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Ms. Leah Mohr
Executive Director
South Dakota Public Utilities Commission
500 East Capitol Ave.
Pierre, South Dakota 57501

Re: **Request for Approval of Material Deviation**

Docket No. 09-028

Dear Ms. Mohr:

PrairieWinds SD 1, Inc., a wholly-owned subsidiary of Basin Electric Power Cooperative (Basin Electric) received a Wind Energy Facilities Permit (Permit) from the South Dakota Public Utilities Commission (Commission) for the PrairieWinds Project (Project) in 2010. In early 2018, PrairieWinds SD 1, Inc. was merged into Basin Electric, which assumed ownership and operation of the Project. Basin Electric (or Permittee) is planning to repower the Project to increase the overall energy production of the Project. This change will increase the nameplate capacity of each of the 108 turbines from 1.5 megawatts (MW) per turbine to 1.6 MW per turbine, resulting in a total nameplate capacity of 172.8 MW, up from 162 MW (Repower Project). The Permittee asks the Commission approve a material deviation pursuant to Condition 18 of the Permit related to the Repower Project.

BACKGROUND

I. The Project & Permit.

The Project, also known as the Crow Lake Wind Project, is a 162 MW wind energy electric generating facility and ancillary facilities in Aurora, Jerauld, and Brule Counties, South Dakota, approximately 7 miles northeast of Kimball, South Dakota. The Permit states that the Project includes up to 110 General Electric 1.5 SLE model wind turbines for the Project, each with a nameplate capacity of 1.5 MW, a hub height of 80 meters (262 feet), total height of 118.5 meters (389 feet), and a rotor diameter of 77 meters (252 feet). As constructed, the Project includes 108 GE 1.5 MW SLE model turbines with a total nameplate capacity of 162 MW, a hub height of 80 meters, a total of 128.5 meters (422 feet) and a rotor diameter of 77 meters. The Repowering Project would extend the life of the turbines 20 years from the date of repowering.

The Permit was issued in June 2010 pursuant to a stipulation that includes 40 conditions, including Condition 16 establishing a noise limit of 50 dBA for all receptors absent a waiver. The

conditions do not include a shadow flicker limit. The Permit also includes the following Condition No. 18 regarding changes to the Project:

> Applicant shall seek approval from the Commission prior to making any material deviations to the Project. For purposes of this paragraph, the term "material deviations" shall mean any action or activity outside the reasonable parameters of this Permit.

II. The Repower Project

The Project began operation in 2011 and has been operational for approximately 15 years. Now, to increase the output and efficiency of the Project, the Permittee is planning to repower the Project by installing longer blades, increasing the rotor diameter from 77 meters to 97 meters. The physical changes include the installation of longer blades, which increases the rotor swept area and total height. The Repower Project will also include drivetrain replacement and generator refurbishment. The same hub height, turbine count, and project footprint will remain unchanged and no permanent ground disturbance is anticipated.

III. Discussion

The Permittee has conducted updated noise and shadow flicker modeling to reflect the Repower Project, and those reports are included as Exhibits A and B to the Affidavit of Erin Fox Duckart. These reports show that, although the proposed changes will change the shadow flicker and noise impacts, the Permittee will continue to meet the conditions on which the Permit was issued, as reflected in the Affidavit of Erin Fox Duckart.

A table summarizing the physical changes to the Project, followed by a summary of noise and shadow flicker impacts for participants and non-participants which total 87 receptors[1], are provided below:

[1] A new participating residence, REC-42A, was constructed after the Project became operational.

Repower Project Specifications

Specification	Original (2010)	Proposed (Repowered)	Change
Rotor Diameter	252 feet (77 m)	~318 feet (97 m)	+66 feet (+26.2%)
Hub Height	262 feet (80 m)	262 feet (80 m)	No change
Total Height (blade vertical)	389 feet (118.5 m)	~422 feet (~128.5 m)	+~33 feet (+8.5%)
Blade Length (tip to hub)	~115 feet (~35 m)	~148 feet (~45 m)	+~33 feet (+28.7%)
Nameplate Capacity per Turbine	1.5 MW	1.6 MW	+0.1 MW
Number of Turbines	108	108	No change
Total Nameplate Capacity	162 MW	172.8 MW	+10.8 MW

Noise

Noise	Project	Repower Project
Non-participant receptors at or below 50 dBA	68 of 68	68 of 68 (maximum 43.1 dBA)
Participant receptors at or below 50 dBA	18 of 18	16 of 19
Participant receptors exceeding 50 dBA	0	3
Noise waivers obtained from participants exceeding 50 dBA	N/A (none required)	3 (50.7 dBA, 51.6 dBA, and 51.9 dBA)

Shadow Flicker

Shadow Flicker	Project	Repower Project
Total receptors with 0 hours of shadow flicker	80 of 86	72 of 87
Participants with 0 hours	14 of 20	6 of 18
Non-participants with 0 hours	66 of 66	67 of 67
Receptors experiencing more than 30 hours per year of shadow flicker	N/A	2 participants (39.95 hours per year and 48.8 hours per year)
Waivers to be obtained	N/A	1

The modeling indicates that the Repower Project will comply with the Permit's 50 dBA noise limit. All 68 non-participant receptors are modeled at or below 43.1 dBA both before and after the Repower Project. Three participating receptors REC-7, REC-75 and REC-83, have modeled noise levels above 50 dBA. REC-75 is the former Patten schoolhouse that has been repurposed as a part-time hunting lodge/cabin. The Permittee has obtained noise waivers from each of those participants.

Two participating receptors, REC-75 and REC-83, will experience more than 30 hours of shadow flicker annually. The Permittee will obtain a waiver from the owner of the occupied residence, REC-83, or otherwise ensure that that the shadow flicker does not exceed 30 hours per year.

The Repower Project will also be subject to local review. Aurora, Brule, and Jerauld Counties are each expected to require new conditional use permits and building permits.

CONCLUSION

For the reasons discussed above, the Permittee respectfully requests that the Commission approve the Repower Project as a material deviation under Condition 18 of the Permit.

Sincerely,

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/s/ Lisa Agrimonti

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