

## 8.0 REVENUE METERING

### 8.1 INTRODUCTION

The purpose of this section is to outline requirements of the Customer, as set forth herein by LIPA, as they pertain to Electric Revenue Metering at Primary and Secondary Level Service Installations. These requirements pertain to all revenue metering and associated equipment, and any other equipment that may be required, but is not specifically referenced herein, to provide for complete and operational revenue metering system installation.

- 8.1.1 The breaking of seals, tampering with meters, unmetered wiring or removal of revenue metering equipment is prohibited. Section 165.15 of the New York State Penal Laws make such unauthorized tampering a misdemeanor punishable by fine or imprisonment or both.
- 8.1.2 Under no circumstances shall a service entrance be left unmetered. Notify the Distribution Design Department if an unmetered service is encountered.
- 8.1.3 LIPA shall be the sole supplier of all revenue metering potential and current transformers, all electric revenue meters and related accessories.
- 8.1.4 LIPA will furnish and install all meters and metering transformers required for billing purposes, however, the contractor will be responsible for installing window type current transformers.
- 8.1.5 All 480Y/277 – volt installations shall be transformer rated and require prior LIPA approval. Self-contained installations at this voltage will not be approved.
- 8.1.6 The Distribution Design Department shall be contacted for all Primary Level Service metering and connections.
- 8.1.7 All single meter services must be hot sequenced.

### 8.2 METER LOCATION AND CLEARANCE REQUIREMENTS

- 8.2.1 A suitably located and adequately protected meter location shall be provided, to ensure meter accuracy and to facilitate meter access, reading and testing without undue inconvenience. Meters shall be located on front or side of building. Other locations must be approved by LIPA.
- 8.2.2 On new installations, the meter location shall be outside the customer's building. While it is LIPA's general practice to require its meters to be installed outdoors, indoor installations may be allowed at the option of LIPA.
- 8.2.3 Indoor meter installations shall be within 5 linear feet from the point where the conductors enter the building. Meters shall **not** be installed in the following locations:
  - where they would be subjected to vibration or mechanical damage,
  - near moving machinery,
  - in transformer vaults, or attached to padmount transformers, or in meter pits,
  - in hallways, in stairways, or under stairways,
  - in bedrooms, attics, store windows, behind shelves, in bathrooms or toilets,
  - in storage closets,
  - other areas deemed hazardous by LIPA
- 8.2.4 An unobstructed space of twelve inches (12") on each side of the meter pan and four feet (4') in front of each meter enclosure (floor to ceiling) and two inches (2") between meter sockets must be provided. A four inch (4") spacing must be maintained from the bottom of a self-contained meter pan to any obstruction.

Note: An obstruction is anything that has a greater profile than the metering equipment or restricts access to the metering equipment.

- 8.2.5 In multiple occupancy buildings of three or more stories above street level, the installation of unmetered risers in rigid conduit to a single approved accessible metering location on alternate floors may be permitted in accordance with the National Electric Code. The disconnecting means, at the point of service entrance, must indicate the floor levels controlled. Under these circumstances, LIPA will not be responsible for maintaining an adequate voltage level beyond the service taps. LIPA reserves the right to prohibit the installation of meter rooms, other than one adjacent to the point of service entrance.

### 8.3 EQUIPMENT REQUIREMENTS

- 8.3.1 Only LIPA approved metering equipment identified in the latest edition of the “Electric Meter Enclosures and Accessories” list shall be utilized. The customer shall be responsible for the procurement and installation of all equipment as outlined herein. The LIPA “Electric Meter Enclosures and Accessories” list can be found on the LIPA website [www.lipower.org](http://www.lipower.org). The list will be revised and updated by LIPA as necessary. LIPA gives no warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any equipment, wiring of devices, and assumes no responsibility with respect thereto.

- 8.3.2 All metering enclosures and their associated assemblies used in the LIPA service area shall be UL approved and bear the UL label. Metering enclosures and their associated assemblies used in the Fifth Ward of Queens, New York City shall also meet the requirement of the Department of Public Works, Bureau of Gas and Electricity of the City of New York.

- 8.3.3 Meter and current transformer mounting equipment and its installation shall meet at a minimum the requirements as set forth in the following codes and standards as they may pertain:

- National Electrical Code
- National Electrical Safety Code
- Local Municipal Code
- Federal Emergency Management Agency (FEMA)
- New York State Uniform Building Code

It is the responsibility of the customer to ascertain that this equipment meets the requirements of all other authorities having jurisdiction.

- 8.3.4 A triple neutral lug for a bonding conductor is required for all individual self-contained meter sockets.

- 8.3.5 Three Wire - Single Phase Service meter pans shall be ringless type equipped with:
- fifth jaw in the 9 o'clock position
  - lever operated, jaw release bypass.
  - plastic safety shield over the jaws.
  - insulating barriers between the wiring terminals and bypass blades

- 8.3.6 Four Wire - Three Phase Service meter pans shall be ringless type equipped with:
- seven jaws
  - lever operated, jaw release by-pass
  - plastic safety shield over the jaws, plastic may be clear or opaque
  - insulating barriers between the wiring terminals and bypass blades

- 8.3.7 Metering enclosures shall not be altered. Only factory supplied knockouts are permitted. Field made knockouts or any other field alterations will not be accepted.

- 8.3.8 Multi stack meter mounting equipment shall be used as allowed by the manufacturer's instructions. Field made penetrations (knockouts) on multi stack metering mounting equipment will be allowed when made in accordance with manufacturer's factory specifications.
- 8.3.9 Meter equipment shall not be utilized as a raceway, junction or splice point.
- 8.3.10 Outdoor metering equipment shall not be mounted to plywood.
- 8.3.11 Line and Load Conductors:
  - A) Shall not cross and shall not be located in the same trough. Load conductors shall not exit the top of a meter pan except for Trans "S" enclosures.
  - B) Of horizontal and vertical meter bank assemblies of two (2) or more positions shall not be in the same raceway.
  - C) Shall not be installed behind the bypass mechanism in a meter pan. (It is permissible, however, to install an insulated neutral behind the bypass mechanism on UNDERGROUND SERVICES ONLY).
  - D) Must be marked accordingly in the meter pan in all instrument rated services, including Trans "S" cabinets.
- 8.3.11 Only the equipment manufacturers' cable lug kits supplied with the equipment shall be accepted for termination of the line and load conductors. The contractor shall be responsible for ensuring that the number and size of line and load conductors, their entry and exit and the associated terminal lugs conform to the UL approved configurations listed by the equipment manufacturer. The substitution of non-listed cable sizes and the use of lug-adapters is prohibited unless the contractor obtains written approval from the equipment manufacturer that the installation does not invalidate the equipment UL rating. Lugs shall not exceed the width of the bus and may not be cut or altered. Back to back connections of lugs or the use of step lugs is prohibited.

#### 8.4 SERVICE EQUIPMENT IDENTIFICATION

- 8.4.1 In multiple meter installations (i.e. an apartment house, meter room, etc.) each meter enclosure, associated service disconnect and distribution panel shall be permanently marked to properly identify the portions of the premises being served. The markings shall be on the inside and outside of the meter enclosure, the customer's distribution panel, and on all equipment covers.
- 8.4.2 Identification, in the case of apartment buildings, shall consist of the apartment number. In the case of a store or office building, the address and/or unit/suite number shall be utilized. Contact LIPA for the correct marking information prior to starting any work.
- 8.4.3 Identification lettering shall be a minimum of one inch (1") high and shall be done in indelible ink or paint. Magic markers or adhesive labels are **not** acceptable.

#### 8.5 SECURITY OF SERVICE

- 8.5.1 All cabinets, conduit fittings and equipment enclosures containing unmetered conductors shall be purchased and installed with provisions to allow LIPA to install a seal as necessary.
- 8.5.2 All meters, meter facilities and all points of access to unmetered wiring on the customer's premises will be sealed by LIPA.

8.5.3 To gain entry to sealed equipment, arrangements are to be made by contacting the appropriate Distribution Design Department office during normal working hours, at least three (3) working days in advance of need. Electrical contractors will be asked to provide their name, license number and telephone numbers in addition to the customer's name, address and reason for requiring access to the metering equipment. The Distribution Design Department representative may require an "Addition of Electric Load" letter prior to unlocking commercial services. Upon receipt of the above information, LIPA shall provide for the metering equipment locking devices to be removed in the following manner:

A) Permission shall be granted by LIPA to the licensed electrical contractor to remove the locking device(s).

Or, if the licensed electrical contractor does not want to remove the locking device,

B) A LIPA representative shall unlock the equipment by the end of the third business day following initial contact.

8.5.4 Electrical contractors/customers requesting entry to the metering equipment shall, upon removal of the locking device, be responsible for such equipment. Responsibility will rest with the electrical contractor/customer until all work is completed and the equipment is again made secure by LIPA. All unused revenue metering equipment shall be returned to LIPA. Electrical contractors/customers shall not dispose of or retain any LIPA revenue metering equipment.

## 8.6 CONNECTION

8.6.1 Metering will be connected to the service entrance conductors on the line side of service equipment.

### **Exceptions:**

Where a main switch is installed in multi-metered installation, metering shall be connected on the load side of the main switch. Fire pumps may be connected on the line side of the main switch and metered separately.

In an underground secondary network area all metering and fire pumps must be installed on the load side of the main switch.

8.6.2 LIPA will make final connections to the meter, metering instrument transformers, and test switch.

## 8.7 TRANS "S" INSTALLATIONS - ADDITIONAL REQUIREMENTS

8.7.1 Application of Trans "S" equipment is limited to single and three-phase services ranging from 100 to 800 amperes, for either indoor or outdoor metering points.

8.7.2 Where metering equipment is installed on the load side of a switch with ground fault protection, neutral terminals of meter equipment must be isolated. Grounding strap of the neutral bus must be disconnected (see drawing D29).

8.7.3 Only manufacturer supplied lug kits shall be used to connect conductors to landing pads. Lugs shall not exceed the width of the bus and may not be cut or altered. Back to back connections of lugs or step lugs is prohibited.

8.7.4 The Trans S cabinet shall be rated NEMA 3R and shall be constructed from code gauge galvanized or galvanealed steel. Bus bars shall be mounted in the cabinet by means of

standoff insulators or insulated mounting brackets. Insulating material shall conform to the applicable sections of UL 746 and UL 94. Cabinet may be designed with a single or double door as necessary to conform with applicable standards. Hex head or thumb screws may be furnished instead of a three point latch.

8.7.5 Entry and exits of cables will only be acceptable if they meet these criteria:

- In the top and out the top.
- In the bottom and out the bottom.
- In the top and out the bottom.
- In the bottom and out the top.

8.7.6 The maximum allowable wire size shall be 500 KC mil.

8.7.7 The use of SEU cable in a Trans "S" is not allowed.

8.7.8 In addition to clearances outlined in section 8.2, a twelve-inch (12") clearance from the left side of a Trans-"S" enclosure must be maintained from any obstruction including walls, metering equipment or other electrical equipment.

8.7.9 Only the right hand side of a Trans "S" shall be used for line or load conductors.

8.7.10 A 5' +/- 12" height from top of meter glass to finished grade is required.

8.7.11 Conductors must be properly inserted in the connectors so as to facilitate ease of installation and removal of bar type current transformers.

8.7.12 All final termination of control wiring will be done by LIPA personnel.

8.7.13 Trans-S cabinets shall be secured to an adequate building structure with stainless steel or galvanized lag screws, through bolts or anchors for masonry applications.

## 8.8 INSTRUMENT TRANSFORMER SOCKET METER

8.8.1 An approved ringless SOCKET type transformer rated meter enclosure with an approved test switch shall be used. Entry through the hub opening at the top of the meter enclosure will not be permitted.

8.8.2 The Contractor shall furnish and install the required control cable from the instrument transformer compartment to the metering location. Splicing of control cable is prohibited.

8.8.3 Remote meter installations shall utilize a ten (10) conductor control cable, as specified in 8.10. Maximum distance of meter socket from CT cabinet shall be determined by LIPA.

## 8.9 CONTROL WIRE AND CABLE

Insulated multi-conductor type 20/10-control cable for installation for all secondary wiring of instrument transformers as follows:

8.9.1 600V, 10 conductor #12 AWG, Class "C" stranding (19/25), soft drawn, annealed copper, color coded; blue, black, red, orange, white with black trace, green, white, red with trace, green with trace, and orange with trace. Each conductor shall be insulated with an extruded 20 mil wall of virgin high molecular weight polyethylene, with a melt index of .2 to .4, and a 75 degree Celsius heat and moisture resistant 60 mil polyvinyl chloride jacket over the polyethylene insulation. Cable shall be flame resistant and comply with IEEE 383 Vertical Tray Flame Test.

8.9.2 For instrument transformer control cable lengths in excess of 25 feet, refer to the appropriate Distribution Design Department office to determine proper wire size.

- 8.9.3 Control cable for totalized meter installations shall consist of (4) triad 16AWG stranded copper conductors, with individual triad shield and an overall cable shield. Conductor and cable jacket PVC installation shall be rated 90°C, 600V. Triads shall be color coded with tracers.