BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF CROWNED RIDGE, LLC FOR A FACILITIES PERMIT TO CONSTRUCTION 300 MEGAWATT WIND FACILITY

Docket No. EL19-XX

DIRECT TESTIMONY AND EXHIBITS

OF RICHARD LAMPETER

July 9, 2019

INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Richard Lampeter. My business address is 3 Mill & Main Place, Suite 250, Maynard, MA 01754.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed at Epsilon Associates, Inc. ("Epsilon"). I am an Associate at the company and manage the Acoustics Group.

Q. PLEASE DESCRIBE YOUR BACKGROUND AND QUALIFICATIONS

A. I have over 15 years of experience in conducting impact assessments for various developments across the United States. Prior to joining Epsilon, I graduated from Lyndon State College in Vermont with a B.S. in Environmental Science. While at Epsilon, I have been involved in approximately 90 wind energy projects evaluating potential impacts from sound and/or shadow flicker. The projects I have worked on ranged in size from 1.5 megawatts ("MW") to over 300 MW. I utilize the WindPRO software package to calculate shadow flicker durations in the vicinity of a project on both a worst-case and expected basis. As part of project evaluations, I have assisted in refinements in wind turbine layouts to minimize shadow flicker at residences, evaluated curtailment options, and analyzed the impact of existing vegetation to modeled shadow flicker durations. My other areas of expertise include the measurement of ambient sound levels, modeling sound levels from proposed developments, evaluation of conceptual mitigation, and compliance sound level measurements. I have conducted impact assessments for power generating facilities, commercial developments, industrial facilities, and transfer stations. In addition to conducting and/or managing the impact assessments, I have presented the results of the analyses at public meetings to county and township boards. Additional detail regarding my education, background and experience is contained in my curriculum vita which is attached as Exhibit RL-1.

Q. HAS THIS TESTIMONY BEEN PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?

A. Yes.

Q. HAVE YOU TESTIFIED BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION?

A. Yes, in Docket No. EL19-003.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR DIRECT TESTIMONY.

A. The purpose of my testimony is to (1) set forth the proposed post-construction sound monitoring protocol and (2) address low frequency sound and infrasound.

Post Construction Sound Protocal

Q. WHAT POST-CONSTRUCTION SOUND MONITORING PROTOCOL ARE YOU PROPOSING?

A. The same protocol proposed in EL9-003 jointly agreed to by the Applicant in EL19-003 and Staff, which is attached as Exhibit RL-2. While not the only appropriate way to evaluate sound level compliance of a wind energy facility, the proposed methodology allows for a degree of confidence in the assessment of whether the sound level limit is being met by the wind energy facility. This is achieved through wind turbine operational requirements, the inclusion of background sound level measurements, ground level wind speed measurements, and the measurement location selection requirements. This protocol utilizes a sound level metric and sound level limit consistent with the most restrictive County sound level requirements and recent conditions on previously approved projects. If post-construction program is requested a test protocol is required which is good practice as it allows methodology details to be agreed upon in advance of any testing.

Low Frequency Sound and Infrasound

Q. WHAT IS LOW FREQUENCY SOUND AND INFRASOUND?

A. Low frequency noise and infrasound are present in the environment due to other sources besides wind turbines. For example, refrigerators, air conditioners, and washing machines generate infrasound and low frequency sound as do natural sources such as ocean waves. The frequency range of low frequency sound is generally from 20 Hz to 200 Hz, and the range below 20 Hz is often described as infrasound. However, audibility can extend to frequencies below 20 Hz if the energy is high enough. Since there is no sharp change in hearing at 20 Hz, the division between low frequency noise and infrasound should only be considered practical and conventional. The threshold of hearing is standardized for frequencies down to 20 Hz (Acoustics - Normal equal-loudness-level contours, International Standard ISO 226:2003, International Organization for Standardization, Geneva, Switzerland, (2003).

Q. HAVE YOU CONDUCTED A STUDY OF LOW FREQUENCY SOUND AND INFRASOUND IN THE CONTEXT OF WIND GENERATION?

A. Yes, I co-authored as study, presented in the peer reviewed journal article I co-authored (*Low frequency noise and infrasound from wind turbines,* R. O'Neal et al, Noise Control Engineering J., 59(2), 2011.), which is attached as Exhibit RL-3.

Q. PLEASE PROVIDE THE RESULTS OF YOUR STUDY?

A. The study set forth in Exhibit RL-3 found for the wind turbines studied that there was no audible infrasound either outside or inside homes at 1,000 feet from a wind turbine.

Additional findings included that sound levels met the ANSI standard for low frequency noise in bedrooms, classrooms, and hospitals, met the ANSI standard for thresholds of annoyance from low frequency noise, and met ANSI standard for vibration of light-weight walls or ceilings. In homes there may be slightly audible low frequency noise beginning at around 50 Hz (depending on other sources of low frequency noise); however, the levels are below criteria and recommendations for low frequency noise within homes.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

STATE OF MASSACHUSETTS)
) ss
COUNTY OF MIDDLESEX)

I, Richard Lampeter, being duly sworn on oath, depose and state that I am the witness identified in the foregoing prepared testimony and I am familiar with its contents, and that the facts set forth are true to the best of my knowledge, information and belief.

Richard Lampeter

Subscribed and sworn to before me this 26th day of June, 2019.

SEAL

Notary Public

My Commission Expires

KAREN LYN ROTH
Notary Public
Commonwealth of Massachusetts
My Commission Expires
April 10, 2026