PART VII

CONSUMER MEMBER'S EQUIPMENT

The Consumer Member should consult the Cooperative before any electrical wiring or equipment is purchased or installed for use in connection with the Cooperative's service. Information regarding the characteristics of the service to be supplied and the Cooperative's requirements for the installation of the Consumer Member's equipment should be secured from the Cooperative in writing.

The Cooperative has the right, but is not obligated, to inspect and test a Consumer Member's electrical equipment. Such test would be made to determine if the equipment has any unsafe electrical characteristics or may cause undue disturbance to the Cooperative's system and affect the service to other Consumer Members.

When abnormal voltage conditions or objectionable conditions on the Cooperative's system are caused by the Consumer Member's equipment (such as load imbalance or the operation of motors or electric welding equipment), the Consumer Member shall provide, at his expense, suitable corrective wiring or equipment on his premises.

Electrical installations shall be inspected and approved by the Inspection Authority and shall conform to this Tariff. Final service connection will not be made until an approval is received from the Inspection Authority. The Consumer Member's service switch shall be in the open or disconnected position until the Cooperative makes the final connection.

Specific standards regarding wiring, electric motor protective devices, and miscellaneous equipment are outlined in the following pages.

A. WIRING

1. Grounding of Services: Each service shall be grounded in accordance with the requirements of the local Inspection Authority. The following ground requirements apply:

   a. A gas piping system shall not be used as a grounding electrode.

   b. Connection to the grounding electrode shall always be made on the line (or supply) side of the service disconnection means.

   c. In addition, all metallic water and sewage piping within a building shall be permanently and effectively bonded to the service entrance ground.

2. Unmetered Wiring and Feeders: When meters or current transformer compartments are approved for location indoors, the following shall be installed in rigid metal raceway with an approved means of sealing all points of access:

   a. The conductors of the unmetered feeder.

   b. Feeders between the service switch(es) and the meter(s).

c. All other unmetered wiring and feeders.

3. Load Balance: Where the service is three wire or four wire as designated by the Cooperative, the total load on the Cooperative's service shall be balanced over the phases as equally as practical. The Consumer Member shall, at his expense, maintain such balance. (Ordinarily, the difference between the loads on any two phases shall not be greater than 10 percent of the total connected load.)

4. Power Factor: The maintenance of a high power factor is of primary importance in the economic operation of the alternating current transmission and distribution system. The Cooperative reserves the right to measure power factor.

The Consumer Member should pay particular attention to the selection of motors and other equipment of the proper types and capacities to ensure that a power factor above 90 percent is maintained. When the overall power factor of the Consumer Member's load is less than 90 percent, the Cooperative may require the Consumer Member either to (a) install, at his expense, equipment to correct the power factor, or (b) pay increased charges in accordance with the Cooperative's rate schedules for electric service.

B. ELECTRIC MOTOR PROTECTIVE DEVICES

The Consumer Member should provide protective devices for each electric motor to protect the motor and motor circuit against overload and short circuit. Any motor that cannot be safely subjected to full voltage at starting should be provided with a device to ensure that, on failure of supply voltage, the motor will be disconnected from the line, or the starting device returned to the "off" position, unless the motor is equipped with automatic restarting means. To prevent unnecessary shutdown, this starter should be equipped with a time delay feature.

The direction of phase rotation and the continuity of all three-phases of the alternating current supply are guarded with great care, but the Cooperative cannot guarantee against accidental or temporary change or failure thereof. Therefore, motors or other equipment requiring unchanged phase rotation and continuity of all three-phase supply should be equipped by the Consumer Member with suitable protection against such reversal or loss of one phase.

C. ALTERNATING CURRENT MOTORS

1. Electric Motors - 1 Horsepower and Smaller: Motors of these sizes may be single-phase and connected for operation from either 120-volt, 208-volt or 240-volt circuits. Single-phase alternating current motors of 3/4 horsepower and 1 horsepower sizes should be operated from 208-volt or 240-volt circuits.

2. Electric Motors - 1.5 Horsepower to 5 Horsepower: These motors may be single-phase or three-phase, depending on the type of service being received. Single-phase motors of these sizes shall be operated from 208-volt or 240-volt circuits.

3. Electric Motors - Larger than 5 Horsepower: All motors larger than 5 horsepower should be three-phase. Under certain conditions where three-phase service may not be available, motors larger than 5 horsepower may be single-phase, provided written permission for each installation is obtained from the Cooperative.

4. In-rush or Starting Current:

   a. Large in-rush or starting current created by electric motors can cause light flicker or seriously affect other devices. Because of this, the Cooperative establishes a maximum in-rush or pulsating current that can be placed on the system. Motor starting currents are considered to be the same as locked-rotor currents so that the starting current limitations are given in terms of locked-rotor amperes.

   b. The following table shows the starting (locked rotor) current limitations applicable to single-phase and three-phase alternating current motors. For motor installations having starting (locked-rotor) currents greater than those given in the table, consult the Cooperative.

      (1) 120 Volts, Single-phase: 50 Amperes

      (2) 208, 240 or 480 Volts, Single or Three-phase: 100 Amperes

      The starting current limitations do not limit the total current that may be used by a motor in starting, but require that the total current be built up gradually, or in steps which do not exceed the allowed value. In installation of two or more motors supplied from the same service, the starting current limit per step allowed for the largest motor shall be the limit for any other motor installed. Motors starting simultaneously shall be considered as one motor.

   c. The Cooperative reserves the right to measure the starting (locked-rotor) current of any electric motor.

5. Motor Starting Devices: Across-the-line motor starters may be used where the motor has a locked-rotor starting current less than that listed in the table in Paragraph 4 B. If the locked-rotor current exceeds the amount in the table in Paragraph 4 B, then the motor shall be equipped with a current limiting starter. The Cooperative must be consulted regarding the selection and application of a suitable starter to prevent the motor from exceeding the maximum allowable in-rush current.

D. MISCELLANEOUS ELECTRICAL EQUIPMENT

1. In-rush Current: The in-rush current for miscellaneous electrical equipment connected to low voltage alternating current service shall not exceed the limitations corresponding to allowable motor starting current conditions, unless prior approval for the specific premises has been obtained. The term "in-rush current" is defined here as the maximum change in the current occurring within any one-half second of operation.

2. Oil Burner Ignition Transformers: Oil burner ignition transformers shall be of such design that upon breaking the control circuit, high-voltage surges having peaks in excess of 600 volts will not be produced in the supply circuit.

3. Welders: The Consumer Member shall supply the Cooperative with information regarding the electrical characteristics of any welding equipment that he proposes to install and shall secure written Cooperative approval of the equipment before it is installed.

4. Parallel Operation With Consumer Member's Generating Equipment: Where an emergency source of supply is provided by the Consumer Member, parallel operation of the Consumer Member's generating equipment with the Cooperative's system is not allowed. Where installations are made, a double-throw disconnect switch is required that will completely isolate the Cooperative's system when the generator is supplying power to the Consumer Member's equipment.

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