Ex. A10

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY SWEETLAND WIND FARM, LLC FOR FACILITY PERMITS OF A WIND ENERGY FACILITY AND A 230-KV TRANSMISSION FACILITY IN HAND COUNTY, SOUTH DAKOTA FOR THE SWEETLAND WIND FARM PROJECT

SD PUC DOCKET EL19-012

PRE-FILED SUPPLEMENTAL DIRECT TESTIMONY OF ROBERT O'NEAL ON BEHALF OF SWEETLAND WIND FARM, LLC

May 20, 2019

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, employer, and business address.

A. My name is Robert O'Neal and I work for Epsilon Associates, Inc. ("Epsilon"), located at 3 Mill & Main Place, Suite 250, Maynard, Massachusetts 01754.

Q. Did you provide Direct Testimony in this docket on March 6, 2019?

A. Yes.

Q. What is the purpose of your Supplemental Direct Testimony?

A. The purpose of my Supplemental Direct Testimony is to provide the results of updated sound and shadow flicker analyses for the Project. I will also address comments made at the public input meeting regarding predicted shadow flicker levels and infrasound.

Q. What exhibit is attached to your Supplemental Direct Testimony?

A. The following exhibit is attached to my Supplemental Direct Testimony:

- Exhibit A10-1: Updated Sound and Shadow Flicker Analyses.

II. SOUND AND SHADOW FLICKER ANALYSES UPDATE

Q. Please describe the updates reflected in the results of the updated sound and shadow flicker analyses.

A. The results of the updated sound and shadow flicker analyses reflect the following changes: one wind turbine was removed from the layout (T43) and one wind turbine was changed to standard wind turbine blades as opposed to the low noise trailing edge ("LNTE") blades (T42). This modified layout has been modeled to predict the sound levels and the annual expected durations of shadow flicker due to the operation of the proposed wind turbines at occupied residences in Hand County.

It should also be noted that on May 10, 2019, the Project team received confirmation from the Hand County Tax Assessor that the residence of Dale G. Christiansen (modeling receptor 34) is not an occupied residence. Receptor 34 has therefore been excluded from the updated sound level and shadow flicker analyses.

Q. What are the results of your updated sound analysis?

A. Based on the modifications to the wind turbine layout, the sound levels at all 40 modeling receptors showed no appreciable change (i.e. less than one A-weighted decibel ("dBA") change). The predicted worst-case sound levels from the Sweetland Wind Project are still at or below the 50 dBA limit at participating residences and are still at or below 43 dBA at non-participating residences.

Q. Based on the results of the updated sound analysis, will the Project comply with the requirements of the Development Agreement between the Applicant and Hand County?

A. Yes.

Q. What are the results of your updated shadow flicker analysis?

A. Based on the modifications to the wind turbine layout, the shadow flicker durations at 38 of the 40 modeling receptors showed no change. Receptor 5 incurred an annual expected shadow flicker reduction to approximately 21.8 hours. Receptor 6 also incurred an annual expected shadow flicker reduction to approximately 21.3 hours. The predicted annual shadow flicker durations range from 0 hours to approximately 45.5 hours at the modeled receptors. The maximum modeled expected duration of shadow flicker (approximately 45.5 hours) is predicted at a participating residence. The maximum modeled expected duration of shadow flicker predicted at a non-participating residence is approximately 9.3 hours. The maximum modeled expected duration of shadow flicker predicted at a pending participating residence is approximately 21.3 hours.

Q. Based on the results of the updated shadow flicker analysis, will the Project comply with the requirements of the Development Agreement between the Applicant and Hand County?

A. Yes. While the modeling indicates that two residences in Hand County could experience annual shadow flicker levels above 30 hours per year, both residences are participants and Epsilon understands that Sweetland will obtain written waivers for these residences in accordance with the Hand County Development Agreement for the Project. Therefore, the Project meets the requirements with respect to shadow flicker in the Development Agreement.

III. RESPONSE TO PUBLIC COMMENTS

Q. Are you aware of a comment made at the public input hearing regarding the shadow flicker levels expected at residences within the Project Area?

A. Yes. At the public input hearing, a member of the public stated shadow flicker will be 45+ and 55+ hours per year at two residences within the Project Area. However, as explained above, as a result of the changes to the layout reflected in the updated shadow flicker analysis, the annual expected shadow flicker at Receptor 6 (a participating residence) has been reduced from 55.4 hours to 21.3 hours. Further, the receptor predicted to experience 45.5 hours of shadow flicker annually is a participating residence. Epsilon understands that Sweetland will obtain written waivers for this residence in accordance with the Hand County Development Agreement.

Q. There were some comments at the public input hearing regarding infrasound. Could you please explain what infrasound is?

A. The noise or sound emitted by any source contains energy at different frequencies. Humans can generally hear frequencies between 20 and 20,000 Hertz (“Hz”). Low frequency sound is generally defined as that between 20 and 200 Hz, while infrasound is defined as 0 to 20 Hz. Humans are most sensitive to sound at around 1,000 Hz, and least sensitive to low frequency sounds. Many sources

produce infrasound, such as the wind, ocean waves, airplanes, tractors, and wind turbines. The levels produced by all of these sources are below the human hearing threshold by orders of magnitude.

Q. In your experience, is infrasound typically regulated or modeled?

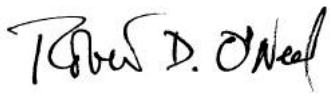
A. No. Infrasound is not typically modeled for wind projects and I am not aware of any regulations in the United States on infrasound produced by wind turbines.

IV. CONCLUSION

Q. Does this conclude your Supplemental Direct Testimony?

A. Yes.

Dated this 20th day of May, 2019.



Robert O'Neal

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