Power Quality Policy

(Rules, Regulations or Extension Policy)

APPLICABILITY:
Applicable to all WREA Members.

OBJECTIVE:
To reduce the adverse effects of voltage fluctuation, harmonic distortion, and all other power quality problems on Member and WREA power systems and to improve utilization of facilities.

INTRODUCTION:
Member loads may have varying characteristics that could impact WREA equipment, Member equipment, or impair WREA's service to other Members. Some equipment, such as motors, may require extremely close voltage regulation due to intermittent load characteristics or abnormal effect on system voltage. Additionally, widespread use of power switching electronic devices, variable frequency drives, and other nonlinear loads have created new challenges for the electrical industry. These nonlinear loads create a type of power pollution or side effect known as harmonic distortion. Individually, these devices offer significant operational advantages of energy efficiency, control, and size. Collectively, however, these nonlinear loads can result in significant distortion to the AC sinusoidal waveform over a broad range of the 60 hertz power system. These non-linear loads and the resulting harmonic distortion can result in excessive heating, equipment malfunction, and premature failure of both Member and WREA facilities.

The WREA Rules, Regulations, or Extension Policy, Sheet 31 – Consumer's Installation – specifies the following terms and conditions:

"Consumer shall not employ or utilize any equipment, appliance or device that will adversely affect the Association's service to the Consumer or other Consumers."

The latest edition of the Institute of Electrical and Electronics Engineers (IEEE) Standard 519 – IEEE Recommended Practice and Requirements for Harmonic Control in Power Systems – defines the quality of the electrical power that WREA should furnish to its Members. These standards are for the mutual benefit of all Members.

APPLICATION:
The prevailing provisions of IEEE Standard 519 define WREA's requirements for the design and operation of power systems with fluctuating or nonlinear loads connected to WREA's system. Any Member or prospective Member may request WREA engineering assistance regarding the specific requirements of IEEE 519 for the Member's existing or proposed load.

The interface between sources and loads is the point of common coupling (PCC). Compliance with this policy is based on measurements at the PCC.

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The distortion limits are for worst-case conditions under steady-state operation. Transient conditions exceeding these limits are not normally considered critical. Some harmonic effects are unavoidable. This policy attempts to reduce the harmonic effects at any point within WREA or Member systems by establishing standards for current and voltage harmonic conditions.

As part of this policy, WREA shall evaluate the options for corrective measures applicable in each case using good engineering judgments. These standards in no way override such judgments. Final policy decisions are at the sole discretion of WREA. Strict adherence to the applicable harmonic standard will not always prevent problems from arising, particularly near the limits. System changes will often require reexamination and harmonic measurements from time to time to determine system behavior and equipment performance.

LIMITS:

The limits described in this policy are intended to:

A. Ensure that WREA can deliver quality electric service to all of its Members according to acceptable industry standards. Quality includes factors such as harmonic distortion, safety, continuity, and voltage stability.
B. Ensure that WREA can prevent its facilities from being subjected to the harmful effects of harmonic distortion including improper operation, reduced useful capacity, loss of operating life, overheating, and excessive voltage stress.

IMPLEMENTATION:

Each existing or new Member whose service is found to exceed the limits established in this policy shall, in coordination with WREA, establish a reasonable correction work plan and compliance timeframe. The plan shall include the engineering analysis and planned Member-owned equipment additions needed for compliance.

Equipment having fluctuating or intermittent load characteristics or having an abnormal effect on voltage may necessitate the furnishing of service to such equipment through isolated transformers and separate service loops, installing transformer and line capacity in excess of that normally required by non-fluctuating or non-intermittent equipment, or may require the use of variable frequency drives.

Motor loads with variable frequency drives or other nonlinear loads may require harmonic filters, upgrading transformer size (pole class may have to increase), decreasing transformer impedance, increasing service wire size and/or decreasing service wire length to reduce Total Harmonic Distortion at the Member's meter (per IEEE Standard 519). These changes will be at the Member's expense.

In the event that any new or existing equipment is connected to WREA's lines, the operation of which impairs service to other Members or violates the IEEE 519 Standard, WREA reserves the right to require correction of the condition by the Member at the Member's expense. WREA may refuse or discontinue service to such equipment until such condition is corrected by the Member. WREA reserves the right to charge the Member the full cost of facilities necessary to provide any special service required by such equipment and/or to prevent any impairment in service to the Member or to other Members.

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