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To: PUC Docket Filings

Cc: Ed Anderson; Walt Bones (wbones_3@yahoo.com); Jerry Lush - Stray Voltage Consulting (jerrylush1@gmail.com); Marv Post (marvjoy@itctel.com)

Subject: RM16-001 Stray Voltage comments

PUC Commissioners:

South Dakota Dairy Producers (SDDP) propose the existing rules not be changed. After reviewing written comments from SD –REA , Xcel Energy and NorthWestern Energy to the March 28, 2016 hearing for changes SDDP have these comments:

20:10:39:10 (3) General requirements for stray voltage measuring and recording.

They recommended that a current measurement must also have a voltage measurement, with a 500 ohm resistor.

A current measurement may be made at other than cow contact points, such as at ground rods, as mentioned in section (5). In these situations the voltage and 500 ohm resistor would be meaningless and/or difficult to obtain. Therefore the proposed wording “must also measure” are not meaningful.

20:10:39:57 Determination of any contributions to stray current or voltage for single phase dairies.

The utility proposals state the 18-24 kW load box test should only be used to represent the utility contribution. It really is a snapshot picture of the utility load at the time the load box test is performed and recorded.

Stray voltage is neutral to earth voltage. If farm 240 volt loads increase the stray voltage, the increase in this voltage can only come from the increase in utility neutral current flowing through the farm neutral/ ground system. The actual 240-volt demand on the farm can be much higher than the load box test demand, thus having greater utility contribution (stray voltage) than what is indicated. The farm can have the vacuum pump, cooling compressors, silo unloaders, TMR equipment, drying bin fans, house air conditioner, and water heaters, as well as other loads. Each one of these 240-volt loads can cause increased utility contribution. The actual farm 240-volt load can be greater than the full load box test. Increased loading of the utility lines from other services on that line can also increase the utility contribution to the farm. Some of these loads and their peak may not be recorded during the 48 hour test. The load box test is used to determine if there is utility contribution, not the total magnitude that will be experienced.

The utility proposal is a snapshot versus the formula in the document as per the March 28th hearing date. The rule states the reality of what really does occur. The current formula as initially proposed in these rules captures the 48 hour test including peak demand over that time and not a snapshot.

The proposals state that the utility contribution would be the voltage with the farm off: End of story. The dairy farmers argument for contributions would be for three phase as made above for the single phase.

This proposal would be alright if there were only balanced three-phase loads on the farm. Other loads, both 120-volt and 240-volt loads will cause an imbalance of the phases and increased neutral current, and thus, stray voltage. Situations can, and have, existed where the cow contact voltage has increased when three-phase loads have been energized, such as when a V-phase, or 2-phase utility power provides three-phase power through two transformers.

Thank you for the opportunity to contribute, we would be willing to meet with you prior to the May 10 hearing date or at the hearing. <https://puc.sd.gov/agendas/2016/0510.aspx>

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Preserving and Enhancing a Sustainable Dairy Environment in South Dakota

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