

October 14, 2009

**VIA U.S. MAIL AND
ELECTRONIC FILING**

Dr. Burl Haar
Executive Secretary
Minnesota Public Utilities Commission
121 Seventh Place East, Suite 350
St. Paul, MN 55101-2147

**Re: Reply Comments of Wind Developers In the Matter of the Commission Investigation Into Large Wind Energy Conversion Systems Permit Conditions on Setbacks and the Minnesota Department of Health Environmental Health Division's White Paper on Public Health Impacts of Wind Turbines
Docket No. E-999/CI-09-845**

Dear Dr. Haar:

Enclosed for filing in the above-referenced matter, please find the Reply Comments jointly submitted by the following wind developers:

CPV Renewable Energy Company, LLC
Element Power, LLC
enXco inc.
Geronimo Wind Energy, LLC
Goodhue Wind, LLC
Half Moon Power, LLC
High Country Energy, LLC
Lake Country Wind Energy, LLC

Little Rock Wind, LLC
NextEra Energy Resources, LLC
Norfolk Wind Energy, LLC
Project Resources Corporation
Renewable Energy Systems America, Inc.
Root River Energy, LLC
TurningPoint Management, Inc.
Wind Capital Group, LLC

Please feel free to contact me at 612.492.7412 if you have any questions regarding this filing.

Sincerely,



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STATE OF MINNESOTA

BEFORE THE PUBLIC UTILITIES COMMISSION

David Boyd
Phyllis Reha
Thomas Pugh
J. Dennis O'Brien
Betsy Wergin

Chair
Commissioner
Commissioner
Commissioner
Commissioner

**In the Matter of the Commission Investigation
Into Large Wind Energy Conversion Systems
Permit Conditions on Setbacks and the
Minnesota Department of Health
Environmental Health Division's White Paper on
Public Health Impacts of Wind Turbines**

Docket No. E-999/CI-09-845

REPLY COMMENTS OF WIND DEVELOPERS

I. Introduction

On July 21, 2009, the Commission published a Notice of Comment Period soliciting comments from interested persons on the Minnesota Department of Health's White Paper titled *Public Health Impacts of Wind Turbines* and on existing setback requirements imposed in Site Permits that are issued by the PUC authorizing construction and operation of wind developments in the state. Comments were due by September 16, 2009.

The Commission received a substantial number of comments. In addition to the comments filed by these wind developers, several other wind developers individually filed comments and two electric utility companies filed comments. All supported the conclusion that Minnesota's existing noise standards and setback requirements are protective of public health and safety.

The Commission received several hundred comments from individuals who expressed concern about potential impacts from increased sound levels, including low frequency sounds and infrasound. Many of these comments were identical petitions from landowners who oppose new wind developments near their residences. The majority of these comments came from residents in Goodhue County and Clay County who are opposed to projects that have not been built yet.

Out of the hundreds of filed comments, only three pertained to individuals living in or near an existing wind farm. Two individuals who live near existing wind turbines entered comments stating that they did not suffer any adverse health consequences from the nearby turbines. One individual commented that her elderly parents were experiencing symptoms she believed to be related to turbines about 900 feet away. We believe that the small number of adverse impacts cited by individuals living within existing wind farms reflects the robust and thorough permitting process currently administered by the Commission and the responsible siting practices followed by developers in Minnesota.

We offer the following specific Reply Comments to the points raised by the other commenters.

II. Minnesota's Noise Standards Adequately Address Concerns Regarding Sleep Disturbance.

Many commenters who are opposed to the construction of wind turbines within sight of their rural homesteads have raised the concern that they will suffer sleep deprivation and other effects from sounds emanating from the turbines, even at distances of a half a mile or greater. Very little scientific evidence was provided; however, most cited a soon to be published book by Dr. Nina Pierpont to justify their concern. As noted in our Initial Comments in Section V, Dr. Pierpont's claims are not supported by the scientific literature she cites to support her conclusions and, therefore, should not be relied on in this proceeding.

Mr. Per Anderson also submitted a report by Dr. Christopher Hanning titled "Sleep Disturbance and Wind Turbine Noise" (June 2009) as evidence of sleep disturbance issues caused by noise from wind turbines. This group offers the following concerns regarding Dr. Hanning's work:

First, Hanning states, "Arousals ["instantaneous motility" is the term used in the original reference, which are movements] may be caused by sound events as low as 32 dBA and awakenings with events of 42 dBA (Muzet and Miedema 2005), well within the measured noise levels of current "wind farms". However, Hanning fails to state that these are indoor levels and not outdoor levels. When Hanning's thresholds are adjusted to outdoor levels, it is clear that the awakening threshold is greater than the sound levels of wind turbine noise meeting the Minnesota noise standard.

When the thresholds are adjusted to outdoor levels, the outdoor values which Hanning asserts "may" cause sleep effects are 44 dBA Leq (47 dBA maximum) for motility, *i.e.* movement during sleep, and 54 dBA Leq (57 dBA maximum) for awakening when the windows in a home are open. The potential for effects is lessened if windows are closed or for bedrooms not facing wind turbines.¹ It is also important to note that these are the thresholds of sound levels which may cause the effect (*i.e.*, the minimum sound levels). As shown, the Minnesota noise standards mitigate the potential for sleep awakenings.

Second, Hanning cites two studies to demonstrate that computer modeling of wind turbine sound is not accurate and underestimate maximum noise from wind turbines; however, he failed to recognize the limitations of those studies. Both Schneider (2007) and van den Berg (2003), concluded that the measured sound levels during low ground wind conditions was lower than predicted if one used ground wind as a basis for predicting wind turbine noise instead of hub height wind, which under some atmospheric conditions can be significantly higher than ground wind speed. For Schneider the difference was 3 – 7 dBA and for van den Berg the difference was 15 dBA. However, when hub height wind speed is used as a basis for noise predictions, there is no error.

¹ See the Epsilon report included as Attachment C of our Initial Comments for additional information regarding outdoor and indoor sound levels of wind turbines.

Most wind developers use hub height wind speeds, rather than ground wind, to predict noise levels. Developers use the on-site wind data collected at the hub height (60m-80m) and other available wind data to run their noise models. Thus, current wind turbine computer models are sufficiently accurate to predict wind turbine noise and to compare sound levels to existing Minnesota noise standards and other metrics.

Hanning's work does not provide an adequate basis for adopting the greater setback requirements he advocates. As noted above, Minnesota's current noise standards mitigate sleep disturbance concerns, and current noise modeling techniques accurately predict wind turbine sound levels and compliance with Minnesota's noise standards.

III. Shadow Flicker Mitigation Should Continue to be Addressed on a Project-by-Project Basis.

The Minnesota Coalition for Sensible Siting submitted an article raising concerns regarding the potential for flicker from wind turbines to provoke seizures in individuals with photosensitive epilepsy. For individuals with this sensitivity, exposure to flashing lights at certain intensities can trigger seizures.

According to the Epilepsy Foundation, "photosensitivity is a relatively infrequent and benign condition."² Many affected individuals are "unaware of the risks while environmental hazards that can cause seizures by chance stimulation are ubiquitous in modern society."³ Further, the Epilepsy Foundation states that "[m]ethods of prevention and remedies are available and should be tailored to the specific needs of the single individual."⁴

The Epilepsy Foundation further states that, generally, flashing light between the frequencies of 5 to 30 flashes per second (hertz) are most likely to trigger seizures.⁵ In contrast, the frequency of flicker from wind turbines is generally one flicker every 1-2 seconds (one-half to one hertz), significantly below the risk threshold cited by the Epilepsy Foundation.

In connection with siting wind turbines, it is prudent to continue to address concerns over shadow flicker on a project-by-project basis. First, modeling is able to predict the frequency in which shadow flicker may occur. Section IV of our Initial Comments outlines the modeling techniques used by developers to predict and mitigate potential impacts of shadow flicker. Second, proper setback distances can further minimize impacts on residences. Finally, unique individual concerns are best addressed on a project-specific basis.

² *Id.*

³ *Id.*

⁴ *Id.*

⁵ Giuseppe Erba, M.D., "Photosensitivity and Epilepsy: Shedding Light on Photosensitivity, One of Epilepsy's Most Complex Conditions," Epilepsy Foundation, available at: <http://www.epilepsyfoundation.org/about/photosensitivity/gerba.cfm> (accessed October 5, 2009).

IV. The Evidence Supports Continued Siting of Wind Projects.

Several commenters suggested that the Commission declare a moratorium on wind projects for a period of time. Others suggested that a setback from residences of 0.6 miles (over 3000 feet) or more be imposed on all new developments. Existing scientific evidence does not support such actions. The Commission should continue to monitor developments in the scientific community and rely on its existing procedures to address public concerns and to establish appropriate permit conditions.

Throughout the Site Permit process, the Commission has ample authority to address individual concerns and impose conditions in its wind permits to ensure that appropriate setbacks from residences are established. For example, last week, on October 8, 2009, the Commission granted a permit for a wind project – the 20 MW Grant County project (Docket No. WS-09-341) – in which the following finding was suggested to the Commission by the Office of Energy Security:

42. Noise impacts to nearby residents and other potentially affected parties will be factored into the turbine micrositing process. The noise contour map in the application demonstrates that the turbine layout will ensure compliance with PCA noise standards. See permit condition III.E.3.

If there are any unique situations in a particular area with a specific project proposal, the Commission can address concerns during the micrositing process when the actual locations for wind turbines are being finalized. Language like that in the Grant County Project can be relied on to ensure that appropriate setbacks are established and that modeling techniques and results are reviewed during the permitting process.

V. Conclusion

Based on our review of all the comments that were filed, we believe that the best evidence available indicates that wind turbines do not cause adverse impacts from low frequency sounds or infrasound and that compliance with existing noise standards and setback requirements is protective of public health and safety. Further, potential impacts from shadow flicker are properly mitigated when turbines are sited at distances that comply with Minnesota's noise standards.

This group of wind developers respectfully recommends the Commission (1) conclude that current setback requirements adequately protect public health and (2) continue to site wind farms following current permitting practices.

Respectfully submitted,

CPV Renewable Energy Company, LLC
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Wind Capital Group, LLC

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**STATE OF MINNESOTA
MINNESOTA PUBLIC UTILITIES COMMISSION**

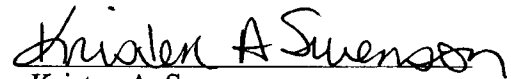
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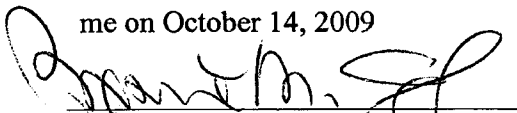
Kristen A. Swenson, of the City of Minneapolis, County of Hennepin, in the State of Minnesota, being duly sworn on oath says: that on the 14th day of October, 2009 she e-filed with the Minnesota Public Utilities Commission the following:

1. Reply Comments of CPV Renewable Energy Company, LLC, Little Rock Wind, LLC, Element Power, LLC, NextEra Energy Resources, LLC, enXco inc., Norfolk Wind Energy, LLC, Geronimo Wind Energy, LLC, Project Resources Corporation, Goodhue Wind, LLC, Renewable Energy Systems America, Inc., Half Moon Power, LLC, Root River Energy, LLC, High Country Energy, LLC, TurningPoint Management, Inc., Lake Country Wind Energy, LLC, Wind Capital Group, LLC; and
2. an Affidavit of Service.

A copy has also been served via electronic mail or U.S. Mail in accordance with the service list of record.


Kristen A. Swenson

Subscribed and sworn to before
me on October 14, 2009


Notary Public

