



April 7, 2016

Ms. Patricia Van Gerpen, Executive Director  
South Dakota Public Utilities Commission  
500 E. Capitol  
Pierre, SD 57501

**RE: Docket RM16-001 – In the Matter of the Adoption of Rules Regarding Stray Electrical Current and Voltage Remediation**

Dear Ms. Van Gerpen,

NorthWestern Corporation, d.b.a. NorthWestern Energy (“NorthWestern”), appreciates this opportunity to provide written comments regarding the above referenced matter. NorthWestern also extends its appreciation to the Commission for the process it has used in developing this set of proposed rules.

NorthWestern will begin its comments in regards to proposed rule **20:10:39:10(3)**. During the public hearing held March 28, 2016, Xcel Energy proposed a possible change to 20:10:39:10(3) due to concerns over the accuracy of current readings due to equipment degradation from normal use or possible environmental factors that can affect current readings. NorthWestern shares those concerns and requests that the Commission consider alternative language as proposed below:

**20:10:39:10(3):** A clamp-on ammeter, a digital multi-meter with clamp-on device, or an in-line ammeter is used to measure current between two points. The meters must be capable of separating and independently measuring alternating current and direct current and capable of measuring the true-root mean square current. ~~A clamp-on ammeter must have the required resolution and accuracy;~~ **current measurement can be prone to erroneous results due to instrument wear and influences of surrounding radio frequency signals and electro-magnetic fields. If choosing to take current measurements, one must also measure the voltage across the 500 ohm resistor to confirm the current measurement satisfies ohms law and meets the accuracy, resolution, and steady state requirements.**

This language provides greater accountability to any measurements taken for stray current or voltage that those readings can hold to Ohm’s Law as a steady state measurement. This proposal would still allow a current measurement to be taken but takes into account the use of a follow-up voltage measurement for verification and accuracy.

Also during the March 28<sup>th</sup> hearing, there was discussion related to **20:10:39:45** and how we might define “significantly” in the proposed rule language. After much discussion within NorthWestern and amongst the other utility stakeholders participating in this rule-making proceeding, we have come to the conclusion that it is best to leave the language in 20:10:39:45 as drafted. In reviewing language from our neighboring states, 20:10:39:45 as proposed conforms to what those state have used as a standard for the measurement of stray voltage or current. Also, we believe that the expert who is conducting the measurements has the best understanding of the parameters under which their equipment works and how to interpret those results. Those experts will also have a better understanding of the system on which they are working. It is impractical to try to define a standard or range that can be applied to all possible scenarios.



NorthWestern also proposes a change to **20:10:39:57** that provides a formula to determine the utility's contribution to cow contact current or cow contact stray voltage. NorthWestern proposes that the formula and existing proposed language be struck in its entirety and replaced with the following:

**20:10:39:57. Determination of any contributions to stray current or voltage for single phase dairies.** Cow contact voltage or cow contact current are measured with the load box set at FULL LOAD (18-24 kW) and recorded with the farm off. This measurement represents the utility contribution to stray voltage or current.

This revised language clarifies that any contribution to stray current or voltage results from the utility alone. There is no contribution from the customer's load as that is turned off. Also, the proposed change is reflective of best practices used in other states and is simpler to implement.

A similar revision is proposed for **20:10:39:58** in that the proposed language be struck in its entirety and replaced with the following:

**20:10:39:58. Determination of any contributions to stray current or voltage for three-phase dairies.** The utility contribution to cow contact voltage or cow contact current are measured with the farm off. This measurement represents the utility contribution to stray voltage or current. The values determined are compared to the preventive action level.

Again, this proposed language eliminates any on-farm contributions to the measurement of cow contact voltage or cow contact current influencing in the measurement reflecting the utility's contribution alone. It is easier to implement and conforms to best practices used in neighboring states.

Finally, as discussed during the March 28<sup>th</sup> hearing, NorthWestern is in agreement that a 30-day timeframe is a "reasonable period of time" for inclusion in **20:10:39:59**.

NorthWestern Energy looks forward to working with the Commission and other interested parties in further discussing our comments.

If there are any questions or additional information is needed, please do not hesitate to contact me at your convenience.

Sincerely,

**Pamela A. Bonrud**

*Director Government & Regulatory Affairs*

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