Glacier Electric Cooperative

Policy: #521 **Date: December 31st, 2009**

Power Quality Policy

Objective:

In an effort to maintain the highest level of service to all members, the following policy outlines the objectives and criteria the Cooperative will consider in meeting the required levels of reliability and power quality.

General Policy:

A. Harmonics Guideline:

It is the intention of the cooperative to provide clean, stable, and reliable power to all of its customers. In order to insure that the processes and operations of one customer connected to the system do not affect another, the cooperative will follow the IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems; IEEE Std. 519-1992.

Considerable effort should be spent in the planning and design phase of plant installation. However, many unique problems could arise after the plant is in operation. In this light, customers are required to demonstrate, through field measurements, that their installations comply with the harmonic current limits during the commissioning stage as well as during normal operation.

Two criteria should be met by the customer. First, the customer's total harmonic producing loads, acting as current sources, should not distort the system voltage waveform beyond limits set in IEEE 519 with the exception that the limits on triple harmonics be reduced to one third of the limits for odd order harmonics. Second, the customer's capacitors should not cause a resonance condition, both series and parallel, on the system.

B. Design Considerations:

The following items should be considered during the design phase of load consideration:

For calculating harmonic current distortions, the maximum fundamental frequency load current under normal plant operation conditions, e.g., steady state conditions, should be used as the base value. The Point of Common Coupling (PCC) will be defined as the cooperative's point electrically nearest to the customer installation.

The nominal RMS operating voltage of the PCC is used as the base value for the harmonic voltage distortion.

The total harmonic distortion, current or voltage, is defined to include harmonics up to the fortieth. A zero background harmonic distortion is assumed in the calculation of harmonic currents at the PCC. The supply system harmonic impedance as seen from the PCC is zero at all harmonic frequencies.

In conclusion, the harmonic levels outlined in IEEE 519 should be adhered to by the customer. It is the customer's responsibility to insure that the criteria are met and that the levels are adhered to. Furthermore, it is the customer's responsibility to ensure that his equipment operates successfully as well as within the original design criteria set forth and is subject to all cost associated with correct power quality problems.

C. Motor Design Specifications:

All three-phase motors 40 HP or larger shall be equipped with reduced voltage starters. Across the line starters will be satisfactory for small motors; provided, however, that in areas where in the judgment of the Cooperative, across the line starting may cause unnecessary system disturbance, reduced voltage starters may be required.

The member shall provide single phasing protection. On three-phase installations, each phase shall be equipped with overload and short circuit protection. Where momentary interruptions caused by power line sectionalizing equipment or outages are troublesome to the user, the member should provide automatic re-start equipment. By-pass relays to keep the starter contacts closed for a predetermined interval may also be used.

Power factor correction must be installed to maintain a 95% power factor level. If the account sustains a power factor level of less than 95%, the account will be subject to a power factor adjustment charge.

All new installations shall meet NEMA and National Electrical Code requirements

Phase convertors will not be allowed if over ten (10) horsepower. Ten horsepower and smaller will need to be approved on a case by case basis to assure location of such will not interfere with power quality.

D. Responsibility:

It is the responsibility of the General Manager to implement this policy.

Date: 12-31-2009 President: Mike Lewis