AMI repeaters are installed on secondary service poles or guy stub poles, the top bolt of the bracket arm shall be mounted a minimum of 12 inches below the top of the pole.

Bracket arms may be offset as needed to meet clearance requirements from any equipment (guys, secondary services, streetlights, floodlights, etc.). See Section 3.6.

**Figure 3.4.2. AMI Repeater Mounted on a 3-ft Bracket Arm on a Wood Pole**

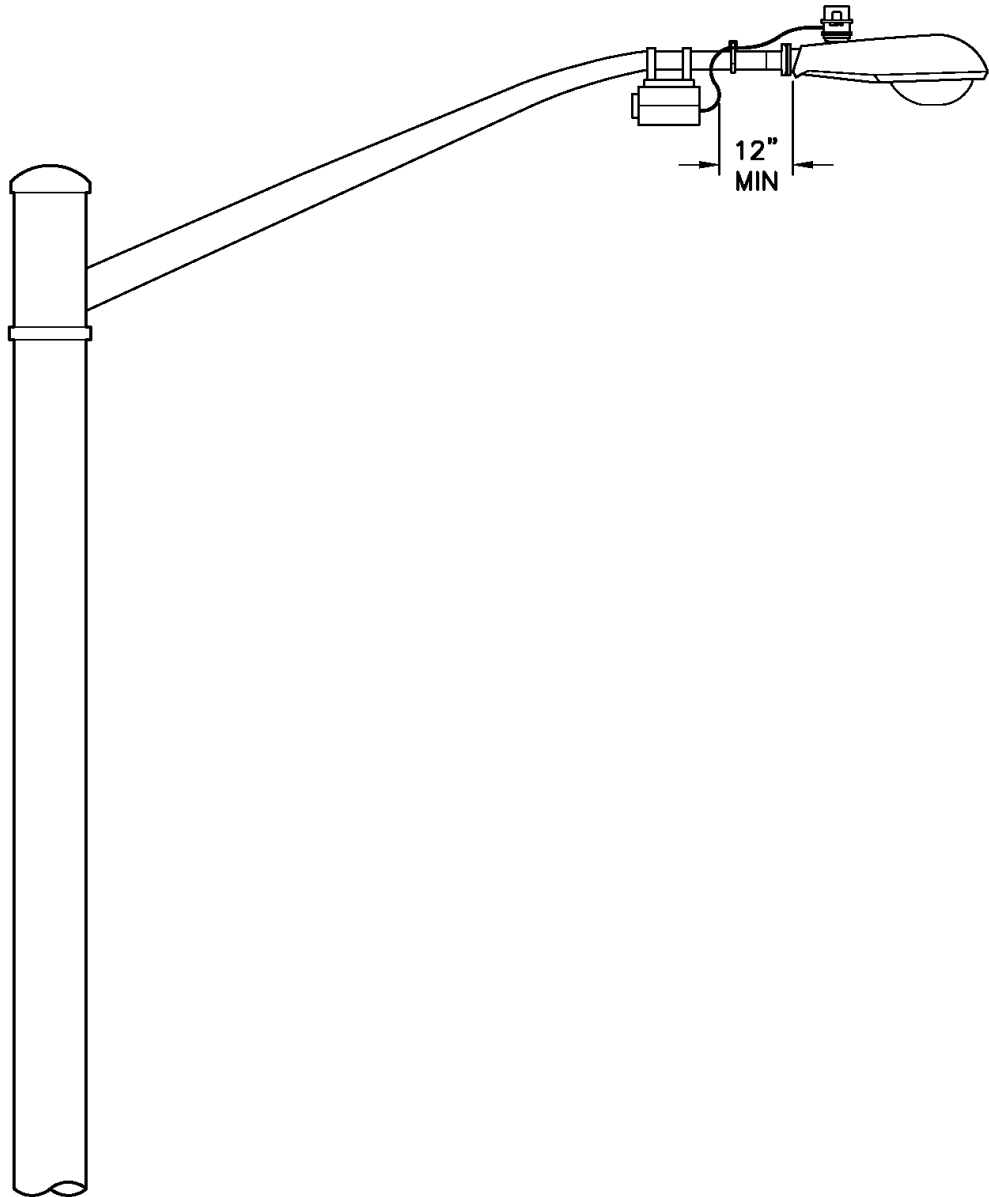


### 3.4.3. Mounting on Streetlight Poles

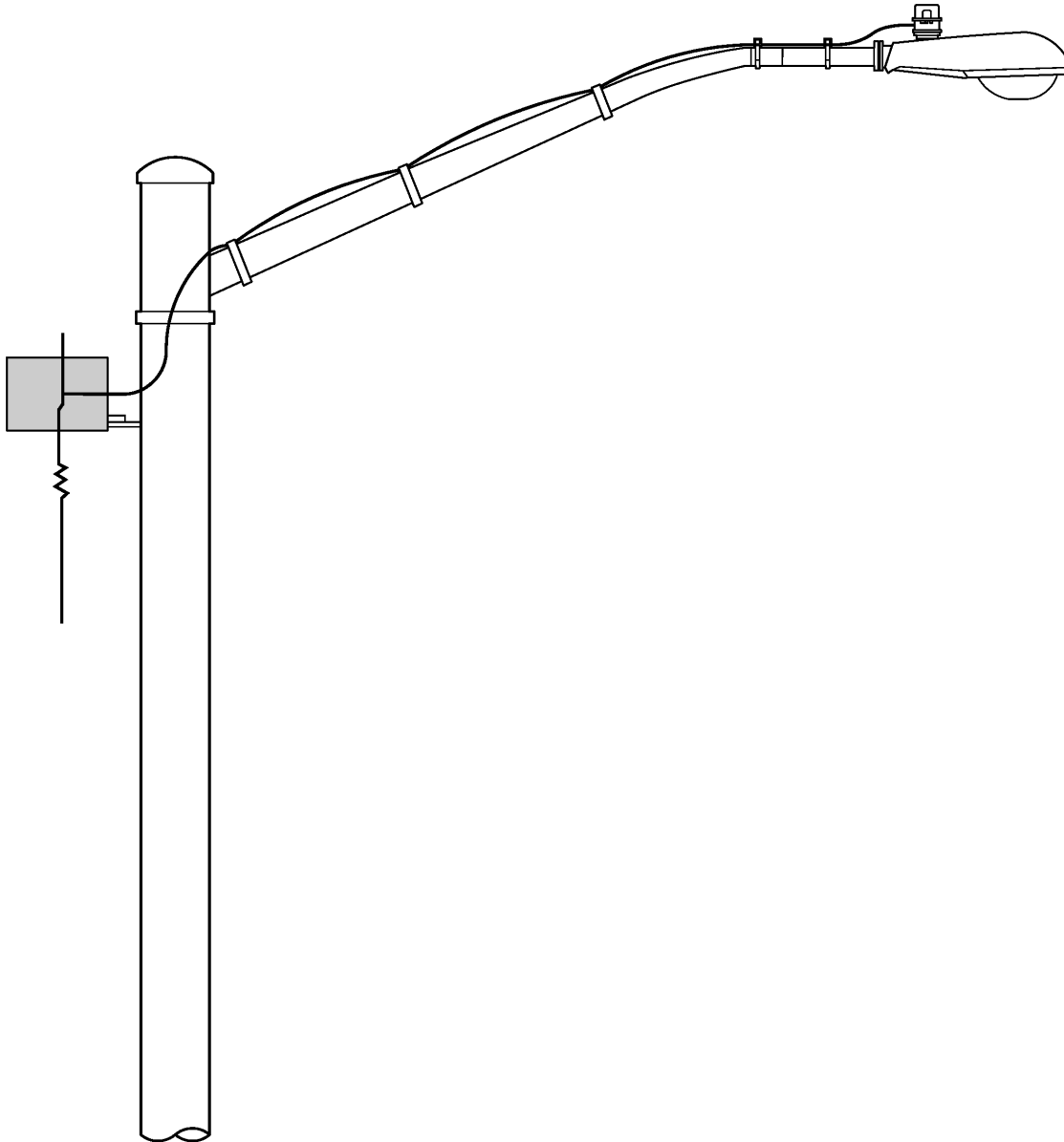
SCL AMI repeaters shall be installed on a mast arm as shown in Figure 3.4.3a.

PSE AMI wireless units shall be installed on the property side of the pole underneath the mast arm as shown in Figure 3.4.3b.

**Figure 3.4.3a. SCL AMI Repeater Mounted on a Streetlight Mast**



**Figure 3.4.3b. PSE AMI Repeater Mounted on a Streetlight Pole**



### **3.5 Labeling**

All AMI repeaters shall be clearly marked and visible from the ground with a unique company equipment ID number and 24-hour contact phone number, as approved by SCL Engineering.

Each SCL AMI repeater shall be labeled with orange reflective tape.

Each PSE AMI repeater shall be labeled with green reflective tape.

PSE AMI repeaters shall be labeled with the 3-digit renter code assigned by SCL Joint Use per SCL 0093.12 (renter code for PSE is 137).

### 3.6 Clearances

A minimum vertical clearance of 12 inches above the neutral and 36 inches below primary voltage conductors shall be maintained for all parts of the AMI repeater mounted between the neutral and primary. Clearances includes the tips of the antennas. See Figure 3.4.2.

The minimum horizontal and/or slant clearance of 36 inches shall be maintained between all conductors energized at primary voltage and all parts of the pole-mounted unit, antennas, and cables.

The minimum horizontal clearance between the AMI repeater and the base of the streetlight head shall be a minimum of 12 inches. See Figure 3.4.3b.

### 4. Construction Notes

Secure (with a nylon zip tie or similar appropriate device) all loose wires and jumpers to minimize flapping and entanglement.

AMI repeaters are provided by Landis+Gyr. See the manufacturer installation and user's guide for each type for more information

### 5. Material List

**Table 5. Materials for AMI Repeater**

Fig	Compatible Unit	ID	Qty
3.4a	AMI Repeater	AMILG6500ARM	↓
#	Material Description	ID	
1	Wire, THWN, 600 V, copper, #8 AWG	612277	10
2	Conduit, flexible, non-metallic, 1/2"	013544	10
3	Bolt, galvanized, machine, 5/8" x 14"	780846	1
4	Screw, galvanized, lag, 1/2" x 4"	785261	2
5	Staple, galvanized, 2" x 5/8"	013517	6
6	Clamp, parallel groove, bolted	652020	2

### 6. References

**SCL Construction Standard 0093.04**; "Utility Pole Attachments"

**SCL Construction Standard 0093.12**: Pole Attachments, Identification and Tagging"

**SCL Construction Standard 0095.10**; "AMI Collector Antennas"

## 7. Sources

**C6500-Series (GAP) Collector Installation and User's Guide**; Landis + Gyr; 98-1210  
Rev AD

**Babino, Gianni**; Joint Use Engineering and subject matter expert for 0095.17  
(gianni.babino@seattle.gov)

**National Electrical Safety Code (NESC), C2-2012 Edition**; Institute of Electrical and  
Electronics Engineers (IEEE) Inc., New York, NY, 2011

**Neuansourinh, Ponet**; SCL Standards Engineer, originator, and subject matter expert  
for 0095.17 (ponet.neuansourinh@seattle.gov)

**Ryon, Sean**; SCL Streetlight Crew Chief and subject matter expert for 0095.17  
(sean.ryon@seattle.gov)

**SCL Construction Standard 0095.01** (canceled); "AMI Wireless Repeater and Collector  
Installation"

**SCL Construction Standard 0095.06**; "Non-Ionizing Electromagnetic Radiation (NIER)  
Report Requirements"

**Series V Router Installation and User's Guide**; Landis+Gyr, 98-1203, Rev. AE

**Taggart, Ryan**; Engineering Specialist and subject matter expert for 0095.17  
(ryan.taggart@seattle.gov)