STANDARDS for Electric Service

PRECO provides residential, business and light industrial electric service to 10 counties in central Florida
JUST A REMINDER!

FLORIDA STATUTE 812.14 STATES “IT IS UNLAWFUL TO WILLFULLY ALTER, TAMPER WITH, INJURE, OR KNOWINGLY SUFFER TO BE INJURED ANY METER, METER SEAL, PIPE CONDUIT, WIRE, LINE, CABLE, TRANSFORMER... OR TO ALTER THE INDEX OR BREAK THE SEAL OF ANY METER.”

PLEASE KEEP SAFETY FIRST—CALL YOUR LOCAL PRECO CONSTRUCTION OFFICE FOR AN APPOINTMENT TO DISCONNECT THE SERVICE AND REMOVE THE SEAL AND METER.
FOREWORD

The goal at Peace River Electric Cooperative, Inc., is to provide dependable service to our Members and value to our community. In order to assist you we have established this standards manual to furnish information often required by Members or their agents. This manual will acquaint you with the requirements for installing, replacing and maintaining electric service. This standards manual is subject to and subordinate in all respects to PRECO’s Board Policies and Tariffs, and to the provisions of the current edition of the National Electric Safety Code.

This standards manual covers PRECO’s requirements for residential, commercial and industrial self-contained and instrument transformer-rated metered services. PRECO’s Engineering Department should be contacted before the start of any construction to ensure the proper requirements are met. Please be aware that all Member-furnished and installed facilities on the load side of the meter or the delivery point comply with the current edition of the NATIONAL ELECTRIC CODE (NEC). All PRECO installed facilities on the line side of the meter or delivery point must comply with the current edition of the NATIONAL ELECTRICAL SAFETY CODE (NESC). This document is not intended to be all inclusive and is not a substitute for the direct communication between the Member and PRECO. PRECO requires this communication to ensure that proper and adequate electric service is provided.

The personal pronouns “he”, “him”, “his”, etc., when used in the text are generic and not intended to specify gender. This standards manual is revised periodically due to ongoing changes in engineering, design and construction practices. Consequently, some of the provisions contained herein may be obsolete.

In order to ensure that you have the latest issue of PRECO’s standards manual, it is essential that the Member or his agent contact PRECO’s engineering department for the latest version.
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I. DEFINITIONS

ACCESSIBLE- Allowing adequate physical clearance for ingress and egress of equipment.

AMPACITY- The current rating or thermal current rating is the RMS electric current which a device can carry continuously under the conditions of use without exceeding its temperature rating.

AMPERE- The common unit of electric current flow.

AVAILABLE FAULT CURRENT- The maximum current available from the utility source that may occur in a fault condition.

BASE RATE REVENUE- For use in these Standards, the non-fuel energy (kWh) and demand charge (kW), if any revenue resulting from the Member’s electricity use under the applicable rate schedule. Base Rate Revenue excludes, without limitation, Member charges, taxes, franchise fees, fuel, conservation, capacity payment, environmental charges and any other charges or credits (such as load management or curtailment credits).

BILLING DEMAND- The demand on PRECO’s electrical system for which a Member is billed according to his rate or contract.

CABLE- An electrical conductor composed of insulated wires banded or twisted together.

CIRCUIT- A conductor or system of conductors through which an electric current flows or is intended to flow.

CIRCUIT BREAKER- An overcurrent device used to protect a circuit from excessive current flow.

COMMERCIAL SERVICE- Service to Members engaged in selling, warehousing or distributing a commodity, in some business activity or in a profession, or in some form of economic or social activity, such as offices, stores, clubs, hotels, schools, etc.

CONDUCTOR- A wire that carries electric energy.

CONTRIBUTION IN AID OF CONSTRUCTION (CIAC)- A nonrefundable charge for electric service where (a) the extension is not justified by projected revenues and/or (b) the cost of providing underground electric facilities exceeds the cost of equivalent overhead facilities (“differential” cost), and/or (c) non-standard service, as determined by PRECO, is being requested for the load being served.

CURRENT- The volume of electrical energy flowing through a conductor, expressed in amperes.

ESTIMATED ANNUAL REVENUE (EAR)- The estimated Base Rate Revenue, as defined above and determined by PRECO, generated annually by the load for which electric service is being requested by the Member.

FINISHED GRADE- The final grading level of the earth around a building or structure.

FLICKER- Known as Voltage dip or sag, flicker is the momentary variation of voltage level caused by switching a load or circuit ON or OFF.

FLORIDA ADMINISTRATIVE CODE (FAC)- The official compilation of the Rules and Regulations of Florida regulatory agencies filed with the state of Florida under the provisions of Chapter 120, Fla. Statutes.

FREQUENCY- The number of AC cycles in one second. AC power systems in the United States operate at a frequency of 60-hertz (Hz).

GROUND- A conducting connection between an electrical circuit or piece of equipment and the earth, or to a conducting body that serves in place of the earth.
KILOWATT (kW)- 1,000 Watts. A watt is the electrical units of power or rate of work. It is equal to one ampere flowing under the pressure of one volt at unity power.

KILOWATT-HOUR (kWh)- The product of kilowatts and time in hours.

METER SOCKET- A meter socket is a device which provides support and means of electrical connection to a watt-hour meter. It has a wiring chamber, with provisions for conduit entrances and exits, and means of sealing the meter in place. The word “socket” in these Standards refers to meter socket.

MOBILE HOME- A mobile home is a factory assembled structure designed to be used as a living unit, and readily movable; it has no permanent foundation.

MULTIPLE OCCUPANCY BUILDING- A unified structure containing five or more individual dwelling units.

POINT OF DELIVERY- The location where PRECO-owned conductors are connected to Member-owned conductors. Points of delivery include weatherheads, meter sockets, service junction boxes, handholes, padmounted transformers and vaults. The point of delivery shall be determined by PRECO. The point of delivery for a PRECO owned and maintained underground residential service lateral is the line side of the meter socket, for an overhead service drop the weatherhead will be the point of delivery.

RECREATIONAL VEHICLE (RV)- A vehicle designed for temporary living quarters for camping, traveling or recreational use; it can be driven under its own power or pulled by another vehicle.

RESIDENTIAL SERVICE- Electric service supplied exclusively for domestic purposes in individually meter dwelling units, where permanent residency is established, including the separately metered non-commercial use facilities of a residential Member (e.g. garages, etc.).

RECREATIONAL VEHICLE PARK OR CAMPGROUND- An accommodation for recreational vehicles or other camping needs that can be rented, these sites are not intended for permanent residencies.

SERVICE- Conductors and equipment that deliver energy from PRECO’s pole to the Member’s entrance.

SERVICE DROP- Overhead conductors from PRECO’s last pole that connect to the Member’s service entrance at the building or other structure.

SERVICE ENTRANCE- The Member’s installation from the service drop or the service lateral connection to the Member’s service equipment.

SERVICE EQUIPMENT- The Member’s equipment which controls the electric service and contains the protective devices located near the point of service entrance conductors into the building.

SERVICE LATERAL- Underground service conductors connecting PRECO’s distribution system to the Member’s service entrance conductors.

STANDARD SERVICE- The minimum level of service, as determined by PRECO, for the load to which electric service is being requested by the Member. The service is typically overhead with wood poles, at the standard voltages specified in this manual, and to the PRECO designated point of delivery. Generally, any service requested of PRECO that exceeds PRECO’s minimum level of service is paid for as CIAC.

TEMPORARY SERVICE- Limited term electric service to operations such as, exhibitions, construction projects, fairs, etc.

UNDERGROUND DISTRIBUTION- A distribution system where the conductors are buried with or without enclosing ducts; newer systems are in conduit. Transformers, switches and other equipment are normally above ground.
II. GENERAL

A. Tree Trimming Standards

General

All trees will be trimmed according to ANSI Standard A300 Utility Pruning, utilizing directional trimming techniques. Palm trees making contact with the primary require removal.

Plant Smart

Access to PRECO padmounted equipment located on the Member’s property is critical. There should be 10 feet of clearance from the door side and 3 feet of clearance from other sides. This includes structures such as fences, shrubs and other obstructions.

PRECO will help plan the Member’s installations of these structures near PRECO facilities so they will not obstruct access or cause damage to PRECO’S facilities. Providing adequate access to PRECO facilities allows for faster service restoration in the event of a power outage.

Never attempt to prune or trim near electrical wires or remove branches that are touching power lines. If you touch a tree that is in contact with a power line, you could be seriously injured or killed.

Tree-caused outages can be minimized with the cooperation and understanding of our Members. PRECO tree trimming can reduce outages, ensure safety and help to maintain stable base rates.

Exercise care when planting trees or shrubs near power lines. Plant taller trees away from overhead lines.

B. Early Notification and Coordination

PRECO- As used in this Handbook, the word “PRECO” represents Peace River Electric Cooperative, Inc. or any employee properly qualified to represent Peace River Electric Cooperative, Inc.

Member- For the purpose of these Standards, the word “Member” represents any present or prospective user of PRECO electric service, or any natural person or entity representing him, such as the architect, engineer, electrical contractor, land developer, or builder, etc.

Contacting PRECO– PRECO maintains offices throughout its service area. New extensions of electric facilities to serve Members, or modifications to existing electric facilities, are generally handled by PRECO’s Engineering Department. Information concerning a specific installation can be requested by the Member from any PRECO office. Locations are listed at the end of this section.

Early contact with PRECO is necessary to ensure provision of electric service in as timely a fashion as possible.

Close coordination is necessary throughout the planning and construction stages by PRECO and the Member, or those representing him. Particular attention shall be given to the scheduling of the construction of paved areas and the various subgrade installations of the several utilities.

PRECO strives to supply its Members’ needs for electric service as efficiently, reliably and economically as possible. Although this publication provides many of the guidelines concerning PRECO’s character of service and policies, it is not possible to document all the detailed information the Member may require. This publication is not intended to replace direct communication with PRECO. Contact with PRECO during the early stages of the Member’s design is strongly encouraged to avoid misunderstanding, delays and unnecessary expense.
C. Application for Electric Service

Application for electric service shall be well in advance of the date service will be required. All matters pertaining to the use of electric service should be discussed with PRECO at that time. Depending on the service requested, a standard written agreement between the Member and PRECO may be required. Depending on the type of load being served, any or all of the following information may be required of the Member:

1. Exact location of premise to be served (i.e., site plan, recorded plat, street address, lot, block number and legal description of property)
2. Size of air conditioning, heating, water heating, cooking, etc.; type and voltage of other motor load, number of phases, horsepower; area lighting, traffic signals, etc.
3. Mechanical plans, electrical plans, elevations, etc.
4. Utility (water, sewer, gas, etc.) plans and paving & drainage plans
5. Any special or unusual requirements

Every reasonable effort will be made by PRECO to reach a prompt and mutually satisfactory arrangement with the Member regarding the characteristics of the service to be furnished and the designated point of delivery.

D. Availability of Electric Service

Contact with PRECO early in the Member’s planning stage is strongly encouraged to determine availability of service at any location, PRECO’s standard type of service for the load to be served and the designated point of delivery. If the standard type of service does not meet the Member’s requirements, PRECO will consider supplying the requested type of service, subject to availability, providing the manner of use does not jeopardize the quality of service to others. It may be necessary for the Member to compensate PRECO for any incremental costs of supplying such service. If special PRECO equipment is needed, adequate time shall be allowed to obtain costs of supplying such service. If special PRECO equipment is needed, adequate time shall be allowed to obtain it.

Written information concerning availability, cost and character of service for any desired location will be supplied by PRECO. PRECO will not be responsible for mistakes resulting from information given orally.

Contact with PRECO early in the Member’s design stage is essential so that engineering, material procurement and job scheduling may be performed in a manner conducive to providing timely service to the Member. Any change in plans that is likely to affect the electric service should be communicated to PRECO at once. Failure to do so may result in unnecessary delays and/or expense.

E. Contributions by Members

Throughout this handbook, references are made to Member Contributions In Aid of Construction (CIAC), whereby the Member pays for a portion of the requested service. In all cases, ownership of the requested facility remains with PRECO, and payments are required well in advance of PRECO’s construction, allowing for proper scheduling.

Contact your PRECO representative concerning the “timing” of the payment.

Withholding payment until the later stages of a project’s development may cause unnecessary delays and added expense to the Member.
F. Right of Way, Final Grade and Easements

The Member shall furnish satisfactory rights of way and easements, including legal descriptions of such easements and all survey work associated with producing legal descriptions of such easements, as required by and at no cost to PRECO before PRECO commences construction. Prior to the start of construction, these rights of way and easements shall be cleared by the Member of any trees, tree stumps and other obstructions that conflict with construction, staked to show property corners and survey control points, graded to within six inches of final grade, with soil stabilized. In addition, the Member shall provide stakes showing final grade along the easement. Such clearing and grading shall be maintained by the Member during construction by PRECO.

Where plats are concerned, PRECO requests the plat be presented before recording so provisions for easements can be included on the plat. This will minimize, if not eliminate, future costs associated with producing, securing and recording the easement(s).

When building additions to existing structures, care shall be taken not to encroach upon PRECO’s easements. Violation of PRECO’s granted easements may result in legal consequences to the building owner. PRECO should be contacted early in the design and planning stage in order to determine if changes to PRECO’s existing easement are required.

G. Measuring (Metering) Electric Consumption

PRECO’s individual electric metering requirements are set forth in Florida Administrative Code 25-6.049, which states in section (5):

a. Individual electric metering by the utility shall be required for each separate occupancy unit of new commercial establishments, residential buildings, condominiums, cooperatives, marinas, and trailer, mobile home and recreational vehicle parks for which construction is commenced after January 1, 1981. Individual electric meters shall not, however, be required:

1. In those portions of a commercial establishment where the floor space dimensions or physical configuration of the units are subject to alteration, as evidenced by nonstructural element partition walls.

2. For electricity used in central heating, ventilating and air conditioning systems, or electric backup service to storage heating and cooling systems.

3. For electricity used in specialized-use housing accommodations such as hospitals, nursing homes, living facilities located on the same premises as, and operated in conjunction with, a nursing home or other health care facility providing at least the same level and types of services as a nursing home, convalescent homes, facilities certificated under Chapter 651 Florida Statutes, college dormitories, convents, sorority houses, fraternity houses, motels, hotels and similar facilities;

4. For separate, specially designated areas for overnight occupancy at trailer, mobile home and recreational vehicle parks and marinas where permanent occupancy is not established.

5. For new and existing time-share plans, provided that all of the occupancy units which are served by the master meter or meters are committed to a time-share plan as defined in Section 721, Florida Statutes, and none of the occupancy units are used for permanent occupancy. When a time-share plan is converted from individual metering to master metering, the Member shall reimburse the utility for the costs incurred by the utility for the conversion. These costs shall include, but not be limited to, the undepreciated cost of any existing distribution equipment which is removed or transferred to the ownership of the Member, plus the cost of removal or relocation of any distribution equipment, less the salvage value of any removed equipment.
b. For purpose of this rule:

1. “Occupancy unit” means that portion of any commercial establishment, single and multi-unit residential building, or trailer, mobile home or recreational vehicle park, or marina which is set apart from the rest of such facility by clearly determinable boundaries as described in the rental, lease or ownership agreement for such unit.

2. The construction of a new commercial establishment, residential building, marina, or trailer, mobile home or recreational vehicle park shall be deemed to commence on the date when the building structure permit is issued.

3. “Overnight Occupancy” means use of an occupancy unit for a short term such as per day or per week where permanent residency is not established.

Where individual metering is not required under FAC 25-6.049 section (5)(a) above and master metering is used in lieu thereof, reasonable apportionment methods, including sub-metering may be used by the Member of record or the Owner of such facility solely for the purpose of allocating the cost of the electricity billed by PRECO. When Members are currently separately served by PRECO as individual accounts, they may not terminate these individual accounts and receive service from PRECO collectively through a single meter account unless the resulting combined service account is one which could be served by one meter as allowed in FAC 25-6.049 section (5)(a).

H. Conjunctive Billing or Totalized Metering as disallowed in FAC 25-6.102

1. Conjunctive billing means totalizing metering, additive billing, plural meter billing, conjunctural metering and all like or similar billing practices which seek to combine, for billing purposes, the separate consumptions and registered demands of two or more point of delivery serving a single Member.

2. A single point of delivery of electric service to a user of such service is defined as the single geographical point where a single class of electric service, as defined in a published rate tariff, is delivered from the facilities of the utility to the facilities of the Member.

3. Conjunctive billing shall not be permitted. Bills for two or more points of delivery to the same Member shall be calculated separately for each such point of delivery.

4. A Member operating a single integrated business* under one name in two or more buildings and/or energy consuming locations may request a single point of delivery and such request shall be complied with by the utility that:
   
   c. Such buildings or locations are situated on a single unit of property; or
   
   d. Such buildings or locations are situated on two or more units of property which are immediately adjoining, adjacent or contiguous; or
   
   e. Such buildings or locations are situated on two or more units of property, which are immediately adjoining, adjacent or contiguous except for intervening streets, alleys or highways.

In all cases arising in sub-paragraph (a), (b), or (c), it shall be the Member’s responsibility to provide the electrical facilities necessary for distributing the energy beyond the single delivery point.

*The word “business” as used in this section shall be construed as including residences and educational, religious, governmental, commercial and industrial operations.
I. Electrical Inspections and Connection of Service
When a Member’s electrical installation has been completed, it shall be inspected by the local electrical inspector to ensure compliance with the National Electrical Code and such local rules that may apply. PRECO cannot energize new service installations until such inspection has been made, and until formal notice from the inspecting authority has been received by PRECO.

J. Member Responsibility for Safety and Adequacy of Wiring
Electric service is rendered to the Member with the understanding that he will not use any appliance or device which is not properly constructed, controlled and protected, or that may adversely affect service rendered to him or other Members. PRECO shall reserve the right to discontinue or refuse service to any apparatus or device, which in its opinion, may adversely affect the service to any other Member or utility or that may be of an improper or unsafe type (FAC 25-6.105), even if the inspection, as mentioned in paragraph “H” above, has been received by PRECO. However, PRECO assumes no responsibility whatsoever for any portion of the Member’s wiring installation. PRECO depends upon the local inspecting authority to ensure the adequacy of the wiring on the Member’s premise.

Compliance with the National Electrical Code, National Electrical Safety Code and local codes ensures that the installation conforms to recognized minimum safe practices. It is the responsibility of the Member to comply with all Code requirements.

The Member shall decide whether additional capacity should be provided for future load growth. In general, PRECO recommends that an adequate margin for load growth be provided.

K. Access to PRECO Facilities
Access to the Member’s premises shall be provided for the purpose of reading meters, installing, maintaining, inspecting or removing PRECO’s property, and other purposes incident to performance under or termination of PRECO’s agreement with the Member, and in such performance, PRECO or its representatives shall not be liable for trespass.

L. Load Balance
To prevent overloading the service conductors and transformer coils, the Member’s electrical load shall be properly balanced on the service entrance conductors and service equipment.

M. Member-owned Generators
Standby Generator. In some cases, the Member may wish to provide an emergency 60- hertz generator to supply a portion, or all, of his electric service in the event of failure of PRECO’s service.

A double throw switch which disconnects the Member’s service equipment from PRECO’s lines before connecting it to the emergency generator shall be provided by the Member. This switch is necessary to prevent a dangerous backfeed of energy onto PRECO’s lines and equipment which might create a hazard to equipment and personnel and could seriously damage the Member’s wiring and generator. If an automatic transfer system is proposed for this transfer function, the specific system shall be reviewed for approval by PRECO before it may be used.
N. Unauthorized Attachments
PRECO prohibits any attachments to its poles or other equipment unless specifically authorized by agreement. Such attachments include, but are not limited to fences, banners, signs, clotheslines, basketball backboards, antennas, placards, political posters or any advertising matter. PRECO will remove unauthorized attachments without notice. Meter sockets and Member’s electric service risers are not to be attached to PRECO poles, except where permitted by PRECO.

PRECO forbids any work on or access to any of its facilities without authorization.

O. Continuity of Service
PRECO strives to furnish reliable, dependable service at a reasonable cost. It cannot guarantee service continuity. Some Members may have equipment which cannot tolerate an occasional interruption. They may wish to invest in a standby system which will supply uninterrupted power upon failure of PRECO’s service, or when transient interruptions occur.

P. Contacting PRECO
Contact regarding new construction and changes in service requirements (service changes) should be directed to your local PRECO Office, PRECO’s Engineering Department or PRECO’s Member Services Department which are open during normal business hours.

Peace River Electric Cooperative, Inc. 210
Metheny Road
Wauchula, FL 33873
1-800-282-3824

Peace River Electric Cooperative, Inc.
Manatee Service Center
14505 Arbor Green Trail
Lakewood Ranch, FL 34202
1-800-282-3824
III. SERVICE PROVISIONS

A. Standard Service

PRECO’s standard service is that supplied by overhead lines, with wood poles, to PRECO’s designated point of delivery, at the standard voltages specified below. All service is alternating current at 60 hertz (60 cycles per second). All voltage and frequencies mentioned are nominal values.

Single phase, three wire 120/240-volt service furnished for ordinary lighting loads, household equipment, small appliances and motors. This voltage is standard throughout PRECO’s service area for residences and for commercial and industrial applications where three phase service is not required, in the opinion of PRECO, or available. Three phase service will be provided where available, or where in the opinion of PRECO, the use of single phase is impractical. This, as all service, is subject to the line extension provisions of Board Policy 5.3. Devices to convert single phase to three phase can be obtained for a wide range of three phase motors, therefore availability of three phase service for smaller motors should be discussed in advance with PRECO.

Voltages Under 600V—In most locations, PRECO’s overhead secondary distribution system provides service at the following standard voltages:

- Single phase, 120-volt, two wire (requires PRECO 120/240 volt, 3-wire service), single phase 480-volt, three wire
- Single phase, 120/240-volt, three wire

In some locations, PRECO’s system is able to provide service at the following voltages:

- Three phase, 120/240 volt, four-wire delta
- Three phase, 120/208-volt, four wire wye
- Three phase, 277/480-volt, four wire wye
- Single phase, 120/208-volt, three wire (from a three phase, four wire wye)

120/240 volt, four-wire delta is determined by PRECO to be the standard 3 phase voltage for loads in which individual motor sizes are greater than or equal to 7.5 HP (but not exceeding 20 HP), or, the 3 phase “demand” load does not exceed 75 KVA, or, the “total” demand load does not exceed 150 KVA, and the use of single phase, in the opinion of PRECO, is impractical. When the Member desires three phase, 120/208 or 277/480 volt will be considered the standard voltage only where, in the opinion of PRECO, three phase service is required, and 120/240 volt delta service is not, in the opinion of PRECO, the standard voltage for the load being served, unless otherwise mutually advantageous to both PRECO and the Member.

Voltages Over 600V—Service requirements for installations requiring higher distribution voltages (primary voltages) are subject to special negotiation between the Member and PRECO.

Typically, where the Member requests service considered by PRECO to be non-standard for the load being served, the Member will bear the additional expense as a CIAC.

B. Point of Delivery

The point of delivery is defined as that location where PRECO’s electric facilities connect to those of the Member’s. PRECO will give considerable weight to the Member’s preference but shall reserve the right to designate this location. Should the Member request a location other than that designated by PRECO, and PRECO approves, the Member shall be responsible for all additional costs to extend beyond PRECO’s designated point.
C. Extension of PRECO’s Electric Facilities

1. General –
   Amounts due as Contributions In Aid of Construction (CIAC) from Members who require extensions or “upgrades” of distribution facilities are calculated in accordance with Board Policy 5.2

2. Overhead Extensions –
   A nonrefundable CIAC will be required for any overhead extension where the estimated job cost for new poles, conductors and fixtures (excluding transformers, service drops and meters) required to provide standard service, as determined by PRECO, exceeds the estimated 30 month non-fuel revenue generated by the new service. This CIAC amount is equal to the difference between that estimated job cost and the 30-month revenue. If the Member requests facilities that are not typically required, in the opinion of PRECO, to serve the load, a CIAC in addition to the above difference will also be required. This additional amount is equal to the difference (including transformers, service and meter) between PRECO’s estimated cost to provide the standard service and the estimated cost of the non-standard service requested by the Member.

3. Underground Extensions –
   Where, in PRECO’s opinion, overhead distribution facilities are typically provided to serve the load for which service is requested, but underground is provided instead (due to Member request or the requirement of a governmental agency), a CIAC is required which is equal to the difference between the estimated cost to provide the overhead standard service and the estimated cost of the underground. This differential cost includes all transformers and services.

4. Furthermore -
   If the cost of the overhead system for standard service could not have been supported by estimated base rate revenue, the Member would pay an additional CIAC amount equal to the difference between that estimated job cost (poles, conductors and fixtures for standard service) per Board Policy 5.6

D. Residential Service (under 600v)
A single, one phase, 120/240-volt, three wire overhead service drop per lot is the standard service offered by PRECO to residential Members. Excluding any extension charges that might apply. Three phase service may be available but only under special circumstances and CIAC charges may apply.

PRECO will provide residential underground electric service upon request when the Member or developer pays the difference between the estimated cost of underground and the estimated cost of overhead facilities. The charges quoted are based on conditions which permit employment of rapid construction techniques and applies to all residential Members, including those where underground is required by local ordinance.

Underground residential service is offered under the following scenarios:
- New subdivisions, known as URD (Underground Residential Distribution) Subdivisions
- New underground service laterals from overhead systems
- Replacement of existing overhead and underground service laterals
- New multiple occupancy residential buildings
1. Underground Service for New Residential Subdivisions (5 or more dwelling units)

When requested, PRECO will provide underground distribution facilities in accordance with its standard practices, in (a) recognized new residential subdivisions of five or more building lots and (b) tracts of land upon where five or more separate dwelling units are to be located.

Developers of new URD subdivisions are to contact PRECO before the platting process so easements can be included in the plat. Survey work associated with producing legal descriptions of such easements for PRECO facilities is to be completed by the developer’s surveyor where needed. Early notice also enables PRECO to design an efficient URD system and consider preferences the developer may have concerning the location of PRECO facilities.

PRECO will normally provide the trench and backfill for all its underground distribution facilities, including service laterals. The Member may choose to provide and install the service entrance conduit (downpipe), the meter socket, and the wiring from the meter socket to the service entrance equipment (Fig IV-9).

The charges for underground service are based upon arrangements that will permit serving the subdivision’s underground distribution system from overhead feeder mains. If feeder mains are deemed necessary by PRECO to provide and/or maintain adequate service and are required to be installed underground by the Applicant or a governmental agency, the Applicant shall pay PRECO the difference between the cost of such underground feeder mains and the cost of equivalent overhead feeder mains.

Charges for underground service to new residential subdivisions are based on timely and reasonably full use of the land being developed. Where PRECO is required to construct underground facilities through a section or sections of the development where full use of facilities, as determined by PRECO, may not be realized for at least two (2) years, PRECO may require a deposit before construction commences. This deposit, to guarantee performance, will be based on the estimated total cost of such facilities, and not solely upon an overhead vs underground cost differential.

2. Underground Service from an Overhead System to New Residential Buildings (5 or more dwelling units per building)

PRECO will normally provide the trench and backfill and provide and install the PVC conduit and service lateral conductors. The Member will provide and install the service entrance conduit (downpipe), provide and install the meter socket and the wiring from the meter socket to the service entrance equipment. (Fig.IV-9).

3. Replacement of Existing Overhead and Underground Residential Service Laterals

If a residential Member wishes to replace an existing PRECO overhead service drop with an underground service lateral, or to relocate an existing PRECO underground service lateral, or to replace a Member-owned underground service lateral, PRECO will provide the underground service lateral according to the terms, provisions and changes specified in PRECO Board Policy 5.7.

4. Mobile Home and Recreational Vehicle (RV) Parks

Individual electric metering by the utility is required for each separate occupancy unit (where the intent is to establish permanent residency) in trailer, mobile home and recreational vehicle (RV) parks for which construction was commenced after January 1, 1981.

PRECO will supply service to these individual units provided the service entrances are properly wired and grounded in accordance with the National Electrical Code and local building codes, and the wiring is approved by the local inspector.
Overhead service typically requires no CIAC provided the estimated revenue supports the estimated cost of any extension that might be required (section III.C).

Underground service requires CIAC in accordance with PRECO’s Board Policy 5.2.

PRECO’s overhead service drop or buried service lateral may not terminate directly on a mobile home or recreational vehicle, but shall run to a pole or pedestal mounted service entrance provided by the Member. The Member’s service equipment is to be mounted on the load side of the meter socket. The wiring from the pole or pedestal to the Mobile Home or RV is also provided and installed by the Member.

For overhead service, a treated pole or equivalent shall be furnished to provide adequate support and elevation for PRECO’s service drop. Overhead service drops shall have 16 feet of clearance crossing over areas subject to mobile home or recreational vehicle movement. Other clearances are specified in section IV.B and Fig. IV-4.

If service is underground, an approved pedestal shall be furnished to support and protect PRECO’s cable and meter (Fig. IV-10, 11, 12). If the Member wishes to furnish and use a pedestal which combines the service equipment and the meter socket, he may do so only if he uses equipment approved by PRECO. It shall be the Member’s responsibility to obtain authorization from PRECO before any commitments are made to use this equipment at a particular location. There will be no charge to PRECO.

Where individual electric metering is required, it is often advantageous for the Member to group multiple meter sockets and service equipment on a single pole or pedestal (Fig. IV-12). Where overhead service is provided, this is aesthetically advantageous in that the number of aerial service drops is minimized. Where underground service is provided, this reduces the CIAC amount required by PRECO.

In those parks or areas of parks designated for overnight occupancy (where the intended use is not for purposes of permanent residency), individual electric metering is not required, nor provided by PRECO. In these cases, electric consumption is considered commercial use and PRECO will provide a single point of service (or multiple points if deemed necessary or appropriate by PRECO) with each point individually metered. Electric wiring from these points to the individual units is the responsibility of the Member.

5. Multiple Occupancy Building (5 Units or more per building)

For new residential multiple occupancy buildings (five or more dwelling units), the Member may request underground service. PRECO will provide underground facilities at or near the building at no cost to the Member provided PRECO is allowed to build its distribution facilities in the most economic and efficient manner. If PRECO determines a padmounted transformer is necessary, the transformer will be the point of delivery, to which point the Member will install (and PRECO will connect) his cables. The location will typically lie between PRECO’s source of power and the portion of the building closest to the available source.

Should a point of delivery not preferred by PRECO be desired by the Member, a CIAC will be required to cover any additional cost that might be incurred. Should the Member provide the suitable location but PRECO elects to place its transformer equipment elsewhere, PRECO may elect to install its buried secondary conductors to a PRECO owned enclosure. In this case, the enclosure would be the point of delivery.

The Member shall extend his building service to PRECO’s designated point of delivery regardless of the distance from the Member’s switchgear.

When feeder mains on tracts of land upon which multiple occupancy buildings will be constructed are deemed necessary by PRECO to provide and/or maintain adequate service, and underground installation is requested by the Member or required by a governmental
agency, the Member shall contribute the difference between the cost of underground and the cost of overhead feeder mains. There will typically be no contribution required from the Member with respect to construction of underground distribution facilities to multiple occupancy dwellings other than feeder mains as long as PRECO is free to construct such extensions in the most economic manner, and reasonable full use is made of the tract of land upon which the multiple-occupancy residential buildings will be constructed. Other conditions may require special considerations, cost estimates or arrangements.

6. Commercial Service (under 600v)

For commercial Members whose load is such that, if located in an overhead area it could be served by one (or bank of) single phase aerial transformer(s) rated 100 kVA or less (as determined by PRECO), standard service is considered by PRECO to be overhead (with wood poles), at the standard voltages specified in section III.A, to the PRECO designated point of delivery.

E. Commercial Underground Service

For loads where overhead service is considered standard by PRECO, and underground service is either requested by the Member or required by local governmental agency, a CIAC equal to the difference between the estimated cost of underground and the estimated cost of overhead will be required. Where EAR does not support the estimated cost of a PRECO line extension, additional CIAC will be required (section III.C).

a. Underground Service Small to Medium Commercial Loads

In overhead areas where, in the opinion of PRECO, the load is such that secondary voltage can be provided at an overhead source, PRECO will provide secondary conductors to a handhole at the base of the pole where PRECO will connect to the Member’s underground conductors. If a transformer (or transformers) must be hung to make this secondary voltage available, PRECO will consider installing underground primary cable to a padmounted transformer, where PRECO will connect to the Member’s underground conductors. In either case, CIAC applies.

If either of these options are not desirable, the Member can elect to receive overhead service. Member-owned risers for commercial electric service are not permitted on PRECO or PRECO poles.

Where PRECO’s secondary source is “underground” (i.e. vault, padmounted transformer or handhole), the Member provides and installs the service conductors, and PRECO connects those conductors at the secondary source. If that underground secondary source was existing before the request for service, no CIAC would typically be required.

b. Underground Service to Large Commercial Loads

If the load is such that, if located in an overhead area it could not be served by one (or bank of) single phase aerial transformer(s) rated 100 kVA or less, in the opinion of PRECO, PRECO’s standard service then would consist of underground primary cables (from an overhead source determined by PRECO) to a radial padmounted transformer. CIAC would typically not be required if the cost of an equivalent overhead line extension is justified, but would be required for cases including, but not limited to: radials that cannot originate from an overhead source where, for instance, a padmounted switch cabinet must be installed; “loop” systems; underground primary conductors that do not originate at an overhead source at PRECO’s preferred location; points of delivery requested beyond those designated by PRECO; etc.
F. Temporary/Construction Service General

Temporary/construction service is usually a limited term service to installations such as fairs, exhibitions, construction projects, displays and similar projects. Contact PRECO regarding availability and applicable installation and removal charges before installing the temporary facility. These nonrefundable charges are paid in advance of PRECO’s construction. Contact PRECO to determine current charges and availability of temporary/construction service.

Service may be single phase or three phase, 60 hertz, at the available secondary distribution voltage. This service is available only when PRECO has existing capacity in lines, transformers and other equipment at the requested point of delivery.

For Overhead temporary service, the Member shall provide a sturdy and adequate service drop support, complete with service entrance, to accommodate PRECO’s service drop and meter (Fig. IV-1).

If specific electrical service other than that stated above is required, PRECO, at the Member’s request, will determine its feasibility and may provide such service based on the estimated cost of installing and removing such additional electrical equipment. This estimated cost is payable in advance to PRECO and will be subject to adjustment or refund based on the actual costs. The additional service may be overhead or underground, depending on circumstances at the particular locations, as determined by PRECO.

All temporary/construction services shall be subject to all of the applicable Rules, Regulations and PRECO Board Policies, including service charges. The energy used by the temporary service will be billed monthly under the appropriate rate schedule.

The Member’s installation shall satisfy all the requirements of the National Electric Code and other authorities having jurisdiction and shall be inspected prior to connection of service.

G. Unauthorized Connections & Disconnections

All connections of the Member’s wiring to that of PRECO, all disconnects of service entrance conductors, all meter removals and installations and all breaking of PRECO meter equipment seals shall be made only by PRECO.

Any connection or disconnection of PRECO’s service by the Member or his agent is prohibited. If done with the intent to injure or defraud, it is punishable by law. Violators will be prosecuted.

H. Change in Service Requirements (Service Changes)

The Member will normally own all the service facilities on his side of the point of delivery: i.e., the point where PRECO’s wires carrying the voltage of supply are to join the Member’s wires, except for the meters which will be owned by PRECO.

The Member shall notify PRECO, in advance, when a change in service (service change) is being considered to accommodate provisions that service and metering facilities remain adequate.

When a service change requires disconnection of PRECO’s service, the Member shall request a disconnect/reconnect from PRECO. The Member shall establish an advance appointment to ensure proper coordination between his electrical contractor and PRECO crews who will disconnect the service and later reconnect after an inspection (when required by local authorities) is received.
I. **Service to Special Equipment**

The operation of electric furnaces, electric dredges and draglines, large motors and other heavy utilization equipment, if served from PRECO’s distribution system, might interfere with service to other Members. Contact PRECO concerning the requirements for furnishing this type of service.

J. **Service to Boat Facilities**

PRECO electric service to marinas and private docks will be to a designated point of delivery on shore. The Member shall bring his service conductors to the point of delivery (such as a handhole, pedestal, junction box or padmounted transformer). PRECO will not extend its conductors onto marinas or docks.

The Member should install his PRECO-approved meter sockets on land so as not to be a hazard to people on the dock and they shall be accessible for meter maintenance and monthly readings.
IV. SERVICE AND METER CONNECTIONS

A. Service Equipment

1. General
The Member should consult PRECO at an early stage to verify availability of service and to
determine the PRECO designated point of delivery. Contact with PRECO should be made
before the purchase of equipment and its installation. This PRECO approval is not a substitute
for inspection and approval by the local electrical inspection authority. PRECO assumes no
responsibility for the Member’s wiring installation. Upon request, PRECO will inform the
Member of available short circuit currents.

The Member shall provide, install, own and maintain all service entrance conductors and service
equipment. The service equipment usually consists of a circuit breaker or switch and fuses, and
their accessories, located near the point of entrance of the supply conductors to the buildings or
otherwise defined area. It is intended to be the main control and means of cutoff of the supply.

PRECO will provide, install, own and maintain adequate meters to measure the electrical
quantities required to apply its rate schedules and contracts.

The Member may choose the type of service equipment he prefers, consistent with local
building codes and the National Electrical Code (NEC). It shall be able to successfully interrupt
the maximum fault current available at its location. Where load growth is possible, PRECO
recommends that the capacity of service entrance conductors and service equipment be greater
than the minimum requirements of the NEC or other local codes. PRECO encourages residential
Members to install a service entrance with a capacity of at least 150 amperes for average homes
and more in the case of larger homes.

Service entrance equipment should be in a location which is accessible and not likely to become
obstructed.

No fuses should be installed at any point in the grounded neutral conductor of the service
entrance.

No resistor or reactor or other similar fault current limiting device shall be installed in the
neutral or the phase conductors of the service entrance.

A main disconnecting switch may be ahead of the meters when more than six meters are
grouped. This is because the NEC requires a main disconnect switch where it would otherwise
be necessary to operate more than six switches to completely disconnect the building service.

When installed ahead of the meters, the door of the main switch shall be sealable in both the
“on” and “off” positions. The handle shall be sealable in the “off” position.

The use of a metallic fishtape to pull service conductors into PRECO owned equipment is
not allowed.

2. Ampere Rating
   a. Residential
       The rating of the service entrance equipment shall satisfy the general requirements stated
       above, the NEC and local building codes. Section 230 of the NEC states that the minimum
       rating for a one family dwelling with six or more two-wire branch circuits, or an initial
       computed load of 10 kVA or more is 100 ampere, three-wire. For dwelling units with less
       load, as computed in accordance with NEC guidelines, the minimum may be 60 ampere,
       three wire if approved by the inspecting authority.

       As stated previously, PRECO recommends that the service entrance have more capacity
       than the minimum required by the NEC. Local inspecting authorities shall be consulted,
since some locations may have requirements that exceed the minimums.
b. Commercial

The rating of the service equipment for commercial or industrial occupancies will depend on the connected load, and in most cases, will be specified by the Member’s engineer.

It is important that the requirements be reviewed with PRECO at an early date so that a satisfactory solution as to service voltage and service entrance location can be determined. At this time, details as to the nature and size load to be served may be given to PRECO, if this has not already been done.

One requirement is that the service equipment shall be able to safely interrupt the maximum fault current available at its locations. Upon request, PRECO will supply information which will permit the maximum available fault current to be determined.

PRECO emphasizes that changes in the Member’s load and other loads in the area may require changes in PRECO’s system. These changes may increase the available fault current. Allowance should be made for this possible increase.

c. Service Equipment Rated Below 600 Volts

In those cases where the Member’s ampere demand at these voltages exceeds 600 amperes, PRECO will furnish a current transformer cabinet and an instrument transformer rated meter socket, installed ahead of the Member’s service equipment. The Member will also furnish and install a 1 inch (minimum) conduit from the cabinet to the meter socket (refer to the specifications found in section VI-2 &VI-3). PRECO will provide and perform the current transformer installation, install the secondary wiring from the current transformer to the meter socket and install the meter.

d. Service Equipment Rated Over 600 Volts

When the Member takes service at primary voltage, he shall provide service equipment rated for the voltage supplied. The service equipment will normally be on the load side of PRECO’s instrument transformer metering installation.

The service equipment shall satisfy all the requirements of the NEC, the building code and the inspecting authority.

PRECO shall be consulted so that the Member’s primary service equipment may be coordinated with PRECO’s feeder protection circuit breakers and fuses.

B. Overhead Service

For residential overhead service, the attachment will normally be within ten (10) feet of the corner, on the side of the building nearest PRECO’s secondary facilities (Fig. IV-3). The Member’s service entrance should be installed in such fashion that service drop wires will not cross over buildings, swimming pools or adjacent property not owned by the Member.

1. Vertical Clearance to Ground

The point of attachment for multiplex service drops 0 to 750 volts from any conductor to ground shall allow 12 feet of ground clearance to lowest point of sag in the multiplex service drop.

Where the multiplex service drop must pass over immediately adjacent driveways or parking areas subject to truck traffic or if it is within 25 feet of a swimming pool shall maintain a minimum clearance of 16 feet. In these cases a greater attachment height shall be provided.

2. Clearance from Building Openings

Multiplex service conductors shall have a clearance of not less than 3 feet from windows, doors, porches, fire escapes or similar openings.
3. Clearance from Swimming Pools
PRECO prefers a minimum horizontal clearance of 10 feet from its facilities to swimming pool edges, pool enclosures or related pool equipment. However, if certain conditions are met, including minimum vertical clearances, the National Electrical Safety Code (NESC) provides for less than 10 feet of horizontal separation. Costly relocations of existing services may become necessary if the Member builds a pool too near PRECO’s electric facilities. Should there be any question or conflict between the location of a new swimming pool or pool enclosure and PRECO’s facilities, the Member is to contact PRECO before construction of the pool facilities to ensure required NESC clearances are met.

4. Anchorage for Overhead Service Drop Cable or Wires
The Member shall provide a safe and adequate anchorage for PRECO’s overhead service drop conductors at the agreed upon location and height.

The Member will install a suitable attachment for the service drop. The attachment device furnished will vary, to be compatible with the type of building construction (Fig. IV-5).

PRECO WILL NOT BE RESPONSIBLE FOR DAMAGE TO THE MEMBER’S BUILDING OR WIRING RESULTING FROM FAILURE OF THIS ANCHORAGE.

Where the height of the building would not allow adequate clearance from service drop to ground, the Member shall furnish and install a service mast or other approved extension (Fig. IV-5). PRECO will provide and install the bracket for attaching the service drop to the service mast.

5. Installation of Service Entrance
The service entrance conductors shall be provided and installed by the Member in accordance with local building codes and the latest NEC. The conductors will extend a minimum of 36 inches beyond the service weatherhead to permit connection to PRECO’s service drop wires. PRECO limits the number of weatherheads per service to three (3) with no more than four (4) conductors in each.

The service entrance weatherhead shall be above the service drop attachment. If this is impractical, the weatherhead shall not be farther than 24” from the point of attachment.

Service drop conductors and service entrance conductors will be arranged in a manner that will prevent water from getting into the service entrance raceway or cable sheath (Fig. IV-5).

The neutral conductor of the service entrance shall be identified by the Member. Wiring of the meter socket shall be as shown in the appropriate sketch of Fig. IV-7.

The service entrance conduit is installed by the Member from the service weatherhead to the meter socket or the service entrance equipment, when this precedes the meter. It may be either exposed on the exterior building wall or concealed within the structure itself in a permanently inaccessible location. The use of Condulets® is prohibited. Where exposed to the weather, conduit shall have threaded joints and shall be arranged to drain.

6. Distributed Generation Resources
See Figure IV-13
C. Illustrations

The following illustrations contain pertinent information regarding the installation and connection of overhead and underground services.

1. Temporary/Construction Service – from Overhead System (typical)  IV-1

![Temporary/Construction Service Illustration](image)

For prompt electric service, set temporary pole as detailed.

**Service and Meter Connections**

**NOTES:**

1. Before service can be run, Company must have an electrical inspection; necessary tree trimming shall be done by customer, and the deposit and non-refundable temporary service charge shall be paid.
2. Service pole shall not be within 25 ft. of swimming pool and must provide clearances shown in Fig. IV-4.
3. Unspliced timbers are required (minimum length of 12 ft. for 2x4 braces and 16 ft. for 4x4 posts. Use ten penny nails (3” long).
4. Special arrangements shall be made with PRECO if service drop exceeds 80 ft. or is larger than 200 amp capacity.
5. Minimum typical requirements are shown. If local code requirements are more stringent, they shall be adhered to.
6. The surface the meter socket is mounted on shall be plumb so the meter socket jaws are truly vertical.
7. Where acceptable to the inspecting authority, an 18 ft. treated pole (5” min. diameter at the top) may be substituted for the 4x4 timber and braces, provided the pole is set 5 ft. deep and well tamped. All other requirements remain the same.

**Temporary / Construction Service From Overhead System (Typical)**

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<td>JUNE 2015</td>
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</table>

**FIGURE IV-1**
# 2. PRECO Energy New Service Request Form

**Peace River Electric Cooperative, Inc.**

P.O. Box 1310 • Wauchula, FL 33873 • (863) 773-4116 • www.preco.org

**Notification of New Construction & Load Characteristics**

**Important Contact and Project Information-Residential & Commercial**

<table>
<thead>
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<th>Description</th>
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<tr>
<td>Office ☐</td>
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<tr>
<td>Hotel ☐</td>
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</tr>
<tr>
<td>Retail ☐</td>
<td>Residential ☐</td>
</tr>
<tr>
<td>Restaurant ☐</td>
<td>House ☐</td>
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**Address**

**How Can We Contact You**

<table>
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<tr>
<th>Contractor Name</th>
<th>Phone Number</th>
<th>Cell Number</th>
<th>Fax</th>
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<tbody>
<tr>
<td>Email Address</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mail Address</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City, St, Zip</td>
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</table>

**Construction Options**

**Required information**

- Type of Permanent Service
- Desired Date of Permanent
- Desired Date of Temp
- Required information
- Overhead
- Underground

**Desired Voltage**

- 120/240v-1ph
- 120/240v-Vph
- 120/208v-3ph
- 277/480v-3ph
- 480v-1ph
- 120/208v-1ph

**Your PRECO Engineering Tech**

<table>
<thead>
<tr>
<th>Tech Name</th>
<th>210 Metheny Rd., Wauchula FL 33873</th>
<th>Tech Phone №</th>
</tr>
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**What PRECO Will Provide**

1. Industry Know How
2. Technical Proficiency
3. Hands on Project Management
4. Crew Professionalism
5. Open Communication

The above information is true and correct to the best of my knowledge.

**Signed**

**Print Name**

**Date**

Thank you for the opportunity to serve you.

**FIGURE IV-2**
3. Guide for Locating Point of Delivery on Outside of Building

NOTES:
1. Customer arranges for approval of Point of delivery by PRECO and County.
2. Customer provides, without cost to PRECO, suitable space on their premises for the installation of PRECO’s metering and service facilities.
3. Customer provides easements of PRECO’s conductors and equipment at no cost.
4. Any PRECO approved change from originally approved Point of Delivery will be in accordance with a customer contribution based on any added cost to reach the new Point of Delivery.

GUIDE FOR LOCATING POINT OF DELIVERY ON OUTSIDE OF BUILDING

REVISED: JUNE 2015
24.9/14.4 kV
FIGURE IV-3
4. Overhead Service – Minimum Vertical Clearances

**MINIMUM VERTICAL CLEARANCE ABOVE GRADE (from NESC Table 232–1)**

- Multiplexed overhead service drops of 750v to ground or less located more than 10 feet horizontally from swimming pool.

A. Roads, streets and other areas subject to truck traffic: 16 feet (NEC=18')

B. Driveways, parking lots and alleys: 16 feet (NEC=18')

**Exception –** Residential driveways only where attachment height at building does not permit 15 feet of clearance:

- Voltage limited to 300v to ground:
  - Service Drops: 12.5 feet (NEC=12')
  - Drip Loops: 10.5 feet (NEC=12')

- Voltage limited to 150v to ground:
  - Service Drops: 12 feet (NEC=12')
  - Drip Loops: 10 feet (NEC=12')

C. Spaces & ways subject to pedestrian or restricted traffic only: 12 feet (NEC=12')

**Exception –** Where attachment height at building does not permit 12 feet of clearance:

- Voltage limited to 300v to ground:
  - Service drops and drip loops: 10.5 feet (NEC=12')

- Voltage limited to 150v to ground:
  - Service drops and drip loops: 10 feet (NEC=10')

D. Other land (such as cultivated, grazing, forest, orchard, etc.) traversed by Vehicles: 16 feet (NEC=18')

**NOTES:**

1. 120v single phase, 120/240v single phase and wye 3 phase services meet the 150v to ground criteria.
2. 120/240v open or closed delta 3 phase and 277/480v wye 3 phase services meet 300v to ground criteria.
3. 240/480v delta services do not meet either the 150v or 300v to ground criteria and do not qualify for the exception to the basic clearance.
4. The clearances above are NESC minimum values for worst-case sag conditions. The attachment height at the building or customer’s service pole must be sufficient to provide these clearances for all situations involved. Good judgment dictates that initial installation be made at higher values to ensure code compliance under worst-case sag conditions. For additional details and clarification regarding these and all clearances, refer to Section 23 of the NESC.

**OVERHEAD SERVICE MINIMUM VERTICAL CLEARANCES**

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**FIGURE IV-4**
5. Attachment of Service Drop at Building – to the Pipe Mast

![Diagram of Service and Meter Connections]

**NOTES:**
1. A service mast may be used to get proper clearance if permitted by local code.
2. The Service Drop and Service Bracket are provided and installed by PRECO.
3. Service Mast or other approved attachment post or bracket must be sufficient strength to support the Service Drop. 2” or larger rigid galvanized conduit is preferred. The point of attachment must be sufficient height to provide minimum clearances. PRECO will not attach Service Drop to an aluminum, EMT or PVC mast.
4. Customer provides and installs Service Mast in accordance with National Electrical Code and/or local codes.
5. Minimum clearance to Drip Loops is 10 feet from ground. Minimum Drip Loop to roof clearance is 18 inches.
6. Service Drop, Service Bracket and Meter are owned and installed by PRECO. Meter Socket is owned, installed and maintained by customer.
7. Service Drop clearance required at locations other than a house are shown in Fig IV-4.
8. For triplexed or quadruplexed cable services, less than 750 volts, with bare neutral, the 18” minimum clearance is allowed only when no more than 6 feet, measured horizontally, of the service drop passes over a roof to terminate at a through-the-roof mast located not more than 4 feet, measured horizontally, from the nearest edge of the roof. Otherwise, the minimum clearance above the roof (not readily accessible) of the building to which the service is attached is 3 feet. Refer to NESC 234C3d.
6. Outdoor Meter Installation – 1ph 120/240v 3 wire Overhead Service

SERVICE AND METER CONNECTIONS

PRECO furnishes, installs and maintains service drop and makes connection to customer’s service entrance conductors

Customer must identify neutral at weatherhead.

For service drop clearance see Fig IV-4.

Customer furnishes, installs and maintains anchor bolts, service entrance conductors and conduit (per local code).

Mount meter socket securely and level in horizontal and vertical planes

To Weatherhead (see Fig IV-7, Detail "A")

Finish Grade

3 ft. minimum horizontal clearance to building openings, etc.

NOTE: Customer must provide adequate grounding of facilities in accordance with the NEC and local codes.

Customer to Finish and Install Grounding Bushing & Bonding Conductor where required by National Electric Code.

Grounding Bushing (Required for Concentric & Eccentric Knockout with Retaining Rings)

DETAIL A

BOUNDING AROUND CONCENTRIC & ECCENTRIC KNOCKOUTS

OUTDOOR METER INSTALLATION – 1 PH 120/240V 3 WIRE OVERHEAD SERVICE

REVISION:
JUNE 2015 24.9/14.4 kV

FIGURE IV-6
7. Self-Contained Meter Installation – Overhead Service

**SERVICE AND METER CONNECTIONS**

**To Detail “A”**

- Neutral
- Line Hot Legs
- Load Hot Legs

3-Wire, 120/240v 1ph

**To Detail “A”**

Multiple Meter Socket Enclosures
(3-Wire, 120/240v 1ph Shown as Typical)

**To Detail “A”**

- Neutral
- Line Hot Legs
- See Note 1

3-Wire, 120/208Y 1ph (2 Stator Network)

**To Detail “C”**

- Line Hot Legs
- Load

4-Wire, 3ph

**Meter Cans with By-Pass Handles**

**Commercial Applications:**
Wiring similar for wye and delta, but on delta, Hot Wire #3 (hi-leg) must be 208v to ground and must be connected to right terminal as shown (other two hot wires, lighting legs, are 120v to ground).

**Underground Residential Applications:**
Risers for PRECO underground services must be installed on the opposite side of the meter can from the customers service entrance conductor. Customer's conductors MUST be kept entirely to one side to the meter can unobstructed for PRECO's conductor.

**DETAIL "B"** Same as DETAIL "A", but only one line "Hot" Leg

**DETAIL "C"** Same as DETAIL "A", but with one additional line "Hot" Leg

**NOTE:**
1. Customer to bond around concentric knockouts. See Fig. IV-6, Detail "A"

---

**SELF CONTAINED METER INSTALLATION – OVERHEAD SERVICE**

<table>
<thead>
<tr>
<th>REVISED:</th>
<th>24.9/14.4 kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>JUNE 2015</td>
<td></td>
</tr>
</tbody>
</table>

**FIGURE IV-7**
8. Lug-Type Meter Socket Installations

**SERVICE AND METER CONNECTIONS**

**ACCEPTABLE**

PROPER INSTALLATION OF WASHERS & LUGS ON LUG–TYPE METER CANS

Be sure the flat washer is placed between the belleville washer and the wire lug. This installation will ensure the maximum surface contact area of the lug and meter block.

Be sure the wire is placed properly in the lug so it will not interfere with the tightening of the belleville washer.

The lug used in the 400 amp (K7) and 600 amp (K7T) cans must have an anti-rotation ridge as shown. This ridge is not required in smaller cans.

**NOT ACCEPTABLE**

**ACCEPTABLE CONFIGURATIONS**

Mains may only extend from ONE side of meter can, on OPPOSITE side of meter can from downpipe.

When customers conductors are parallel, customers conductors MUST be kept entirely to one side of the meter can, leaving the opposite side of the meter can unobstructed for PRECO’s conductor. When load conductors enter through the bottom rear of the meter can they must be kept entirely to one side so not to interfere with the PRECO conductor.

**NOT ACCEPTABLE**

**LUG - TYPE METER SOCKET INSTALLATIONS**

REVISED: JUNE 2015

24.9/14.4 kV FIGURE IV-8
9. PRECO Buried Service Lateral – Meter Socket & Down Pipe Requirements

**SERVICE AND METER CONNECTIONS**
(references to notes shown in Figure IV–10)

**PREFERRED METHOD**
(Using 90 degree Bends)

- Customer Supplied and Installed Meter Socket
- Customer 2” or 4” Rigid Galvanized, Intermediate or Schedule 80 PVC (Notes 2 & 8)
- Strap conduit to wall
- 5’Min 6’Max
- 36” Min.
- PRECO Service Cable in Conduit to padmounted transformer, handhole or riser
- See Table “A”
- Extending conduit 24” beyond obstructions

**ALTERNATE METHOD**
(Using 2–45 degree Bends)

- Customer Supplied and Installed Meter Socket
- Customer 2” or 4” Rigid Galvanized, Intermediate or Schedule 80 PVC (Notes 2 & 8)
- Strap conduit to wall
- 5’Min 6’Max
- 36” Min.
- PRECO Service Cable in Conduit to padmounted transformer, handhole or riser
- See Table “A”

**METER SOCKET FOR RESIDENTIAL**

Typical Meter Socket supplied and installed by the customer
If Load Conductors enter from the side, Entrance must be opposite side of PRECO conductors. See Fig IV–8. Center positions may not be used for downpipe.
Customer’s Service Entrance Conductors (by customer)

**IMPORTANT** – Please distinguish between Overhead and Underground (URD) Meter Socket when purchasing.

**Table A**

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Down Pipe</th>
<th>90° Bends</th>
<th>45° Bends</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/0 or 4/0</td>
<td>2”</td>
<td>(1) 2”–90°, 30”</td>
<td>(2) 2”–45°, 18”</td>
</tr>
<tr>
<td>2-4/0</td>
<td>2-2”</td>
<td>(2) 2”–90°, 30”</td>
<td>(4) 2”–45°, 24”</td>
</tr>
<tr>
<td>2-4/0</td>
<td>4”</td>
<td>(1) 4”–90°, 30”</td>
<td>(2) 4”–45°, 24”</td>
</tr>
</tbody>
</table>

**PRECO Buries Service Lateral – Meter Socket & Down Pipe Requirements**

**REVISED**

**JUNE 2015**

24.9/14.4 kV

**FIGURE IV–9**
10. **Remote Meter Location, typically used for Service to a Mobile Home** IV-10

![Diagram of service and meter connections](image)

(A) **UNDERGROUND SERVICE**

(B) **OVERHEAD SERVICE**

**NOTES:**
1. Space under meter socket on pole to be reserved for conduit.
2. Pole to be constructed of reinforced concrete (5"x5"), 4"x4" pressure treated wood, 2" galvanized steel pipe with 2" concrete encasement below ground level, or equivalent.
3. Circuit breaker or main service fused disconnect (outdoor type) National Electric Code.
4. The customer must ground facilities as required by National Electric Code and applicable local code.
5. Customer will install a sufficient number of conduit straps to properly secure conduit to pole.
6. Customer's service may be run underground in conduit from bottom of main switch.
7. Customer's class 6 or 7 pressure treated wood pole or equivalent, set a minimum of 5' deep. Must provide minimum service drop clearances shown in Figure IV-4.
8. Meter – Furnished and installed by PRECO. Meter socket furnished and installed by customer.

---

**REMOTE METER LOCATION – TYPICALLY USED FOR SERVICE TO A MOBILE HOME**

REVISED: JUNE 2015

24.9/14.4 kV

FIGURE IV-10
11. Pedestal Service – Member Provided Meter Pedestal (typical) IV-11

SERVICE AND METER CONNECTIONS

Meter pedestal must be rigid enough to withstand force applied when meters are installed.

- Customer Owned Meter Pedestal
- Service Equipment (Outdoor Type) in accordance with N.E.C.
- Seal
- 48” Max
- 36” Min
- To Transformer, pole or handhole (in conduit)
- 30” Min.
- 36” Min
- Grounding Electrode Conductor

The customer must ground facilities as required by the National Electric Code and applicable local codes.

NOTES:
1. Meter pedestal must be on PRECO’s approved list and equipped with standard meter socket.
2. Where PRECO is providing the service lateral to the pedestal, refer to Figure IV-9 for downpipe specifications.
3. PRECO conductors may terminate in customer owned pedestal, but are not to be looped in and out of pedestal.

PEDESTAL SERVICE – CUSTOMER PROVIDED METER PEDESTAL (TYPICAL)

REVISED: JUNE 2015
24.9/14.4 kV
FIGURE IV-11
12. Mobile Home Service – “Grouped” Service to Mobile Homes  IV-12

SERVICE AND METER CONNECTIONS

Main Service Fused Disconnect or Circuit Breaker (Outdoor Type) sized according to the National Electric Code

- 2"x5/8" Galv. Steel Channel or Equivalent
- Meter Owned and Installed by PRECO
- Meter Sockets Provided and Installed by Customer
- When there are 4 meters, mount 2 here
- Post to be constructed of reinforced concrete (5"x5"), 4"x4" pressure treated wood, 2" galvanized steel pipe with 2" concrete encasement below ground level, or equivalent
- To Mobile Homes (by customer)
- Customer Owned and Installed (See note 2)
- To Transformer, pole or handhole (in conduit)
- The customer must ground facilities as required by the National Electric Code and applicable local codes

NOTES:
1. Customer must permanently mark meter socket and switch to indicate which unit they serve.
2. Where PRECO is providing the service lateral to the pedestal, refer to Figure IV-9 for downpipe specifications.
3. Where PRECO is providing the service lateral to pedestal, a maximum of 4 units is allowed per pedestal.
4. Where PRECO is providing the service lateral to the pedestal, PRECO conductors will terminate in customer owned pedestal (they will not be looped in and out of pedestal).

MOBILE HOME SERVICE – “GROUPED” SERVICE TO MOBILE HOMES

PREVISED: JUNE 2015
24.9/14.4 kV
FIGURE IV-12
13. Distribution Generation Resources

NOTES:

1. Knife blade manual disconnect required on all grid connected P.V. systems.
2. Provide copy of homeowners liability insurance for all grid connected systems.
3. Grid connected systems with a gross power rating greater than 10 KW require not less than one million dollars ($1,000,000) personal injury and property liability insurance.
4. Member and installer, complete and sign PDF documents found at http://www.preco.coop/member-services/solar-pv-systems/
5. Provide FSEC approval for panels and inverters.
6. Provide detailed one line diagram of panel and inverter arrangement.
7. Mail completed packet to: PEACE RIVER ELECTRIC COOPERATIVE, INC. ATTENTION: ENGINEERING DEPARTMENT 210 METHENY ROAD WAUCHULA, FL 33873

PEACE RIVER ELECTRIC'S SOLAR DISCONNECT REQUIREMENTS

REVISED: MAR 2016
FIGURE IV-13
V. REQUIREMENTS FOR TRANSFORMERS ON MEMBER PROPERTY

A. Padmounted Transformer Requirements (See Figure V-1)

- 4” Std GI pipe with threaded GI Cap
- Drill 1/2” thru hole for lifting
- Paint pipe to match transformer
- 5” Std GI pipe sleeve
- Slope concrete for water shed
- Machine bolt (3/4”x8”)
- Galvanized tamped earth
- 3’ Min—See Note 1

**REQUIREMENTS FOR TRANSFORMERS SITUATED ON CUSTOMER PROPERTY**

<table>
<thead>
<tr>
<th>REVISED:</th>
<th>JULY 2015</th>
<th>24.9/14.4 kV</th>
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</thead>
<tbody>
<tr>
<td>FIGURE V-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VI. METERING EQUIPMENT

A. Equipment Furnished and Installed By PRECO

PRECO provides and installs, at its expense, adequate metering instruments to measure the electric service used by the Member. Usually, only one watt-hour meter per Member is needed. However, PRECO will furnish whatever metering, in its opinion, is required.

Instrument transformers are provided and installed by PRECO when the voltage or current exceeds the rating of PRECO’s standard self-contained meter. Generally, current transformers will be used if the service is 600 amperes or greater or if the voltage to ground is greater than 277 volts.

B. Equipment Furnished, Installed, and Owned by the Member

All residential meter sockets (meter enclosures) are to be provided and installed by the Member and shall be approved by PRECO for use on our system.

For commercial, self-contained metering PRECO will provide the necessary metering equipment (including meter can) it deems appropriate based on completed load sheet and valid county permit number. PRECO requires meter sockets with manual by-pass capability to eliminate service interruptions on meter changes. All Instrument Transformer (IT) rated metering equipment enclosures and commercial self-contained meter cans will be provided by PRECO and installed by the Member. These include IT rated meter sockets, wall mounted and weatherhead IT cabinets. (Fig. VI-2 thru VI-5).

In some cases, the Member might prefer prefabricated, combination socket and disconnect assemblies for multiple occupancy buildings (e.g. apartment or condominium, buildings, shopping centers, etc.), or pedestal mounted equipment for mobile home parks. Such equipment for all three phase and nonresidential installations shall contain manual by-pass, jaw tension/release socket blocks. It shall be the Member’s responsibility to obtain authorization from PRECO to use this equipment for a particular installation before committing to its use. Information and specifications on any such special meter equipment shall be submitted to PRECO for approval before installation.

Meter socket enclosures and C.T. cabinets shall not be used as raceways for other conductors.

C. Location of Metering Equipment

The metering equipment’s location will be designated by a PRECO representative. The Member will provide the meter location free of cost to PRECO.

1. Sequence in Service Entrance

Where permitted by Code authorities, the metering equipment will precede all service equipment.
2. Located Indoors

Except where meter rooms are used, all metering installations shall be outdoors, on a vertical wall or other substantial support where the view from the ground is unobstructed. They should be readily accessible to PRECO at all times so they may be read, inspected, removed or tested with a minimum of disruption of service to the Member. The preferable height of the centerline of the meter is five feet, six inches above ground. The maximum distance shall be six feet and the minimum five feet, except meter pedestals for mobile homes may have a minimum height of 36”. The meter location should not be affected by a kitchen discharge fan or other vents, or the drain from a roof gutter or air conditioner, and should be free from vibration. Sockets shall be securely attached to the building wall, pedestal, metal rack or other permanent structure, and aligned so that the meter is both level and plumb (Fig. IV-7). Attachment to temporary structures (except for temporary service) or structures subject to early deterioration is prohibited. When the equipment is exposed to vehicular traffic, PRECO may require that the metering equipment be protected by concrete filled 4” steel pipes firmly installed in the ground, similar to those shown in Fig. V-1.

3. Gang Socket Installations Located Indoors or Outdoors

When meters are in a meter room or a gang configuration, the room should have adequate lighting and contain only meters and associated equipment, and should remain unlocked so meters are readily accessible. In unusual cases where an unlocked meter room would impose a severe hardship on the Member, arrangements can be made to furnish keys to PRECO so the meters will always be accessible to meter readers. The meter room may then be locked, provided this does not violate any local code or rule. The meter room must not be used for storage. The centerline of the meters should be five feet, six inches above the floor, but when necessary because of grouping may be a maximum of 72” and a minimum of 36”.

D. Identification of Meters

If a building requires more than one meter, or if the meter is not directly within the boundaries of the premises served, PRECO cannot render service until the meter socket or cabinet and the service equipment have been properly marked to show plainly the location served and the character of the service (Fig. VI-5). Multiple meter sockets shall be “rungout” by the electrical contractor. Each meter enclosure shall be correctly identified on the outside front by a nonferrous metal or plastic plate a minimum of ¾ inch high, 1 ½ inches wide and 1/16 inch thick, with letters a minimum of ⅛ inch high engraved or stamped to indicate the apartment number, office suite, lot number, etc. (Red font or red background color is not permissible.) The plate shall be riveted to the meter enclosure and adjacent breaker (See Figures VI-6 and VI-7 for placement.)

The inside of each meter enclosure shall be correctly identified with a plate described above. At the time each meter is being installed/activated by Company service personnel, the customer or his agent will provide one or more representative(s) with appropriate communicative devices to verify that each premise address corresponds to the permanent marking on each meter enclosure. Any incorrect markings discovered during verification will terminate future installations of meters until all meter enclosures have been correctly marked. Verification of correct markings is the responsibility of the customer.

E. Relocation or Upgrade of Metering Equipment

Whenever it is necessary to relocate or upgrade an existing metering installation, the new installation shall be made by the Member in accordance with these standards. A definite schedule for the switch-over to the new meter shall be arranged in advance by the Member so PRECO can accommodate the request upon completion of the Member’s electrical work. The new service
entrance shall be inspected and approved by local authorities before service can be restored. No energized service entrance shall be left unmetered, and all meters shall be re-identified as to what units they serve.

F. Illustrations

FIG. VI-1: Metering Configurations – Descriptions and Notes

FIG. VI-2: CT Metering Configuration 6 – CTs in Padmounted Transformer or Vault

FIG. VI-3: CT Metering Configuration 7, 8, 9 – CT Cabinet Mounted on Wall

FIG. VI-4: CT Cabinet and IT Rated Meter Socket – Installation and Bonding

FIG. VI-5: Identification of Multiple Meter Sockets

FIG. VI-6: Residential Multi Unit Meter Center with Grouped Load Breaker Panel

FIG. VI-7: Residential Multi Unit Center with Grouped Load Breaker Panel
1. FIG. VI-1: Metering Configurations – Descriptions and Notes

**METERING EQUIPMENT**
**SELF CONTAINED METER ENCLOSURES**

[Diagrams of metering configurations]

**Configuration 1, 1a**
**Configuration 2**
**Configuration 3**

**GENERAL NOTES ON SELF CONTAINED METER SOCKET BLOCK CONFIGURATIONS:**

**Configuration 1** – For one phase service requiring bypass device. Limited to 320 amp demand. (See Note 2)

**Configuration 1a** – Modification of Configuration 3 (5th terminal for network meters). Limited to 320 amp demand. (See Note 2)

**Configuration 2** – For three phase service. Limited to 320 amp demand. (See Note 2)

**Configuration 3** – For one or three phase service. Limited to 600 amp demand. (See Note 3)

**NOTES:**
1. May be used for very small commercial applications, such as billboards and parking lot lights.
2. All three phase and all commercial installations shall have a meter socket with the approved bypass jaw tension/release device (excluding Configuration 3 applications and commercial applications referred to in Note 1).
3. Maximum wire size is 1–800 MCM or 2–500 MCM per phase. For single phase applications lease the center wire unwired.
4. In Residential applications where PRECO service conductors are paralleled, the customer shall provide and install parallel lug connectors on the line side of the meter socket (one hole per conductor).
5. For use of conductor that exceed the size or number of lugs in the PRECO provided commercial meter can the customer shall provide at their expense lugs acceptable to PRECO for the meter can provided.
2. FIG. VI-2: CT Metering Configuration 6 – CTs in Padmounted Transformer or Vault

METERING EQUIPMENT

<table>
<thead>
<tr>
<th>CT Ratio</th>
<th>Max Amps</th>
<th>Max Distance (feet)</th>
<th>Max Cable Length (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>300/5</td>
<td>600</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>600/5</td>
<td>1200</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>1200/5</td>
<td>2400</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>2000/5</td>
<td>3000</td>
<td>10</td>
<td>30</td>
</tr>
</tbody>
</table>

IT Rated Meter socket

6’ Max 5’ Min

1" minimum Schedule 80 PVC conduit and pull string. "Condulets" are NOT allowed

Concrete Pad

Legend:
- Space reserved for customer conduit and cable (including CT conduit).
- Space reserved for PRECO conduit and cable.

NOTES:
1. IT rated meter socket provided by PRECO and installed by customer:
   ____1ph or ____3ph (check one)
2. Current transformers (CTs) provided and installed in padmounted transformer by PRECO.
3. 1" minimum Schedule 80 PVC conduit with pull string installed between meter socket and padmounted transformer provided and installed by customer. For maximum distance between transformer and socket, see table above.
4. Restricted to one customer per padmounted transformer. Exceptions must be approved by PRECO.
5. Ct ratio determined by PRECO.
6. IT Meter socket and CT cabinet shall be bonded by the customer to a customer driven ground.
7. KYZ Pulse Isolator maybe installed as required.

CT METERING CONFIGURATION 6 – CTs IN PADMOUNTED TRANSFORMER OR VAULT

REVISED: JULY 2015
24.9/14.4 kV
FIGURE VI-2
3. FIG. VI-3: CT Metering Configuration 7, 8, 9 – CT Cabinet Mounted on Wall

**NOTES:**

1. IT rated meter socket provided PRECO and installed by customer: ______1ph or ______3ph (check one)
2. Wall mounted current transformer (CT) cabinet provided by PRECO and installed by customer.
3. 1" Schedule 80 PVC conduit with pull string installed between meter socket and current transformer cabinet provided and installed by customer. Maximum allowed distance from socket to cabinet is 10 feet.
4. Window CTS provided by PRECO and installed in CT cabinet by customer before customer pulls wire. Coordination with PRECO is Required.
5. Customer conductor runs must be continuous through the transformer cabinet.
6. Size and number of conductors entering shall equal the size and number of conductors exiting.
7. Conduits/Cables must enter/exit opposing corners (AA/AA or BB/BB) as indicated above within 10" of the cabinet’s corner and must be approved by PRECO before installation.
8. KYZ Pulse Isolator may be installed as required.

---

**CT METERING CONFIGURATION - CT CABINET MOUNTED ON WALL**

REVISED
NOV. 2018
24.9/14.4 kV
FIGURE VI-3
4. **FIG. VI-4: CT Cabinet and IT Rated Meter Socket – Installation and Bonding**

---

**METERING EQUIPMENT**

**PRECO Will:**
1. Furnish and install the IT rated meter socket bonding wire.
2. Furnish and install the instrument transformers, the wiring from the transformer secondary to the meter and set the meter.
3. Furnish the current transformer cabinet (when required) and equipment enclosures (when required).

**The Customer Will:**
1. Furnish and install the service entrance conduit, conductors and equipment, including grounds.
2. Furnish and install any conduit necessary to connect the cabinets and sockets, including a pull string.
3. Mount cabinet with sealing ears at bottom.
4. Fasten cabinet and meter socket to masonry walls with toggle screws or expansion shields (no plastic plugs or impact tools).
5. When cabinet is installed in exposed locations, install conduits entering top of cabinet with approved watertight connectors.
6. Installations must conform to local code requirements.

---

**NOTES:**
1. All IT rated meter sockets, current transformer cabinets and equipment enclosures to be bonded together (by Customer) with #12 insulated bonding wire (color coded green with white stripe). This wire furnished and installed by Customer.
2. Customer’s neutral conductor(s) **MUST** be continuous through the transformer cabinet.

---

**CT CABINET AND IT RATED METER SOCKET INSTALLATION AND BONDING**

**REVISED:**
- JULY 2015
- 24.9/14.4 kV

**FIGURE VI-4**
5. FIG. VI-5: Identification of Multiple Meter Sockets

NOTES:
1. If lease units have different numbers, these should be shown with a nonferrous metal or plastic plate a minimum of 1/2 inch high, 1 1/2 inches wide and 1/8 inch thick, with letters a minimum of 1/2 inch high engraved or stamped to indicate store number, office suite, lot number, etc. (Red font or red background color not permissible.) The plate shall be riveted to the meter enclosure and adjacent breaker. Markings should also be put inside meter socket (to prevent confusion if covers are interchanged before service is connected). IT rated meter sockets (not illustrated) should be marked similarly.
2. The Electrical Contractor shall provide PRECO a meter layout drawing.

REVISED:
OCT. 2019
24.9/14.4 kV
FIGURE VI-5
6. FIG. VI-6: Residential Multi Unit Meter Center with Grouped Load Beaker Panel

REFERENCE LETTERS TO PARTS ON DRAWING:

A. INDIVIDUAL SOCKET FACE, ONE FOR EACH METER OPENING.

B. COMMON TRIP LOAD BREAKER FOR EACH APARTMENT. BREAKERS SHALL BE ON THE LOAD SIDE OF METER ENCLOSURE.

C. GROUNDED FIFTH TERMINAL TO BE PROVIDED WHEN USED ON 120/208 VOLT SINGLE PHASE AND IS ACCEPTABLE IN EITHER THE 6 OR 9 O’CLOCK POSITION AS SHOWN. (9 O’CLOCK POSITION PREFERRED.) IDENTIFICATION TAG MUST BE PLACED ON BOTH METER COVERS AND BREAKER FACE PLATES

NOTES:

1. METER ENCLOSURE SHALL BE BONDED TO GROUND AS REQUIRED BY THE N.E.C. OR AUTHORITY HAVING JURISDICTION.

2. ALL COMPONENTS AND RACEWAYS AHEAD OF METERS SHALL BE SEALABLE. METER CENTER SHALL BE SUPPLIED AND MAINTAINED BY CUSTOMER.

3. METER CENTER MUST COMPLY WITH REQUIREMENTS OF SECTION D (IDENTIFICATION OF METERS).

4. METER CENTER SHALL BE SUPPLIED AND MAINTAINED BY CUSTOMER.

5. COMMERCIAL GROUPED METER CENTERS MUST HAVE HEAVY-DUTY JAW TENSION RELEASE LEVER TYPE BY-PASS SOCKETS.

6. METER CENTERS MUST BE APPROVED BY THE COMPANY PRIOR TO INSTALLATION.

7. ON 277/480 VOLT INSTALLATIONS, A DISCONNECT SWITCH SHALL BE AHEAD OF EACH METER.
7. FIG. VI-7: Residential Multi Unit Center with Grouped Load Breaker Panel

REFERENCE LETTERS TO PARTS ON DRAWING:

A. INDIVIDUAL SOCKET FACE, ONE FOR EACH METER OPENING.

B. COMMON TRIP LOAD BREAKER FOR EACH APARTMENT. BREAKERS SHALL BE ON THE LOAD SIDE OF METER ENCLOSURE.

C. FIFTH TERMINAL TO BE PROVIDED WHEN USED ON 120/208 VOLT SINGLE PHASE AND IS ACCEPTABLE IN EITHER THE 6 OR 9 O’CLOCK POSITION AS SHOWN. (9 O’CLOCK POSITION PREFERRED.)

D. IDENTIFICATION TAG MUST BE PLACED ON BOTH METER COVERS AND BREAKER FACE PLATES. SEE SECTION D (IDENTIFICATION OF METERS).

NOTES:

1. METER ENCLOSURE SHALL BE BONDED TO GROUND AS REQUIRED BY THE N.E.C. OR AUTHORITY HAVING JURISDICTION.

2. ALL COMPONENTS AND RACEWAYS AHEAD OF METERS SHALL BE SEALABLE.

3. METER CENTER MUST COMPLY WITH REQUIREMENTS OF SECTION D (IDENTIFICATION OF METERS).

4. METER CENTER SHALL BE SUPPLIED AND MAINTAINED BY CUSTOMER.

5. COMMERCIAL GROUPED METER CENTERS MUST HAVE HEAVY-DUTY JAW TENSION RELEASE LEVER TYPE BY-PASS SOCKETS.

6. METER CENTERS MUST BE APPROVED BY THE COMPANY PRIOR TO INSTALLATION.

7. ON 277/480 VOLT INSTALLATIONS, A DISCONNECT SWITCH SHALL BE AHEAD OF EACH METER.
VII. GROUNDING

A. General

The Member’s service entrance installation shall satisfy all grounding requirements of the National Electrical Code (NEC) and any applicable building codes, and is subject to acceptance of local inspection authorities.

PRECO’s service drop or service lateral includes a grounded conductor. This conductor is grounded at the source transformer location and generally interconnected with other grounded conductors. This grounded conductor will normally be attached to a ground connector in the meter socket and also to one in the service equipment and to the neutral or ground bus in the service equipment. When meter sockets with Member- owned isolated neutrals are required by local codes, a separate Member-owned ground conductor shall be run by the Member from the service equipment to the grounding connection of the meter socket.

The NEC allows several methods of supplying a grounding electrode. A ground rod is not the only means of supplying the grounding electrode. A brief discussion of the NEC requirements is provided in the following notes and is not intended to be all-inclusive.

The NEC and your local inspecting authorities should be consulted for additional details and for those that may have changed since the time of this printing. PRECO accepts any method which satisfies the NEC and the local inspecting authorities.

Local inspecting authorities may have more stringent requirements than the NEC. For example, some inspecting authorities require the use of a concrete-encased electrode as described in Section 250. This electrode would consist of at least 20 feet of one or more bare or zinc galvanized or other electrically conductive coated steel reinforcing bars or rods of not less than ½ inch in diameter or of at least 20 feet or bare copper conductor not smaller than No. 4. The electrode would be encased in at least 2 inches of concrete and located within or near the bottom of a concrete foundation or footing that is in direct contact with the earth.

B. Notes on Grounding Member’s Service Entrance

1. PRECO’s point of delivery includes a grounded conductor. The point of delivery is normally at the weatherhead (in the case of a PRECO overhead service lateral), the meter can (in the case of a PRECO underground service lateral), a padmounted transformer or a vault.

2. The Member shall connect this PRECO grounded conductor to the service equipment by extending a Member-owned grounded conductor along with the other conductors of the Member’s service entrance which attach to PRECO at the point of delivery. This grounded conductor shall be extended even though it may not be required as a circuit conductor by the NEC and shall be sized according to NEC 250.

3. The Member’s service entrance wiring shall be grounded as required by the NEC, Article 250, and any local code in effect.

4. The grounded wiring system to each premises shall have a grounding electrode conductor connected to a grounding electrode meeting the requirements of the NEC. This grounded conductor shall be connected to the grounded service conductor at any accessible point on the load side of the service drop or lateral to and including the service equipment terminals provided to connect the grounded service conductor.

5. The equipment grounding conductor and the service equipment enclosure shall be connected to the grounded conductor of the system within the service equipment or within the service conductor enclosure.
6. The grounding electrode system is discussed in section 250 of the NEC. Section 250 states that, if available on the premises, each of the following along with any made electrodes shall be bonded together to form the grounding electrode system. (a) metal underground water pipe, (b) metal frame of building, (c) concrete encased electrode, and (d) ground ring. The metallic water pipe shall be supplemented by an additional electrode of type specified in Section 250. The “made” electrode of Section 250 may be a local metal underground system or structure other than gas piping systems, a rod or pipe electrode, or a plate electrode. The rod or pipe electrode may be a listed ½” x 8’ stainless steel or nonferrous rod, a 5/8” x 8’ galvanized pipe, all driven 8’ into the earth. A plate electrode shall expose not less than two square feet of surface to exterior soil. Iron or steel plates shall be at least ¼ inch thick and nonferrous plates shall be at least .06 inch thick. Aluminum “made” electrodes ARE NOT PERMITTED. A metal underground gas piping system SHALL NOT BE USED AS A GROUNDING ELECTRODE.

7. For additional grounding information, see the National Electric Code, Article 250, and local building codes in effect in the area. If local building code requirements exceed those of the National Electric Code, installations shall comply with the local codes.
VIII. MOTORS, CONTROLLERS and AIR CONDITIONERS

A. General

Before ordering or installing any large polyphase or single phase motor, PRECO should be consulted to determine the character and adequacy of the available service and the allowable starting current at the premises to be served. This information should be passed on to the suppliers of the proposed motorized equipment. This will assist suppliers in providing equipment and protective devices to obtain satisfactory operation at minimum cost, considering both initial installation and future maintenance.

Motors less than 7.5 horsepower can be served with single phase service, unless three phase service is already being supplied. Devices are obtainable to convert single phase service to 3 phase for a wide range of three phase motors, therefore availability of three phase service should be discussed in advance with PRECO. Note: in some cases a “Written Pole” motor may prove to be advantageous. These motors have low starting current requirements which can reduce flicker. They also can be manufactured with a ride-through characteristic that may mitigate problems caused by momentary power interruptions. In addition, high horsepower single phase Written Pole motors can be used where traditionally three phase motors were required.

Single phase motors larger than one-half horsepower fed from 120/240 volt circuits should be connected for 240 volt operation. Smaller motors may be connected for 240 volts, where practicable, at the Member’s option.

The current required to start a motor is much greater than that required to operate it at full load after it has reached rated speed. If not controlled, this starting current may cause severe voltage fluctuations, not only on the wiring of the Member using the motor, but also on other Member’s wiring. The more frequently the motor is started, the more objectionable these voltage fluctuations become.

The National Electric Code, in Article 430, provides a table which classifies motors by their “locked-rotor” (starting) input requirements. A code letter is assigned to each requirement bracket. The brackets are given in “kilovolt-amperes” per horsepower which can be easily converted to amperes for a given motor. The starting current increases as the code letter increases. The appropriate letter is stamped on the motor nameplate.

Using this information, PRECO has prepared Table VIII-1 for single phase motors, five horsepower and below. This table lists code letters and starting currents which will be acceptable at most locations on PRECO’s system. The value given is for one motor which does not start more than four (4) times per hour. Table VIII-2 provides similar data for single phase air conditioners, but is based on the unit’s rated output rather than horsepower.

B. PRECO Approval of Starting Means for Large Motors

For motors larger than those listed in Table VIII-1, or which start more frequently, the Member may be required to provide reduced voltage or incremental starting equipment, to reduce each step of starting current to the value shown. PRECO shall be consulted and will advise the Member of its requirements.

In the case of three phase motors, because of the variety of service conditions and the large number of motor sizes available, PRECO shall be contacted in each case to determine if reduced voltage or incremental starting will be required. If two (2) or more motors are started simultaneously, the starting limitations apply to the total current of the group.
IX. TABLE VIII-1
Acceptable Code Letters
Single Phase Motors Acceptable for Across the Line Starting at
Most Locations on PRECO’s System Horsepower Ratings by NEC Letters
No more than Four Starts per Hour

<table>
<thead>
<tr>
<th>HORSEPOWER</th>
<th>115 VOLTS (50 AMPS)</th>
<th>230 VOLTS</th>
<th>MAXIMUM STEP IN STARTING CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼</td>
<td>A THRU V</td>
<td>A THRU V</td>
<td>50 AMPS</td>
</tr>
<tr>
<td>1/3</td>
<td>A THRU S</td>
<td>A THRU V</td>
<td>50 AMPS</td>
</tr>
<tr>
<td>½</td>
<td>A THRU N</td>
<td>A THRU V</td>
<td>50 AMPS</td>
</tr>
<tr>
<td>3/4</td>
<td>A THRU J*</td>
<td>A THRU S</td>
<td>50 AMPS</td>
</tr>
<tr>
<td>1</td>
<td>A THRU G*</td>
<td>A THRU P</td>
<td>50 AMPS</td>
</tr>
<tr>
<td>1 ½</td>
<td>A THRU C*</td>
<td>A THRU K</td>
<td>50 AMPS</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>A THRU H</td>
<td>60 AMPS</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>A THRU G</td>
<td>80 AMPS</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>A THRU F</td>
<td>120 AMPS</td>
</tr>
</tbody>
</table>

*These motors should be connected for 230 volt operation if feasible
### X. TABLE VIII-2
Acceptable Air Conditioning Equipment, One Phase, 240 Volts

<table>
<thead>
<tr>
<th>SIZE IN TONS (NOTE1)</th>
<th>SIZE IN BTU</th>
<th>*MAXIMUM ALLOWABLE STEP IN STARTING CURRENT AT 240V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12,000</td>
<td>30 AMPS</td>
</tr>
<tr>
<td>1 ½</td>
<td>18,000</td>
<td>45 AMPS</td>
</tr>
<tr>
<td>2</td>
<td>24,000</td>
<td>60 AMPS</td>
</tr>
<tr>
<td>3</td>
<td>36,000</td>
<td>90 AMPS</td>
</tr>
<tr>
<td>4</td>
<td>48,000</td>
<td>120 AMPS</td>
</tr>
<tr>
<td>5 (NOTE 2)</td>
<td>60,000</td>
<td>150 AMPS</td>
</tr>
</tbody>
</table>

**Note 1:** Table based on units being sized and maintained so that there will be maximum of four starts per hour.

**Note 2:** Better performance may sometimes be obtained by using two smaller units.

*This is the maximum allowed coincident starting current of any, or all of the system’s components (compressor, condenser fan motor and air handler blower motor). If the System Starting Current exceeds the values shown, the Member should investigate the installation of either a “hard start” kit or “stage” starting (or other method recommended by the manufacturer) to reduce the starting current to the level for which PRECO’s distribution system was designed.*
C. **Motor Protection and Power Factor**

It is the Member’s responsibility to ensure that all motor circuits include protection which at a minimum meets the National Electrical Code and any applicable local codes.

**Note:** Such protection is designed to protect personnel from electrical and fire hazard. It is not intended to protect the motor from damage. For this reason, PRECO recommends that the Member add the following to motor circuits to reduce the risk of equipment damage.

The use of automatic time delay circuit breakers or time delay fuses is strongly recommended when protecting motors against damage from excessive currents. The time delay feature will eliminate unnecessary operation of the breakers or blowing of fuses during motor starting or temporary overloads.

**Under Voltage Protection**—A low-voltage release is designed to disconnect the motor automatically and return the starting device to the “off” position upon partial or total failure of the supply voltage. It is used, where applicable, for motors that cannot safely be subjected to full voltage at starting, or where low voltage would result in injury or damage to equipment. This release should be of the time delay type, capable of adjustment to a maximum of at least two seconds and set at the lowest value suitable for proper protection. PRECO will be glad to advise the Member on the proper interval for coordination with PRECO’s circuit breakers. This will prevent unnecessary disconnection of the motor on momentary voltage fluctuations or loss of voltage.

**Single Phase Protection**—When installing three phase motors, the Member should consider the possibility of the loss of one phase, either in his own installation or in PRECO’s supply lines. This “single phasing” may happen regardless of the precautions taken to avoid it. And PRECO therefore strongly recommends that devices be installed to protect the equipment against the damage that may result.

**Phase Reversal Protection**—Three phase motors for applications to elevators, cranes, hoists, pumps or other installations where reversal of rotation might cause damage to equipment or constitute a hazard to personnel should **have phase rotation protection**.

Under voltage, single phase, phase reversal and imbalance protection are all available through the installation of an electronic phase loss protector in the motor control circuit. Such protective devices are supplied and installed by the Member. PRECO is not responsible for damage to motors from power abnormalities.

Surge protection should also be considered for installation at the motor breaker panel. Surge protection can help reduce damage to a motor’s winding from external spikes, as well as reduce damage to Member equipment from power spikes generated by large motors starting and stopping.

Power factor is a calculation indicating how efficiently power is being used. It represents the relationship of “real” power (KW) which performs useful work in turning a motor to “apparent” power (KVAR) which magnetizes motor and transformer coils. Motor loads frequently adversely affect the power factor of a circuit, usually from oversized or lightly loaded motors. Certain other types of loads can reduce power factor. A low power factor also reduces the capacity of circuit conductors to deliver “real” power and can increase wiring costs as well as electric demand on the utility system. PRECO reserves the right to adjust meter reading KW for billing where power factor is less than 90%.

Capacitors are sometimes connected on the load side of a motor controller to improve the power factor of the circuit. When this is done, the total KVAR connected should not exceed the value required to raise the power factor of the motor to unity when it is **running unloaded**.
D. **Air Conditioners that require excessive starting currents**

A number of signal phase 240-volt air conditioning units currently on the market require starting currents that exceed the 30 amps per ton allowed by PRECO design practices.

This will cause voltage flicker (momentary voltage dips) to exceed the limits to which PRECO distribution systems have been designed, and in many cases, flicker conditions quite objectionable to homeowners having these units.

Air conditioning units causing the majority of complaints seem to be those with the “scroll” type compressors, that are 3 tons or greater. Unlike their predecessor reciprocating compressor types, these systems do not require a starting capacitor system to start, so the manufacturers are no longer installing them. Without starting capacitors, the starting currents drawn on the electrical distribution system and “seen” by the Member as flicker have increased dramatically.

We strongly suggest you verify, before purchasing, that the units you obtain require starting currents of 30 amps or less per ton. If these limits are exceeded, “hard start kits” should be installed. If further reductions are necessary, “delay start” mechanisms might be considered so all the unit’s components (compressor, air handler, condensing fan) do not start simultaneously.

Installing this equipment at the factory can be done for minimal cost (far less than retrofits in the field) and will prevent Member complaints. If PRECO has to oversize new facilities or upgrade existing facilities due to starting currents exceeding the 30 amp per ton threshold, CIAC charges would apply.

Air conditioning manufacturers do not routinely publish starting current values. For units without starting capacitors a “rough” approximation of the starting current can be obtained by adding the Locked Rotor Amp (LVR) values for the compressor, condenser fan and air handler, and multiplying this total by 1.10. For further information on this subject contact your local PRECO construction representative.