Mountrail-Williams Electric Cooperative
P.O. Box 1346
Williston, ND 58802-1346

800-279-2667

MOUNTRAIL-WILLIAMS ELECTRIC COOPERATIVE

TECHNICAL STANDARDS AND REQUIREMENTS

UPDATED: January 2021

MWEC

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MOTOR STARTING

- Full voltage, across-the-line starters may be used on motors up to and including 10 horsepower per phase.
- Motors larger than 10 horsepower per phase shall be started only with reduced voltage starters unless special permission is given by the Cooperative to start the motor with an across the line starter. The motor start voltage dip shall not violate the Cooperative's Voltage Flicker criteria.
- All three phase motor starters shall be equipped with three overload relays, as all multi-phase lines on this system are grounded Y connected and subject to single phasing.
- All motors shall be wired according to the National Electric Code and all wiring of electrical devices to be managed must be done according to approved State Wiring Codes and Practices.

HARMONICS

- The power supplier follows the IEEE 519-2014 "Recommended Practices & Requirements for Harmonic Control in Electrical Power Systems" as our standard for acceptable harmonic distortion caused by consumers.

Voltage Distortion Limits IEEE 519-2014		
Bus Voltage at Point of Delivery	Individual Harmonic (%)	Total Harmonic Distortion THD (%)
V ≤ 1.0kV	5.0	8.0
1.0kV < V ≤ 69kV	3.0	5.0
69kV < V ≤ 161kV	1.5	2.5
161kV < V	1.0	1.5

- The Cooperative will notify consumers as problems are identified. The consumer will be responsible to correct the harmonic issue within 45 days or be subject to harmonic distortion payments. The Cooperative reserves the right to disconnect the service should the distortion be negatively impacting (at the Cooperatives sole judgement) neighboring consumers.

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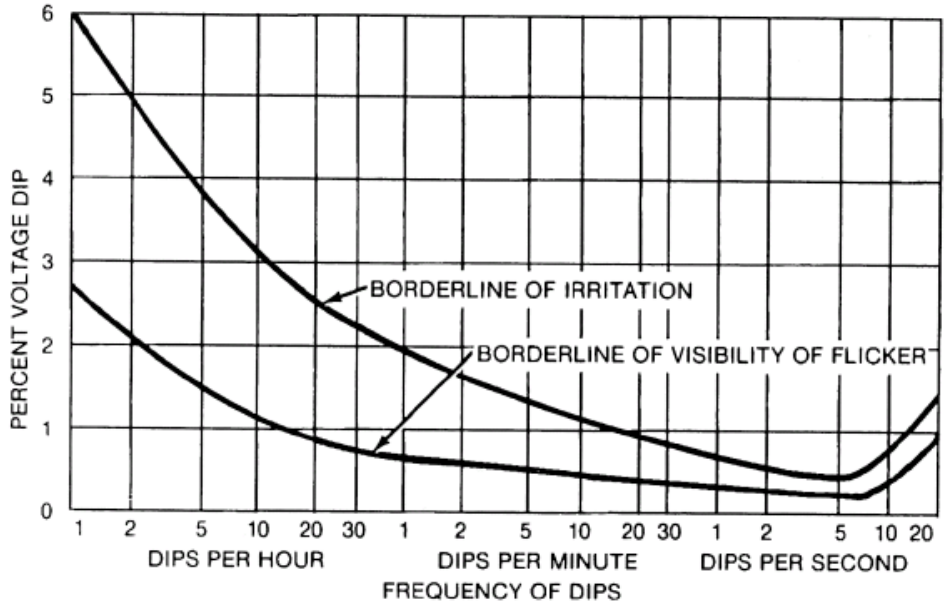
VOLTAGE FLICKER

- Voltage flicker shall not violate the voltage flicker "Borderline of Visibility" criteria established by IEEE 141 at the Cooperative substation serving the consumers' load. The Cooperative reserves the right to disconnect the service should the voltage flicker excursions be negatively impacting (at the Cooperative's sole judgement) neighboring consumers.



POWER FACTOR ADJUSTMENT

- The consumer is expected to maintain a power factor between 95% lagging to 95% leading; however, if test made by the Cooperative at the metering point should be below 95% lagging, the demand for billing purposes may be adjusted. For each full percentage point by which the power factor is lower than 95% lagging, the Cooperative may increase the billing demand 1%. The Cooperative reserves the right to disconnect the service should the power factor excursions be negatively impacting (at the Cooperative's sole judgement) neighboring consumers.

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PROTECTION OF CONSUMERS OWNED EQUIPMENT

- Under/Over voltage, overload, phase failure (single phasing), phase reversal, power interruptions and short circuit protection is strongly recommended for each motor installation. It is the Customer's responsibility to provide adequate protective equipment to protect the Customer's equipment from high or low voltage, phase loss or reversal or any unusual condition.
- The Cooperative will not be responsible in any way for damage to Customer's equipment due to failure of the Customer to provide adequate protective devices, or due to any failure of such devices.

STANDARD VOLTAGE

- The national standard for utility voltage tolerance in North America is ANSI C84.1.

- Service Voltage is defined as the point of interconnection between the Cooperative and the Customer. Utilization Voltage is a proxy for the terminals of end user equipment within the Customer's facility.

- Range A: Range A provides the normally expected voltage tolerance on the utility supply for a given voltage class. Variations outside the range should be infrequent. The utilization equipment (load) is expected to function and provide full satisfactory performance for range A voltage tolerance.
    - Service Voltage: It is expected that most service voltage variation occurs within this range. The occurrence of service voltage variation outside this range should be infrequent. For range A this variation of allowable service voltage is +5% to -5% for system operating 600V and below. For systems operating above 600V this range is +5% to -2.5%.
    - Utilization Voltage: End user equipment should be designed to operate effectively and to provide full performance within the limits of range A service voltage. The tolerance for range A utilization voltage is +5% to -10%.

- Range B: Range B provides voltage tolerances above and below range A limits that necessarily result from practical design and operating conditions on supply or user systems or both. These conditions should be limited in extent, frequency and duration. When these variations occur, measures should be taken within a reasonable time frame to get back to range A.
    - Service Voltage: For range B this variation of allowable service voltage is +5.8% to -8.3% for system operating 600V and below. For systems operating above 600V this range is +5.8% to -5%.
    - Utilization Voltage: End user equipment should be designed to provide acceptable performance for voltages in range B. The tolerance for range B utilization voltage is +5.8% to -13.3%.

- It is recognized that due to conditions beyond the control of supplier, user, or both there will be periods when the voltages are outside range B limits. Utilization equipment may not operate under such conditions and protective devices may operate to protect the equipment.

SPACE FOR TRANSFORMERS AND OTHER FACILITIES

- The Consumer, at the request of the Cooperative, shall furnish and maintain indoor or underground space and facilities for the installation of the Cooperative's transformers and other equipment in those cases where this type of installation is required or requested by the Consumer.

SERVICE INTERRUPTIONS

- Service interruptions may occur. Customer is responsible for installing and maintaining protective devices as are recommended or required by the most current edition of the National Electrical Code and other such devices as are necessary or advisable to protect Customer's equipment or process during irregular or interrupted service including, but not limited to, voltage and wave form irregularities, or the failure of part or all of the electrical service. When interruptions do occur, the Cooperative shall re-establish service as soon as practicable. The Cooperative may interrupt service as necessary for maintenance, repairs, construction, relocation or changes of facilities, to prevent or alleviate an emergency which may disrupt operation of all or any portion of the Cooperative's system, to lessen or remove risk of harm to life or property, to aid in the restoration of Electric Service, and on occasions when the Cooperative's wholesale power supplier fails to deliver sufficient power and/or energy to the Cooperative.

INVESTIGATION OF SERVICE INTERRUPTIONS AND IRREGULARITIES

- The Cooperative makes reasonable investigation of service interruptions and irregularities reported by a Customer. Such investigation normally terminates at the Point of Delivery. If standard service voltage exists at this point and the Cooperative's service facilities are in good condition, the Customer shall be so advised. The Cooperative shall not be obligated to inspect Customer's conductors, installation, or equipment.

LOAD BALANCE

- The Cooperative requires Customer to control the use of electric energy so that the Cooperative's electrical load at the Point of Delivery is in reasonable balance.

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GENERATION FACILITIES INTERCONNECTION REQUIREMENTS

- The technical requirements for generation facilities connecting to the Cooperative's system are provided in the document titled "MWEC Interconnection Requirements of Generation Systems"
- Additionally, all generation facilities connected to MWEC at 100kV or higher shall meet the requirements listed in SPP's Tariff Attachment V "Generation Interconnection Procedure" and the NERC standards that apply to the Generator Owner or Generator Operator function.