



TRANSMITTAL

255 Fuller Road, Suite 274
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Date: March 7, 2006
To: Vicki Colello, NYSERDA
Re: Wind Energy and Stray Voltage

AWS Truewind is pleased to provide you with the following information regarding wind energy and the potential for stray voltage.

Overview of Issue

To date, there is no reliable evidence indicating that wind energy systems produce stray voltage. Of the few claims that wind energy produces stray voltage, most are presented by dairy farmers living near a wind farm (specifically without turbines on their property). As stray voltage is a common problem on farms in general, it is likely that this condition was present before the wind farms were installed. In the case of on-site generation, Mick Sagrillo, a nationally renowned expert on wind generation systems, has stated that presence of a wind generator simply will not create (nor will it solve) any on-site stray voltage problems.

The term “stray voltage” is used to describe a special case of voltage developed on the grounded neutral system of a farm. Thus, stray voltage arises from local electric distribution or wiring problems – not on-site or nearby electric generation. Problems associated with stray voltage are typically a direct result of poor grounding practices, improper or inadequate wiring, or the breakdown of insulation in old wires or loads; these are found solely on the customer’s side of the meter. These conditions are not a problem beyond the electrical system of a particular home or farm. If stray voltage is present and reaches sufficient levels, animals coming into contact with grounded devices may receive a mild electrical shock that can cause an abnormal behavioral response.

Although research has found that stray voltage is rarely strong enough to affect the behavior or production of dairy cattle, many farmers still consider its mere existence a cause of numerous problems. Today's perception of stray voltage may be compared to the suspicion of the microwave oven when it was first introduced to consumers two decades ago. Microwave ovens were once feared for possibly transmitting dangerous waves, but were deemed safe after much research was conducted and results were widely communicated. Stray voltage, too, may become less of a concern once more and more people learn what little effect it has on livestock today. As long as electricity is supplied to farms, the issue of stray voltage will likely exist.

In summary, there is no credible evidence indicating that wind generators in general are the cause stray-voltage problems.

Web Sites

American Wind Energy Association

http://www.awea.org/faq/sagrillo/ms_strayvoltage_0406.html

University of Wisconsin

http://www.uwex.edu/uwmril/pdf/StrayVoltage/03_What_do_we_know_about_Stray_Voltage.pdf

Wisconsin Public Service Commission

<http://www.wisconsinpublicservice.com/farm/research.asp>

Publications

Althouse, J.R., R.J. Fick and T.C. Surbrook. "Equipotential plane voltage gradient transitions." Presented at the 1997 International American Society of Agricultural Engineers Meeting, Paper No. 97-3113. ASAE, 2950 Niles Rd., St. Joseph, MI 49085 USA.

Fick, R.J. and T.C. Surbrook. "A review of stray voltage research: Effects on livestock." Prepared by the Michigan Agricultural Electric Council.