

SECTION 300 - METERING STANDARDS

301 Scope

1. Chugach's metering and service equipment requirements are based on practices that are necessary in order to supply uniform satisfaction and safe service. Interpretations or clarifications of intent of these requirements are subject to Chugach's approval.
2. The following general notes apply to all installation guides and service equipment specifications in this publication, where applicable.
3. All metering and service equipment installed in the Chugach service area must conform to the latest state adopted revision of the NEC, to MOA local amendments to the NEC, to the latest state adopted revision of the NESC and to Chugach's requirements as stated in this publication.
4. Information on electrical inspection guidelines and instructions on how and when to schedule an inspection are found in Section 400.
5. Refer to the Service Standards in Section 500 for typical applications of service entrance equipment and their installation requirements.
6. The point of delivery, unless otherwise specified, is that location on the exterior of the customer's building or structure where Chugach's circuit and the customer's circuit are interconnected. Chugach's responsibility for maintenance of service ends at the first point of contact; whether it is at the current transformer enclosure, panel bus bar, meter socket for underground, or at the weatherhead for overhead.

302 Metering and Service Equipment Location

1. Metering and service equipment location is subject to Chugach's approval. Prior to wiring a building or structure or performing any electrical construction for a new service or a change in service, the customer shall request Chugach to designate the location of the customer metering and service equipment. Chugach will not be obligated to provide service to a structure at a point not designated by Chugach and a customer who proceeds without the designation of location may be required to modify the wiring or other construction to provide for service equipment at a location subsequently designated by Chugach.
2. Metering and service entrance equipment shall be on the side of the building nearest to a Chugach overhead or underground power source facility suitable for providing service. Single-occupancy residential service installations shall be within 3 feet of the corner of the structure nearest to the available power source. Chugach Engineering shall approve all metering and service equipment locations larger than 200A in advance. Where building occupancy requires more than 3 feet, the meters shall be grouped at one readily accessible location. (Note: Chugach approval for other arrangements must be obtained

when capacity requirements make multiple services desirable and are required by the National Electrical Code.)

3. Metering and service equipment including self-contained meter sockets, CT rated meter sockets, CT cabinets, CT compartments of switchboards, meter and service disconnects shall be located on the exterior of the building or structure.
4. Metering and service entrance equipment shall be located level and plumb, outdoors on the customer's structure (building, post or pedestal). The metering and service equipment may not be placed in a locked area. Metering and service entrance equipment must be firmly supported and be in locations free from vibration, mechanical injury or falling ice or snow and accessible at all times for reading, inspection, testing and replacement. The term "accessible" is defined as a safe and sanitary (free of obstacles and unsanitary debris) access to, from and at the service entrance equipment location work area (see 302.14).
5. In multiple occupancy buildings, all meters shall be located at a common location or as otherwise specified by Chugach. This same requirement applies when one or more meter sockets are added to existing services for a multiple occupancy building.
6. Metering and service equipment shall not be placed in any unsafe location as determined by Chugach. These include locations under inclined roofs subject to sliding ice and snow. Metering and service equipment shall be installed on the gable end of the structure when it is available. When metering and service equipment must be installed on the eave side of a metal roofed structure, roof-mounted snow anchors, snow gates or snow diverters are required above the service equipment location.
7. Metering and service equipment shall not be located directly above or below any stairway, ramp, or steps.
8. Metering and service equipment shall not be located in any underground vault or other depressed location.
9. Locating metering and service equipment in carport, porch or patio areas should be avoided due to possible future enclosure of such areas, resulting in inconvenience and expense to the customer when it becomes necessary to move the meter location to maintain access and exterior service equipment location requirements.
10. Chugach does not permit the installation of the customer's service equipment on Chugach facilities, such as wood poles or padmounted equipment.
11. Metering and service equipment are not allowed on mobile structures such as trailers, houseboats, barges, cranes, skid-mounted facilities, storage sheds, dredges, draglines or mobile pumping equipment.
12. Metering and service entrance equipment, including meter sockets, CT cabinets, pull boxes, switchboard service enclosures and gutters shall be located a minimum of 36 inches horizontal from any part of the natural gas service entrance equipment and any

other gas or liquid fuel source (fuel oil, propane etc.). Meters will not be allowed above or below the natural gas service entrance equipment.

13. A level standing and working surface shall be provided and maintained in front of each metering and service equipment installation. A clear and unobstructed working space shall be provided above this surface. The width of the working space shall be sufficient to permit ready access to the metering and service equipment, and in no case less than 36 inches or the width of the service equipment (whichever is greater). The height of the working space shall be equal to the overall height of the service equipment or 78 inches (whichever is greater). The working space shall extend 36 to 48 inches (defined by NEC 110-26) measured from the enclosure front surface and 10 inches from the centerline of the meter socket opening to any side obstruction and 9 inches from the meter socket centerline to any obstruction above or below. Refer to Service Guide SG-4 for details. Refer to Section 303.6.d for additional requirements.
14. If at any time Chugach determines that a meter access problem exists or may exist (e.g., fences, building additions, shrubbery, dogs, unsanitary and/or hazardous materials, etc.) the customer at their expense shall relocate the metering equipment to a new location approved by Chugach Engineering (see 302.4).
15. Chugach is not obligated to provide service to a location not approved by Chugach. A customer who installs metering and service entrance equipment without prior Chugach approval may be required, at the customer's expense, to relocate the metering and service equipment to an approved location.
16. The meter socket(s), CT enclosure and other Chugach maintained equipment shall not be located within a restricted area (e.g., controlled access areas within the International Airport).
17. The customer is discouraged from placing structures (sheds, decks, etc.) over the top of the Chugach conductor that provides electrical service to the property. If Chugach cannot access a failed conductor because of a conflicting structure, the owner will be responsible for removing the structure before Chugach will make permanent repairs to the conductor.
18. Metering and service equipment that becomes unsafe shall be repaired or replaced at the customer's expense.

303 Metering and Service Equipment General Requirements

1. The meter socket and enclosure shall be designed in accordance with the latest revision of AEIC-EEI-NEMA Standards for Watt-Hour Meter Sockets, Publication ANSI C12.7 and with UL Standard for Meter Sockets UL414.
2. Meter Sequence: The metering arrangement approved as standard and required by Chugach provides for the line current to first enter the meter and then the disconnecting means and over-load protective devices (meter-switch-fuse sequence). The only

exception to this is for multiple metering installations with more than 6 (six) meter socket positions.

3. All meter sockets shall be ring type; ringless sockets are not approved under any circumstance.
4. All single position meter panels shall be surface mount configuration. All multiple metering sockets and their enclosures shall be either wall mounted or switchboard type.
5. Test by-pass provision shall be manual link. Automatic type, slide type and lever type meter socket by-pass devices are not approved under any circumstance.
6. Meter Socket Mounting Height Requirements:
 - a) The mounting height for single position wall mounted meter panels shall be no more than 72 inches and no less than 60 inches above the finished grade or standing surface immediately in front of the meter. The mounting height is measured from the centerline of the meter socket opening to the standing surface immediately in front of the meter.
 - b) The mounting height for post mounted meter panels and padmounted service pedestals shall be no more than 64 inches and no less than 42 inches above the finished grade or standing surface immediately in front of the meter. The mounting height is measured from the centerline of the meter socket opening.
 - c) The mounting height for multiple metering equipment shall be no more than 75 inches and no less than 33 inches above the finished grade or standing surface immediately in front of the meter. The mounting height is measured from the centerline of the meter socket openings.
 - d) Steps or stools are not an acceptable alternative for meeting meter height requirements.
 - e) A platform is an acceptable means for meeting meter height requirements as long as it is permanent in nature. Platforms shall be constructed from concrete, steel, or structural lumber rated for ground contact. If a platform is more than 12 inches above grade, it shall be equipped with stairs, with handrails, and side rails. Platforms shall be constructed according to International Building Code standards. Where platforms are used to meet meter height requirements the dimensions of the platform must provide an additional 12 inches of width and depth to the minimum clearance and working space requirements as defined in Section 302. The maximum height above grade for any platform used to meet meter height requirements shall be 30 inches. Platforms with a standing surface more than 30 inches above grade shall not be acceptable for meeting meter height requirements.
7. Meter Access Requirements: Customer locking methods for meter enclosures and service equipment shall provide for independent access by Chugach. Contact the Chugach Meter Shop for assistance with double locking provision or lock box, if necessary.

8. **Meter Socket Clearance Requirements:** Where an adjacent wall or other electrical equipment extends beyond the face of the meter socket enclosure, a 10-inch minimum side clearance dimension (measured to the centerline of the meter socket) is required. The 10-inch minimum side clearance requirement applies to all metering installations (including self-contained, CT rated, commercial service pedestals and multiple metering). Refer to Service Guide SG-4 and SG-5 for details.
9. **CT Rated Versus Self-Contained Metering Requirements:** CT rated metering is required if either the rated capacity of the service switch exceeds 200 amperes or the capacity of the conductors supplying a breaker or a group of breakers exceeds 200 amperes. Self-contained metering is required where the electric service rating is 200 amperes or less. Chugach does not use class 320 or 400 metering.
10. **Service Capacity Rating:** The capacity of a service entrance as related to the sizing of utility service equipment and conductor shall be determined by the rating of the meter main or service disconnect switch. In those cases where a main service disconnect switch is not used, the nameplate rating of the service equipment (bus rating) shall be used.
11. The customer shall furnish and install the service entrance conductor and service equipment beyond the point of attachment to Chugach's overhead or underground service conductor. All conductor between the overhead service outlet or underground pull section (utility compartment) shall be suitably enclosed and protected and shall not be concealed except with the approval of Chugach.
12. **Four-Wire Delta Requirements:** All three-phase, 4-wire service supplied from a delta-connected secondary shall have the phase conductor having the higher voltage (V line – ground) identified as different from the other two phase conductors. The phase conductor having the higher voltage shall be located on the right hand position of each meter socket or CT bus. This applies to existing services only; this type of service is not available for new services.
13. Service terminating space in enclosures rated greater than 200 amperes with multiple meter sockets shall accommodate either compression type NEMA 2-hole lugs or mechanical lugs (see Service Equipment Specification SE-4). The manufacturer or the customer's contractor shall provide all bussing or cable conductor beyond the terminating lugs. Bus stubs or bussing in the service terminating enclosure used for terminating the utility service conductor shall have mounting bolts spaced in accordance with NEMA standards. Refer to the Service Equipment Specification SE-4 for details.

304 Grounding and Bonding Requirements

1. All electric services shall comply with all of the applicable grounding requirements of the latest revision of the NEC and with any local amendments to the NEC.
2. The customer is responsible for furnishing, installing and maintaining all components at the point of connection between Chugach and the premises wiring necessary to comply with the grounding requirements cited above.

3. Within the Municipality of Anchorage inspection area, the use of concrete encased ground electrodes are required where footers exist as part of the structure for new installations and when available for remodeled structures that include new foundations. Outside of the Municipality of Anchorage inspection area, two ground rods are required (because of the quality of concrete encased ground electrodes, their use is recommended outside the municipality in addition to the required two driven ground rods).
4. For commercial installations where a concrete foundation does not exist (load centers, remote meters, etc.) ground rods shall be required as per the NEC.
5. Where ground rods are used as part of the grounding electrode system, they shall be placed a minimum of 36 inches from any Chugach underground conductor/conduit, padmounted equipment, or poles. Enstar requires 36 inches minimum separation between the ground rod and the gas service line.
6. Where multiple ground rods are installed as part of the grounding electrode system, they shall be placed a minimum of 8 feet apart. Locate ground rods to one side of the service entrance equipment. Do not straddle the riser conduit(s) for underground installations.
7. A minimum of one ground rod shall be installed, when required, for temporary service installations. The ground rod shall be placed no more than 72 inches from the service disconnect.
8. Ground rod connections must remain visible until inspections are completed. The top of the ground rods shall be installed 12 inches below surface grade after covering.
9. CT rated meter sockets are considered non-current-carrying metal parts of the service equipment and shall be effectively bonded together with all other non-current-carrying metal parts of the service equipment. CT rated meter sockets shall be bonded in accordance with all the applicable articles of the latest revision of the NEC. Where a bonding conductor is used, it shall be a minimum of 6 AWG copper.
10. Customer system grounding connections may be made inside of CT cabinets, service conductor terminating enclosures, the service termination compartment of combination disconnect device and terminating enclosure, and termination compartment of switchboard style service equipment, as long as the connections do not interfere with the termination of the utility (supply side) service conductors. Customer (load side) grounds shall not be terminated on the neutral bus within the CT compartment.
11. The grounding conductor to the grounding electrode (concrete encased and ground rods) shall be at a minimum, #6 AWG copper unless required to be larger, as specified by NEC 250.66.

305 *Sealing and Locking Requirements*

1. All removable access covers for compartments containing un-metered conductors shall be sealable or lockable. No removable panel or cover requiring sealing or locking shall be located behind other panels, covers, or doors (except rain-tight enclosure doors).
2. All top cover panels, side cover panels and rear cover panels providing access to un-metered conductors shall be secured in place with devices that may not be loosened from the outside. Screws or bolts requiring special tools for installation or removal are not acceptable alternatives.
3. Sealable latches, studs with wing nuts, sealing screws, or slot and tab devices shall be provided as the means of sealing removable access covers.
4. Hinged cover panels shall be lockable on the side opposite the hinges. Hinged panel covers shall accept a padlock with a shackle diameter of not less than 5/16 inch.
5. Removable cover panels shall be sealed with stud and wing nut assemblies on opposite sides of the panel. Alternate sealing methods may be used if the removable covers are self-supporting with the captive screws and sealing provisions removed.
6. Stud and wing nut sealing assemblies shall consist of a ¼ inch x 2 inch minimum stud and associated wing nut, each drilled 0.0635 inch (minimum) for sealing purposes. The stud shall be securely attached so as not to loosen or back out when being fastened.
7. Sealing screws shall be drilled 0.0635-inch (minimum) for sealing purposes.
8. Latching devices shall be designed to permit positive locking and shall be made of a durable corrosion resistant material.
9. All securing screws for removable panel covers shall be captive.
10. All sealing and locking provisions must be OEM, provided and installed by the equipment manufacturer or be an OEM field retrofit kit provided by the manufacturer. Sealing and locking provisions provided by a third party manufacturer are not acceptable.
11. All CT cabinets and compartments shall have hinged front cover access to the CT's. The hinged cover shall be lockable and shall accept a padlock with a shackle diameter of not less than 5/16 inch. The hinged front cover requirement applies to all CT compartments, single-phase and three-phase, in wall mount and switchboard style equipment.
12. The term "lockable" is defined as accepting a padlock with a shackle diameter of not less than 5/16 inch.
13. Key lock handles where the locking mechanism is an integral part of the handle assembly are not an acceptable means of locking or securing doors or panels covering any space,

compartment, or section with unmetered conductors or metering equipment or meter disconnect devices or main service disconnect devices.

306 Service and Meter Disconnect Requirements

1. General Requirements - Meter Disconnects
 - a) For each and every meter the customer shall furnish a circuit breaker, fused switch, or other approved disconnecting means with over-current protection referred to in these requirements as a meter disconnect.
 - b) The meter disconnect shall control all of and only the energy registered by its related meter.
 - c) In certain types of CT rated metering applications, the meter disconnect may consist of up to six separate devices.
2. Meter Disconnects – Locking Provisions
 - a) Meter disconnects supplied from CT compartments shall be capable of being locked in the open position.
 - b) Locking provisions may be:
 - 1) A lockout device which is incorporated as an integral part of each meter disconnect, or
 - 2) A lockable cover for each meter disconnect where the lock prevents the operation of the disconnect and prevents removal of the cover, or
 - 3) A lockable cover for multiple meter disconnects where the lock prevents the operation of the disconnect, prevents removal of the cover and all disconnects are supplied from a single CT compartment.
 - 4) Items 1, 2 and 3 shall be permitted to be accomplished by a maximum of two locking provisions per disconnect.
 - 5) For fused disconnects, the fuse access cover shall be lockable when the disconnect is locked in the off (open) position.
 - 6) All locking provisions for disconnects shall accept a padlock with a shackle diameter of not less than 5/16 inch.
3. Main Service Disconnects – Self-Contained Metering
 - a) A main service disconnect device is installed on the supply (utility) side of a group of meter sockets and may be a circuit breaker, fused disconnect, or other approved disconnecting means.

- b) A service disconnect shall be installed on the supply (utility) side of more than six meter sockets.
 - c) A service disconnect is not permitted on the supply (utility) side of six or fewer meter sockets.
4. Remote Control Option (Shunt Trip): Meter disconnects supplied from CT compartments may be located indoors under the following specific conditions:
- a) Meter disconnects located indoors shall provide for remote operation of the disconnect device or devices by means of a shunt trip device.
 - b) Meter disconnect devices placed indoors shall be located nearest the point of entrance of the service conductors.
 - c) The shunt trip device may be either the safety switch type or a two-position rotating type switch inside an enclosure.
 - d) The safety switch must be suitable for the environment and be lockable in either the “on” or “off” position. Interlock contacts may be used to provide correct handle location. The “off” position must disconnect the power.
 - e) The shunt trip switch must be placed within an enclosure rated for the environment with a hinged access cover. The enclosure shall be large enough for the required sign to be mounted on it. The enclosure must have a padlock hasp with the padlock accessible for removal with bolt cutters by emergency responders. No padlocks with hardened shackles are permitted. The maximum shackle diameter is limited to 5/16 inches. The shunt trip switch shall be a maintained contact (non-momentary) with “off” and “on” clearly identified. The “off” position shall disconnect the power.
 - f) Push button switches, whether momentary contact or sustained contact, are not acceptable; they are prohibited from use.
 - g) The shunt trip device enclosure shall be labeled with the following language: “SERVICE SHUNT TRIP - UTILITY”.
 - h) The label for a shunt trip device shall be engraved laminated plastic with 1-inch high, block type, open face white letters on a red background. The label shall be attached by screws, rivets or a plastic to metal epoxy adhesive rated for exterior applications with a temperature range of 120 to -40°F. The label shall meet the requirements of the most recent revision to the Uniform Fire Code.
 - i) Shunt trip devices shall meet the requirements of the Anchorage Fire Department Information & Policy Bulletin 05-003, dated March 1, 2005. Refer to the MoA Building Safety Division Policy E.04 - Electrical Disconnects.
 - j) Meter and main service disconnects located indoors and operated by means of a remote shunt trip device shall meet all locking requirements of those located

outdoors. Main distribution panels with key-lock handles or flush mount socket type locks and/or latches are not acceptable for use as meter disconnect devices.

- k) Contact Building Safety Electrical Inspections or Anchorage Fire Department Plan Review for similar requirements concerning equipment supplied by on-site alternate power sources.
 - l) Services with shunt trip disconnects may require a test to demonstrate complete shunt trip function.
5. Except where otherwise specified in these requirements, no sealing and/or locking provisions for securing un-metered conductors or bus and no locking provisions for securing meter disconnects or main service disconnects may be placed behind any door or panel or concealed from view in any manner.

307 Self-Contained Metering Requirements

- 1. Self-contained meters are designed to carry rated current and to be energized at line potential. They do not require auxiliary instrument transformers to step down line current and/or voltage. Self-contained meter sockets are required on all electric services with a rating of 200 amperes or less.
- 2. Service equipment with a minimum rating of 200-ampere is required for all self-contained services except for: 1) self-contained service equipment with a minimum 100-ampere rating is acceptable for use on overhead services, and 2) 100-ampere rated service equipment with test block by-pass may be used on non-residential remote meter bases and load centers for overhead and underground services.
- 3. Self-contained meter sockets shall be furnished, installed and wired by the customer. When self-contained meter sockets are installed in switchboards, the switchboard manufacturer shall wire them.
- 4. For each and every meter the customer shall furnish and install a circuit breaker, fused switch, or other approved disconnecting means with over-current protection referred to in this book as a meter disconnect. The meter disconnect shall control all of and only the energy registered by its related meter.
- 5. Self-contained meter sockets shall have a maximum ampere rating not less than the ampere rating of the associated meter disconnect. The maximum ampere rating is 125% of the continuous duty rating.
- 6. Meter sockets used in residential applications shall meet the requirements of SS-1, include a disconnect, and shall be located on the exterior of the building.
- 7. Meter sockets used in commercial, industrial, or non-residential applications shall meet the requirements of SS-1, shall include a disconnect test block with manual by-pass or safety socket. The meter socket shall be located on the exterior of the building, as applicable. The following non-residential applications do not require test block with by-

pass: decorative lighting, head bolt heater receptacles, Lake Hood/Spenard floatplane tie downs, and thaw wires.

8. Meter sockets used in commercial, industrial, or non-residential applications at 480-volt require a safety socket. A safety socket is required for all commercial, industrial, or non-residential applications installed without a manual by-pass provision.
9. Automatic type, slide type, horn type, screw type and lever type meter socket by-pass devices are not allowed under any circumstances or conditions.
10. The service termination facilities of meter sockets used in underground service applications shall be specifically designed to accept underground service risers. Enclosures designed for either overhead or underground entry are acceptable provided they meet the requirements for both types of cable entry.
11. The service cable entry section and the meter socket shall be sealable and isolated from other integral enclosure sections, which are accessible to the customer, in order to effectively prevent the attachment of unauthorized connections to the supply side (un-metered) conductors and/or terminals.
12. Meter sockets used in underground service applications shall have a separate cover plate for the section of the socket that receives the meter and a separate cover plate for the utility side termination compartment. Chugach prohibits the use of meter sockets with a single common cover plate for the meter socket and utility side termination compartment, except for overhead service installations. Note: All services within the MoA underground surcharge area require underground feed.
13. Network service installations require a factory installed 5th jaw or a factory supplied 5th jaw kit. The 5th jaw shall be located in the 9 o'clock position.
14. The 5th jaw and associated wiring shall be removed from meter sockets equipped with a 5th jaw for network service when it is supplied with a single-phase, 3-wire 120/240-service voltage.
15. Load center installations require clear and permanent labeling attached to the outside of the enclosure that identifies the owner and the type of service. The type of service shall be designated with the code shown in Service Standard SS-14. The meter will not be installed until after the labeling is complete. Remote meter locations shall identify the address of the building that is served.
16. Examples of acceptable permanent identification labeling are: 1) 3M Scotchcal 220 cut vinyl decals or, 2) an embossed metal or engraved laminated plastic identification plate attached by screws, rivets or a plastic to metal epoxy adhesive rated for exterior applications with a temperature range of 120° to -40°F. All lettering and numbering for the code designation shall be a minimum of ¾ inch in height, custom printed ownership decals are acceptable.

308 Multiple Metering Requirements

1. The customer shall furnish and install multiple metering service equipment with self-contained meter sockets appropriate to the type of service and the number of metered points requested. Multiple metering service equipment shall be located on the exterior of the building. All meters shall be mounted at a common location approved in advance by Chugach Engineering.
2. Multiple metering service entrance equipment shall be located on the exterior of the building or structure.
3. The customer shall arrange the wiring of a multi-occupant building so that the wiring for all stores, apartments, or other individual units will terminate at a common point or points designated by Chugach. Multiple points of delivery or metering on the same premises may not be utilized without the prior written consent of Chugach. All meters and related service entrance equipment shall be mounted at a common location approved in advance by Chugach Engineering.
4. For each and every meter the customer shall furnish and install a circuit breaker, fused switch, or other approved disconnecting means with over-current protection referred to in this book as a meter disconnect. The meter disconnect shall control all of and only the energy registered by its related meter.
5. Each individual meter in a multiple metering installation shall serve only one dwelling unit or commercial space. One meter shall not serve multiple dwelling units or commercial spaces.
6. A main service disconnect device shall be installed on the supply side (utility) of a group of more than six meter sockets. The main service disconnect may be a fused or non-fused switch, a molded case circuit breaker, or a molded case switch.
7. Multiple metering equipment with fewer than seven meter socket positions shall not have a main service disconnect on the supply side (utility) of the meter sockets. These installations shall follow the meter-switch-fuse sequence.
8. All main service disconnects on the supply side (utility) of a multiple metering installation, whether a residential or a commercial application shall have factory designed and installed sealing and/or locking provisions for all areas of the enclosure except for access for fuse replacement or switch operation.
9. All combination disconnect device and terminating enclosures shall meet the requirements of Service Equipment Specification SE-3.
10. All combination disconnect device and terminating enclosures, whether for residential or commercial application, shall have terminating provision for the supply (utility) service conductor meeting the requirements of Service Equipment Specification SE-4, utility service conductor shall not terminate on a molded case switch or breaker.

11. The maximum ampere rating for combination disconnect devices and terminating enclosures shall be 1200 amps for three-phase and 800 amps for single-phase sources.
12. All services with multiple metering requirements having ampere ratings of 1201 amperes and above shall use switchboard style service section type equipment for terminating supply side service conductor.
13. The minimum pull section compartment sizes for the supply side (utility) service conductor termination in switchboard style service equipment shall meet the requirements of Service Equipment Specification SE-2.
14. Minimum pull section compartment sizes for supply side (utility) service conductor terminations on combination terminating enclosures and multiple metering panels for residential services having from two to six meter socket positions shall meet the requirements of Service Equipment Specification SE-1.
15. Combination residential multi-meter panels, up to six maximum with ampere ratings from 201 amps to 600 amps, shall have supply side terminals that meet the requirements of Service Equipment Specification SE-4.
16. Non-residential multiple metering installations, up to six meters maximum, using modular wall mounted metering equipment requires a wall mounted pull/terminating cabinet with supply side terminals that meet the requirements of Service Equipment Specifications SE-2 and SE-4.
17. Combination residential multi-meter panels and wall mounted modular multi-meter panels used in residential applications are limited to a maximum of four meter sockets installed vertically in each panel.
18. Non-residential multiple metering installations, including wall mounted and switchboard style service equipment, are limited to a maximum of three meter sockets installed vertically in each panel.
19. Multiple metering service equipment without factory-installed bussing requires permanent (non-removable) solid metal barriers to isolate the supply side (utility) conductors from the load side (metered) conductors.
20. Barriers used in multiple metering enclosures to separate customer and utility compartments/sections (e.g., pull sections/metering compartments) shall be constructed from 16-gauge steel (minimum). The barriers shall be secured within the interior of the supply side (utility compartment or section) so that they may not be removed from the customer section or the exterior of the enclosure.
21. The service termination compartment, meter socket enclosure, test-block/by-pass compartment and raceways with supply side (utility) conductors require separate, removable and sealable access panels or covers. Two lifting handles are required for all panels greater than 16 inches in width.

22. All meter sockets used for non-residential multi-metering service equipment shall be equipped with a safety socket feature and factory-installed test block/by-pass provision.
23. Self-contained meters installed in switchboards require meter sockets that meet the requirements of Service Equipment Specification SE-6.
24. Each meter socket position and each respective meter disconnect device shall be clearly and permanently identified designating the specific location served (apartment/unit number, street address, suite, etc.). Business names may be included, but shall be supplemented by the specific location information. The relation of the socket, breaker and portion of the structure shall be readily discernable. Meters will not be installed until after the labeling is complete.
25. Examples of acceptable permanent identification labeling are: 1) 3M Scotchcal 220 embossed style decals, and 2) an embossed metal or engraved laminated plastic identification plate attached by screws, rivets or a plastic to metal epoxy adhesive rated for exterior applications with a temperature range of 120° to -40°F. All lettering and numbering shall be a minimum of ¾ inch in height. marking with permanent marker and office style label markers are not acceptable.
26. When the layout of a multiple metering installation has been established for a building or structure, any future meter sockets shall conform to that plan. When making additions to the existing service equipment the new equipment shall be similar and shall be used as intended by the service equipment manufacturer (e.g., individual wall mounted single-position meter sockets shall not be added to existing wall mounted modular or wall mounted multiple metering panels).

309 *CT Rated Metering Requirements*

1. Current Transformer (CT) rated metering is required where the service entrance ampere rating, as determined by Chugach, is greater than 200 amps. Chugach does not use 320 or 400 class metering.
2. CT rated meter sockets, CT cabinets, and all associated service equipment (including service disconnect devices) shall be located on the exterior of the building or structure. Refer to Section 302 for details on metering and service equipment location.
3. The CT enclosure/side gutter, CT mounting and bus, CT rated meter socket, rigid conduit and related fittings between the CT cabinet and the meter socket shall be furnished and installed by the customer.
4. A CT rated meter socket meeting the requirements of Service Equipment Specification SE-7 (non-panel mount) shall be installed for each CT rated service.
5. All CT service equipment installations shall include a disconnect device or devices meeting the requirements of Section 306.

6. The service disconnect shall be located downstream from the CT cabinet. No customer owned or customer controlled disconnect device shall be installed ahead of the CT metering. Refer to Section 303 for details.
7. CT rated meter sockets and related rigid steel conduit for meter wiring are considered non-current carrying parts of the service equipment and shall be effectively bonded together with all other non-current carrying metal parts of the service equipment. CT rated meter sockets and associated rigid steel conduits shall be bonded in accordance with all applicable articles of the latest revision of the NEC. Where a bonding conductor is used, it shall be a minimum of #6 AWG copper.
8. The conduit connecting the meter socket and the CT cabinet shall be a direct run without access points (e.g., junction boxes, and condulets with access covers).. The maximum conduit length is 25 feet with a 1-inch minimum diameter. The total of all bends is limited to 270 degrees. Rigid steel conduit is required.
9. The conduit connecting the meter socket and the CT cabinet shall enter the side of the meter socket enclosure in one of the lowest factory supplied conduit entrances (knockouts). The conduit entrance into the CT cabinet shall be even with or in front of the CT bus.
10. The conduit connecting the CT rated meter socket enclosure and the CT cabinet shall provide a minimum of three inches of unobstructed wiring space at the CT cabinet entrance. Obstructions, including the CT mounting base support brackets or load side (customer) conductors, shall be positioned to maintain the three-inch wiring space.
11. CT rated meter installations shall meet the clearance and working space requirements of Section 303 and Service Guide SG-4.
12. A wall mounted CT cabinet meeting the requirements of Service Standards SS-10, SS-11 or SS-12, as applicable, shall be installed for each CT rated service. The minimum dimensions for wall mounted CT cabinets/side gutters shall comply with the requirements of Service Standard SS-11 or SS-12, as applicable.
13. The mounting height for wall mounted CT meter sockets shall be between 60 inches and 72 inches from socket centerline to final grade. For post mount (remote) installations the mounting heights are between 64 inches and 42 inches. The preferred height for either installation is 50 inches.
14. Wall mounted CT cabinets shall be installed so that the top of the cabinet is no more than 90 inches above final grade. The bottom of the cabinet shall be no less than 16 inches above final grade.
15. CT cabinets and compartments require a hinged front cover. The cover shall be lockable, accepting a padlock with a 5/16-inch shackle diameter. The requirement for a hinged cover applies to all wall mounted CT cabinets (single-phase and three-phase). Screw mounted covers are approved for side gutters containing supply side conductor. All wall mounted service equipment requires a NEMA 3R rating.

16. 2000 amp and lower three-phase and 800 amp and lower single-phase CT service installations require a bar type CT mounting provision. The ampere rating of the CT mounting/bus assembly shall equal or exceed that of any conducting portion of the service equipment. NEMA 4-hole CT bus terminals are required for applications that exceed 1400 amps.
17. All CT service installations between 2001 and 4000 amps requires a CT mounting base or rack with removable bus links (5" maximum) and CT support brackets. The ampere rating of the CT mounting/bus assembly shall equal or exceed that of any conducting portion of the service equipment. The removable bus links and support brackets shall meet the requirements of Service Standard SS-13.
18. CT mounting bases, interiors, or racks shall meet or exceed the Ampacity rating of the service disconnect(s).
19. CT mounting bases, interiors, or racks shall have an ampacity rating equal to or greater than the service capacity rating.
20. For three-phase applications, CT mounting bases, interiors, or racks shall have a minimum AIC rating of 50,000 amps.
21. CT meter wiring shall not be allowed in the same conduit as the supply conductor (utility). The conduit connecting the meter socket and the CT cabinet is for utility metering wiring only.
22. CT cabinets or compartments shall not be used as a junction point to serve other metered circuits.
23. The CT cabinet is limited to the supply side (utility) and load side (customer) conductors only. No other conductors or devices may be installed in or routed through the CT compartment. The side gutter is limited to the supply side (utility) conductors only.
24. The load side (customer) conductors shall not pass over the top of, in front of, or in any way restrict access to the supply side (utility) conductors or CT's. A larger CT cabinet may be necessary to meet this requirement.
25. Padmount enclosures with a CT compartment on one side and a service termination compartment on the opposite side are permitted under certain circumstances and conditions. Contact Chugach Engineering for specific details and approval.
26. Wall mounted three-phase CT service installations from 201 – 800 amps where the load side conductors exit through the bottom of the cabinet can install a cabinet with a minimum width of 36 inches.
27. All CT installations require grouping of the supply side conduit riser(s) to ensure that they enter the bottom corner of the enclosure (bottom of the side gutter for SS-11, 12 and 13A) in an array that minimizes obstructions to training the conductor to reach the upper

bus terminals. Where more than two conduits are installed the conduit may require a stacked configuration as opposed to horizontal.

28. Services rated from 201 amps to 1200 amps are restricted to connectors with a maximum width of 2-1/8 inches. Connectors (compression and mechanical) shall not be altered or modified in any way.
29. The supply side (utility) and load side (customer) connectors shall be 2-hole. One-hole connectors are not approved. Compression and mechanical connectors shall not be modified.
30. Where more than one CT metered (or a combination of self-contained meters and CT rated meters) point is required, the customer shall furnish a wall mounted termination/pull box that complies with the requirements of Service Equipment Specification SE-2. The termination/pull box shall have an ampere rating not less than the total of the ampere ratings of all of the metered circuits that are fed directly from it. The customer shall supply and install the conductors from the load side of the termination/pull box to the supply side of each metered component (refer to Service Guide SG-2).
 - a) Chugach limits these installations to a maximum of three CT rated points to be served. The total combined service ampere rating is limited to 1200 amps. Where more than three CT rated metering points are required, or when the total combined service ampere rating exceeds 1200 amps, switchboard service equipment is required.
 - b) Where a combination of CT metered points and self-contained metering points are required, the total service Ampacity shall not exceed 1200 amps. This type of installation is limited to a total of six main disconnect points (e.g., one CT metered disconnect and up to five self-contained meters with individual disconnect breakers or one CT metered disconnect and a fused disconnect with ganged self-contained meters up to the Ampacity limit of the termination/pull box or 1200 amps maximum).
 - c) The wall mounted terminating/pull box shall meet the requirements of Service Equipment Specification SE-2. The CT rated and/or self-contained metering points shall meet the requirements as specified by the applicable sections of this publication.

310 *Switchboard Service Equipment Requirements*

1. Switchboard service equipment, meter sockets and all associated service equipment shall be provided by the customer and installed on the exterior of the building or structure in accordance with Section 302.
2. All switchboards shall meet the requirements of NEMA PB-2, UL 891 and the latest revision of the NEC. All sections and devices shall be listed and labeled accordingly.

3. All switchboards shall be housed in a NEMA 3R rated enclosure meeting the requirements of Service Equipment Specification SE-5.
4. Switchboard service equipment must be designed and manufactured specifically for terminating the supply side (utility) conductor and for housing the CT's. Additional sections may include the customer's service disconnect and fire pump terminal.
5. All switchboards shall be hot sequenced with the line current first entering the CT's and then the disconnecting device and overcurrent protective devices (meter-switch-fuse sequence). The only exceptions to this rule are for multiple metering installations with more than six meter socket/disconnect provisions and fire pumps.
6. For each CT rated meter in a switchboard service section installations, the customer shall install a circuit breaker, fused switch or other approved disconnect with overcurrent protection. Refer to Section 306 for details.
7. Customer owned or controlled disconnects are not permitted on the unmetered side (upstream) of the CT compartment. Refer to Section 303 for details.
8. Switchboard service equipment shall be "front only accessible" such that all supply side connections can be made from the front of the equipment.
9. Switchboard service equipment cover panels (top, front, rear and side) that can be removed from outside any of the supply side (utility) compartments shall be sealable or lockable. Sealing or locking provisions shall not be concealed or placed behind a door or panel. The switchboard section manufacturer shall supply the sealing or locking provisions as part of the original equipment or as an OEM retrofit kit, non-factory modifications are not acceptable.
10. Unmetered (utility side) conductors or bus and metered (customer side) conductors or bus shall not occupy the same conduit, raceway or compartment when installed in a switchboard service section.
11. Barriers used in switchboard equipment to separate the supply side (utility) and the load side (customer) sections/compartments shall be constructed from 16-gauge (minimum) steel and secured with devices that prevent removal from either the customer side or the exterior of the switchboard equipment. The switchboard section manufacturer shall supply the barriers as part of the original equipment or as an OEM retrofit kit, non-factory modifications are not acceptable.
12. CT compartments in switchboard service equipment shall have hinged access doors meeting the requirements of Service Equipment Specification SE-7. The hinged access doors shall be lockable and accept a padlock with a 5/16-inch shackle diameter. The switchboard section manufacturer shall supply the locking provisions as part of the original equipment or as an OEM retrofit kit, non-factory modifications are not acceptable.

13. CT compartment size for switchboards rated from 201 amps to 1000 amps shall have minimum dimensions meeting the requirements of Service Standard SS-10.
14. CT compartment size for switchboards rated from 1001 amps to 3000 amps shall have minimum dimensions meeting the requirements of Service Standard SS-11.
15. CT compartment size for switchboards rated from 3001 amps to 4000 amps shall have minimum dimensions meeting the requirements of Service Standard SS-13.
16. CT mounting provisions for switchboards rated from 201 amps to 2000 amps shall be designed with a bar CT mounting provision. NEMA 4-hole CT bus terminals are required for applications between 1401 amps and 2000 amps.
17. CT mounting provisions for switchboards rated from 2001 amps to 4000 amps shall be designed with removable bus links and CT brackets meeting the requirements of Service Standard SS-13.
18. Switchboard service equipment shall be configured so that the centerline of the CT's when mounted shall be between 48 inches and 72 inches above the standing surface directly in front of the CT compartment.
19. Conductors shall not be rerouted through a CT compartment. Supply side conduit, raceway and wiring gutters are limited to un-metered supply side (utility) conductor only.
20. The switchboard service equipment for single metered applications may be equipped with either a wall mounted meter socket, a meter socket attached to the outside exterior wall of the CT compartment, or a 15-inch hinged meter panel meeting the requirements of Service Specification SE-7. The conduit entrance into the CT cabinet shall be even with or in front of the CT bus for all external meter socket configurations.
21. The switchboard service equipment for multiple metered applications shall be equipped with 15-inch hinged meter panels meeting the requirements of Service Equipment Specification SE-7. For multiple self-contained metered applications the equipment shall meet the requirements of Service Equipment SE-6.
22. When two or more switchboard service sections are supplied from one set of supply conductors, the supply conductors serving these switchboards shall be terminated ahead of and outside of the CT compartments in a separate sealable enclosure. The supply side conductors are to be arranged so they are readily accessible without disturbing the CT's and associated secondary wiring.
23. Switchboard service equipment requires underground termination provisions that meet the requirements of Service Equipment Specification SE-2 and SE-4.
24. Switchboard services shall be placed on a concrete pad that is configured to provide separation of the unmetered (utility) and metered (customer) conductors. Vault or box pads require a concrete barrier wall to provide this separation.

311 High Voltage (Primary) Metering

1. High voltage instrument transformers (current and potential) and transformer-type meters may be required for customers taking service at primary voltage under provisions of the Chugach Tariff. Chugach Engineering shall be consulted before construction begins to establish a mutually satisfactory location for the point of delivery and to clarify meter details.
2. Chugach shall furnish and install high voltage metering cabinet(s), current and voltage transformers, meter sockets, and all related secondary wiring.
3. Chugach shall require the customer to provide a switch cabinet (to Chugach's specification) immediately after the primary metering enclosure. Contact Chugach Engineering for details.

312 Load Control and Pulse Metering

1. Chugach encourages the use of load leveling control equipment by the customer since it can relieve distribution and transmission facilities of unnecessary peak loadings. Additionally, as power costs increase, controlled loads may become desirable in the long term, both for the customer and Chugach.
2. Chugach will install a meter with a pulse initiator in order to provide pulses for customer use. The customer shall pay the cost of this installation in excess of the cost of a standard meter installation.
3. The customer shall bring control wiring to the Chugach terminal block and Chugach personnel will make the final connections (refer to SG-8). The customer shall not tamper with Chugach's metering installation and shall be liable for disconnection of service pursuant to cases of tampering. The customer shall notify Chugach whenever a malfunction in the metering installation appears to exist.
4. Chugach will proceed with the installation of the metering equipment subject to parts availability. The customer will be notified should the installation be delayed. Chugach will provide a standard metering installation until the necessary parts are available (for new installations and maintenance).

313 Meter Testing

Upon request by a customer, Chugach will test an electric meter. If the test results demonstrate that the meter varies more than 2 percent from 100 percent accuracy standard as determined by the State of Alaska, the test will be performed at the expense of Chugach. If the meter does not vary from the standard tolerance, a charge will be made to the customer requesting the test in accordance with the Schedule of Fees and Charges contained in the Chugach tariff. The meter test will be conducted during normal business hours and, if requested, in the presence of the customer.

314 *Fire Pump and Fire Pump Equipment*

1. Chugach acknowledges NEC requirements, permissions, and exceptions with regard to fire alarms, fire pump equipment and fire sprinkler systems. The NEC does allow attachment of such equipment to the supply side of the service disconnecting means. Chugach shall not allow or permit any customer equipment to be attached to the supply side of the utility metering equipment.
2. Chugach views all fire alarms, fire pump equipment and fire sprinkler systems as non-utility equipment and will not allow circuits serving this equipment to be placed in the CT compartment, service termination compartment or the service termination section of a switchboard service enclosure. All requirements with regard to separation and barriers stated in Section 310 are in effect with respect to fire alarm and fire pump equipment.
3. If the electric service entrance for a building or structure utilizes switchboard service style equipment, then a separate area outside of the sealable sections for the attachment of the fire alarm and fire pump equipment conductors must be an integral part of the electrical service entrance equipment design.
4. Circuits for fire alarm and fire pump equipment may be installed along with other customer circuits inside of wall mounted CT cabinets as long as such attachment remains on the load side of the CT's where other customer load (metered) conductors are typically terminated. A separate service will not be provided to feed the fire alarm and/or fire pump loads.

315 *Unusual Conditions*

The above requirements and specifications are a statement of minimum requirements for most customer metering installations. Standards are necessarily subject to additions and changes as new developments and progress dictates. In doubtful or unusual instances, special consideration will be necessary. Chugach shall be consulted as to any conditions that may not be set forth herein.