

**Related Operating Procedures:
310A; 310B; 310C; 310D**

I. OBJECTIVE

To set forth the rules, regulations and specifications under which services will be provided under the rate schedules which follow and other general information regarding electric service and metering requirements.

II. POLICY

Cass County Electric Cooperative Inc. is hereafter referred to as the Cooperative. The member or their contractor is hereafter referred to as the owner.

- A. Special Service Requirements** (Automated transfer switching, redundant circuits, etc.) – See Policy 304
- B. Electric Motors:** See policy No. 319
- C. Power Quality:** See policy No. 320
- D. Distributed or Co-generation systems, member-owned:** See policy 321
- E. Service Disconnects and Double Throw (DT) Switches**

If the owner desires a disconnecting means, or uses a standby generator which requires a DT switch, they shall have one of the following options:

1. Cooperative-owned switch

The Cooperative will install for the owner the proper capacity switch at a charge equal to the Cooperative's net cost, plus stores expense, for the switch only. The switch shall remain the property of the Cooperative's distribution system and the Cooperative shall maintain, repair, or replace the switch at no additional cost to the customer so long as the customer's service requirements do not exceed the electrical capacity of the switch. If the customer's service requirements exceed the electrical capacity of the switch, the Cooperative shall replace the switch with a larger switch at a charge equal to the Cooperative's net cost, plus stores expense, for the switch only; or a suitable metering socket per subsection "H – Metering Equipment and Instrument Transformer Metering " of this policy.

2. Member-owned switch

The owner can make arrangements to have the proper switch installed by a licensed contractor.

NOTE: Double-throw switch meter socket combinations are exempt from by-pass rules.

F. Service Voltages and Ampacities

1. Single phase, three wire service

- a. Single phase service voltages are available at the following nominal values: 120, 240, and 480 volts.
- b. Single phase services shall be allowed up the maximum amperage values as follows:

Voltage	Maximum Amps
120	100
240	1,000
480	500

- c. The maximum available direct-metered service voltage for single phase service is 240 volts at a maximum available service entrance ampacity of 400 amps.

2. Three phase grounded-wye four wire service

- a. Three phase service voltages are available at the following nominal values: 120/208y; 277/480y; 2400/4160y.
- b. Three phase services shall be allowed up to the maximum amperage values as follows:

Voltage	Maximum Amps
120/208y	3,000
277/480y	3,000
2,400/4,160y	400

- c. The maximum available direct-metered service voltage for three phase service is 208 volts (line-line) at a maximum available service ampacity of 200 amps.

G. Delivery Point

Unless otherwise specified in a service contract, the delivery point of the owner's connection to the Cooperative's electric service shall be as follows:

1. Direct-Metered Services

- a. For a meter loop mounted on a pole; the delivery point shall be the load service wires extending from the meter loop weather-head with overhead secondaries, or the load-side connections of a meter base with underground secondaries.

- b. For metering mounted on a building; the delivery point shall be the line service wires extending from the meter loop weather-head, with overhead secondaries, or the load-side connections of the meter base, with underground secondaries.
- c. All residential self-contained meters for new construction must be located outside, on a building sidewall. Meters shall be located on the side of the house (including attached garage) or building within ten (10) feet from the corner nearest the Cooperative's service point (i.e. transformer; secondary pedestal or stub out) unless that location is not practical as determined by the Cooperative's engineering personnel. In such cases, the meter facility shall be located as directed by the Cooperative. The side of the house (including attached garage) is construed to mean the outermost side, which is not considered the front or back of the house. All residential self-contained meters for rewires or service upgrades must be located outside, preferably on a building sidewall. Additional footage charges are applicable for any length over 100 feet.
- d. The maximum height to the center of the top meter shall be seven (7) feet. The minimum height to the center of the bottom meter shall be two (2) feet indoors and three (3) feet outdoors.

2. Multiple-Metered Services (more than two general service meters)

- a. For services less than 600 amps, and gang-metered panels furnished and installed by the owner, the delivery point shall be the transformer terminals, or the buss of a secondary transition cabinet furnished and installed by the owner, including the cabinet connectors.
- b. For services exceeding 600 amperes, the owner shall furnish and install a secondary transition cabinet within 30 feet of the transformer with connecting underground nonmetallic conduits between them as specified by the Cooperative (number and size of conduits). The Cooperative shall furnish and install the conductors between the transformer and the transition cabinet, and be fully responsible for all connectors and connections in the transformer. The owner shall furnish the connectors inside the transition cabinet.
- c. If the owner chooses to install separately-wired sockets, a secondary transition cabinet shall be installed as defined in G.2.b above.

3. Instrument Transformer (IT) Metered Services

- a. For service 600 amperes or less, the delivery point shall be the transformer terminals, or an instrument transformer cabinet furnished and installed by the owner.
- b. For services over 600 amperes, the delivery point shall be the load-side connections in a secondary transition cabinet or instrument transformer cabinet furnished and installed by owner. Such cabinets shall be located

within 30 feet of the transformer with connecting underground nonmetallic conduits between them as specified by the Cooperative (number and size of conduits). The Cooperative shall furnish and install the conductors between the transformer and the cabinet and the connectors in the transformer. The owner shall furnish the connectors inside the cabinet.

4. Primary Metered Services

Where the member requests primary metering of a service, the delivery point shall be the connection point on the member's primary service equipment.

H. Metering Equipment and Instrument Transformer Metering

1. Meter Socket Specifications

- a. All 200 amp or greater self-contained meter sockets used for new or rewired single phase and three phase installations must be as follows:
 - i. Ring-less design with provisions for locking or sealing the cover.
 - ii. Equipped with an approved lever actuated solid handle positive bypass mechanism.
 - iii. Bypass mechanism shall have a minimum rating of 200 amps and equipped with pressure release jaws.
 - iv. Must be UL listed.
 - v. Must have socket terminals rated for conductors from #6 to 350 MCM Cu/Al.

NOTE: The Cooperative shall not provide self-contained metering for services exceeding 240 volts line to line, single phase or three phase. All sockets and connecting conduits must be properly grounded as per NEC. Installations made without the above specifications will not be energized.

2. Single Phase Direct-Metered Services

- a. On overhead services where the metering equipment is located on the Cooperative's pole, the Cooperative will furnish and install, on all new construction and rewires of old installations, a meter loop and socket of proper size up to and including 400 amps (320 amp nominal meter socket rating) capacity.
- b. On underground services or overhead services on a building or structure, it shall be the owner's responsibility to provide and install the service meter socket and connecting conduit per NEC.
- c. The owner shall use a slip-joint conduit connection (Slip Meter Riser from Carlon Industries or equal as approved by the Cooperative) for the utility supply wires on all direct-metered underground services.

3. Single Phase Multiple-Metered Services (more than two general service meters)

- a. Where two or more service meters are requested, the owner shall furnish and install either ring-less, gang-metered service panels or individually wired meter sockets. Gang panels shall have only one meter installed under one socket cover. Each socket must have provision for a fifth terminal and a system neutral connection with a minimum wire size of #14 AWG. A maximum of five (5) meter sockets per vertical stack is allowed.
- b. Meter sockets must have an approved disconnect (load side only) or socket by-pass provision on both indoor and outdoor applications.

NOTE: Apartment buildings are excluded from the requirement of locating all residential meters outdoors.

4. Three Phase Metered Services

- a. Self-contained metering will be used in all three phase services 200 amperes or less, and 208 volts (line-line) or less.
- b. Instrument transformers will be used in all three phase services over 200 amperes and/or over 208 volts (line-line).

5. Mobile Homes (All meter socket rules and specifications apply)

- a. Overhead service to individual trailers - Cooperative shall furnish and install a meter loop to which the owner shall connect the service entrance conductor.
- b. Overhead service to trailer courts or parks - the owner shall furnish and install the meter loop and support pole.
- c. Underground service to any mobile home - the owner shall furnish and install the meter socket and service.

6. Instrument Transformer (IT) Metering

- a. Cooperative-furnished sockets:
 - i. Meter sockets for instrument transformer rated meters (where current and voltage transformers are used) shall be furnished by the Cooperative and installed by the owner.
 - ii. The preferred location of IT metering is on the outside of the building near the transformer. If necessary, the owner shall furnish and install one inch conduit between the ITs and the meter socket; separate conduits shall be provided for multiple metering applications.

- iii. The Cooperative shall furnish and install the metering wire between the ITs and the meter socket.
- b. Instrument transformer cabinets furnished and installed by the owner:
 - i. The Cooperative shall furnish to the owner, ITs of the proper rating (bar or window CTs and PTs).
 - ii. The owner shall install the ITs and the Cooperative shall make the final connections.

7. Instrument, Transition or Combination Instrument-Transition Cabinets

Any IT or secondary transition cabinets necessary due to wire size differences shall be the responsibility of the owner. All cabinets shall be UL listed and manufactured to the following specifications:

- a. Minimum size requirements shall be as follows:

Instrument Transformer (IT) Cabinet Sizes	
1,000 amps or less	24 in. (w) x 24 in. (h) x 10 in. (d)
1,001 to 1,200 amps	30 in. (w) x 30 in. (h) x 16 in. (d)
Over 1,200 amps	Transition cabinet required; consult CCEC engineering for more details

Transition Cabinet Sizes	
1,000 amps or less	42 in. (h) x 30 in. (w) x 24 in. (d)
1,001 to 1,500 amps	42 in. (h) x 40 in. (w) x 24 in. (d)
1,501 to 2,000 amps	54 in. (h) x 54 in. (w) x 36 in. (d)
Over 2,000 amps	Consult CCEC engineering

NOTE: Contact CCEC engineering with any questions regarding above cabinets.

- b. Material Requirements
 - i. Cabinets shall be constructed of painted or stainless steel, or aluminum
 - ii. Steel cabinets shall be constructed of minimum 14 gauge material. Mild steel shall be primed and finished-painted inside and out to resist corrosion.

iii. Aluminum cabinets shall be constructed of minimum 10 gauge material

c. Design Features

- i. The cabinet cover shall be hinged or bolted, and gasketed
- ii. The cabinet shall be equipped with a hasp and staple or other device which can be both padlocked and sealed using a lead wire seal, to secure the cabinet from unauthorized entry.
- iii. There shall be no knockouts or vents in the cabinets.
- iv. The cabinet shall have a drip shield for outdoor installation. Hinged doors shall have wind latches installed.
- v. A NEMA Type 12 enclosure is recommended for an Instrument Transformer Cabinet. A back panel of 3/4" exterior grade plywood, dimensionally about 2" less than the cabinet size, shall be mounted on the inside back of the cabinet.
- vi. A NEMA Type 3R enclosure is required for all Transition Cabinets. Bus bar spacing shall be as follows:

Bar Spacing	< 2,000 amp	> = 2,000 amp
Bar-bar:	8"v x 4"h	10"v x 6"h
Bar-cabinet top or bottom	8"	10"
Bar-cabinet back	4"	6"
Bar-cabinet front	3"	4"

vii. For services over 2,000 amperes, consult the Cooperative's engineering department.

viii. A NEMA Type 3R enclosure is required for all Combination Instrument - Transition Cabinet. Size requirements will depend on the installation; consult with the Cooperative's engineering department.

d. Instrument and Transition Cabinets Mounted on Buildings

The owner shall use a slip-joint conduit connection (Slip Meter Riser from Carlon Industries or equal as approved by the Cooperative) for the utility supply wires on all IT meter transition cabinets mounted on building walls with underground services.

8. Primary Metered Services

- a. Where the owner requests a primary metered service, the Cooperative shall furnish and install at the owner's expense, a primary metering cabinet which shall be located electrically before the delivery point.

I. Transformers: Locations, Connections, Pads and Grounding

1. Minimum separation distances

- a. Transformers shall be separated from buildings by the minimum distances as shown in the table below.

Transformer Rating – kVA	Minimum distance from building, all sides – feet
75 or less	10
76 – 333	20
> 333	30

- b. Where an owner requests to install a transformer less than the minimum distances listed in the above table, the following criteria shall apply:
- i. The building shall have a fire-resistive wall construction with a minimum one (1) hour fire rating
 - ii. The transformer shall not be enclosed or obstructed in the front or on either side
 - iii. No flammable materials or liquids shall be stored or located within the distances set forth in the table above

2. Enclosed transformer locations

- a. Where an owner requests to install a transformer inside an enclosed area or courtyard, the following criteria shall apply:
- i. A minimum of 30 feet of clear space shall be provided around all sides of the transformer; with the exception of a transition or instrument transformer cabinet, no other equipment shall be located within this area.
 - ii. No equipment or structure may be located above the transformer.
 - iii. Vehicular access shall be provided to the enclosed area and be kept clear at all times for uninhibited access
 - iv. Any means of controlled access into the area shall be equipped with a means of uninhibited security access for Cooperative personnel at all times without reservation or cause
 - v. If the transformer location area is a secured access area, the owner shall provide two clear and distinct means of exit from the area into public space per North Dakota building codes. Exit doors shall be equipped with panic bars for emergency exit.
 - vi. Owners assumes all liability for any damage incurred on premise grounds as a result of equipment access to remove and/or replace the transformer

- vii. Owner shall be responsible for any costs incurred to the Cooperative for special equipment required to remove and/or replace the transformer
- b. The Cooperative reserves the right to refuse placement of a transformer inside an enclosed area if it determines in its sole discretion that doing so would be a potential hazard or detrimental to the transformer life.

3. Highly corrosive environments

- a. Where the owner requests placement of a transformer in a highly corrosive or chemically harsh environment, the Cooperative reserves the right to install a transformer constructed with a stainless steel cabinet.
- b. The owner shall reimburse the Cooperative for the additional cost of the special application transformer vs. a standard design specification.

4. Transformer Load-Side Connections

- a. The maximum size secondary conductor allowed in the transformer compartment will be 250 MCM.
- b. A maximum of three conductors per phase or leg is allowable.
- c. The Cooperative shall provide all secondary connectors for the conductors terminated in the transformer compartment.

5. Transformer Pad and Grounding

- a. Single Phase: The transformer pad will be furnished and installed by the Cooperative. Grade elevations at the transformer site must be within 2" of final grade. Exception: Where transition cabinet is necessary owner shall provide pad in accordance with Cooperative specifications.
- b. Three Phase: The transformer pad shall be furnished by the owner in accordance with the specifications provided by the Cooperative.
- c. Owner shall contact the Cooperative engineering department for pad specifications.
- d. Grounding for all transformer installations will be provided by the Cooperative.

J. Cold weather Construction Charges

1. The Cooperative may collect contributions towards construction costs for any construction made after November 1.
2. A determination of when to initiate cold weather construction charges shall be made each year depending on weather conditions.
3. The Owner and/or their contractor(s) shall be notified prior to the implementation of cold-weather charges.

III. RESPONSIBILITY

The president/CEO shall be responsible for the administration of this policy.

Effective Date: February 22, 1988
Revised: February 25, 1997
Revised: December 22, 1998
Revised: September 30, 2003

Reviewed: Engineering 02/28/2008
Reviewed: Ops & Admin 03/13/2008

Revised: March 25, 2008
Revised: February 24, 2009