

## Transmission & Distribution Services

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Date: 6/1/2010

To: CCEC members considering the North Dakota State Energy Program rebate for motors and variable speed drives

From: CCEC Engineering Department

Re: Motor starting and variable speed drives

Electric motor starting can have a negative impact on the distribution system to which it is connected. When selecting electric motors, it is important to review CCEC's motor starting policy 319 before installation takes place. This policy gives guidelines for proper electric motor operation as well as protection on CCEC's distribution system. CCEC operates two different primary voltages on its system: 15 kV (mostly rural) and 25 kV (mostly urban). On CCEC's 15 kV primary system, these limits should allow single phase motors up to 10 horse power and three phase motors up to 30 hp to be started without reducing the starting current, provided the motor code is NEMA "G" or better. On CCEC's 25 kV primary system, these limits should allow single phase motors up to 15 horse power and three phase motors up to 50 hp to be started without reducing the starting current, provided the motor code is NEMA "G" or better.

CCEC recognizes that variable speed drives have several positive applications such as converting single-phase to three-phase and reducing starting current on motors. These applications work fine in most situations. However variable speed drives have the potential to cause power quality issues for the operating member and their neighbors. CCEC has a power quality policy 320 that states limits for adverse effects on the distribution system.

For additional information on CCEC's motor starting or power quality policy please contact the CCEC's engineering department at 701-356-4400.