

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

IN THE MATTER OF THE)	
APPLICATION OF CROWNED)	
RIDGE WIND, LLC FOR A)	RESPONSE TO
PERMIT OF A WIND ENERGY)	INTERVENER
FACILITY IN GRANT)	COMPLAINTS
AND CODINGTON COUNTIES)	

EL-19-003

**RESPONSE OF
OF
CROWNED RIDGE WIND, LLC**

Introduction

1. On December 30, 2019, Intervener Kristi Mogen (“Intervener”) filed six complaints (“Complaints”) related to: (1) Crowned Ridge Wind, LLC’s (“CRW”) December 13, 2019 request for a limited and temporary waiver (“Waiver”), so that CRW may install low noise trailing edge (“LNTE”) attachments on each wind turbine blade when weather conditions permit; and (2) CRW’s compliance with the Final Order issued on July 26, 2019. The Complaints, however, are based on incorrect factual predicates. CRW is in compliance with the Final Order. The sound and shadow flicker studies attached hereto in support of the Waiver also show that CRW will continue to be in compliance if certain turbines are curtailed to mitigate sound prior to the installation of certain identified LNTE attachments, as committed to by CRW. Therefore, the Complaints should be dismissed and CRW’s request for a Waiver should be granted.

Argument

Complaint No. 1 (LNTE Blades)

2. Intervener requests that the Commission deny CRW's Waiver and revoke the Permit, alleging that CRW knew during the evidentiary proceeding in this docket that there was insufficient time to attach the LNTEs to all 87 blades prior to the start of operations and failed to so inform the Commission. Intervener is incorrect. The CRW development team did not know at the time of the evidentiary proceeding that the LNTE attachments could not be completed prior to commercial operations. There was no logical reason for CRW to withhold this type of information, as there were readily available mitigation measures, such as turbine curtailments, that it could have offered during the evidentiary proceeding if CRW knew it would not be in a position to attach all LNTEs prior to commercial operations. For example, during the evidentiary proceeding, to ensure no resident experienced shadow and flicker above 30 hours annually, CRW offered to curtail certain turbines, and the Commission conditioned the Permit on CRW filing a mitigation plan for any residence that would exceed 30 hours of shadow flicker annually without a signed waiver. The same could have been offered for a known delay in the ability to attach LNTEs.
3. In this regard, it is also illogical to accept Intervener's premise that CRW knew that it could not complete the LNTE attachments and waited until the last minute to address the LNTE issue. CRW is in a commercially undesirable position in which it could be subject to \$75,000 a day in damages under the power purchase agreement ("PPA") with Northern States Power Company ("NSP"). Similarly, CRW is unable to deliver the entire output of the project, which negatively impacts the revenues CRW receives under the PPA with NSP.

Thus, the adverse economic situation facing CRW as a result of the late installation of the LNTEs undercuts Intervener's allegation that CRW withheld information related to the LNTE installation during the evidentiary proceeding, and, therefore, Complaint No. 1 should be dismissed.

4. On the issue of which turbines should be curtailed under the Waiver, CRW has provided Attachment 1, which is an updated sound study using a ground attenuation factor of 0.5.¹ This study shows that CRW complies with the Final Order's Condition No. 26 sound thresholds by curtailing CR1-21, CR1-29, CR1-37, CR1-44, CR1-48, and CR1-95 at wind speeds above 6 meters per second prior to the installation of LNTEs on CR1-21, CR1-29, CR1-33, CR1-37, CR1-41, CR1-44, CR1-46, CR1-48, CR1-50, CR1-52, CR1-61, CR1-63, CR1-64, CR1-66, and CR1-95 (collectively referred to as the "Mitigation Plan"). The use of a ground attenuation factor of 0.5 to develop the Mitigation Plan is the appropriate modeling assumption and is supported by all the sound studies on the record in this proceeding. Both Mr. Haley and Mr. Lampeter agree that the curtailments of the CRW wind turbines should be based on a sound model using the industry accepted ground attenuation factor of 0.5.² Mr. Haley's use of a ground attenuation factor of 0.5 should not be considered as a one-off assumption as suggested by Intervener; instead, it should be

¹ The December 13, 2019 sound study included the CRW alternative turbines to conduct a direct comparison of the assumptions used with the July 29, 2019 sound study. Since the alternative turbines were not constructed, it is more appropriate for purposes of the Waiver to use the as-built turbines only. The updating of the model also included a reduction in the wind speeds that turbines need to be curtailed at wind speeds above 6 meters per second instead of 9 meters per second, which is based on a correction to the model. Attachment 2 shows the sound impacts to Interveners using a ground attenuation factor of 0.5.

² See Affidavits of Jay Haley and Richard Lampeter submitted as Attachment 3. During the December 30, 2019 hearing, Mr. Haley in response to Commissioner Nelson's question said that his on-the-spot thought was that a 0.3 ground attenuation factor might be appropriate. After further consideration, Mr. Haley confirmed that the industry standard 0.5 ground attenuation factor should be used. *Id.*

considered in the context of the sound model's use of a number of conservative modeling assumptions, all of which were recognized by the Commission in its Final Order.³ Indeed, there is no technical basis to use a lesser ground attenuation factor, particularly when one considers the overall conservative nature of Mr. Haley's modeling of sound. Thus, CRW appropriately employed a ground attenuation factor of 0.5 for purposes of developing the Mitigation Plan.

5. For these reasons, Intervener's assertion that a ground attenuation factor of 0.0 should be used to determine which CRW turbines should be curtailed under the Waiver is baseless, contrary to industry standard, and should be rejected. Moreover, Intervener is a lay person with no training or experience in sound modeling. The Commission cannot rely on the recommendation of a lay person when the recommendation requires scientific, technical, or other specialized knowledge. See SDCL 19-19-701(c). Therefore, Intervener's recommendation to use a ground attenuation factor of 0.0 should be rejected.⁴
6. Further, consistent with CRW's commitments in this proceeding, if directed by the Commission, CRW will conduct post-construction sound modeling consistent with the protocol adopted in Condition No. 26 during the period when the Waiver is in effect.
7. In addition to its willingness to implement the post-construction sound protocol during a period when the Waiver is in effect, CRW commits to operate the turbines in General Electric's ("GE") newly developed Enhanced Power Curve Operation ("EPCO") mode, which GE expects will reduce sound by approximately 1.5 dBA when compared to the

³ The Final Order at page 14 cited the following conservative sound modeling assumptions used by CRW: "(1) the wind turbines were assumed to be operating at maximum sound emission levels; (2) a 2 dBA adder was applied to the wind turbines sound emission levels; (3) the wind turbines were assumed to be downwind of the receptor; and (4) the atmospheric conditions were assumed to be the most favorable for sound to be transmitted."

⁴ See Attachment 3.

normal operation mode.⁵ Accordingly, the CRW sound model includes appropriately conservative modeling assumptions that when combined with the EPCO mode of operating the wind turbines further supports the use of a 0.5 ground attenuation factor for the development of the Mitigation Plan in order to comply with the Condition No. 26 sound thresholds. Based on CRW's commitments to implement a Mitigation Plan, conduct post-construction sound monitoring, and use the EPCO operating mode, CRW requests that the Commission grant its Waiver, and, at the same time, dismiss Complaint No. 1.

Complaint No. 2 (Change in Hub Heights)

8. Intervener asserts that CRW changed the hub heights of turbines nos. CR1-89, CR1-90, CR1-91, and CR1-97, and, therefore, the associated sound and shadow flicker studies will be impacted. As explained at the November 30, 2019 hearing, the sound study submitted with the waiver considered that turbines nos. CR1-89, CR1-90, CR-91, and CR-97 are 90-meter hub height ("mhh") instead of an 80 mhh. The same holds true for the updated sound study submitted as Attachment 1 using the 0.5 attenuation factor. Also, attached as Attachment 5 is a shadow flicker study showing the results using the higher hub height for turbine nos. CR1-89, CR1-90, CR1-91, and CR1-97, which demonstrates that even with the increased hub heights on the four turbines, shadow flicker is below the 30-hour annual threshold set forth in Condition No. 34 of the Final Order.⁶

⁵ See Letter from GE submitted as Attachment 4. EPCO is a new software option that produces more torque at a lower rpm and slows down the overall speed of the blades which results in a quieter turbine. This does not increase the maximum output of the turbine. CRW intends to operate the wind turbines in the EPCO mode for the entirety of the project's life, with the understanding that if another software operational mode becomes available that further optimizes the wind turbine and equally or further mitigates sound, CRW may use that operational mode.

⁶ Attachment 2 shows the difference in shadow flicker study for all Interveners.

9. As explained at the December 30, 2019 hearing, the change in the hub heights of the four turbines from 80 to 90 mhh was directly associated with CRW's deferral of 100 megawatts ("MW") until such time that MISO and SPP interconnection studies support the construction and operation of 100 MWs of CRW.⁷ In Section 6.1 of the January 30, 2019 Application, CRW explained that it may use as many as 117 2.3 MW 90-mhh turbines as the primary turbine size, with 13 2.3 MW 80-mhh turbines as the secondary size. In the end, CRW only needed nine of the 2.3 MW 80-mhh turbines to qualify for the Production Tax Credit. The remaining four 2.3 MW 80-mhh turbines were to be reallocated to the deferred CRW 100 MWs or other wind projects.⁸ As part of CRW's as-built compliance filing under Condition No. 44, it will show the new hub heights. The use of the 90 mhh versus the 80 mhh, as shown in Attachments 1 (sound study) and 5 (shadow flicker study), for turbines CR1-89, CR1-90, CR1-91, and CR1-97 does not impact compliance with the sound and shadow flicker thresholds in Condition Nos. 26 and 34. Further, neither the Final Order nor its conditions limit CRW's ability to replace 2.3 MW 80 mhh turbines with 2.3 MW 90 mhh turbines. Also, CRW's Determinations of No Hazard issued by the FAA were all based on a 90 mhh turbine, whether or not 80 or 90 mhh was to be constructed. Therefore, contrary to Intervener's assertion, CRW is not in violation of its Permit with the use of the 90 mhh for turbines CR1-89, CR1-90, CR1-91, and CR1-97, because there was no requirement to provide notice to the Commission of such change and there is no

⁷ See Docket No. EL19-003, September 12, 2019 Letter from CRW on the 100 MW deferral.

⁸ Intervener asserts the Commission should investigate what other changes have occurred to the project. The only other change is due to the 100 MW deferral and involves the Aircraft Detection Lighting System ("ADLS") which had to be moved to the 200 MW electrical system. In Exhibit A44 at page 11 it was explained that CRW was on track to install and operate ADLS within a year of Federal Aviation Administration ("FAA") approval. Although the ADLS has been moved, which required more analysis and studies, CRW will submit its application to the FAA in January of 2020, and expects to install and operate the ADLS by June 2020.

violation of the sound and shadow flicker thresholds with the use of the taller turbines for turbines CR1-89, CR1-90, CR1-91, and CR1-97. Therefore, Complaint No. 2 should be dismissed.

Complaint No. 3 (County Conditional Use Permits)

10. Intervener asserts that CRW is not constructing the project consistent with the conditional use permits (“CUP”), issued by Grant and Codrington counties. Intervener is incorrect. The CUPs did not require CRW to construct any specific MW turbine type, and the request for a stop work order on this issue to each County Zoning Officer and appeals to the Board of Adjustments for each County were resolved in favor of CRW and against Intervener. Specifically, the response of Luke Muller, Codrington County Zoning Officer, to Amber Christenson’s request on November 20, 2019 was as follows:

Stop construction of any turbines which were permitted at the county with 1.7 mw generators, unless and until there is documentation provided by the applicant proving the turbines will comply with the county permit CU018-007.

- Codrington County Zoning Ordinance makes no mention of requirement to list the power generation of any specific wind tower nor the project as a whole.
- No conditions of the Conditional Use Permit granted by the Board of Adjustment on July 16, 2018 limited the power generation of any specific tower in any way.
- Regarding the speculated differences in noise generated by any tower on the basis of changing the power generation:
 - * There is no requirement for a Noise Study in the Codrington County Zoning Ordinance and therefore no parameters for the study which was provided. Thus, changing the power output does not violate any requirements of Section 5.22.03.12.
 - * As referenced previously in this letter, the Board provided conditions obligating the Wind Energy System to meet noise requirements and a manner for enforcing violations.
- Therefore changing the Mw of some towers does not affect the status of the Conditional Use Permit issued to Crowned Ridge Wind, LLC and Crowned Ridge Wind II, LLC.

Similarly, the response of Krista Atyeo-Gortmaker, Grant County Planning and Zoning Officer, to the request of Kristi Mogen and Allen Robish on November 25, 2019 was as follows:

Stop construction of any turbines that have a change in turbine size.

- Grant County Zoning Ordinance makes no mention of requirement to list the power generation of any specific wind tower nor the project as a whole.
- No conditions of the Conditional Use Permit granted by the Board of Adjustment on December 17, 2018 limited the power generation of any specific tower in any way.
- Regarding speculated differences in noise generated by any tower on the basis of changing the power generation:
 - * There is no requirement for a Noise Study in Grant County Zoning Ordinance and therefore no parameters for the study which was provided. Thus, changing the power output does not violate any requirements of Section 1211.
 - * The Board provided conditions obligating the Wind Energy System to meet noise requirements and a manner for enforcing violations.
- Therefore changing the megawatts of some towers does not affect the status of the Conditional Use Permit issued to Crowned Ridge Wind, LLC and Crowned Ridge Wind II, LLC.

These responses confirm that permitting requirements of both counties did not require that CRW construct and operate a specific MW turbine. Accordingly, Complaint No. 3 should be dismissed.

Complaint No. 4 (2.7 MW Capability)

11. Intervener asserts that CRW is constructing and operating 2.7 MW turbines, instead of the 2.3 MW turbines approved in the Final Order. Intervener is wrong. The GE 2.3 MW 116 turbines CRW proposed in its Application and approved in the Final Order are the turbines that CRW ordered, constructed, and will operate. The Intervener submitted photographs showing turbine capability, not the nameplate of the turbine. The nameplate of the CRW turbines is 2.3 MW. A sample of the actual nameplate affixed to the turbines is provided

in Attachment 4.⁹ Further, as explained at the December 30, 2019 hearing and confirmed in Attachment 4 by GE, the GE 2 MW 116 model series or platform is built to be capable of being upgraded to operate at different megawatt settings,¹⁰ provided the turbine has the necessary components and its software is updated. That said, as explained at the December 30, 2019 hearing, CRW ordered and was delivered 2.3 MW nameplate turbines. This is confirmed in Attachment 4 by GE. Therefore, Intervener is incorrect that CRW has switched or changed turbine types or models. Thus, Complaint No. 4 is without merit and should be dismissed.

Complaint No. 5 (Movement of Turbines)

12. Intervener claims that CRW has moved turbines CR1-50 and CR-1-Alt-22 without notice. Intervener is again incorrect. During the evidentiary proceeding, in Hearing Exhibit A59 CRW showed turbine CR1-50 was moved to address sound compliance at CR1-C37-NP. CRW's sound and shadow flicker studies submitted as Hearing Exhibits A56, A57, A67, and A68 modelled the movement of turbine location CR1-50 and showed it to be compliant with the sound and shadow flicker thresholds. This was further confirmed in the July 29, 2019 sound and shadow flicker results submitted with CRW's notice of construction. In the July 29, 2019 filing, CRW also explained that it moved CR1-Alt-22, and that the accompanying sound and shadow flicker results showed the move was compliant with the

⁹ Intervener's photographs are shipping invoices. In Attachment 4, GE explains these photographs do not show the turbine nameplates.

¹⁰ CRW understands that if it proposed to operate the 2 MW model series 116 at 2.5 MW or 2.7 MW, it would be a material modification that would require Commission approval. As GE explains in Attachment 4, changing the 2.3 MW nameplate to 2.5 MW or 2.7 MW would require a number of changes, including studies, conversions of equipment, and software updates.

sound and shadow flicker thresholds.¹¹ Thus, Intervener incorrectly alleges that CRW did not provide notice and study the impacts of the moves of turbines CR1-50 and CR1-Alt-22. Hence, Complaint No. 5 should be dismissed.

Complaint No. 6 (Construction of the Operation and Maintenance (“O&M”) Building)

13. Intervener asserts that CRW prematurely started construction on the wind O&M building on July 12, 2019. The photographs submitted by Intervener, however, relate to the preparation of a laydown yard for the transmission line approved in EL17-050 on November 21, 2018, with construction commencing on June 3, 2019. Therefore, CRW was preparing the laydown yard consistent with the Final Order in EL17-050, and not the O&M building. CRW did not start construction on the wind O&M building until September 23, 2019, in full compliance with the Final Order.
14. Intervener also claims that CRW started construction of the O&M building prior to the issuance of a Building Permit. CRW did not start construction on the wind O&M building until September 23, 2019, in full compliance with the Final Order. The Application for Building Permit for the O&M building was made August 16, 2019 and the permit was issued September 11, 2019, which is provided as Attachment 6. No work other than the grading described above was commenced on the O&M building site prior to issuance of the Building Permit. Rather than contest allegations that CRW commenced construction of the O&M building prior to issuance of the Building Permit, the CRW’s contractor paid

¹¹ Intervener also misstates that CRW did not include the coordinates of turbine locations until December 13, 2019. Mr. Haley’s studies in Exhibit A1-H and Exhibit A22-1 during the evidentiary proceeding included turbine coordinates, and Mr. Haley also included turbine coordinates in the July 29, 2019 preconstruction studies. In fact, the coordinates for CR1-50 and CR1-Alt-22 are the same in the July 29, 2019 preconstruction study as in the studies associated with the December 13, 2019 Waiver request.

the administrative fee to the County.¹² Intervener, therefore, has raised no issue that implicates the Final Order in this proceeding, and, thus, Complaint No. 6 should be dismissed.

Conclusion

15. For the reasons set forth herein, CRW requests that the Waiver be granted with conditions that CRW: (1) implement the Mitigation Plan; and (2) submit reports starting on April 1, 2020 on the progress of the installation of the LNTEs every 90 days thereafter until all LNTEs are attached.
16. For all of these reasons, CRW also requests that the Commission dismiss all of the Intervener's Complaints.

January 3, 2020

/s/ Miles Schumacher

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¹² See Affidavit of Sean Harrington, which is provided as Attachment 7.