

**BEFORE THE STATE OF NORTH DAKOTA  
PUBLIC SERVICE COMMISSION**

**Public Service Commission  
Energy Conversion Facility Siting Criteria  
Rulemaking**

**PU-19-290**

**Rulemaking Comments of NextEra Energy Resources, LLC**

NextEra Energy Resources, LLC (“NextEra Energy Resources”) appreciates the opportunity to provide comments on the North Dakota Public Service Commission’s (“Commission”) proposed rulemaking regarding energy conversion facility siting criteria in Case No. PU-19-290.

**I. Introduction and Background**

NextEra Energy Resources is a clean energy leader and is one of the largest wholesale generators of electric power in the United States, with approximately 21,000 megawatts (“MW”) of net generating capacity, primarily in 36 U.S. states and Canada as of year-end 2018. Through its subsidiaries, NextEra Energy Resources owns and operates 14 existing wind projects in North Dakota, for a total of approximately 1,250 MW of currently installed capacity, and is currently constructing a 15th wind project, which it expects will be in service before the end of 2019. Its first project was built in 2003.

In this rulemaking proceeding, the Commission proposes to modify its avoidance areas related to sound levels for wind energy conversion facilities in N.D. Admin. Code § 69-06-08-01(4), reducing the sound level from 50 dBA to 45 dBA within 100 feet of an inhabited residence or community building. The Commission has retained the language that the sound level criteria may be waived in writing by the owner of the occupied residence or community building.

**II. A Reduction in the Commission’s Sound Criteria Below the Currently Applicable 50 dBA Is Not Necessary**

NextEra Energy Resources does not believe that there is a need to reduce the Commission’s current sound criteria contained in § 69-06-08-01(4). Despite its long operating history and significant number of projects installed in diverse areas across the state, NextEra Energy Resources is not aware that there have been a material number of landowner complaints about sound from operating wind turbines. Specifically, NextEra Energy Resources is aware of only two landowner sound complaints related to its projects in its 16-year operating history. In these limited instances, NextEra Energy Resources dealt directly with particular landowners and proposed mitigation measures directly to these landowners. NextEra Energy Resources takes its duty to its neighbors seriously, whether they are participating or not, and will work directly with affected landowners that may have noise concerns. However, there do not appear to be significant or wide-spread

concerns about sound levels from landowners that neighbor operating wind projects. Accordingly, NextEra Energy Resources does not believe that there is a need to modify the existing sound limitation of 50 dBA to 45 dBA.

### **III. Further Reductions to the Commission’s Sound Criteria Below 45 dBA Is Not Supported by Evidence or the Practice in Other States**

If the Commission does decrease the sound level in its avoidance criteria, NextEra Energy Resources does not recommend that it be lowered below 45 dBA. There have been over 100 peer-reviewed scientific articles published in the field of wind turbine sound and proper siting to avoid health effects and undue community annoyance/complaints for those living in proximity to projects. The weight of this research concludes that there are no health or welfare issues associated with non-participants experiencing sound at or below 45 dBA at the exterior of their residences.

Health Canada undertook the largest wind turbine noise, health and annoyance population epidemiological study conducted around the world and has since published its findings in ten scientific peer-reviewed journal articles. This study was initiated in 2012 and was a partnership between Health Canada and Statistics Canada to understand the potential impacts of wind turbine noise on health and well-being of communities in Southern Ontario and Prince Edward Island. A total of 1238 households participated in the study, with an almost 80% response rate of all households within 6 miles of projects investigated, making it the largest and most comprehensive study ever undertaken around the world. Households were located between 820 feet and 6 miles from operational wind turbines. The A-weighted dBA sound levels (audible sound/noise) were grouped into 5 dBA increments with the loudest level in the Health Canada study at the exterior of a home being 46 dBA Leq (highest nighttime level). The study found:

*Beyond annoyance, results do not support an association between exposure to [wind turbine noise] up to 46 dBA and the evaluated health-related endpoints.*

The results of the Health Canada work also supported the fact that annoyance was driven largely by the visual cue (whether you can see the turbines) and attitude towards the wind project, *i.e.*, that the sound level experienced by landowners was not the driving force towards annoyance. Further, they determined that annoyance from wind turbine noise does not directly translate to a number of complaints. Table IV from their work, reproduced below, identifies the number of formal complaints (with % in brackets) by sound grouping. It also provides the annoyance levels at each sound level. Table IV shows that a greater percentage of people reported annoyance with visual aspect of the projects over that of the actual sound levels. Also, the percentage of complaints between 40-46 dBA (2.6%) was consistent with those living up to 6 miles from wind turbines where the sound level would be completely inaudible at the <25 dBA (2.4%). This data suggests regardless of the sound level there will be a small percentage of complaints regardless of the sound level from the wind turbines.

TABLE IV. Perception of community noise and related variables.

Variable	Wind Turbine Noise (dB)					Overall	CMH $p$ -value <sup>a</sup>
	<25	[25–30]	[30–35]	[35–40]	[40–46]		
Formal complaint <sup>f</sup>	2 (2.4)	2 (2.1)	3 (1.0)	22 (4.2)	6 (2.6)	35 (2.8)	0.2578
Reporting a high (very or extreme) level of annoyance to wind turbine features, $n$ (%)							
Noise	0 (0.0)	2 (2.1)	3 (1.0)	52 (10.0)	32 (13.7)	89 (7.2)	<0.0001
Visual	2 (2.4)	15 (16.0)	17 (5.6)	81 (15.5)	44 (18.9)	159 (12.9)	

Hubner *et al.* (2019) recently published the first U.S. based study on wind turbines and annoyance, “Monitoring annoyance and stress effects of wind turbines on nearby residents: A comparison of U.S. and European samples.” The U.S. sample included 1441 residents living near 231 wind farms, across 24 states. People living between 262 feet and up to three miles from a turbine were included in the research. Sound levels in the study ranged from <30 dBA to >50 dBA. The study concluded:

*Average annoyance levels of residents near wind farms in Europe and the U.S. were low, with the levels for noise similar across both samples, with European levels slightly higher for shadow-flicker, lighting and landscape change. In all cases the annoyance levels were comparable to the levels associated with traffic noise.*

The past decade of scientific research has also demonstrated that participating landowners, who typically live a lot closer to wind turbines and experience higher sound levels do not report health effects or indeed any annoyance with the wind turbines. From the Health Canada study:

*Aggregate annoyance was effectively 0 (i.e., least squares mean – 0.11) among the 110 participants who reported to receive personal benefit from having wind turbines in the area, compared to an average of 1.93 among those who did not report such benefits.*

NextEra Energy Resources believes that this research is compelling and clearly indicates that there would be no additional benefit to North Dakotans to lower the sound level criterion below 45 dBA for non-participating residences. It also indicates that there would be no need to lower the sound level criterion for participating residents from the existing 50 dBA.

At the hearing held by the Commission on September 19, 2019, there was discussion regarding the sound requirements implemented by the South Dakota Public Utilities Commission (“SD PUC”) for non-participating landowners. NextEra Energy Resources provides the following comments to clarify the record regarding current sound levels required by the SD PUC. NextEra Energy Resources subsidiaries currently own and operate three wind projects in South Dakota (or approximately 190 MW), and thus, NextEra Energy Resources is familiar with the SD PUC’s approach to permitting wind projects in the state. Unlike North Dakota, South Dakota has not implemented state-wide sound limitations for wind projects. Rather, the SD PUC has taken a case-by-case approach in adopting sound levels for wind projects, which levels often are tied to specific

county sound limitations and supported by the evidentiary record that is developed in a particular proceeding. In 2019, the SD PUC has granted approval for at least four different wind projects using the standards of 50 dBA for participating landowners and 45 dBA for non-participating landowners,<sup>1</sup> and one wind project using a standard of 45 dBA for all landowners,<sup>2</sup> in decisions that were supported by the expert testimony of noted sound experts and medical professionals. In fact, to NextEra Energy Resources' knowledge, the SD PUC has approved sound levels of 45 dBA for participating landowners and 40 dBA for non-participating landowners on only one occasion,<sup>3</sup> in an order issued in November 2018, and that was based upon the specific modeled sound levels presented by the applicant for that particular project.<sup>4</sup> Thus, the SD PUC decides sound on a case-by-case basis, and, therefore, has not imposed an overarching standard requiring sound levels below 45 dBA for non-participating residences.

NextEra Energy Resources recommends that if the Commission reduces the existing sound level, the reduction not extend below 45 dBA and that it be limited to non-participating landowners. Although the rule provides for a waiver of the sound limit, the proposed rule's applicability to both non-participating and participating landowners would require an applicant to obtain waivers from participating landowners for "exceedances" beyond 45 dBA that are unlikely to be objectionable based upon the history of existing facilities' operations.

NextEra Energy Resources also believes that adopting a limitation below 45 dBA at non-participating residences would be too restrictive and could significantly limit areas available in North Dakota for wind energy development, and as shown above would not provide additional health or community benefit. It is important to note that the sound models used to support a

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<sup>1</sup> *In the Matter of the Application of Dakota Range III, LLC for a Permit of a Wind Energy Facility and a 345-kV Transmission Line in Grant and Roberts Counties*, Docket No. EL18-046, Permit Condition No. 27 (Feb. 6, 2019), available at: <https://puc.sd.gov/commission/dockets/electric/2018/el18-046/settlement2.pdf>; *In the Matter of Deuel Harvest Wind Energy LLC for a Permit of a Wind Energy Facility and a 345-kV Transmission Line in Deuel County*, Docket No. EL18-053, Finding of Fact No. 103 and Permit Condition No. 27 (May 30, 2019), available at: <https://puc.sd.gov/commission/orders/electric/2019/el18-053final.pdf>; *In the Matter of Crowned Ridge Wind, LLC for a Permit of a Wind Energy Facility in Grant and Codington Counties*, Docket No. EL19-003, Finding of Fact No. 45 and Permit Condition No. 26 (July 26, 2019), available at: <https://puc.sd.gov/commission/orders/electric/2019/el19-003final.pdf>; *In the Matter of the Application of Sweetland Wind Farm, LLC for Permits of a Wind Energy Facility and a 230-kV Transmission Facility in Hand County, South Dakota*, Docket No. EL19-012, Conditions of Stipulation No. 28 (July 31, 2019), order approving stipulation available at: <https://puc.sd.gov/commission/orders/electric/2019/el19-012settlement.pdf>.

<sup>2</sup> *In the Matter of the Application of Triple H Wind Project, LLC for a Permit of a Wind Energy Facility in Hyde County, South Dakota*, Docket No. EL19-007, Permit Condition No. 26 (July 24, 2019), available at: <https://puc.sd.gov/commission/orders/electric/2019/el19-007final.pdf>.

<sup>3</sup> *In the Matter of the Application by Prevailing Wind Park, LLC for a Permit of a Wind Energy Facility in Bon Homme County, Charles Mix County and Hutchinson County, South Dakota, for the Prevailing Wind Park Project*, Docket No. EL18-026 at Finding of Fact No. 65 and Permit Condition No. 27 (Nov. 28, 2018), available at: <https://puc.sd.gov/commission/orders/electric/2018/el18-026final.pdf>.

<sup>4</sup> *Id.* ("The record demonstrates that 40 dBA at non-participating residences is an appropriate and reasonable sound limit to protect the welfare of non-participants.").

certificate application often take a conservative approach, *i.e.*, they overestimate sound levels at modeled receptors. For example, most sound models make conservative assumptions, such as: utilizing sound levels at the wind turbines' peak operations, rather than at levels closer to actual operating levels; modeling all proposed turbine and alternate turbine locations; and adding a 1-2 dBA buffer onto modeled sound results. All of these assumptions tend to increase a project's modeled sound results. In addition, implementing sound level limitations below 45 dBA for non-participating landowners could have the effect of increasing a project's overall footprint (*i.e.*, by requiring developers to space turbines further apart in order to meet lower sound thresholds).

In addition, it does not appear that reducing the sound level limitations below 45 dBA for non-participating landowners is necessary to address landowner noise complaints. As noted above, in its 16-year operating history in North Dakota, NextEra Energy Resources is only aware of two noise complaints to the Commission related to its projects. However, NextEra Energy Resources' subsidiaries' operating history does not suggest that a significant problem exists or that it needs to be addressed by implementing an across-the-board threshold below 45 dBA.

For these reasons, NextEra Energy Resources respectfully submits that if the Commission determines to change the sound level criteria in N.D. Admin. Code § 69-06-08-01.4, that it consider adopting the following:

4. **Additional avoidance areas for wind energy conversion facilities.** A wind energy conversion facility site must not include a geographic area where, due to operation of the facility, the sound levels within one hundred feet of an inhabited residence or a community building will exceed fifty dBA **for project participants and forty-five dBA for non-participants**. The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building.

#### **IV. Conclusion**

NextEra Energy Resources respectfully requests the Commission not to reduce the Commission's current sound criteria contained in § 69-06-08-01(4). If the Commission does make any reductions to the existing sound criteria, NextEra Energy Resources believes that there is not support to reduce the sound criteria below 45 dBA.