

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

<b>IN THE MATTER OF THE APPLICATION OF DEUEL HARVEST WIND ENERGY LLC FOR A PERMIT OF A WIND ENERGY FACILITY AND A 345-KV TRANSMISSION LINE IN DEUEL COUNTY</b>	<b>) ) ) ) ) )</b>	<b>FINAL DECISION AND ORDER GRANTING PERMIT TO CONSTRUCT FACILITIES; NOTICE OF ENTRY</b>
		<b>EL18-053</b>

**APPEARANCES**

Commissioners Gary Hanson, Chris Nelson, and Kristie Fiegen.

Mollie Smith, Lisa Agrimonti, and Haley Waller Pitts, Fredrikson & Byron, P.A., 200 South Sixth Street, Minneapolis, Minnesota 55402, appeared on behalf of Applicant, Deuel Harvest Wind Energy LLC (Deuel Harvest or Applicant).

Kristen Edwards and Amanda Reiss, 500 E. Capitol Ave., Pierre, South Dakota 57501, appeared on behalf of the South Dakota Public Utilities Commission Staff (Staff).

Thomas Welk and Jason Sutton, Boyce Law Firm, LLC, 300 S. Main Ave., Sioux Falls, South Dakota 57104, and Kristian Dahl, appeared on behalf of Otter Tail Power Company (Otter Tail).

Garrett Homan appeared pro se.

John Homan appeared pro se.

John Henslin appeared pro se.

Christina Kilby appeared pro se.

Heath Stone appeared pro se.

Will Stone appeared pro se.

**PROCEDURAL HISTORY**

On November 30, 2018, Deuel Harvest filed an Application for Energy Facility Permits (with appendices) (Application) for the up to 310.1 megawatt (MW) Deuel Harvest North Wind Farm wind energy conversion facility (Wind Farm or Project) and 345-kilovolt (kV) transmission line with associated 345-kV interconnection substation (Transmission Facility) to be located entirely within Deuel County, South Dakota.<sup>1</sup> Also on November 30, 2018, Deuel Harvest filed the

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<sup>1</sup> See Ex. A1 (Application).

prefiled direct testimony of Michael Svedeman, Andrea Giampoli, JoAnne Blank, Michael Hankard, and Michael MaRous.

On December 3, 2018, Deuel Harvest filed revised Appendices J, L, O, P, Q, and R.

On December 6, 2018, the Commission electronically transmitted notice of the filing and the intervention deadline of January 29, 2019, to interested persons and entities on the Commission's PUC Weekly Filings electronic listserv.

On December 6, 2018, Deuel Harvest filed certificates of service confirming it had sent copies of the Application and pre-filed direct testimony to the Commission and to the Deuel County Auditor.

On December 12, 2018, the Commission issued a Notice of Application; Order for and Notice of Public Input Hearing; and Notice of Opportunity to Apply for Party Status (Order). The Order scheduled a public input hearing for January 24, 2019, at 5:30 p.m., CST, at the Clear Lake Community Center, 218 Third Ave. S., Clear Lake, South Dakota.

On December 18, 2018, the Commission issued an Order Assessing a Filing Fee; Order Authorizing Executive Director to enter into Necessary Consulting Contracts.

On January 16, 2019, Affidavits of Publication were filed confirming that the Notice of Public Hearing was published in the *Watertown Public Opinion* on December 21 and 27, 2018, and in the *Clear Lake Courier* on December 19 and 26, 2018.

On January 23, 2019, Deuel Harvest filed a revised Appendix D.

On January 24, 2019, a public input hearing was held as noticed at the Clear Lake Community Center, 218 Third Ave. S., Clear Lake, South Dakota.

On January 25, 2019, Staff submitted a Motion for Adoption of Procedural Schedule.

On January 28, 2019, Deuel Harvest filed the PowerPoint presentation that was presented at the public input meeting on January 24, 2019.

On January 31, 2019, Deuel Harvest filed a Response to Motion for Adoption of Procedural Schedule.

The Commission received ten applications for party status by the January 29, 2019 deadline.

On February 4, 2019, Affidavits of Publication were filed confirming that the Notice of Public Hearing was published in the *Watertown Public Opinion* and in the *Clear Lake Courier* on December 26, 2018, and January 23, 2019.

On February 5, 2019, the Commission issued an Order Granting Party Status; Order Establishing Procedural Schedule.

On February 14, 2019, Deuel Harvest filed the prefiled supplemental testimony of: Michael Svedeman, Andrea Giampoli, Michael Hankard, Dr. Mark Roberts, Dr. Jeffrey Ellenbogen, JoAnne Blank, and Jacob Baker.

From February 20 to February 28, 2019, the following parties filed Withdrawals of Party Status: Nancy Henslin, Ruby Holborn, and George Holborn.

On March 6, 2019, the Commission issued an Order Granting Withdrawal of Party Status.

On March 8, 2019, Intervenor Kilby filed a Motion for Denial of Deuel Harvest's Application. Intervenor Kilby's supporting Brief and Affidavit were posted to the docket on March 11, 2019. On March 12, 2019, Intervenor Garrett Homan filed a Letter in Support of Motion for Denial.

On March 11, 2019, the Commission issued an Order for and Notice of Evidentiary Hearing.

On March 14, 2019, Staff filed the prefiled direct testimony of David Hessler, Tom Kirschenmann, Paige Olson, and Jon Thurber.

Also, on March 14, 2019, Intervenor Garrett Homan filed the prefiled direct testimony of Garrett Homan and Kevin Elwood. Intervenor Otter Tail filed the prefiled direct testimony of Dean Pawlowski. Intervenor Heath Stone filed prefiled direct testimony. Intervenor Kilby filed prefiled direct testimony.

On March 15, 2019, Intervenor Will Stone filed prefiled direct testimony. Intervenor John Homan filed prefiled direct testimony.

Also, on March 15, 2019, Intervenor Heath Stone filed a Letter in Support of Motion for Denial.

On March 19, 2019, Intervenor John Homan filed the prefiled direct testimony of George Holborn.

On March 19, 2019, the Commission issued an Order for and Notice of Motion Hearing on Less Than 10 Days' Notice.

On March 20, 2019, Deuel Harvest filed a Response to Intervenor Kilby's Motion for Denial.

On March 26, 2019, Intervenor John Henslin filed Comments in Support of Motion for Denial.

On March 26, 2019, Intervenor Kilby filed a Reply Brief in Support of Motion to Deny.

On March 27, 2019, Intervenor Garrett Homan filed Additional Information in Support of Motion for Denial.

On March 28, 2019, Deuel Harvest filed a Motion to Exclude Portions of Testimony and/or Exhibits of Intervenors. Attachment A to Deuel Harvest's Motion was filed on March 29, 2019.

On March 29, 2019, the Commission issued an Order Denying Motion for Denial.

On April 1, 2019, Intervenor John Homan filed a request for the Commission to issue subpoenas for Kevin DeBoer, Lynn Pederson, Dennis Kanengieter, Gary Jaeger, John Knight, and Jodi Theisen.

On April 1, 2019, Staff filed the rebuttal testimony of Jon Thurber.

Also, on April 1, 2019, Deuel Harvest filed the rebuttal testimony of Michael Svedeman, Andrea Giampoli, Jacob Baker, Michael Hankard, Dr. Jeffrey Ellenbogen, JoAnne Blank, Michael MaRous, Benjamin Doyle, Cody Kenyon, and Doyle Thompson.

Also, on April 1, 2019, Intervenor Garrett Homan filed rebuttal testimony, and Intervenor Kilby filed the rebuttal testimony of Intervenor Kilby and Robert Rand.

On April 2, 2019, Intervenor John Homan filed rebuttal testimony.

On April 2, 2019, Intervenor Kilby filed a Motion to Allow Robert Rand to Appear Telephonically.

On April 2, 2019, Deuel Harvest filed a Motion to Exclude Testimony Related to Local Land Use Decisions.

On April 3, 2019, Intervenor Garrett Homan filed a Motion to Allow Kevin Elwood to Appear Telephonically.

Also, on April 3, 2019, Intervenor Kilby filed a Motion to Compel Deuel Harvest's Responses and Production of Documents.

On April 3, 2019, Deuel Harvest filed a letter to amend its Motion to Exclude Portions of Testimony and/or Exhibits of Intervenors dated March 28, 2019.

On April 4, 2019, the Commission issued an Order for and Notice of Motion Hearing on Less Than 10 Days' Notice.

On April 4, 2019, Staff filed a Response to Deuel Harvest's Motion to Exclude Portions of Testimony and/or Exhibits of Intervenors.

On April 8, 2019, Staff filed a Response to Deuel Harvest's Motion to Exclude Testimony Related to Local Land Use Decisions, and a Response to Christina Kilby's and Garrett Homan's Motions to Allow Telephonic Testimony.

On April 8, 2019, Intervenor Kilby filed a Brief in Opposition to Deuel Harvest's Motion to Exclude Testimony and/or Exhibits of Intervenors.

On April 9, 2019, Intervenor Kilby filed a Response Regarding Christina Kilby's Motion to Compel. Intervenor Kilby also filed an Argument in Opposition of Deuel Harvest's Motion to Exclude Testimony Related to Local Land Use Decision.

On April 9, 2019, Deuel Harvest filed a Response to Intervenor Kilby's April 2, 2019 Motion to Allow Robert Rand to Appear Telephonically and Intervenor Garrett Homan's April 3, 2019 Motion to Allow Kevin Elwood to Appear Telephonically. Deuel Harvest also filed a Response to Intervenor Kilby's Motion to Compel Deuel Harvest's Responses and Production of Documents.

On April 10, 2019, Intervenor Otter Tail filed prefiled supplemental testimony of Dean Pawlowski.

On April 11, 2019, the Commission issued an Order Granting Motions to Allow Robert Rand and Kevin Elwood to Appear Telephonically; an Order Granting Motion to Exclude Testimony Related to Local Land Use Decisions as It Relates to the Invalidated Special Exception Permit of Deuel Harvest; Order Allowing John Homan's Subpoenaed Witnesses to Testify Only for Rebuttal and/or Impeachment Purposes; an Order Granting, in Part, Motion to Exclude Portions of Testimony and/or Exhibits of Intervenors.

Also, on April 11, 2019, Deuel Harvest filed prefiled surrebuttal testimony for Michael Hankard and Dr. Jeffrey Ellenbogen.

On April 12, 2019, the Commission issued an Order Granting, in Part and Denying in Part the Motion to Compel.

On April 15-18, 2019, the evidentiary hearing was held as noticed in the Drifters Event Center, 325 E. Hustan Ave., Fort Pierre, South Dakota.

On April 15, 2019, the Commission voted to approve a Stipulation agreed to by Staff, Deuel Harvest, and Otter Tail, submitted as Exhibit A33, regarding the switching station (Switching Station) and the conclusion that a facility permit from the Commission is not required for the 345-kV transmission line (Gen-Tie) that Deuel Harvest will construct, own and operate between Deuel Harvest's Project Substation and Otter Tail's facilities. Otter Tail's Facilities consist of: a switching station (Switching Station) and a segment of a 345-kV transmission line located from the Switching Station to the first structure outside the Switching Station (Otter Tail's Facilities). Otter Tail's Facilities will be constructed, owned, and operated by Otter Tail and are needed to interconnect Deuel Harvest's Project Substation and Gen-Tie to the Big-Stone South to Brookings 345-kV transmission line.<sup>2</sup>

On April 15, 2019, following the presentation of Applicant's case-in-chief, Kilby made a Motion to Dismiss. The Commission voted to deny the Motion to Dismiss.

On April 25, 2019, the Commission issued an Order Setting Post-Hearing Briefing Schedule and Decision Date.

On April 29, 2019, Deuel Harvest filed a Proof of Mailing to affected landowners pursuant to SDCL 49-41B-5.2.

On May 1, 2019, in accordance with the Hearing Examiner's decision regarding the striking of portions of Intervenor Kilby's Exhibits K1-K8, K29, and K30, Deuel Harvest filed the redacted versions of Intervenor Kilby's Exhibits K1-K5, K8, and K29.

On May 8, 2019, Staff and Deuel Harvest filed a Corrected Attachment A.

On May 14, 2019, at its regularly scheduled meeting, the parties made oral arguments. After questions of the parties by the Commissioners and public discussion among the Commissioners, the Commission voted unanimously to grant a permit to construct the Project to Deuel Harvest, subject to the approved Permit Conditions, and to approve the Stipulation between Deuel Harvest, Otter Tail, and Staff.

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<sup>2</sup> See Evid. Hrg. Tr. at 30-31 and Ex. A33 (Stipulation).

Having considered the evidence of record, applicable law, and the briefs and arguments of the parties, the Commission makes the following Findings of Fact, Conclusions of Law, and Final Decision and Order Granting Permit to Construct Facilities:

## **FINDINGS OF FACT**

### **I. PROCEDURAL FINDINGS.**

1. The Procedural History set forth above is hereby incorporated by reference in its entirety in these Procedural Findings. The procedural findings set forth in the Procedural History are a substantially complete and accurate description of the material documents filed in this docket and the proceedings conducted and decisions rendered by the Commission in this matter.

### **II. PARTIES.**

2. Applicant, Deuel Harvest Wind Energy LLC, is a Delaware limited liability company and is wholly owned by Invenergy LLC (Invenergy).<sup>3</sup> Deuel Harvest Wind Energy LLC is registered to conduct business in South Dakota as a foreign limited liability company.<sup>4</sup>

3. Invenergy is a privately held Delaware limited liability company headquartered in Chicago, Illinois.<sup>5</sup> Invenergy develops, builds, owns, and operates large-scale power plants across four core technologies: wind (90 projects, 12,864 MW); natural gas (11 projects, 5,642 MW); solar (25 projects, 2,150 MW); and battery storage (5 projects, 72 MW). Invenergy has a proven development track record of 131 large-scale projects, and currently provides wind turbine operations and maintenance services on more than 3,400 wind turbines currently in operation. As part of Invenergy's various generation projects, Invenergy has permitted and built 414 miles of transmission lines greater than 69-kV and continues to operate 182 miles of those lines.<sup>6</sup>

4. Intervenor Otter Tail is headquartered in Fergus Falls, Minnesota and is a subsidiary of Otter Tail Corporation, which has its headquarters in Fargo, North Dakota. Otter Tail provides retail electric service to approximately 132,100 customers, including approximately 11,700 in South Dakota, 61,700 in Minnesota, and 58,800 in North Dakota. In South Dakota, Otter Tail is the operator and majority owner of the Big Stone Power Plant, located near Big Stone, South Dakota and is an approximately 50 percent owner in the Big Stone South to Brookings and Big Stone South-to-Ellendale 345-kV transmission projects.<sup>7</sup>

5. Intervenor Heath Stone is a landowner and resides in Deuel County.

6. Intervenor Will Stone is a landowner and resides in Deuel County.

7. Intervenor John Homan is a landowner in Deuel County and resides in Watertown, South Dakota.

8. Intervenor John Henslin is a landowner and resides in Deuel County.

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<sup>3</sup> Ex. A1 at 4-1 (Application).

<sup>4</sup> Ex. A1 at 5-1 (Application).

<sup>5</sup> Ex. A1 at 4-1 (Application).

<sup>6</sup> Ex. A1 at 1-2 (Application).

<sup>7</sup> Ex. OTI at 1 (Pawlowski Direct).

9. Intervenor Garrett Homan resides in Hermantown, Minnesota.
10. Intervenor Christina Kilby resides in Burnsville, Minnesota.
11. Staff fully participated as a party in this matter, in accordance with SDCL

49-41B-17.

### III. PROJECT DESCRIPTION.

12. The Project is a wind energy facility located in Deuel County, South Dakota.<sup>8</sup> The Project will have a nameplate capacity of up to 310.1 MW and will generate up to 300 MW of electricity.<sup>9</sup> The Project includes up to 112 wind turbines, access roads to turbines and associated facilities, underground 34.5-kV electrical collector lines connecting the turbines to the collection substation, underground fiber-optic cable for turbine communications co-located with the collector lines, an operations and maintenance (O&M) building, up to four permanent meteorological (MET) towers, Aircraft Detection Lighting System (ADLS) facilities, a 34.5 to 345-kV collection substation (Project Substation), and additional temporary construction areas, including crane paths, public road improvements, a laydown yard, and a concrete batch plant(s) (as needed).<sup>10</sup>

13. Deuel Harvest will also construct, own, and operate a 345-kV transmission line Gen-Tie between Otter Tail's Facilities (defined below) and Deuel Harvest's Project Substation. The Gen-Tie will be less than one-half mile long, it will not cross a public highway, and eminent domain will not be used to acquire the right-of-way for the Gen-Tie.<sup>11</sup> No permit needs to be issued by the Commission for construction, ownership, and operation of the Gen-Tie.<sup>12</sup>

14. Otter Tail will construct, own, and operate a Switching Station needed to interconnect Deuel Harvest's Project Substation and Gen-Tie to the Big Stone South to Brookings 345-kV transmission line. Otter Tail also will construct, own, and operate a segment of a 345-kV transmission line between the Gen-Tie and the Switching Station. Specifically, Otter Tail will own and operate that portion of the 345-kV transmission line located from the Switching Station to the first structure outside the Switching Station. The transmission line owned by Otter Tail will be less than one-half mile long, it will not cross a public highway, and Otter Tail will not utilize eminent domain to acquire the right-of-way for the transmission line. The Switching Station and the portion of the 345-kV transmission line owned by Otter Tail are collectively referred to as Otter Tail's Facilities.<sup>13</sup> No permit needs to be issued by the Commission for construction, ownership, and operation of Otter Tail's Facilities.<sup>14</sup>

15. Deuel Harvest has entered into a Generator Interconnection Agreement (GIA) with Otter Tail and the Midcontinent Independent System Operator, Inc. (MISO).<sup>15</sup> The Project will

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<sup>8</sup> Ex. A1 at 1-1 (Application).

<sup>9</sup> Ex. A1 at 8-1 (Application).

<sup>10</sup> Ex. A1 at 1-1 (Application).

<sup>11</sup> Ex. A33 at 2 (Stipulation).

<sup>12</sup> Ex. A33 at 2 (Stipulation).

<sup>13</sup> Ex. A33 at 1-2 (Stipulation).

<sup>14</sup> Ex. A33 at 2 (Stipulation).

<sup>15</sup> Ex. OT1 at 7 (Pawlowski Direct).

interconnect to the regional electric grid along the Big Stone South to Brookings 345-kV transmission line and will be able to deliver 300 MW of electricity.<sup>16</sup>

16. The Project Area consists of approximately 41,980 acres of leased land, of which up to approximately 68 acres will be developed for permanent facilities.<sup>17</sup> The Project is located entirely within Deuel County in the townships of Portland, Lowe, Altamont, Glenwood, Herrick, and Antelope Valley.<sup>18</sup>

17. The current estimated capital cost of the Project is approximately \$400 million based on indicative construction and wind turbine pricing cost estimates for the turbine layout. This estimate includes lease acquisition, permitting, engineering, procurement, and construction of turbines, access roads, underground electrical collector system, a Project Substation, Transmission Facility, an O&M building, a supervisory control and data acquisition (SCADA) system, and up to four permanent MET towers; and tax payments, landowner payments, and Project financing. The Wind Farm has a current estimated capital cost of \$387 million, and the Transmission Facility has a current estimated capital cost of \$13 million.<sup>19</sup> The overall cost of developing the Project depends primarily on-site selection and construction timing. Site-dependent costs will include access to the individual wind turbine locations, site-specific subsurface conditions that determine foundation design, access road design and layout, ease of underground work, and the layout of the turbine arrays, which affects road and electrical cable cost.<sup>20</sup> Ongoing O&M costs and administrative costs are estimated to be approximately \$8.5 million per year, including payments to landowners for wind lease and easement rights, and taxes related to the capacity and generation of the Project.<sup>21</sup>

18. Deuel Harvest proposes to erect up to 112 wind turbines for the Project, which will be comprised of two turbine models. One of the turbine models will be the GE 2.3-116 turbine, a 2.3 MW turbine with an 80-meter hub height and 116-meter rotor diameter (RD). These turbines qualify the Project for the Production Tax Credit (PTC). The other proposed turbine model that will be utilized for the Project is anticipated to be the GE 2.82-127, a 2.82 MW turbine with an 88.6-meter hub height and 127-meter RD. The total number of turbines will be dependent on the final combination of turbine models.<sup>22</sup> Deuel Harvest requested the Commission provide flexibility for the Project to use a turbine of comparable capacity and specifications, so long as the new model complies with all other applicable regulations and Permit requirements.<sup>23</sup> Deuel Harvest demonstrated that this turbine model flexibility is necessary.<sup>24</sup> Further, Deuel Harvest has committed to the process outlined in Condition 22 of Applicant's and Staff's Corrected Permit Conditions for addressing the change in turbine model and demonstrating compliance with all of the conditions of the permit for the Project.<sup>25</sup>

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<sup>16</sup> Ex. A1 at 1-1 (Application).

<sup>17</sup> Ex. A1 at 9-1 (Application).

<sup>18</sup> See Ex. A1 at Figure A-1 (Application); Ex. A14-1 (Updated Project Layout).

<sup>19</sup> Ex. A1 at 7-1 (Application).

<sup>20</sup> Ex. A1 at 7-1 (Application).

<sup>21</sup> Ex. A1 at 7-1 (Application).

<sup>22</sup> Ex. A1 at 8-4 (Application).

<sup>23</sup> Ex. A1 at 8-4 (Application).

<sup>24</sup> See Ex. A1 at § 8.2 (Application); Ex. A2 at 7 (Svedeman Direct).

<sup>25</sup> Permit Conditions at ¶ 22.



19. All turbines will be constructed within the Project Area consistent with the configuration presented in Exhibit A14-1 (Updated Project Layout) and subject to all commitments, conditions, and requirements of the Commission's Order.

20. Deuel Harvest presented evidence of consumer demand and need for the Project.<sup>26</sup> Deuel Harvest does not currently have a purchase agreement or off-take agreement for the Project but is currently negotiating two power purchase agreements with utilities. At the time of hearing, those negotiations were still in process and were confidential.<sup>27</sup> The electricity generated by the Project would be used as needed on the MISO regional grid and will help MISO operators meet electricity demand.<sup>28</sup> The output from the facility will be used to meet the needs for the region's electrical utilities and industrial, commercial, and residential customers.<sup>29</sup>

21. With regard to micro siting, Deuel Harvest provided evidence to support the need for turbine and associated facility flexibility.<sup>30</sup> With respect to turbine flexibility, Deuel Harvest and Staff agreed to the turbine flexibility and "material change" provisions set forth in Applicant's and Staff's Corrected Permit Condition 22.<sup>31</sup> With respect to the access roads, the collector and communications systems, meteorological towers, ADLS facilities, the O&M facility, the Project Substation, and temporary facilities, Deuel Harvest and Staff agreed to Condition 23 of Applicant's and Staff's Corrected Permit Conditions.<sup>32</sup>

22. The record demonstrates that Deuel Harvest has made appropriate and reasonable plans for decommissioning.<sup>33</sup> With respect to financial security for decommissioning, Staff and Deuel Harvest have agreed to Condition 36 of the Permit Conditions, which provides for a decommissioning escrow account.<sup>34</sup> Deuel Harvest and Staff also agreed to Condition 37 of the Permit Conditions, which provides for financial security for decommissioning in the event Deuel Harvest is purchased by an electric utility that is rate regulated by the Commission.<sup>35</sup>

23. The record demonstrates that Deuel Harvest has provided adequate information on potential cumulative impacts and that the Project will not have a significant impact.<sup>36</sup>

#### **IV. APPLICABLE STATUTES AND REGULATIONS FOR AN ENERGY FACILITY PERMIT.**

24. The following South Dakota statutes are applicable: SDCL 49-41B-1, 49-41B-2, 49-41B-2.1, 49-41B-4, 49-41B-5.2, 49-41B-12 through 49-41B-19, 49-41B-22, 49-41B-25, 49-41B-26, 49-41B-35, and 49-41B-36 and applicable provisions of SDCL Chapters 1-26 and 15-6.

25. The following South Dakota administrative rules are applicable: ARSD Chapters 20:10:01 and 20:10:22.

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<sup>26</sup> See, e.g., Ex. A1 at Ch. 6.0 (Application).

<sup>27</sup> Evid. Hrg. Tr. at 200 (Svedeman).

<sup>28</sup> Ex. A1 at 6-1 (Application).

<sup>29</sup> Ex. A1 at 6-3 (Application).

<sup>30</sup> See, e.g., Ex. A1 at 8-2 – 8-3 (Application).

<sup>31</sup> Permit Conditions at ¶ 22.

<sup>32</sup> Permit Conditions at ¶ 23.

<sup>33</sup> See Ex. A1 at Appendix U (Decommissioning Cost Analysis); Ex. A1 at Ch. 23 (Application); Ex. A2 at 21-22 (Svedeman Direct); Permit Conditions at ¶¶ 36, 37.

<sup>34</sup> Permit Conditions at ¶ 36.

<sup>35</sup> Permit Conditions at ¶ 37.

<sup>36</sup> See, e.g., Ex. A1 at Ch. 10.0 (Application).

26. Pursuant to SDCL 49-41B-22, Applicant has the burden of proof to establish that:

(1) The proposed facility will comply with all applicable laws and rules;

(2) The facility will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area;

(3) The facility will not substantially impair the health, safety or welfare of the inhabitants; and

(4) The facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

27. SDCL 49-41B-25 provides that the Commission must make a finding that the construction of the facility meets all of the requirements of Chapter 49-41B.

28. There is sufficient evidence on the record for the Commission to assess the proposed Project using the criteria set forth above.

## **V. SATISFACTION OF REQUIREMENTS FOR THE ISSUANCE OF AN ENERGY FACILITY PERMIT.**

### **A. The proposed facility will comply with all applicable laws and rules.**

29. The evidence submitted by Deuel Harvest demonstrates that the Project will comply with applicable laws and rules.<sup>37</sup> Applicant certified that it will obtain all governmental permits which reasonably may be required by any township, county, state agency, federal agency, or any other governmental unit for the construction and operation activity of the Project prior to engaging in the particular activity covered by that permit.<sup>38</sup>

30. Intervenors assert that the Project is in violation of the Deuel County Ordinance because it is not set back two miles from Lake Alice and it is not set back four times the height of the turbine from Stone's Conservation Acres.<sup>39</sup>

31. Deuel County Ordinance Section 1215.03(2)(d) pertaining to setbacks provides, "Distance from the Lake Park District located at Lake Cochrane 3 miles, Lake Alice 2 miles and 1 mile from the Lake Park District at Bullhead Lake." Staff contacted the Deuel County Zoning Officer who advised that as to Section 1215.03(2)(d) of the Ordinance, the setback was from the Lake Park District at Lake Alice, not from Lake Alice itself.<sup>40</sup> The Commission has legislative direction to give due consideration to the views of governing bodies of affected local units of government pursuant to SDCL 49-41B-22(4).<sup>41</sup> The Commission finds the plain language of the Ordinance

<sup>37</sup> See, e.g., Ex. A1 at 3-2 – 3-3, 8-4 – 8-5, 9-2 – 9-3, 16-1 (Application); Ex. A2 at 8-9, 22 (Svedeman Direct).

<sup>38</sup> Ex. A1 at 28-1; Permit Condition ¶ 1.

<sup>39</sup> See, e.g., Evid. Hrg. Tr. at 1064 (Kilby); Ex. K14 at 7 (Kilby); Evid. Hrg. Tr. at 1260 (W. Stone); Ex. HS9 at 2 (H. Stone Responses to Staff's First Set of Data Requests).

<sup>40</sup> Ex. S1 at 23 (Thurber Direct).

<sup>41</sup> Ex. S1 at 23 (Thurber Direct).

dictates that the Project should be set back two miles from Lake Alice and therefore rejects the Deuel County Zoning Officer's interpretation.

32. Deuel County Zoning Ordinance Section 1215.03(2)(A), establishes a setback from residences and businesses. Mr. Will Stone and Mr. Heath Stone argued that this provision of the Ordinance requires that wind turbines be set back at least four times the height of the turbine from the property boundary of the Stone's Hunting Operation. Deuel Harvest asserted that the setback does not apply to the Stone's Hunting Operation because there are no structures on the hunting preserve property. Deuel County will interpret and apply this requirement when determining whether to grant a Special Exception Permit (SEP) for the Project.<sup>42</sup>

33. The Federal Aviation Administration (FAA) has issued a Determination of No Hazard for each of the Project's proposed turbine sites, including Turbine 90 which is located near the Clear Lake Municipal Airport.<sup>43</sup> Deuel Harvest testified it will comply with SDCL 50-9-1 and submit the Determinations of No Hazard to the South Dakota Aeronautics Commission "prior to the start of construction in lieu of the application and permit required by SDCL Ch. 50-9."<sup>44</sup> Accordingly, Deuel Harvest has demonstrated that the Project will comply with SDCL Ch. 50-9.

34. Intervenor Kilby argued that Deuel Harvest failed to demonstrate that it will comply with ARSD Chapter 20:10:22. However, ARSD Chapter 20:10:22 contains the application content requirements, which are not substantive decision-making criteria. Further, Staff provided testimony noting that the Application was "generally complete" at the time of filing and that "an applicant supplementing its original application with additional information as requested by Staff is not unusual for siting dockets."<sup>45</sup>

35. The record demonstrates that construction of the Project, subject to the Permit Conditions, will meet all of the requirements of Chapter 49-41B.

**B. The facility will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area.**

**1. Environment.**

36. The evidence demonstrates that the Project does not pose a threat of serious injury to the environment in the Project Area and that Deuel Harvest has adopted numerous reasonable avoidance and minimization measures, as well as commitments, to further limit potential environmental impacts.<sup>46</sup>

37. Construction of the Project will not result in significant impacts on geological resources.<sup>47</sup> The risk of seismic activity in the vicinity of the Project Area is "extremely low to negligible" according to data from the U.S. Geological Survey (USGS).<sup>48</sup>

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<sup>42</sup> On May 8, 2019, the Deuel County Board of Adjustment approved the SEP.

<sup>43</sup> Ex. S7 at 31 (Applicant's Additional Data Request Responses to Staff) (Public).

<sup>44</sup> SDCL 50-9-1 and Ex. S7 at 31-32 (Applicant's Additional Data Request Responses to Staff) (Public).

<sup>45</sup> Ex. S1 at 4 (Thurber Direct).

<sup>46</sup> See, e.g., Ex. A1 at Ch. 10.0, §§ 11.1.2, 11.2.2, 12.1.2, 12.2.2, 13.1.2, 13.2.2, 13.3.4, 14.2, 17.2, 18.2 (Application).

<sup>47</sup> See Ex. A1 at § 11.1.2 (Application).

<sup>48</sup> Ex. A1 at 11-4 (Application).

38. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to soil resources.<sup>49</sup> The majority of impacts will be temporary and related to construction activities.<sup>50</sup> Permanent impacts to soils associated with operation of the Project will be approximately 68 acres, which is less than 0.2 percent of the Project Area.<sup>51</sup> Deuel Harvest will implement various measures during construction and restoration to minimize impacts to the physical environment, including segregating topsoil and subsoil, use of erosion and sediment control during and after construction, noxious weed control, and reseeding of disturbed areas.<sup>52</sup>

39. The Project is not anticipated to have material impacts on existing air and water quality.<sup>53</sup>

40. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to hydrology.<sup>54</sup> The record demonstrates that Deuel Harvest has minimized impacts to wetlands and water bodies.<sup>55</sup> The Project is not anticipated to have long-term impacts on groundwater resources.<sup>56</sup> Although floodplains mapping has not been completed by FEMA for the Project Area, it is unlikely the Project would impact floodplains. Wind turbine and MET tower foundations, access roads, the Project Substation, and the O&M building will be located at higher elevations. Any potential impacts to floodplains would be temporary in nature, and existing contours and elevations would be restored upon Project completion.<sup>57</sup> The nearest mapped floodplains to the Project Area are Zone A designations associated with the South Fork Yellow Bank River on the northern boundary of the Project Area and the West Fork of the Lac qui Parle River on the eastern Project Area boundary.<sup>58</sup>

41. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to wetlands and streams. The Project would avoid significant impact to wetland areas and streams.<sup>59</sup> No turbines are located within delineated wetland basins, and only 12 of 119 access roads (10 percent) have the potential to cross wetlands.<sup>60</sup> Following the recommendation of the South Dakota Game Fish and Parks (GFP) and the United States Fish and Wildlife Service (USFWS), Deuel Harvest removed 12 proposed turbines sited in the northwest corner of the Project Area because of the concentration of wetlands in that area.<sup>61</sup>

42. The record demonstrates that Deuel Harvest has minimized impacts to vegetation.<sup>62</sup> The proposed Project would result in approximately 57 acres of permanent

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<sup>49</sup> See Ex. A1 at § 11.2.2 (Application).

<sup>50</sup> See Ex. A1 at 11-10 (Application).

<sup>51</sup> See Ex. A1 at 3-1, 8-1, 11-10, 15-3 (Application).

<sup>52</sup> See Ex. A1 at 11-1, 13-5 (Application).

<sup>53</sup> See Ex. A1 at §§ 17.2, 18.2 (Application).

<sup>54</sup> See Ex. A1 at §§ 12.1.2, 12.2.2 (Application); Ex. S2 at JT-9 (South Dakota Department of Environment and Natural Resource Response Letter) (Thurber Rebuttal).

<sup>55</sup> See Ex. A1 at § 13.2.2 (Application); Ex. A15 at 10 (Giampoli Rebuttal).

<sup>56</sup> See Ex. A1 at § 12.1.2 (Application).

<sup>57</sup> Ex. A1 at 12-8 (Application).

<sup>58</sup> Ex. A1 at 12-5 (Application).

<sup>59</sup> See Ex. A1 at § 13.2.2 (Application).

<sup>60</sup> Ex. A15 at 9, 11 (Giampoli Rebuttal).

<sup>61</sup> Ex. A15 at 4 (Giampoli Rebuttal); Evid. Hrg. Tr. at 215 (Giampoli).

<sup>62</sup> See Ex. A1 at § 13.1.2 (Application).

disturbance to vegetation (predominantly cropland and grassland/pasture), which is less than 2 percent of the Project Area.<sup>63</sup>

43. Deuel Harvest coordinated with GFP, USFWS, and The Nature Conservancy (TNC) to avoid and minimize impacts to potentially undisturbed grasslands.<sup>64</sup> The Project will avoid impacts to all of TNC's native prairies and the USFWS's grassland easements located in the Project Area.<sup>65</sup> The Project turbines and facilities were carefully sited to minimize permanent impacts to potentially undisturbed grasslands to less than one-quarter of 1% of the 16,285 acres of potentially undisturbed grasslands mapped in the Project Area.<sup>66</sup> Potentially undisturbed grassland impacts are estimated to be 0.09 percent.<sup>67</sup> Permanent habitat loss due to construction of wind turbines would be minimal across the Project Area and localized.<sup>68</sup>

44. Deuel Harvest will reseed temporarily disturbed uncultivated areas with weed-free seed mixes to blend in with existing vegetation.<sup>69</sup>

45. Deuel Harvest has conducted numerous wildlife studies and surveys for the Project to assess existing use, identify potential impacts, and incorporate appropriate avoidance and minimization measures.<sup>70</sup> Deuel Harvest provided the testimony of Andrea Giampoli, Senior Manager of Environmental Compliance and Strategy at Invenergy, who has overseen the environmental due diligence on over 25 wind projects and who oversaw the environmental consultants that conducted the environmental due diligence on the Project.<sup>71</sup> Deuel Harvest has engaged in ongoing coordination with the USFWS and GFP to seek input on wildlife resources potentially occurring within the Project Area and to seek guidance on the appropriate studies to evaluate risk and inform development of impact avoidance and minimization measures for the Project.<sup>72</sup> Deuel Harvest followed the processes outlined in the USFWS Land-Based Wind Energy Guidelines (WEG), Eagle Conservation Plan Guidance (ECPG), and the South Dakota Siting Guidelines for developing, construction, and operation of wind energy projects.<sup>73</sup> In addition, Deuel Harvest has developed a Bird and Bat Conservation Strategy (BBCS) in accordance with the WEG, which includes strategies for mitigating risks to avian and bat species during construction and operation of the Project.<sup>74</sup>

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<sup>63</sup> Ex. A1 at 13-5 (Application).

<sup>64</sup> Ex. A15 at 9 (Giampoli Rebuttal); Ex. A7 at 4 (Svedeman Supplemental).

<sup>65</sup> Ex. A10 at 5 (Giampoli Supplemental); Ex. A15 at 9 (Giampoli Rebuttal); Ex. A7 at 4 (Svedeman Supplemental).

<sup>66</sup> Ex. A10 at 5 (Giampoli Supplemental); Ex. A15 at 9 (Giampoli Rebuttal); *see also* Evid. Hrg. Tr. at 532-533 (Kirschenmann).

<sup>67</sup> Ex. A1 at 13-27 (Application).

<sup>68</sup> Ex. A1 at 13-23 (Application).

<sup>69</sup> Ex. A1 at 3-3, 13-5 (Application).

<sup>70</sup> *See* Ex. A1 at 2-2 – 2-3, § 13.3 (Application).

<sup>71</sup> Evid. Hrg. Tr. at 208-209, 254-255 (Giampoli).

<sup>72</sup> *See* Ex. A1 at 13-9 (Application).

<sup>73</sup> Ex. A1 at 13-9 (Application).

<sup>74</sup> *See* Ex. A15-1 (Updated BBCS). There were inadvertent inaccuracies in the Draft BBCS that were then incorporated into the Application. The distances of turbines from lakes and other specified resources on page 37 of the Draft BBCS were intended to be factual statements of the minimum distance to each resource, and not setbacks from each resource. However, the distances in the BBCS were inaccurate, and those inaccuracies were transferred to the Application (*see* Section 13.3.4.4). In its rebuttal testimony, Deuel Harvest supplemented Section 13.3.4.4 of its Application to include the correct distances (*see* Ex. A14 at 5-6 (Svedeman Rebuttal)) and submitted a revised BBCS that includes the same updates (*see* Ex. A15-1 (Updated BBCS) and Ex. A15 at 1-2 (Giampoli Rebuttal)).

46. Construction of the Project may have impacts on wildlife species primarily as a result of habitat disturbance. However, following construction, all areas of temporary disturbance will be reclaimed with vegetation consistent with the surrounding vegetation types.<sup>75</sup> The Project was designed to avoid and minimize displacement of wildlife by minimizing the Project's footprint in undisturbed areas.<sup>76</sup> Permanent habitat loss due to construction of wind turbines and other facilities would be minimal across the Project Area and localized.<sup>77</sup>

47. The record demonstrates that, while the Project may directly impact birds and bats, avian fatalities due to the Project are anticipated to be low and similar to the average mortality rates in the U.S. at wind facilities within similar environments.<sup>78</sup> To prevent potential bird strikes with electric lines, the electrical collection system will be buried underground.<sup>79</sup>

48. The record demonstrates that the Project was designed to avoid and/or minimize impacts to bats. Based on available data, bat fatalities and the degree to which bat species would be affected by the Project would be within the average range of bat mortalities found throughout the U.S.<sup>80</sup> Project turbines will be feathered below cut-in, 3.0 meters per second (m/s; 6.7 mph) from sunset to sunrise April 1 – October 31 to reduce impacts to all bat species, including the northern long-eared bat (NLEB). This feathering will reduce the speed that blades will rotate when the turbines are not generating electricity in order to minimize the risk of bat-blade collisions.<sup>81</sup> Additionally, as recommended in the USFWS's Northern Long-Eared Bat Interim Guidance, all turbines will be sited more than 1,000 feet from the edge of connected patches of forested habitat to avoid potential impacts to bats, including the NLEB.<sup>82</sup> The Project has been sited in an area and designed in a manner to avoid and minimize impacts to birds and bats.<sup>83</sup>

49. Deuel Harvest conducted two years of pre-construction avian surveys.<sup>84</sup> Those surveys indicate that avian impacts from the Project are anticipated to be low.<sup>85</sup> Further, Deuel Harvest has committed to a minimum of two years of independently-conducted post-construction avian and bat mortality monitoring.<sup>86</sup>

50. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to federal- and State-listed species.<sup>87</sup> There is a potential for the following federally-listed species to occur within the Project Area, but the likelihood is low: whooping crane, NLEB, rufa red knot, Dakota skipper, Poweshiek skipperling, and Topeka shiner.<sup>88</sup> Five State-listed species may occur in Deuel County: whooping crane, osprey, banded killifish, northern redbelly dace, and northern river otter.<sup>89</sup> The whooping crane, osprey, banded killifish, northern redbelly dace, and northern

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<sup>75</sup> Ex. A1 at 13-5, 13-28 (Application).

<sup>76</sup> Ex. A1 at 9-2, 13-27 (Application).

<sup>77</sup> Ex. A1 at 13-23 (Application).

<sup>78</sup> Ex. A1 at 13-26 (Application).

<sup>79</sup> Ex. A1 at 13-28 (Application).

<sup>80</sup> Ex. A15-1 at 35, 36-37 (Updated BBCS).

<sup>81</sup> Ex. A1 at 13-16, 13-29 (Application).

<sup>82</sup> Ex. A1 at 13-16 (Application).

<sup>83</sup> See Ex. A3 at 8 (Giampoli Direct); Ex. A1 at 13-16 (Application).

<sup>84</sup> Ex. A1 at § 2.5, 13.3.3 (Application).

<sup>85</sup> See Ex. A3 at 8 (Giampoli Direct); Ex. A1 at § 13.3.4 (Application).

<sup>86</sup> Permit Conditions at ¶ 31.

<sup>87</sup> See Ex. A1 at §§ 13.3.2, 13.3.4 (Application); Ex. A3 at 6-7 (Giampoli Direct).

<sup>88</sup> See Ex. A3 at 6 (Giampoli Direct); Ex. A1 at § 13.3.2.1 (Application).

<sup>89</sup> See Ex. A3 at 6 (Giampoli Direct); Ex. A1 at §§ 13.3.2.2, 13.3.4 (Application).

river otter are not likely to occur within the Project Area due to limited suitable habitat and lack of historical records.<sup>90</sup> The only State-listed species observed was the osprey. No other federal- or State-listed endangered or threatened species have been observed during surveys in the Project Area.<sup>91</sup>

51. Over 839 avian survey hours, two ospreys were observed on the eastern edge of the Project boundary in September 2017, 1.3 miles east of the nearest proposed turbine location. Osprey is considered rare in the county and were likely migrating through when they were observed. Given the low likelihood of osprey occurrences in the Project area, Deuel Harvest does not anticipate impacting this species.<sup>92</sup>

52. While NLEB have the potential to migrate through the Project Area during the fall, Deuel Harvest sited turbines at least 1,000 feet away from suitable NLEB foraging habitat.<sup>93</sup>

53. Deuel Harvest also conducted a field assessment for Dakota skipper and Poweshiek skipperling habitat, and sited Project facilities to avoid grasslands with the potential to support these species.<sup>94</sup>

54. Impacts on federally-listed species due to Project construction and operations are anticipated to be minimal due to the low likelihood or frequency of species' presence in the Project Area and implementation of appropriate species-specific conservation measures.<sup>95</sup> Further, Project facilities have been sited to avoid federally-designated critical habitat, USFWS easements, protected lands, and sensitive resources that may provide habitat for protected species.<sup>96</sup>

55. Deuel Harvest has demonstrated that it will avoid impacts to whooping cranes.<sup>97</sup> The Project Area is not located within the USFWS whooping crane migration corridor, which is located approximately 85 miles west of the Project Area; thus, whooping cranes are unlikely to occur in the Project Area.<sup>98</sup>

56. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to eagles. Deuel Harvest has conducted two years of pre-construction avian use surveys to assess the use of the Project Area by bald eagles. Deuel Harvest also conducted two years of nest surveys to locate and assess the status of bald eagle nests in and around the Project Area.<sup>99</sup>

57. Deuel Harvest submitted an information request regarding known bald eagle nest sites through the GFP Natural Heritage Program, as well as to the GFP Wildlife Division, and the USFWS South Dakota Ecological Services Field Office. Both agencies provided data to Deuel Harvest in August 2016 but did not include information about the eagle nest near Lake Alice at that

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<sup>90</sup> See Ex. A3 at 6 (Giampoli Direct); Ex. A1 at §§ 13.3.2, 13.3.4 (Application).

<sup>91</sup> Ex. A3 at 6 (Giampoli Direct)

<sup>92</sup> Ex. A15 at 12 (Giampoli Rebuttal).

<sup>93</sup> Ex. A3 at 6-7 (Giampoli Direct); Ex. A1 at 13-25 (Application); Ex. A3 at 4 (Giampoli Direct).

<sup>94</sup> Ex. A3 at 7 (Giampoli Direct); Ex. A1 at 13-18 (Application).

<sup>95</sup> See Ex. A3 at 6-7 (Giampoli Direct); Ex. A1 at § 13.3.4 (Application).

<sup>96</sup> Ex. A3 at 7 (Giampoli Direct).

<sup>97</sup> See Ex. A1 at 13-18 (Application).

<sup>98</sup> Ex. A1 at 13-18 (Application).

<sup>99</sup> Ex. A15 at 15 (Giampoli Rebuttal).

time.<sup>100</sup> The GFP local conservation officer became aware of the eagle nest near Lake Alice in 2016 and began monitoring it.<sup>101</sup>

58. As Staff witness Mr. Kirschenmann testified, the information regarding the nest was not submitted to GFP and the Natural Heritage Database until after Deuel Harvest submitted its Natural Heritage Database request; accordingly, the information regarding that eagle nest was not in the Natural Heritage Database at the time of Deuel Harvest's request.<sup>102</sup> Deuel Harvest did not request an update following its August 2016 request because of ongoing consultation with GFP and USFWS and, as Mr. Kirschenmann testified, GFP did not provide an update notifying Deuel Harvest of the nest.<sup>103</sup> Deuel Harvest surveyed the Project Area and a ten-mile buffer by helicopter for eagle nests in 2016 and conducted a follow-up ground-based survey of previously-identified nests in the Project Area in 2017.<sup>104</sup> No eagle nests were detected near Lake Alice or in the Project Area during either survey.<sup>105</sup> In February 2018, the USFWS informed Deuel Harvest that a landowner had brought to USFWS's attention that there may be an eagle nest north of Lake Alice.<sup>106</sup> Deuel Harvest reviewed the GFP Natural Heritage Program response, and the results of the two years of nest surveys and found that while there were medium sized raptor nests observed north of Lake Alice, none was considered large enough to be an eagle nest, so no further due diligence was conducted at that time.<sup>107</sup>

59. Following comments made at the January 24, 2019 public input hearing regarding a potential eagle nest near Lake Alice, Deuel Harvest contacted the USFWS and GFP. On February 5, 2019, GFP responded that it was aware of a nest and provided its coordinates.<sup>108</sup> Deuel Harvest retained two qualified biologists to survey the area of the potential nest on February 5 and 6, 2019. The biologists confirmed the nest was an eagle nest. The biologists were not able to confirm if the nest is occupied or active but recorded two mature bald eagles flying near the nest.<sup>109</sup>

60. Deuel Harvest also conducted an additional raptor nest survey in Spring 2019, and that survey did not identify any new eagle nests.<sup>110</sup> Deuel Harvest is now coordinating with GFP and USFWS regarding eagle flight path mapping and eagle nest monitoring at the identified eagle nest north of Lake Alice.<sup>111</sup> This involves having staff in the field for multiple days every three to four weeks during nesting season to map the flight paths of eagles in and around the nest and to understand the activity in the nest; this final study plan has been shared with GFP and USFWS.<sup>112</sup> In accordance with the recommendations under the South Dakota Bald Eagle Management Plan,

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<sup>100</sup> Ex. A10 at 2 (Giampoli Supplemental).

<sup>101</sup> Evid. Hrg. Tr. at 538 (Kirschenmann).

<sup>102</sup> Evid. Hrg. Tr. at 539 (Kirschenmann).

<sup>103</sup> Evid. Hrg. Tr. at 539-540 (Kirschenmann).

<sup>104</sup> Ex. A10 at 2 (Giampoli Supplemental).

<sup>105</sup> Ex. A10 at 2 (Giampoli Supplemental).

<sup>106</sup> Ex. A10 at 2 (Giampoli Supplemental).

<sup>107</sup> Ex. A10 at 2 (Giampoli Supplemental).

<sup>108</sup> Ex. A10 at 2 (Giampoli Supplemental).

<sup>109</sup> Ex. A10 at 3 (Giampoli Supplemental); *see also* Ex. A10-1 (Burns & McDonnell Memorandum, Eagle Nest Monitoring near Lake Alice, South Dakota for the Deuel County North Wind Farm, Deuel County, South Dakota (February 11, 2019)).

<sup>110</sup> Evid. Hrg. Tr. at 216 (Giampoli).

<sup>111</sup> Ex. A15 at 2 (Giampoli Rebuttal).

<sup>112</sup> Evid. Hrg. Tr. at 216-217 (Giampoli).



Deuel Harvest has committed to relocating two turbines (Turbine Nos. 40 and 41) to 800 meters (0.5 mile) from the Lake Alice eagle nest to limit disturbance to eagles.<sup>113</sup>

61. Further, according to the USFWS, no eagle fatalities have been reported at a wind energy facility in South Dakota.<sup>114</sup> Additionally, bald eagle populations are increasing by five percent annually.<sup>115</sup>

62. In addition, Deuel Harvest has agreed to a number of avian-related impact minimization and avoidance measures, including: conducting post-construction avian mortality monitoring for two years; and implementing the BBCS developed in accordance with the USFWS WEG to minimize impacts to avian and bat species during construction and operation of the Project.<sup>116</sup>

63. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to aquatic ecosystems.<sup>117</sup> The federally- and State-listed aquatic species with potential to occur in or near the Project are not anticipated to be affected by the Project.<sup>118</sup>

64. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to land use.<sup>119</sup> The Project will not displace existing residences or businesses.<sup>120</sup> Areas disturbed due to construction that do not host Project facilities would be re-vegetated with vegetation types matching the surrounding agricultural landscape. Agricultural uses may continue within the Project Area during construction and operation.<sup>121</sup>

65. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to recreation.<sup>122</sup> No Project facilities would be placed on USFWS Waterfowl Production Areas, GFP Game Production Areas, or GFP Walk-In Areas.<sup>123</sup> All turbines will be sited away from the "Avoidance Areas" identified by GFP and from all USFWS Waterfowl Protection Areas and GFP Game Production Areas; the nearest turbine will be 442 meters (0.27 miles), and 245 meters (0.15 miles) from these areas, respectively.<sup>124</sup>

66. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to conservation easements and publicly-managed lands.<sup>125</sup> Deuel Harvest coordinated with the USFWS to identify the exact boundaries of the USFWS wetland, grassland, and conservation easements within the Project Area.<sup>126</sup> The Project has been designed such that no Project facilities

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<sup>113</sup> Ex. A15 at 15 (Giampoli Rebuttal); Ex. A14 at 5 (Svedeman Rebuttal).

<sup>114</sup> Ex. A15 at 15 (Giampoli Rebuttal).

<sup>115</sup> Evid. Hrg. Tr. at 310 (Giampoli).

<sup>116</sup> Permit Conditions at ¶ 31; Ex. A5-1 (Updated BBCS); Ex. A15 at 2, 8, 15 (Giampoli Rebuttal); Ex. A3 at 8 (Giampoli Direct).

<sup>117</sup> See Ex. A1 at § 14.2 (Application).

<sup>118</sup> See Ex. A1 at 14-3 (Application).

<sup>119</sup> See Ex. A1 at §§ 15.1.2, 20.2.2 (Application).

<sup>120</sup> Ex. A1 at 15-3 (Application).

<sup>121</sup> See Ex. A1 at 15-3, § 20.2.2 (Application).

<sup>122</sup> See Ex. A1 at §§ 15.2.2, 15.4.2, 20.3.2 (Application).

<sup>123</sup> Ex. A1 at 15-5 (Application).

<sup>124</sup> Ex. A14 at 6 (Svedeman Rebuttal).

<sup>125</sup> See Ex. A1 at 3-3, §§ 13.1.1.3, 15.2 (Application); Ex. A10 at 5 (Giampoli Supplemental); Ex. A15 at 9 (Giampoli Rebuttal).

<sup>126</sup> Ex. A1 at § 15.2.2 (Application).

would be placed on USFWS wetland or grassland easements, and thus, no direct impacts to these easement areas would occur.<sup>127</sup> As noted above, the Project will also avoid direct impacts to Game Production Areas and Waterfowl Production Areas.<sup>128</sup>

67. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to visual resources.<sup>129</sup> The nearest scenic resources to the Project Area are the Mitchell State Public Shooting Area (SPSA), located on the eastern side of Lake Alice near the middle of the Project Area; the Lone Tree Lake SPSA, on the eastern side of Lone Tree Lake also near the middle of the Project Area; the Altamont SPSA, Nelson State WMA, Rome State WMA, Sharp SPSA, Rush Lake SPSA, Mud Lake SPSA, Ulen Park, Briggs Lake SPSA, and the Lake Francis SPSA.<sup>130</sup> In accordance with Federal Aviation Administration (FAA) regulations, the turbine towers would be painted off-white to reduce potential glare and minimize visual impact.<sup>131</sup>

68. Additionally, Deuel Harvest will install and use ADLS approved by the FAA for use for the Project, thereby reducing visual impacts.<sup>132</sup>

69. Deuel Harvest has demonstrated that it will minimize and/or avoid impacts to cultural resources.<sup>133</sup> Deuel Harvest conducted multiple cultural resource surveys to identify cultural resources within the Project Area and is continuing to conduct additional cultural resource surveys.<sup>134</sup> Deuel Harvest conducted a cultural resource Level I records review for the Project Area in 2018, which identified previously recorded archaeological and historic resources located within or near the Project Area.<sup>135</sup> Deuel Harvest also conducted a Historic Architectural Resources Reconnaissance Survey.<sup>136</sup>

70. Deuel Harvest's contractor implemented a survey methodology that identified High Probability Areas (HPAs) based on the results of previous investigations, and local and regional proximity to water sources, with consideration of water resource types, topography, and land usage.<sup>137</sup> Based on that analysis, Deuel Harvest's contractor identified an area comprising 15 percent of the Project Component Footprint that was then surveyed by professional archeologists. Through that survey effort, no intact prehistoric archeological sites were identified.<sup>138</sup>

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<sup>127</sup> Ex. A1 at 15-5 (Application).

<sup>128</sup> Ex. A1 at 15-5 (Application).

<sup>129</sup> See Ex. A1 at § 15.4.2 (Application).

<sup>130</sup> Ex. A1 at 15-13 (Application).

<sup>131</sup> Ex. A1 at 8-5 (Application).

<sup>132</sup> Permit Conditions ¶ 35; Ex. A1 at 3-2 (Application); Ex. A14 at 4 (Svedeman Rebuttal).

<sup>133</sup> See Ex. A1 at § 20.5.6 (Application); Ex. A1, Appendix E (Level III Intensive Cultural Resources Survey) (Confidential); Ex. A7 at 4-5 (Svedeman Supplemental); Ex. A7-1 (Deuel Harvest Letter to SHPO, Dated February 5, 2019 (Confidential); Ex. A7-2 (SHPO Email Dated February 5, 2019 and Deuel Harvest Response Dated February 7, 2019); Ex. A14 at 10-12 (Svedeman Rebuttal); Ex. A14-4 (Deuel Harvest Cultural Resources Study Plan, March 22, 2019); Ex. A14-5 (SHPO Concurrence Letter, March 26, 2019).

<sup>134</sup> See, e.g., Ex. A1, Appendix E (Level III Intensive Cultural Resources Survey) (Confidential); Ex. A14 at 10-12 (Svedeman Rebuttal);

<sup>135</sup> Ex. A1 at 2-3, 3-2 (Application).

<sup>136</sup> See Ex. A1 at 20-12, 20-19 – 20-20 (Application); Ex. A1, Appendix T (Historical/Architectural Survey) (Confidential).

<sup>137</sup> Ex. A14 at 11 (Svedeman Rebuttal).

<sup>138</sup> Ex. A14 at 11 (Svedeman Rebuttal).

71. After further consultation with the South Dakota State Historical Society, State Historic Preservation Office (SHPO), Deuel Harvest committed to conducting additional Level III surveys of the remaining 85% of the Project Component Footprint, including buffer areas, to provide additional assurance that archaeological resources will not be impacted.<sup>139</sup> SHPO concurred with Deuel Harvest's planned survey approach, methodology and timeframe.<sup>140</sup> These surveys are currently in progress<sup>141</sup> and a report is scheduled to be submitted to Deuel Harvest by July 10, 2019.<sup>142</sup>

72. Sites or historic architectural resources determined to be eligible for inclusion on the National Register of Historic Places (NRHP) are avoided by Project facilities.<sup>143</sup> If avoidance is not practicable, Deuel Harvest will work with SHPO to develop appropriate minimization or mitigation measures.<sup>144</sup> Further, Deuel Harvest has agreed to develop an unanticipated discovery plan for cultural resources in consultation with SHPO.<sup>145</sup>

73. As Staff witness Ms. Paige Olson testified, Applicant has addressed SHPO's concerns by committing to develop an unanticipated discovery plan for cultural resources, avoid known cultural resource site, and to follow SHPO's recommendation to survey all areas that would be directly impacted by construction of the Project.<sup>146</sup>

74. Deuel Harvest notified Tribes in the vicinity of the Project Area of the Project in November 2018, provided details of the Project and offered the opportunity to review the Project's cultural resource survey results. No Tribe notified Deuel Harvest that it wished to have the opportunity to review those results.<sup>147</sup>

75. Staff and Deuel Harvest have agreed upon Conditions 11 through 13 regarding cultural resources.<sup>148</sup>

## 2. Social and Economic.

76. Deuel Harvest began developing the Project in mid-2015 with initial landowner outreach, establishment of a local office on Main Street in Clear Lake, South Dakota, and the construction of three MET towers to verify and quantify the strong wind resource in the area.<sup>149</sup> Deuel Harvest has undertaken extensive development activities, consisting of landowner outreach and easement acquisition, detailed studies of resources in the Project Area, coordination with resource agencies, and design and refinement of the Project configuration. Deuel Harvest's outreach efforts have included: meeting with individual landowners and landowner groups, regulatory agencies, local government units, and the general public to discuss the Project; and

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<sup>139</sup> Ex. A14 at 10-11 (Svedeman Rebuttal).

<sup>140</sup> Ex. A14 at 10 (Svedeman Rebuttal); Ex. A14-5 (SHPO Concurrence Letter, March 26, 2019); *see also* Evid. Hrg. Tr. at 330-331 (Olson).

<sup>141</sup> Evid. Hrg. Tr. at 39-40 (Svedeman).

<sup>142</sup> Ex. A14 at 10 (Svedeman Rebuttal).

<sup>143</sup> Ex. A1 at 3-2, 20-20 (Application); *see also* Ex. A14 at 12 (Svedeman Rebuttal) and Ex. S5 at 9 (Olson Direct); Permit Conditions ¶ 11.

<sup>144</sup> Ex. A14 at 12 (Svedeman Rebuttal) and Ex. S5 at 9 (Olson Direct); Permit Conditions at ¶¶ 11, 13).

<sup>145</sup> Ex. A14 at 12 (Svedeman Rebuttal) and Ex. S5 at 9 (Olson Direct); Permit Conditions at ¶ 12.

<sup>146</sup> Evid. Hrg. Tr. at 330-331 (Olson).

<sup>147</sup> Ex. A1 at 20-20 (Application) and Ex. A14 at 12 (Svedeman Rebuttal).

<sup>148</sup> *See* Permit Conditions at ¶ 11-13.

<sup>149</sup> Ex. A1 at 2-1 (Application).

gathering comments to address in the Project's planning, design, permitting, construction, and operation phases.<sup>150</sup>

77. Deuel Harvest has obtained all of the land rights required to construct the Project. Private land and public road right-of-way would be used for all Project facilities.<sup>151</sup>

78. The identification of the final Project site was primarily driven by: superior wind resources; proximity and direct access to the Big Stone to Brookings 345-kV transmission line to minimize interconnection infrastructure and need for long distance transmission lines; the ability to locate the Project Area within a single county; the Project's ability to avoid or minimize potential adverse environmental impacts; compatibility with existing agricultural use; and strong support from landowners in the Project Area, as well as the surrounding community.<sup>152</sup>

79. Deuel Harvest also considered input from agencies and the public in siting the Project and in identifying potential turbine locations. Some of the adjustments made during Project siting and design, in response to comments, included: avoidance of impacts to State and federal lands within or near the Project Area, and avoidance or minimization of impacts to undisturbed grasslands, wetlands, and other habitats within or near the Project Area.<sup>153</sup> The proposed configuration of Project facilities also reflects an optimal configuration to best capture wind energy within the Project Area, while avoiding impacts to residences, known cultural resources, wetlands, grasslands, and sensitive species and their habitats.

80. A previous site configuration, which included 161 turbine locations, was submitted and permitted at the County level in December 2017. Deuel Harvest's decision to utilize a combination of 2.3 and 2.82 MW turbines reduced the number of turbine locations in the layout and reduced the total number of and combined footprint of the turbines.<sup>154</sup>

81. In prior contested siting dockets, the Commission has considered the following socioeconomic issues in evaluating whether a project would pose a threat of serious injury to the social and economic condition: temporary and permanent jobs; tax revenue; and impacts on commercial, agricultural, and industrial sectors, housing, land values, labor market, health facilities, energy, sewage and water, solid waste management facilities, fire protection, law enforcement, recreational facilities, schools, transportation facilities, and other community and government facilities.<sup>155</sup>

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<sup>150</sup> Ex. A1 at 2-1 (Application).

<sup>151</sup> Ex. A1 at 9-3 (Application).

<sup>152</sup> Ex. A1 at 9-1 (Application).

<sup>153</sup> Ex. A1 at 27-5 (Application).

<sup>154</sup> Ex. A1 at 9-2 (Application).

<sup>155</sup> See, e.g., *In the Matter of the Application of Dakota Access, LLC for an Energy Facility Permit to Construct the Dakota Access Pipeline*, Docket HP14-002, Final Decision and Order; Notice of Entry (Dec. 14, 2015) at ¶¶ 100-101; *In the Matter of the Application by TransCanada Keystone Pipeline, LP for a Permit Under the South Dakota Energy Conversion and Transmission Facilities Act to Construct the Keystone XL Project*, Docket HP09-001, Amended Final Decision and Order; Notice of Entry (June 29, 2010) at ¶¶ 107-110 (discussing socioeconomic effects, including tax revenue, jobs, and impacts on agricultural, commercial, and industrial sectors and public facilities); *In the Matter of the Application of Dakota Range I, LLC and Dakota Range II, LLC for a Permit of a Wind Energy Facility in Grant County and Codington County, South Dakota, for the Dakota Range Wind Project*, Final Decision and Order Granting Permit to Construct Wind Energy Facility; Notice of Entry (July 23, 2018) at ¶¶ 50-57; *In the Matter of the Application of Montana-Dakota Utilities Co. and Otter Tail Power Company for a Permit to Construct the Big Stone South to*

82. The record demonstrates that the Project will not pose a threat of serious injury to the social and economic condition of inhabitants or expected inhabitants in the siting area.<sup>156</sup>

83. Deuel Harvest has demonstrated that the Project will not adversely impact property values.<sup>157</sup> Mr. Michael MaRous, a South Dakota State Certified General Appraiser and a certified Member Appraisal Institute appraiser with extensive experience evaluating the impact of wind turbines on property values, conducted a Market Analysis to analyze the potential impact of the Project on the value of the surrounding properties and found no market data indicating property values will be adversely impacted due to proximity to the Project.<sup>158</sup> Mr. MaRous further noted that the additional income from participating in the Project may actually increase the value of participating agricultural land.<sup>159</sup> This conclusion is also consistent with the Commission's recent findings regarding property values in the Prevailing Wind Park, Dakota Range I and II, and Crocker wind farm proceedings.<sup>160</sup>

84. There were allegations that Mr. George L. Holborn lost money on the sale of his home in February 2019.<sup>161</sup> He provided no appraisal or other evidence to support this claim. Mr. Holborn testified he was a motivated seller because of his fear of the wind farm's impact on his health.<sup>162</sup> The facts in the record indicate that any alleged loss was due to extra investments Mr. Holborn made to the property. There is no evidence that the proposed Project affected the value of his home, which is located approximately one and a half miles from the nearest proposed turbine location.<sup>163</sup> Mr. Holborn testified regarding the substantial upgrades he made to the house to customize it for his family; the upgrades included geothermal heat, extra insulation, a driveway, and a 50-year metal roof. He acknowledged that he did not expect to recover his full investment when he sold the property. Appraiser MaRous confirmed that property owners make business decisions about what to invest in a house and that some of that investment cannot be recaptured on resale.<sup>164</sup>

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*Ellendale 345 kV Transmission Line*, Docket EL13-028, Final Decision and Order; Notice of Entry (Aug. 22, 2014) at ¶¶ 29-31 (discussing impacts to agriculture, property values, and local roads under this criterion).

<sup>156</sup> See, e.g., Ex. A1 at §§ 20.1.2, 20.2.2 (Application).

<sup>157</sup> See Ex. A1 at § 20.1.2.3 (Application); Ex. A1, Appendix W (Market Impact Analysis); Ex. A5 at 6, 7-9 (MaRous Direct).

<sup>158</sup> See Ex. A1, Appendix W (Market Impact Analysis) and Ex. A5 at 8-9 (MaRous Direct).

<sup>159</sup> Ex. A5 at 6 (MaRous Direct).

<sup>160</sup> See *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 EL18-026, Final Decision and Order Granting Permit to Construct Facilities and Notice of Entry (Nov. 28, 2018) at ¶ 52; *In the Matter of the Application by Dakota Range I, LLC and Dakota Range II, LLC for a Permit of a Wind Energy Facility in Grant County and Codington County, South Dakota, for the Dakota Range Wind Project*, Docket EL18-003, Final Decision and Order Granting Permit to Construct Wind Energy Facility; Notice of Entry (July 23, 2018) at ¶¶ 53-54; *In the Matter of the Application by Crocker Wind Farm, LLC for a Permit of a Wind Energy Facility and a 345 kV Transmission Line in Clark County, South Dakota, for Crocker Wind Farm*, Docket EL17-055, Final Decision and Order Granting Permit to Construct Facilities and Notice of Entry (June 12, 2018) at ¶¶ 58-60; see also Ex. A5 at 6-7 (MaRous Direct); Ex. A5-1 (Surrebuttal Testimony of David Lawrence in Dakota Range Docket).

<sup>161</sup> Evid. Hrg. Tr. at 929 (Holborn).

<sup>162</sup> Evid. Hrg. Tr. at 940 (Holborn).

<sup>163</sup> Evid. Hrg. Tr. at 940 (Holborn).

<sup>164</sup> Evid. Hrg. Tr. at 733 (MaRous).

85. Mr. Jon Henslin advocated for a property value guarantee.<sup>165</sup> There is no basis in the record to require a property value guarantee. There is no record evidence that property values will be adversely affected.<sup>166</sup>

86. The record demonstrates that the Project will not adversely impact hunting or gaming operations in the area. Intervenor Heath and Will Stone testified regarding their concerns about the Project's impact on their pheasant hunting operation (South Dakota Pheasant Hunts). The hunting operation uses approximately 6,000 farm raised Ring-necked pheasants annually. Approximately 25-50 wild pheasants are taken on the property annually.<sup>167</sup> There is no evidence in the record that the Project will adversely impact South Dakota Pheasant Hunts or hunting in general. The Project does not prohibit or otherwise restrict hunting.<sup>168</sup>

87. The study cited by Heath Stone in his testimony does not support his claim that the Project will affect pheasant distribution in the area and around the Stone property. Rather, the study referenced by Mr. Stone found that there was "no biologically significant avoidance of wind turbines by male Ring-necked pheasants."<sup>169</sup>

88. The record demonstrates that the Project will, on the whole, have positive impacts on the community.<sup>170</sup> Construction and operation of the Project will result in substantial benefits to South Dakota and local economies.<sup>171</sup> The Project will create temporary job opportunities during construction, and permanent operations and maintenance job opportunities. During construction, the Project is expected to create approximately 400 temporary construction jobs. During operations, the Project is anticipated to employ approximately 15 full-time, local personnel at the Project's O&M facility.<sup>172</sup> Additionally, local businesses would also likely benefit from construction-related workers and construction-related expenditures for the Project.<sup>173</sup> The Project will make lease payments to participating landowners and will provide long-term benefits to the state and local tax base.<sup>174</sup> Over the estimated 30-year life of the Project, the Project is expected to directly

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<sup>165</sup> Evid. Hrg. Tr. at 1128-1133 (Henslin).

<sup>166</sup> See Ex. A20 at 1-2 (MaRous Rebuttal); see also *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 EL18-026, Final Decision and Order Granting Permit to Construct Facilities and Notice of Entry (Nov. 28, 2018) at ¶ 53; *In the Matter of the Application by Dakota Range I, LLC and Dakota Range II, LLC for a Permit of a Wind Energy Facility in Grant County and Codington County, South Dakota, for the Dakota Range Wind Project*, Docket EL18-003, Final Decision and Order Granting Permit to Construct Wind Energy Facility; Notice of Entry (July 23, 2018) at ¶ 55; *In the Matter of the Application by Crocker Wind Farm, LLC for a Permit of a Wind Energy Facility and a 345 kV Transmission Line in Clark County, South Dakota, for Crocker Wind Farm*, Docket EL17-055, Final Decision and Order Granting Permit to Construct Facilities and Notice of Entry (June 12, 2018) at ¶ 61.

<sup>167</sup> Evid. Hrg. Tr. at 1175 (H. Stone).

<sup>168</sup> Ex. A14 at 16-17 (Svedeman Rebuttal).

<sup>169</sup> Ex. HS2 at 33 (Dupuie, Ring-necked Pheasant responses to wind energy in Iowa). The Dupuie paper also states that while the results "suggest that wind energy infrastructure impacts pheasant abundance, because of the relatively small scale of these effects, we argue they are not biologically significant. Large changes in turbine density and distance equate to changes in only a fraction of a bird." Ex. HS2 at 23 (Dupuie, Ring-necked Pheasant responses to wind energy in Iowa).

<sup>170</sup> See, e.g., Ex. A1 at § 20.1.2, 6-1, 20-2 – 20-3 (Application); Ex. A22 at 3 (Kenyon Rebuttal); Ex. A23 at 3 (Thompson Rebuttal).

<sup>171</sup> See, e.g., Ex. A1 at 6-1, § 20.1.2 (Application).

<sup>172</sup> Ex. A1 at 6-1, 20-2 – 20-3 (Application).

<sup>173</sup> Ex. A1 at 20-2 – 20-3 (Application).

<sup>174</sup> Ex. A1 at 20-3 (Application).

generate more than \$4.5 million in annual local revenue, including taxes, lease payments, and local staff salaries.<sup>175</sup> Further, in addition to annual generation tax payments made to the school, Invenergy will fund a \$30,000 annual scholarship provided to Deuel Schools.<sup>176</sup>

89. While the intervenors voiced their concerns, the Commission also heard the testimony of landowners who do support the Project and they explained their reasons for participating in the Project. Participating landowners Mr. Doyle Thompson and Mr. Cody Kenyon testified to their good working relationships with Deuel Harvest and how they believe the Project will benefit the community.<sup>177</sup> Mr. Thompson and Mr. Kenyon explained their reasons for supporting the Project, including that the Project will generate much-needed revenue for the county, townships, and local schools, provide an additional stable source of income for landowners, and create opportunities for future generations to be able to stay in the community and buy land and actually make a living off the land.<sup>178</sup>

90. Some of the comments expressed by the Intervenors relate to fears regarding environmental impacts, potential health impacts, noise, and shadow flicker; however, as discussed in the section above, these fears are unfounded, and the Project has been designed to minimize environmental impacts and as discussed in the section below, allegations of potential health effects are not supported by record evidence.

91. The record demonstrates that the Project is not anticipated to adversely impact communications systems.<sup>179</sup> Deuel Harvest completed a study on the effects of the Project upon Federal Communications Commission (FCC)-licensed radio frequency facilities, including analyses of microwave paths, airports, radar stations, and military airspace.<sup>180</sup> Deuel Harvest is also undergoing the Interdepartmental Radio Advisory Committee (IRAC) review process developed by the National Telecommunication Information Agency (NTIA).<sup>181</sup> In addition, Deuel Harvest and Staff have agreed upon Condition 24 regarding interference with communication systems.<sup>182</sup>

92. The record demonstrates that Deuel Harvest has avoided and/or minimized impacts to transportation.<sup>183</sup> Deuel Harvest will work with local units of government to obtain the necessary road crossing, approach, and utility permits for the Project.<sup>184</sup> Deuel Harvest will coordinate with applicable local road authorities to establish road use agreements, as needed, to

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<sup>175</sup> Ex. A1 at 6-1 (Application); *see also* Ex. A1 at 20-3 (Application); Ex. A2 at 23 (Svedeman Direct).

<sup>176</sup> Ex. A1 at 20-3 (Application).

<sup>177</sup> *See* Ex. A22 at 2-3 (Kenyon Rebuttal); Ex. A23 at 2-3 (Thompson Rebuttal); *see also* Evid. Hrg. Tr. at 649-650, 653, 661 (Kenyon); Evid. Hrg. Tr. at 584-585, 591-592, 594-595, 599-600 (Thompson). None of the intervenors who participated in the evidentiary hearing live within the Project Area. *See* Ex. A26 (Updated Landowner Ownership Map).

<sup>178</sup> Ex. A22 at 2 (Kenyon Rebuttal); Ex. A23 at 2-3 (Thompson Rebuttal); Evid. Hrg. Tr. at 649-650, 653, 661 (Kenyon); Evid. Hrg. Tr. at 584-585, 591-592, 594-595, 599-600 (Thompson).

<sup>179</sup> *See* Ex. A1 at § 15.6 (Application).

<sup>180</sup> *See* Ex. A1 at § 15.6 (Application).

<sup>181</sup> Ex. A1 at 15-17 – 15-18 (Application) and Ex. S1 at JT-1 page 9 of 41 (Thurber Direct).

<sup>182</sup> Permit Conditions at ¶ 24.

<sup>183</sup> *See* Ex. A1 at § 20.4.2 (Application).

<sup>184</sup> Ex. A1 at 16-1 (Application).

minimize and mitigate Project impacts to roads utilized during construction.<sup>185</sup> The Project will participate in the South Dakota One-Call program.<sup>186</sup>

93. No public airports occur within the Project Area.<sup>187</sup> The closest airport is Clear Lake Municipal Airport, which is a public airport located in Clear Lake, South Dakota, approximately 2.5 miles south of the Project Area.<sup>188</sup> Deuel Harvest completed an analysis of the potential effects on aviation for wind turbines built to a height of 499 feet (ASI Report).<sup>189</sup> Project Facilities are sited to meet the requirements of the ASI report, and no impacts to public airports are anticipated.<sup>190</sup>

94. The FAA has issued a Determination of No Hazard for each of the Project's proposed turbine sites.<sup>191</sup>

95. Deuel Harvest also conducted Obstruction Evaluation and Airspace Analyses (OE Study) of the airspace and the associated height constraints in the vicinity of the Project, which included assessing impacts to public-use, military and private use airports with at least one FAA approved instrument approach procedure.<sup>192</sup> The OE Study assessed potential impacts to instrument approach and departure procedures, visual flight rules (VFR) traffic patterns, VFR routes, en-route airways, minimum vectoring altitudes, minimum instrument flight rules (IFR) altitudes, terminal and en-route NAVAIDS, and military airspace and training routes. The analysis concluded that the Project turbines, as proposed, would not have an adverse aeronautical effect.<sup>193</sup>

96. Deuel Harvest will comply with SDCL 50-9-1 and submit the Determinations of No Hazard to the South Dakota Aeronautics Commission "prior to the start of construction in lieu of the application and permit required by SDCL Ch. 50-9."<sup>194</sup>

**C. The facility will not substantially impair the health, safety or welfare of the inhabitants.**

97. In response to Commission questions at the evidentiary hearing regarding noise, Deuel Harvest and Staff agreed to a condition that describes the post-construction protocols that would be implemented for the Project.<sup>195</sup>

98. Section 1215.03(13)(a) of the Deuel County Zoning Ordinance provides that the noise level from wind energy systems "shall not exceed 45 dBA average A-Weighted Sound pressure at the perimeter of existing residences, for non-participating residences."<sup>196</sup> Deuel Harvest voluntarily committed to limit noise to 50 dBA at participating residences.<sup>197</sup>

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<sup>185</sup> Ex. A1 at 16-1, 20-8 (Application).

<sup>186</sup> Ex. A1 at 24-2 (Application).

<sup>187</sup> Ex. A1 at 20-9 (Application).

<sup>188</sup> Ex. A1 at 20-9 (Application).

<sup>189</sup> Ex. A1 at 20-9 (Application); Ex. A1, Appendix S (Aviation Report).

<sup>190</sup> See Ex. A1 at 20-9 (Application); Ex. A1, Appendix S (Aviation Report).

<sup>191</sup> Ex. S7 at 31 (Applicant's Additional Data Request Responses to Staff) (Public).

<sup>192</sup> Ex. A21 at 7 (Doyle Rebuttal).

<sup>193</sup> Ex. A21 at 7-8 (Doyle Rebuttal).

<sup>194</sup> SDCL 50-9-1 and Ex. S7 at 31-32 (Applicant's Additional Data Request Responses to Staff) (Public).

<sup>195</sup> Permit Conditions at ¶ 26.

<sup>196</sup> Ex. A1, Appendix C (WES Ordinance, SEP, and Findings); Ex. A1 at 15-7 (Application).

<sup>197</sup> Ex. A7 at 2 (Svedeman Supplemental).



99. Deuel Harvest retained an independent expert to independently model the predicted noise levels for the Project.<sup>198</sup> Noise levels are predicted to be less than 45 A-weighted decibels (dBA) at all non-participating residences, and less than 50 dBA at all participating residences.<sup>199</sup> Accordingly, the Project will comply with the requirements of Deuel County and Deuel Harvest's voluntary commitment.

100. The Project's acoustic modeling utilized conservative assumptions and was conducted in accordance with the international standard (ISO 9613-2). The modeling assumes all turbines were operating and producing maximum acoustic output, these emissions propagate out fully in all directions, and that atmospheric conditions will be relatively ideal for the propagation of sound.<sup>200</sup> While the modeling did not include the turbine manufacturers' uncertainty factor, the modeling did apply a conservative ground factor of 0.0, which represents completely reflective ground material such as pavement or flat water, and results in a higher level of sound reaching a receptor.<sup>201</sup> Actual ground conditions could at times be 0.0 when the ground is completely frozen, but would generally be closer to 0.5.<sup>202</sup> The model takes into account source sound power levels, terrain and ground type, ground absorption and reflection, and atmospheric propagation conditions.<sup>203</sup>

101. Deuel Harvest's acoustical expert Mr. Hankard, who was retained by Deuel Harvest to independently model the predicted noise levels for the Project, has verified the accuracy and conservativeness of the modeling method employed for the Project through field measurements at other operating wind projects; thus, the methodology for modeling noise levels has been tested and confirmed in the field.<sup>204</sup> Mr. Hankard's post-construction measurements have demonstrated that his conservative pre-construction modeling methods typically exceed actual operational noise levels of proposed projects.<sup>205</sup>

102. Based on the conservative nature of the sound modeling for the Project, actual noise levels for the Project are expected to be lower than the modeled levels at all times.<sup>206</sup>

103. The record demonstrates that a 45 dBA Leq limit at non-participating residences is an appropriate and reasonable noise limit. Mr. Hankard testified that these limits are reasonable and that, based on his modeling, the Project will meet these limits.<sup>207</sup> Mr. Hankard testified that Deuel County's 45 dBA Leq limit is a reasonable regulatory standard for non-participating landowners based on what he has seen used in other counties and states across the United States.<sup>208</sup> As Mr. Hankard testified, Deuel County's 45 dBA limit is on the low end of the range of United States wind farm sound limits that he is familiar with based on working on projects in 14 states and dozens of counties; further, it is often difficult to discern wind turbine noise at 45 dBA in the presence of noise from the wind blowing through vegetation (trees, grass, crops), the noise

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<sup>198</sup> Ex. A4 at 2 (Hankard Direct).

<sup>199</sup> Ex. A17 at 2 (Hankard Rebuttal).

<sup>200</sup> See Ex. A17-1 at 5, 6 (Updated Noise Analysis).

<sup>201</sup> Mr. Hessler agreed the assumption is more conservative. Evid. Hrg. Tr. at 1003 (Hessler).

<sup>202</sup> Ex. A4 at 6-7 (Hankard Direct); Ex. A17-1 at 6 (Updated Noise Analysis).

<sup>203</sup> See Ex. A17-1 at 4, 5 (Updated Noise Analysis).

<sup>204</sup> See Ex. A4 at 7-8 (Hankard Direct); Ex. A17-1 at 7, 12 (Updated Noise Analysis).

<sup>205</sup> See Ex. A4 at 7-8 (Hankard Direct); Ex. A17-1 at 7, 12 (Updated Noise Analysis).

<sup>206</sup> See Ex. A4 at 8 (Hankard Direct); Ex. A17-1 at 7, 12 (Updated Noise Analysis); see also Evid. Hrg. Tr. at 464 (Hankard).

<sup>207</sup> Ex. A17 at 2, 4 (Hankard Rebuttal); Ex. A17-1 at 12 (Updated Noise Analysis).

<sup>208</sup> Ex. A9 at 3 (Hankard Supplemental).

level of which ranges from 35 to 55 dBA.<sup>209</sup> Staff witness Mr. Hessler agreed that 45 dBA Leq at non-participating residences and 50 dBA at participating residences are reasonable limits the Commission should apply to the Project.<sup>210</sup>

104. Further, Mr. Hessler and Mr. Hankard agreed that Intervenor John Homan's proposal of 35 dBA at non-participating residences is not a reasonable, or achievable, condition for the Project.<sup>211</sup>

105. Thus, a 45-dBA limit at non-participants' residences is consistent with prior dockets, consistent with Deuel County's requirements, and fully supported in the record.

106. Mr. Hessler and Mr. Hankard agreed that L10 should not be used as the sound level metric for the Project.<sup>212</sup> First, the L10 (the level exceeded 10% of the time) is typically applied to sources of transient noise, such as highways, where there is a significant fluctuation in the noise level (e.g., very loud when a truck goes by, and almost silent when no traffic is present).<sup>213</sup> Wind turbines, when operating near or at full power (which is the condition of interest in noise compliance studies), emit a relatively continuous noise.<sup>214</sup> Continuous noise sources are best quantified using the Leq, which is suitable for use on a wide range of environmental noise sources and is by far the most commonly used metric by environmental acoustics professionals, noise standards, regulations, and ordinances for wind turbine projects, highways and airports.<sup>215</sup> Second, the primary challenge in conducting wind turbine noise compliance surveys is separating the relatively constant wind turbine noise from the time varying noise made by all other noise sources in the environment, which is primarily that of the wind blowing through nearby vegetation, but also that produced by passing vehicles, barking dogs, etc.<sup>216</sup> Because the L10 represents the highest noise levels measured over a time interval, it better quantifies the non-turbine intermittent noise in the background than it does the constant noise from the wind turbines.<sup>217</sup> Due to what the L10 metric is specifically intended to measure, the L10 tends to represent the background noise rather than turbine noise and therefore using the L10 would be problematic.<sup>218</sup> Third, a majority of the acoustic standards applicable to wind turbine projects quantify noise using the Leq metric.<sup>219</sup> Manufacturers quantify noise from turbines using the Leq and propagation models specify the Leq, as so do environmental noise measurement standards.<sup>220</sup> The primary method of measuring compliance and of separating turbine and non-turbine noise, using ANSI S12.9 Part 3, is designed to be used with the Leq.<sup>221</sup>

107. The record demonstrates that ambient sound modeling (a community noise assessment) is not warranted. As Mr. Hessler testified, ambient (background) noise levels in rural

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<sup>209</sup> Ex. A24 at 8 (Hankard Surrebuttal); *see also* Evid. Hrg. Tr. at 467-468 (Hankard).

<sup>210</sup> *See* Ex. S3 at 5, 6-8 (Hessler Direct); *see also* Evid. Hrg. Tr. at 970-971 (Hessler).

<sup>211</sup> Ex. S3 at 6 (Hessler Direct); Ex. A17 at 2 (Hankard Rebuttal).

<sup>212</sup> *See, e.g.*, Ex. S3 at 6-7 (Hessler Direct); Ex. A17 at 2, 4-5 (Hankard Rebuttal).

<sup>213</sup> Ex. A9 at 6 (Hankard Supplemental).

<sup>214</sup> Ex. A9 at 6 (Hankard Supplemental).

<sup>215</sup> Ex. A9 at 6 (Hankard Supplemental).

<sup>216</sup> Ex. A9 at 6 (Hankard Supplemental).

<sup>217</sup> Ex. A9 at 6-7 (Hankard Supplemental).

<sup>218</sup> Ex. A9 at 7 (Hankard Supplemental).

<sup>219</sup> Ex. A9 at 7 (Hankard Supplemental).

<sup>220</sup> Ex. A9 at 7 (Hankard Supplemental).

<sup>221</sup> Ex. A9 at 7 (Hankard Supplemental).

areas “all over the country” are “remarkabl[y]” similar<sup>222</sup> and ambient sound surveys “tend to be repetitive” and “[t]end to get the same results.”<sup>223</sup> Further, Mr. Hessler noted that other projects recently permitted by the Commission have also not conducted a community noise assessment.<sup>224</sup>

108. Section 1215.03(13)(b) of the Deuel County Zoning Ordinance states the following: “Limit for allowable shadow flicker at existing residences to no more than 30 hours annually.”

109. The record demonstrates that Deuel Harvest has minimized impacts from shadow flicker.<sup>225</sup> The Project is not projected to result in shadow flicker levels above 30 hours per year at any inhabited residence. Therefore, the Project will comply with the Deuel County Zoning Ordinance.<sup>226</sup>

110. The record demonstrates that the 30 hour/year limit is an appropriate limit.<sup>227</sup> There is no federal standard for shadow flicker exposure from wind turbines, and state and local standards are uncommon.<sup>228</sup> This standard is commonly applied in regulatory proceedings in other jurisdictions.<sup>229</sup> The 30-hour-per-year limit is a reasonable limit that can be used to site wind turbines in a responsible manner. This limit was established by Deuel County after a zoning amendment process. It is the appropriate community standard for the Project based on that community process and based on the fact that the 30-hour annual limit is a typical standard in the United States for shadow flicker when a limit is established, and that there is no evidence of health effects caused by shadow flicker, at any level.<sup>230</sup>

111. The record does not support a limit on minutes of shadow flicker per day.<sup>231</sup> As Deuel Harvest’s expert Ms. Blank testified, there are approximately 4,463 hours of daylight in South

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<sup>222</sup> Evid. Hrg. Tr. at 972-973 (Hessler) (“I’ve done I would estimate 50 to 60 ambient studies before wind projects are built, and just about all wind projects are in rural areas to begin with. It’s remarkable how similar the background is all over the country. Almost to the point where I feel like it’s not even necessary to do the survey. You can also guess what the level’s going to be. ... What we find is that level is often in the 35 to 40 range.”).

<sup>223</sup> Evid. Hrg. Tr. at 1005 (Hessler).

<sup>224</sup> Evid. Hrg. Tr. at 1001 (Hessler).

<sup>225</sup> See, e.g., Ex. A1 at § 15.5.2 (Application); Ex. A18-1 (Updated Shadow Flicker Analysis).

<sup>226</sup> Ex. A18 at 2 (Blank Rebuttal); Ex. A18-1 at 5 (Updated Shadow Flicker Analysis).

<sup>227</sup> See Ex. A8 at 1-2, 3-4 (Blank Supplemental).

<sup>228</sup> Ex. A6 at 4 (Blank Direct) and Ex. A8 at 1 (Blank Supplemental).

<sup>229</sup> See Ex. A8 at 1-2 (Blank Supplemental); see also, e.g., *In the Matter of the Application of Freeborn Wind Energy LLC for a Large Wind Energy Conversion System Site Permit for the up to 84 MW Freeborn Wind Farm in Freeborn County*, Minnesota Public Utilities Commission Docket WS-17-410, Minnesota Department of Commerce Energy Environmental Review and Analysis (EERA) Comments and Recommendations on Draft Site Permit at 18 (December 5, 2017) (eDocket No. [201712-137950-01](#)) (“Some of the comments indicated that non-participants should not experience more than 30 hours of shadow flicker per year. 30 hours of flicker per year was a suggested standard in a couple sources of information reviewed by EERA, but those sources do not provide supporting scientific data that would suggest there is a link between shadow flicker in excess of 30 hours per year of exposure and negative human health impacts.”); *In the Matter of the Application of Lindahl Wind Project, LLC’s Application for a Certificate of Site Compatibility for the Lindahl Wind Farm Project in Williams County, North Dakota*, Docket PU-15-482, North Dakota Public Service Commission Findings of Fact, Conclusions of Law and Order, (Dec. 2, 2016) at Order ¶ 8.

<sup>230</sup> Ex. A8 at 3-4 (Blank Supplemental); see also Ex. A11 at 6 (Ellenbogen Supplemental); Ex. A12 at 10-11 (Roberts Supplemental); Evid. Hrg. Tr. at 409-410 (Ellenbogen).

<sup>231</sup> Ex. A8 at 2-3 (Blank Supplemental).

Dakota annually. The more appropriate tool for limiting shadow flicker is the 30-hour per year limit. In percentage terms, 30 hours represents less than 1 percent of daylight hours.<sup>232</sup>

112. There is no record evidence that the proposed Project will have adverse impacts on human health.<sup>233</sup> Construction and placement of facilities meet or exceed industry standards established for protection of the health and welfare of residences and businesses in and around the Project.<sup>234</sup> Further, in a previous wind docket, the South Dakota Department of Health provided Staff with a letter stating that the Department of Health has not taken a formal position on the issue of wind turbines and human health.<sup>235</sup> The South Dakota Department of Health referenced the Massachusetts Department of Public Health and Minnesota Department of Health studies and noted that those studies generally conclude that there is insufficient evidence to establish significant risk to human health.<sup>236</sup>

113. Deuel Harvest offered the testimony of two highly qualified medical doctors with unchallenged credentials: Dr. Mark Roberts and Dr. Jeff Ellenbogen. Dr. Roberts is a medical doctor and a PhD epidemiologist who spent 18 years working in public health with the Oklahoma State Department of Health.<sup>237</sup> Dr. Ellenbogen, also a medical doctor, is a Board-certified neurologist and spent five years as a professor of neurology at The Johns-Hopkins University School of Medicine.<sup>238</sup> Both Dr. Roberts and Dr. Ellenbogen testified that there is no scientific evidence that wind turbines cause adverse health effects.<sup>239</sup>

114. The testimony of Deuel Harvest's medical doctors was unrebutted. Intervenors did not present any expert medical testimony. While Intervenor Kilby submitted pre-filed testimony from Mr. Robert Rand, he was precluded from testifying regarding health effects because he lacks

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<sup>232</sup> Ex. A8 at 3 (Blank Supplemental).

<sup>233</sup> See, e.g., Ex. A12 at 6-7, 8-9, 14 (Roberts Supplemental); Ex. A11 at 5 (Ellenbogen Rebuttal) ("None of the limited epidemiological evidence reviewed suggested an association between noise from wind turbines and a wide range of topics we considered: pain, stiffness, diabetes, high blood pressure, tinnitus, hearing impairment, cardiovascular disease, and/or headache/migraine. In addition, claims that infrasound from wind turbines directly impacts the vestibular system have not been demonstrated scientifically. . . . We did not find evidence in the human or animal literature to support that vibrations of the kind produced by a wind turbine could influence the vestibular system."); Ex. A11 at 12 (Ellenbogen Supplemental) ("This rigorous study demonstrated no relationship between noise from wind turbines and a wide variety of subjective and objective measures of adverse health outcomes. More simply, the most comprehensive study of the effect of wind turbine noise on human health to date did not show adverse health effects at sound levels up to 46 dBA at the receptor."); Ex. A19 at 2 (Ellenbogen Rebuttal) ("there is not only 'insufficient evidence to establish a significant risk to human health,' but also, there is now evidence to establish that there is not a significant risk to human health."); Evid. Hrg. Tr. at 335-336, 344, 345-346, 353-355, 370-371 (Roberts); Evid. Hrg. Tr. at 376, 385, 403-405, 410 (Ellenbogen).

<sup>234</sup> See, e.g., Ex. A1 at Ch. 8.0, 24.0 (Application).

<sup>235</sup> Ex. A12-2 (Letter, Kim Malsam-Rysdon, Secretary of Health, South Dakota Department of Health (Oct. 13, 2017)); see *In the Matter of the Application by Crocker Wind Farm, LLC for a Permit of a Wind Energy Facility and a 345 kV Transmission Line in Clark County, South Dakota, for Crocker Wind Farm*, Docket EL17-055, Exhibit S1 at DK-4, Letter, Kim Malsam-Rysdon, Secretary of Health, South Dakota Department of Health (Oct. 13, 2017) ("These studies generally conclude that there is insufficient evidence to establish a significant risk to human health.").

<sup>236</sup> Ex. A12-2 (Letter, Kim Malsam-Rysdon, Secretary of Health, South Dakota Department of Health (Oct. 13, 2017)); Ex. A19 at 2-3 (Ellenbogen Rebuttal).

<sup>237</sup> See Ex. A12-1 (Roberts Statement of Qualifications); Ex. A12 at 1-2 (Roberts Supplemental).

<sup>238</sup> See Ex. A11-1 (Ellenbogen Statement of Qualifications); Ex. A11 at 1 (Ellenbogen Supplemental).

<sup>239</sup> See, e.g., Ex. A11 at 5 (Ellenbogen Supplemental); Ex. A19 at 2 (Ellenbogen Rebuttal); Ex. A12 at 6-7, 9, 10-11 (Roberts Supplemental); Evid. Hrg. Tr. at 335-336, 344, 345-346, 353-355, 370-371 (Roberts); Evid. Hrg. Tr. at 376, 385, 403-405, 410 (Ellenbogen).

the education, training, and experience to provide expert testimony on health effects.<sup>240</sup> Accordingly, the hearing examiner ordered redactions of Mr. Rand's pre-filed testimony and exhibits to reflect the hearing examiner's ruling that Mr. Rand is not qualified to testify about health effects.<sup>241</sup>

115. Deuel Harvest's two independent medical experts, Dr. Roberts and Dr. Ellenbogen, provided extensive testimony confirming that there is no scientifically proven link between wind turbines and any adverse health effect.<sup>242</sup> Dr. Roberts concluded that there is no peer-reviewed, scientific data to support a claim that wind turbines are causing disease or specific health conditions.<sup>243</sup>

116. Dr. Ellenbogen participated in a panel that conducted a Massachusetts health impact study, which concluded that wind turbines do not pose a risk to human health. The panel "specifically evaluated the merits of 'wind turbine syndrome'" and "found no basis for a set of health effects from wind turbines."<sup>244</sup> He also evaluated four individuals claiming to suffer from "wind turbine syndrome" and found that the claims could not be substantiated and in fact prevented the individuals from seeking appropriate treatment.<sup>245</sup> Dr. Ellenbogen testified: "[I]n my opinion, the misapplied blame to wind turbines prevented these individuals from seeking and obtaining much-needed medical treatment for their underlying conditions."<sup>246</sup>

117. There is no evidence in the record to support a finding that wind turbines cause adverse health effects.<sup>247</sup> This conclusion has been reached by well-respected, governmental agencies charged with protecting public health that have evaluated the available evidence and concluded that wind turbines are not a cause of adverse health effects.<sup>248</sup> For example, Health Canada has recently completed and published the work of its major study that formally investigated the potential for wind turbine noise to impact human health.<sup>249</sup> As Dr. Ellenbogen testified the Health Canada study "is by far the largest and most comprehensive study on the topic of health effects for humans and wind turbines."<sup>250</sup> This research examined multiple dimensions, including stress, sleep, and cardiovascular disease. Researchers examined self-reported and objective measures of health-related outcomes associated with wind turbine noise of more than one thousand people exposed to outdoor calculated WTN levels up to 46 dBA.<sup>251</sup> The overall conclusion of that work is that there were no positive associations between wind turbine noise and

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<sup>240</sup> See Evid. Hrg. Tr. at 1157, 1158-1160 (Rand).

<sup>241</sup> Evid. Hrg. Tr. at 1158-1161 (Rand).

<sup>242</sup> See, e.g., Ex. A11 at 5 (Ellenbogen Supplemental); Ex. A19 at 2 (Ellenbogen Rebuttal); Ex. A12 at 6-7, 9, 10-11 (Roberts Supplemental); Evid. Hrg. Tr. at 335-336, 344, 345-346, 353-355, 370-371 (Roberts); Evid. Hrg. Tr. at 376, 385, 403-405, 410 (Ellenbogen).

<sup>243</sup> Ex. A12 at 6-7 (Roberts Supplemental); Evid. Hrg. Tr. at 335-336, 345-346 (Roberts).

<sup>244</sup> Ex. A11 at 5 (Ellenbogen Supplemental).

<sup>245</sup> Ex. A11 at 7 (Ellenbogen Supplemental).

<sup>246</sup> Ex. A11 at 9 (Ellenbogen Supplemental).

<sup>247</sup> See, e.g., Ex. A11 at 5, 9, 12 (Ellenbogen Supplemental); Ex. A12 at 3-5, 6-7, 8 (Roberts Supplemental); Ex. A19 at 2-3 (Ellenbogen Rebuttal); Evid. Hrg. Tr. at 335-336, 344, 345-346, 353-355, 370-371 (Roberts); Evid. Hrg. Tr. at 376, 385, 403-405, 410 (Ellenbogen).

<sup>248</sup> See Ex. A12 at 6-7 (Roberts Supplemental).

<sup>249</sup> See Ex. A19 at 2-3 (Ellenbogen Rebuttal); see also Ex. A11 at 6-7 (Ellenbogen Supplemental); Ex. A25 at 3 (Ellenbogen Surrebuttal).

<sup>250</sup> Evid. Hrg. Tr. at 378 (Ellenbogen).

<sup>251</sup> See Ex. A19 at 2-3 (Ellenbogen Rebuttal); see also Ex. A11 at 6-7 (Ellenbogen Supplemental); Ex. A25 at 3 (Ellenbogen Surrebuttal).

a wide variety of subjective and objective measures of adverse health outcomes. Specifically, the study did not show adverse health effects at sound levels up to 46 dBA at the receptor.<sup>252</sup>

118. With respect to sleep disturbance specifically, Dr. Ellenbogen referred to the recent study from Health Canada, which found no evidence of sleep disruption from wind turbines at up to 46 dBA.<sup>253</sup> Specifically, the Health Canada study found that “[t]his demonstrated sensitivity, together with the observation that there was consistency between multiple measures of self-reported sleep disturbance and among some of the self-reported and actigraphy measures, lends strength to the robustness of the conclusion that [wind turbine noise] levels up to 46 dB(A) had no statistically significant effect on any measure of sleep quality.”<sup>254</sup>

119. Infrasound is generally defined as sound in the approximately 0 to 20 Hz frequency range.<sup>255</sup> Infrasound is generated by both natural and man-made sources, including: the human heart, waves, lung and digestive tract sounds, naturally occurring winds, ventilation systems, machinery, and large combustion processes.<sup>256</sup> These sources are in the range of infrasound produced by wind turbines.<sup>257</sup> The levels of infrasound produced by wind turbines are not only below the threshold of human hearing but are multiple orders of magnitude below the threshold.<sup>258</sup> There is no scientifically proven evidence of adverse effects in the range produced by wind turbines.<sup>259</sup> As Staff’s witness Mr. Hessler testified, there are currently over 50,000 wind turbines installed in the United States, with self-reported adverse health effect complaints at only a very small number of those turbines.<sup>260</sup>

120. There is no scientific evidence indicating any demonstrated health effects arising from shadow flicker produced by wind turbines.<sup>261</sup> Further, the record demonstrates that shadow flicker from turbines is not harmful to the health of photosensitive individuals, including those with epilepsy.<sup>262</sup> Seizures that occur as a result of flashes of light may happen as a result of frequencies greater than 5 Hz, usually substantially higher.<sup>263</sup> The frequency of any shadow flicker from wind turbines will be approximately 0.5 to 1 Hz, which is considerably below the range that would elicit a seizure even in someone who is vulnerable to seizures as a result of flashes of light.<sup>264</sup> No

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<sup>252</sup> See Ex. A19 at 2-3 (Ellenbogen Rebuttal); see also Ex. A11 at 6-7 (Ellenbogen Supplemental); Ex. A25 at 3 (Ellenbogen Surrebuttal).

<sup>253</sup> See Ex. A11 at 11-12 (Ellenbogen Supplemental).

<sup>254</sup> Ex. A11-5 at 107 (Michaud et al., Effects of Wind Turbine Noise on Self-Reported and Objective Measures of Sleep (2016)) (emphasis added).

<sup>255</sup> Ex. A12 at 9 (Roberts Supplemental).

<sup>256</sup> Ex. A12 at 9 (Roberts Supplemental).

<sup>257</sup> Ex. A12 at 9 (Roberts Supplemental).

<sup>258</sup> Ex. A17 at 5 (Hankard Rebuttal); Ex. A19 at 5-6 (Ellenbogen Rebuttal); Evid. Hrg. Tr. at 399-400 (Ellenbogen).

<sup>259</sup> See Ex. A12 at 9 (Roberts Supplemental); Evid. Hrg. Tr. at 353-355, 370-371 (Roberts); Ex. A19 at 3-4 (Ellenbogen Rebuttal).

<sup>260</sup> See Evid. Hrg. Tr. at 978 (Hessler) (“The Shirley project had six turbines and lots of people upset. There’s 56 thousand wind turbines in this country, and all we ever hear about is Shirley from years ago. If this were a common problem that was multiplied by the number of turbines, we’d be hearing about all kinds of projects with this problem. In South Dakota there’s 15 projects, 1,000 megawatts operating. Does anyone know of any problems in this state from any of those projects in terms of infrasound? I wasn’t able to find anything.”).

<sup>261</sup> Ex. A11 at 6 (Ellenbogen Supplemental); Ex. A12 at 10-11 (Roberts Supplemental); Evid. Hrg. Tr. at 410 (Ellenbogen).

<sup>262</sup> See Ex. A11 at 6 (Ellenbogen Supplemental); Ex. A12 at 10-11 (Roberts Supplemental).

<sup>263</sup> Ex. A11 at 6 (Ellenbogen Supplemental); Ex. A12 at 10-11 (Roberts Supplemental).

<sup>264</sup> Ex. A11 at 6 (Ellenbogen Supplemental); Ex. A12 at 10-11 (Roberts Supplemental).

supporting scientific data has been provided to suggest that there is a link between shadow flicker in excess of 30 hours per year of exposure and negative human health impacts.<sup>265</sup>

121. Overall, the record shows that Deuel Harvest has met its burden to demonstrate that the Project will not substantially impair human health; indeed, there is no evidence in the record that the Project would substantially impair human health.

122. The record demonstrates that Deuel Harvest has taken appropriate measures to avoid and/or minimize the risk of ice throw occurring.<sup>266</sup> Although icing can occur on turbine blades during freezing rain conditions, the record demonstrates that it is not common and is generally controlled by ice detection systems on the turbines.<sup>267</sup> Staff and Deuel Harvest have agreed upon a permit condition with respect to icing that is consistent with prior Commission orders and is designed to avoid and minimize ice throw.<sup>268</sup> Turbine control systems would either automatically shut down the turbine(s) in icing conditions, or Deuel Harvest would manually shut down turbine(s) if icing conditions are identified (using meteorological data).<sup>269</sup> Turbines would not return to normal operation until the control systems indicate icing is no longer a concern.<sup>270</sup> Deuel Harvest will also be responsible for all documented damages caused by ice thrown from a turbine.<sup>271</sup>

123. The evidence presented in the record demonstrates that Project setbacks and the permit condition regarding turbine icing will protect human health and safety.<sup>272</sup> Deuel Harvest provided testimony from Mr. Jacob Baker, the Director of Operations and Maintenance, Renewables, at Invenergy, who has more than thirteen years of experience working with site operations and maintenance of wind energy facilities.<sup>273</sup>

124. The evidence presented in the record demonstrates that Project setbacks and the condition proposed above will protect human health and safety.<sup>274</sup> In addition to the testimony by Mr. Baker, Deuel Harvest provided written confirmation from General Electric (GE) that the methods Mr. Baker described above to detect icing are "the methods employed by GE to sense and assess ice build-up on the blades and to control the machine appropriately, and that GE's recommended setback guidance of *1.1\*Tip Height*, with a minimum setback distance of 170 meters, is intended to cover residual risks of blade icing."<sup>275</sup> To make the Project setbacks consistent with the setbacks recommended by GE in its Setback Considerations for Wind Turbine Siting<sup>276</sup>, Deuel Harvest and Staff stipulated that, "Turbines shall be set back at least 1.1 times the tip height, with a minimum set back distance of 558 feet, from any surrounding property line. However, if the owner of the wind turbine tower has a written agreement with an adjacent land owner allowing the placement of the tower closer to the property line, the tower may be placed closer to the property line shared with that adjacent land owner."<sup>277</sup> The Commission finds the

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<sup>265</sup> Ex. A11 at 6-7 (Ellenbogen Supplemental); Ex. A12 at 11 (Roberts Supplemental).

<sup>266</sup> See, e.g., Ex. A13 at 2-5 (Baker Supplemental); Evid. Hrg. Tr. at 1016-1017 (Baker).

<sup>267</sup> Ex. A13 at 2 (Baker Supplemental); Ex. A16 at 1 (Baker Rebuttal).

<sup>268</sup> Ex. A13 at 2-3 (Baker Supplemental).

<sup>269</sup> Ex. A13 at 2-3 (Baker Supplemental).

<sup>270</sup> Ex. A13 at 2-3 (Baker Supplemental).

<sup>271</sup> Permit Conditions at ¶ 41.

<sup>272</sup> See, e.g., Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1 (Baker Rebuttal); see also Permit Conditions at ¶ 45.

<sup>273</sup> See Ex. A13 at 1 (Baker Supplemental).

<sup>274</sup> See, e.g., Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1 (Baker Rebuttal); see also Permit Conditions at ¶ 41.

<sup>275</sup> Ex. A40 (Emails regarding Ice Build-Up on Blades).

<sup>276</sup> See Ex. A1 at Appendix V, pg. 7 (General Electric Setback Considerations for Wind Turbine Siting).

<sup>277</sup> Permit Conditions at ¶ 45.

turbine control software coupled with the manufacturer's recommended setback will minimize the health and safety risk associated with ice throw.<sup>278</sup>

125. The record demonstrates that Deuel Harvest has taken appropriate measures to avoid and/or minimize the risk of fire at the Project.<sup>279</sup> Turbine fires are rare. As Mr. Baker testified, he is aware of one turbine fire on all of Invenergy's wind farms, and that fire burned itself out.<sup>280</sup> Turbines are constructed of fiberglass and steel, which are not highly flammable materials.<sup>281</sup> Further, Deuel Harvest will take steps to reduce the risk of fire at the Project. Deuel Harvest will acquire turbines from reputable suppliers.<sup>282</sup> With respect to Project maintenance activities, a rigorous hot works program (a program to reduce risks associated with an activity, such as welding, which provides an ignition source) is adhered to whenever any open flames or heat sources are introduced in a tower.<sup>283</sup> All up tower entries require a fire extinguisher be taken up the tower. All employees are trained annually on use.<sup>284</sup> Additionally, Deuel Harvest will coordinate fire emergency plans and hold emergency response drills at the Project with local fire departments both before the Project becomes operational and annually thereafter.<sup>285</sup>

126. The FAA has issued a Determination of No Hazard for each of the Project's proposed turbine sites.<sup>286</sup>

127. Intervenors John Homan and Garrett Homan both testified concerning their grass airstrip (Homan Airstrip), which is currently being graded in the middle of a cultivated field.<sup>287</sup> The Homans provided no expert testimony on the design of the airstrip. Mr. Garrett Homan, a general aviation aircraft pilot, directly disqualified himself from offering any testimony on airport design.<sup>288</sup> He also is not involved in the construction of the airstrip; his father is responsible for the construction.<sup>289</sup>

128. The Homan Airstrip, if built, would be a private use airport and does not have an FAA approved instrument approach procedure.<sup>290</sup> The FAA does not require private air strips to acquire air rights over neighboring properties and does not afford airspace protections to private use airports without an FAA-approved instrument approach procedure.<sup>291</sup> John Homan received an SEP for the Homan Airstrip from Deuel County; Deuel County required him to submit a letter of assurance stating: "Applicant hereby acknowledges that the only way to be guaranteed unrestricted access to the airspace over the neighbor's property is to secure those rights from the

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<sup>278</sup> See, e.g., Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1 (Baker Rebuttal); see also Permit Conditions at ¶ 41.

<sup>279</sup> See, e.g., Ex. A16 at 3-4 (Baker Rebuttal); Evid. Hrg. Tr. at 1050-1051 (Baker).

<sup>280</sup> Ex. A16 at 3 (Baker Rebuttal).

<sup>281</sup> Ex. A16 at 3 (Baker Rebuttal).

<sup>282</sup> Ex. A16 at 3 (Baker Rebuttal).

<sup>283</sup> Ex. A16 at 3 (Baker Rebuttal).

<sup>284</sup> Ex. A16 at 3 (Baker Rebuttal).

<sup>285</sup> Ex. A16 at 4 (Baker Rebuttal).

<sup>286</sup> Ex. S7 at 31 (Applicant's Additional Data Request Responses to Staff) (Public).

<sup>287</sup> Pub. Hrg. Tr. at 12-16 (Mar. 27, 2019) (J. Homan); Ex. G1 (Homan Direct); see also Ex. JH15 at Photo 5 (Pictures).

<sup>288</sup> Evid. Hrg. Tr. at 1103 (G. Homan).

<sup>289</sup> Evid. Hrg. Tr. at 1109-1110 (G. Homan). Mr. Garrett Homan has been "involved in kind of the siting and layout" of the Homan Airstrip. *Id.* Mr. Garrett Homan also testified that he has landed approximately 20 times on a grass airstrip. *Id.* at 1114.

<sup>290</sup> Ex. A21 at 5 (Doyle Rebuttal); see also Ex. A31-1 at 16-17 (Applicant's First Set of Data Requests to Intervenor John Homan and Responses); Evid. Hrg. Tr. at 1084 (G. Homan).

<sup>291</sup> Ex. A21 at 8 (Doyle Rebuttal).



adjacent property owners. By signing this letter of assurance, Applicant does not waive any legal rights to which he is entitled. That the applicant communicates with their adjacent property owners."<sup>292</sup> At the evidentiary hearing, John Homan did not dispute these requirements.<sup>293</sup>

129. Mr. John Homan has neither sought nor received any airspace or avigational easements from his neighbors (Mr. Doyle Thompson and Mr. Darold Hunt).<sup>294</sup> Mr. Thompson, one of the affected neighbors, testified that losing a single turbine would result in a financial loss of more than six figures over the life of the Project.<sup>295</sup>

130. The Homan Airstrip is not a public airport.<sup>296</sup>

131. Mr. Garrett Homan introduced testimony from Mr. Kevin Elwood, a pilot in Canada. Mr. Elwood has a private pilot's license, a commercial pilot's license, and an airline pilot license. He is a director for the Canadian Owners & Pilots Association. He trains licensed pilots for endorsements.<sup>297</sup> Mr. Elwood opined that as a professional pilot he would have safety concerns based on the layout of the airstrip and wind turbines as found in Exhibit G2.<sup>298</sup>

132. Deuel Harvest presented testimony from Mr. Benjamin Doyle, the president and owner of Capitol Airspace Group, LLC, and a former U.S. Army air traffic controller, describing federal and state airspace regulations and explaining that they do not grant protections to private airstrips like the Homan Airstrip.<sup>299</sup> Mr. Doyle explained that the FAA is the preeminent regulator of flight safety regulations and that it does not restrict turbines in the vicinity of private airstrips and also that it has issued Determinations of No Hazard for each of the Project's turbine locations.<sup>300</sup> Mr. Doyle further explained that "none of the proposed turbines penetrate the 20:1 surfaces for [the Homan Airstrip] and therefore would not have been deemed to have an impact on the airport."<sup>301</sup> Similarly, Mr. Doyle stated that, even if the Homan Airstrip were treated as public, the closest turbine (Turbine No. 108) "is actually located just outside of the VFR traffic pattern area."<sup>302</sup> Mr. Doyle further testified that if the Homan Airstrip were a public airport with VFR, the FAA would issue Determinations of No Hazard for all proposed turbine locations near the Homan Airstrip.

133. Deuel Harvest witness, Mr. Thomas Rice, with Capitol Airspace Group, LLC and pilot and former Marine Corps Officer, testified that: (1) The Homan Airstrip has been designed for small general aviation aircraft for which there are crosswind limitations;<sup>303</sup> (2) In a study of aviation and wind turbine waking based on real-world conditions, pilots reported that "corrected control inputs were accomplished with minimal urgency. Mr. Rice compared this to hitting a bump,"<sup>304</sup> and

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<sup>292</sup> Ex. A31-1 at 16 (Applicant's First Set of Data Requests to Intervenor John Homan and Responses).

<sup>293</sup> See Evid. Hrg. Tr. at 1215-1216 (J. Homan); see also Ex. A31-2 at 2 and 7 (Applicant's First Set of Data Requests to Intervenor John Homan and Responses).

<sup>294</sup> Evid. Hrg. Tr. at 1209-1211 (J. Homan).

<sup>295</sup> Evid. Hrg. Tr. at 631-632 (Thompson).

<sup>296</sup> Evid. Hrg. Tr. at 1084 (G. Homan); Ex. G1 at 3 (G. Homan Direct).

<sup>297</sup> Evid. Hrg. Tr. at 842-854 (Elwood). Evid. Hrg. Tr. at 835; Ex. G10

<sup>298</sup> Evid. Hrg. Tr. at 865, 869

<sup>299</sup> See Ex. A21 (Doyle Rebuttal).

<sup>300</sup> Evid. Hrg. Tr. at 745-747, 748 (Doyle); Ex. A21 at 3-4, 9-11 (Doyle Rebuttal); see also Ex. S7 at 31 (Applicant's Additional Data Request Responses to Staff) (Public).

<sup>301</sup> Ex. A21 at 12 (Doyle Rebuttal).

<sup>302</sup> Evid. Hrg. Tr. at 748 (Doyle).

<sup>303</sup> Evid. Hrg. Tr. at 1316-1318 (Rice).

<sup>304</sup> Evid. Hrg. Tr. at 1329-1330 (Rice).

(3) Turbine waking would not occur under all circumstances. Where it would occur, the crosswind component would be such that it would not be safe for small general aviation aircraft like those proposed by the Homans to land or depart from the Homan Airstrip.<sup>305</sup>

134. The FAA prescribes that general aviation aircraft pilots should maintain between 500 feet (less populated areas) and 1,000 feet (populated areas) between their aircraft and any obstacle (including wind turbines).<sup>306</sup> Mr. Rice testified that the military's policy is to maintain a distance of 2,000 feet from obstacles.<sup>307</sup> The closest wind turbine to the Homan Airstrip is 2,430 feet; the closest wind turbine to the Homan Airstrip approach surface is 1,593 feet.<sup>308</sup>

135. The record demonstrates that the proposed layout of the Homan Airstrip and the wind turbines raised concerns for the safety of the public. Deuel Harvest's proposed layout of wind turbines did not allow a minimum distance of 2,000 feet from obstacles. Deuel Harvest and Staff stipulated that, "All turbines shall be greater than 2,000 feet from the 20:1 approach surface of Homan Field and no turbine blades shall intrude on the traffic pattern airspace for Homan Field."<sup>309</sup> This affords the use of one-sided traffic pattern use. The Commission finds the military's policy of maintaining a distance of 2,000 feet from obstacles to be more conservative and therefore safer than the FAA guidelines of maintaining between 500 feet for less populated areas and 1,000 feet for populated areas between their aircraft and any obstacle.

**D. The facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.**

136. The record demonstrates that the Project will not unduly interfere with the orderly development of the region. The Project complies with all applicable local land use requirements, and the evidence demonstrates that Deuel Harvest has worked cooperatively with local governments.

137. The Commission must give due consideration to the views of governing bodies of affected local units of government pursuant to SDCL 49-41B-22(4).<sup>310</sup> In response to a request from Staff regarding the Deuel County Ordinance Section 1215.03(2)(d), the Deuel County Zoning Officer stated that the setback was from the Lake Park District at Lake Alice, not from Lake Alice itself.<sup>311</sup>

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<sup>305</sup> Evid. Hrg. Tr. at 1322-1323 (Rice) ("[I]f you look at the orientation of that north south runway with the project area and where the turbines are located, as I previously discussed regarding crosswind limitations, if the wind was blowing strong enough to preclude take off due to crosswind, then the aircraft would not be flying even if the turbines didn't exist."); *see also id.* at 1131-1132 ("I believe that based off of the orientation of where the project area is and where those turbines are [sited] and the orientation of his north sound runway I do not believe that if the wind was blowing severe enough to create wing tip vortices that would be a hazard to general aviation aircraft that he would want to fly anyway on that day, even if the turbines didn't exist, because of the excessive crosswind component blowing from west to east. And I back that opinion up based on my own experience of never having experienced any type of turbulence anywhere in the vicinity of a wind turbine in a low altitude environment.").

<sup>306</sup> Evid. Hrg. Tr. at 1352-1353 (Doyle).

<sup>307</sup> Evid. Hrg. Tr. at 1331. (Rice).

<sup>308</sup> Evid. Hrg. Tr. at 1355-1357 (Doyle).

<sup>309</sup> Permit Conditions at ¶ 44.

<sup>310</sup> Ex. S1 at 23 (Thurber Direct).

<sup>311</sup> Ex. S1 at 23 (Thurber Direct).

138. On March 2, 2018, the Deuel County Board of Adjustment (County Board) issued an SEP for the Project. On March 27, 2019, a South Dakota Circuit Court held that two of the County Board members should not have participated in voting on the Project SEP because they had previously held easements for the Project. On April 5, 2019, Deuel Harvest submitted a new SEP application for the Project to the County Board. The County Board meeting at which the SEP application will be considered is scheduled for May 8, 2019.<sup>312</sup>

139. Intervenors requested setbacks greater than those imposed by existing regulations and recommended by the turbine manufacturer from non-participating residences. There is no evidence in the record supporting additional setbacks from non-participating residences.<sup>313</sup> The record demonstrates that the Project meets the Commission's siting requirements applying the current setbacks, as well as Deuel County's requirements under its Zoning Ordinance and Deuel Harvest's commitments.<sup>314</sup> Additionally, there is no reasonable basis in the record to support a two-mile setback from non-participating residences.

140. Intervenors also requested setbacks greater than those imposed by existing regulations and recommended by the turbine manufacturer from property lines. There is no evidence in the record supporting additional setbacks from non-participating property lines.<sup>315</sup> The record demonstrates that the Project meets the Commission's siting requirements applying the current setbacks, as well as Deuel County's requirements under its Zoning Ordinance and Deuel Harvest's commitments.<sup>316</sup> Additionally, there is no reasonable basis in the record to support this request.<sup>317</sup>

141. Intervenors also requested setbacks greater than those imposed by existing regulations from public roads and right-of-ways. There is no evidence in the record supporting greater setbacks from public roads and right-of-ways.<sup>318</sup> The record demonstrates that the Project meets the Commission's siting requirements applying the current setbacks, as well as Deuel County's requirements under its Zoning Ordinance and Deuel Harvest's commitments.<sup>319</sup> Additionally, there is no reasonable basis in the record supporting this request.<sup>320</sup>

142. Mr. Heath Stone requests a 2,000-foot setback from his family's homestead at which there is currently an abandoned residence. Although Deuel Harvest previously met with Mr. Heath Stone regarding the Project during its development phase, he did not mention this request

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<sup>312</sup> On May 8, 2019, the Deuel County Board of Adjustment approved the SEP.

<sup>313</sup> See, e.g., Ex. A14 at 7 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental); Ex. S1 at 26-27 (Thurber Direct).

<sup>314</sup> See, e.g., Ex. Ex. A2 at 8-9 (Svedeman Direct); Ex. A14 at 7, 15-16 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental).

<sup>315</sup> See, e.g., Ex. A2 at 8-9 (Svedeman Direct); Ex. A14 at 15-16 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1, 2-3 (Baker Rebuttal).

<sup>316</sup> See, e.g., Ex. A2 at 8-9 (Svedeman Direct); Ex. A14 at 7, 15-16 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1, 2-3 (Baker Rebuttal).

<sup>317</sup> See Ex. A2 at 8-9 (Svedeman Direct); Ex. A14 at 15-16 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1, 2-3 (Baker Rebuttal).

<sup>318</sup> See Ex. Ex. A2 at 8-9 (Svedeman Direct); Ex. A14 at 15-16 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1, 2-3 (Baker Rebuttal).

<sup>319</sup> See Ex. A2 at 8-9 (Svedeman Direct); Ex. A14 at 15-16 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1, 2-3 (Baker Rebuttal).

<sup>320</sup> See Ex. A2 at 8-9 (Svedeman Direct); Ex. A14 at 15-16 (Svedeman Rebuttal); Ex. A13 at 5 (Baker Supplemental); Ex. A16 at 1, 2-3 (Baker Rebuttal).

at that time.<sup>321</sup> Deuel Harvest has worked with landowners where it is aware of concerns and where it is possible to do so. For example, Deuel Harvest removed five turbines in response to the construction of residences by two participating landowners prior to Deuel Harvest's application to the Commission.<sup>322</sup> In addition, Deuel Harvest treated the new residence for which a building permit has been issued on the Homan property as a non-participating residence (Receptor No. 803), as well as the existing structure on that property (Receptor No. 332).<sup>323</sup> However, Deuel Harvest was not aware of Mr. Stone's request and his future plans and did not have the opportunity to try to incorporate such setbacks into the proposed Project layout submitted to the Commission.<sup>324</sup> Further, the record reflects that Mr. Heath Stone has no current specific plans for re-constructing the homestead. It is abandoned, and there is no evidence that a building permit or other permit that has been issued for that property.<sup>325</sup>

## VI. GENERAL.

143. Applicants have furnished all information required by the applicable statutes and Commission regulations.

144. Applicants have satisfied their burden of proving all of the requirements imposed by SDCL 49-41B-22 for issuance of the permit to construct by the preponderance of the evidence.

145. An application may be denied, returned, or amended, at the discretion of the Commission, for failure to file an application generally in the form and content required by SDCL Chapter 49-41B and ARSD Chapter 20:10:22.<sup>326</sup> The Commission finds that Applicant filed its application generally in the form and content required by SDCL Chapter 49-41B and ARSD Chapter 20:10:22. The Commission notes that the supplementation of an application with additional information is common.<sup>327</sup>

146. An application may be denied, returned, or amended, at the discretion of the Commission, if there are any deliberate misstatements of material facts in the application or in accompanying statements or studies.<sup>328</sup> The Commission finds that the application and its accompanying statements and studies did not contain any deliberate misstatements of material facts.

147. The Commission finds that the Permit Conditions attached hereto and incorporated herein by reference are supported by the record, are reasonable and will help ensure that the Project will meet the standards established for approval of a construction permit for the Project set forth in SDCL 49-41B-22 and should be adopted.

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<sup>321</sup> Ex. S7 at 7 (Applicant's Additional Data Request Responses to Staff).

<sup>322</sup> Ex. A14 at 4-5 (Svedeman Rebuttal). The new homes are Receptor 804 (Toben LP) and 805 (Eugene Lorenzen). *Id.*

<sup>323</sup> See Ex. A38 (Distance from Residences to the Nearest Wind Turbine, Modeled Shadow Flicker and Sound Levels) and Ex. A17-1 at A-5 (Update Pre-Construction Noise Analysis) and Ex. A26 (Updated Land Ownership Map). The existing building on the property is Receptor No. 332. *Id.*

<sup>324</sup> Ex. S7 at 7-8 (Applicant's Additional Data Request Responses to Staff).

<sup>325</sup> Evid. Hrg. Tr. at 1175-1176 (H. Stone); Ex. A31-5 (Applicant's First Set of Discovery Requests to Intervenor Heath Stone and Intervenor Heath Stone's Responses); Ex. S7 at 7-8 (Applicant's Additional Data Request Responses to Staff).

<sup>326</sup> SDCL 49-41B-13(2).

<sup>327</sup> Ex. S1 at 4 (Thurber).

<sup>328</sup> SDCL 49-41B-13(1).

148. The Commission finds that the Project, if constructed in accordance with the Permit Conditions of this decision, will comply with all applicable laws and rules, including all requirements of SDCL Chapter 49-41B and ARSD Chapter 20:10:22.

149. The Commission finds that the Project, if constructed in accordance with the Permit Conditions of this decision, will not pose an unacceptable threat of serious injury to the environment nor to the social and economic conditions of inhabitants or expected inhabitants in the siting area.

150. The Commission finds that the Project, if constructed in accordance with the Permit Conditions of this decision, will not substantially impair the health, safety or welfare of the inhabitants in the siting area.

151. The Commission finds that the Project, if constructed in accordance with the Permit Conditions of this decision, will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

152. The Commission finds the Intervenor's have not presented evidence sufficient to deny the permit under the applicable statutes and Commission regulations.

153. The Commission finds that a permit to construct the Project should be granted subject to the attached Permit Conditions.

154. To the extent that any Conclusion of Law set forth below is more appropriately a finding of fact, that Conclusion of Law is incorporated herein by reference as a Finding of Fact as if set forth in full herein.

155. To the extent that any of the Findings of Fact in this decision are determined to be Conclusions of Law or mixed findings of fact and conclusions of law, the same are incorporated herein by this reference as a Conclusion of Law as if set forth in full herein.

Based on the foregoing Findings of Fact and the record in this proceeding, the Commission hereby makes the following:

### **CONCLUSIONS OF LAW**

From the foregoing Findings of Fact and the record in this proceeding, the Commission now makes the following Conclusions of Law:

1. The Commission has jurisdiction to consider the Application under South Dakota Codified Law Chapter 49-41B.

2. The wind energy conversion facility proposed by Applicant is a wind energy facility as defined under South Dakota Codified Law 49-41B-2(13).

3. The Application submitted by Applicant meets the criteria required by South Dakota Codified Law 49-41B-25, and construction of the Project meets the requirements of South Dakota Codified Law 49-41B.

4. The Commission concludes that it possesses the authority under SDCL 49-41B-25 to impose conditions on the construction, operation and maintenance of the Project, that the Conditions set forth in the attached Permit Conditions are supported by the record, are reasonable, and will help ensure that the Project will meet the standards established for approval of a construction permit for the Project set forth in SDCL 49-41B-22 and that the Permit Conditions are hereby adopted.

5. The Commission concludes that it needs no other information to assess the impact of the proposed facility or to determine if Deuel Harvest has met its burden of proof.

6. The Commission satisfied the hearing and notice requirement in South Dakota Codified Law Chapter 49-41B.

7. Applicant satisfied the applicable notice requirements in South Dakota Codified Law Chapter 49-41B.

8. All other applicable procedural requirements in South Dakota Codified Law Chapter 49-41B have been satisfied.

9. Neither the Gen-Tie nor the Otter Tail Facilities are a "transmission facility" pursuant to SDCL 49-41B-2.1 because they will be less than one-half mile long, they will not cross a public highway, and eminent domain will not be used to acquire the right-of-way for the Gen-Tie or any Otter Tail Facilities. Therefore, no permit from the Commission is required for the construction, ownership, and operation of the Gen-Tie or Otter Tail Facilities.

10. Applicant has demonstrated that the proposed facility will comply with all applicable laws and rules.

11. When considered with all Permit Conditions, Applicant has demonstrated that the facility will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area.

12. When considered with all Permit Conditions, Applicant has demonstrated that the facility will not substantially impair the health, safety or welfare of the inhabitants.

13. When considered with all Permit Conditions, Applicant has demonstrated that the facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

14. Deuel Harvest must comply with the requirements in the Deuel County Zoning Ordinance.

15. No party has provided evidence sufficient for the Commission to impose a two-mile setback from the eagle nest north of Lake Alice.

16. The Commission concludes the plain language of the Deuel County Ordinance Section 1215.03(2)(d) dictates that the Project should be set back two miles from Lake Alice.

17. No party has provided evidence sufficient for the Commission to impose a property value guarantee.

18. No party has provided evidence sufficient for the Commission to impose a setback greater than that required by existing regulations and manufacturer's recommendations from non-participating residences.

19. No party has provided evidence sufficient for the Commission to impose a setback greater than that required by existing regulations and manufacturer's recommendations from property lines.

20. No party has provided evidence sufficient for the Commission to impose a setback greater than that required by existing regulations and manufacturer's recommendations from all public roads and rights-of-way.

21. Sufficient evidence was provided for the Commission to impose a 2,000 foot setback from the Homan Airstrip.

22. No party has provided evidence sufficient for the Commission to impose a condition regarding decommissioning above and beyond the condition agreed to by Staff and Deuel Harvest.

23. The standard of proof is by the preponderance of evidence. Applicant has met its burden of proof imposed by SDCL 49-41B-22 for issuance of the permit to construct by the preponderance of the evidence and is entitled to a permit to construct as provided in SDCL 49-41B-25.

24. Based on the preponderance of the evidence presented to the Commission, the Commission concludes that all of the requirements of SDCL 49-41B-22 have been satisfied.

25. The Commission thus concludes that the Application should be granted and a facility permit should be issued for the Project for the reasons stated in these Findings of Fact and Conclusions of Law. The Commission grants the permit to construct requested in the Application, as amended, subject to the Permit Conditions, and the Stipulation.

### ORDER

From the foregoing Findings of Fact and Conclusions of Law, it is therefore:

ORDERED, that a permit to construct the Deuel Harvest North Wind Farm is granted to Deuel Harvest Wind Energy LLC for the construction and operation of the Project. It is further

ORDERED, that Applicant shall comply with all of the attached Permit Conditions, which are incorporated by reference into this Order the same as if they had been set forth in their entirety herein. It is further

ORDERED, that the joint request for approval of the Stipulation is hereby granted, and the Stipulation is hereby approved. The Stipulation is incorporated by reference into this Order the same as if it had been set forth in its entirety herein. It is further

ORDERED, that the Kilby Motion to Dismiss is hereby denied.

**NOTICE OF ENTRY**

PLEASE TAKE NOTICE that this Final Decision and Order Granting Permit to Construct Facilities was duly issued and entered on the 30<sup>th</sup> day of May 2019.

<p style="text-align: center;"><b>CERTIFICATE OF SERVICE</b></p> <p>The undersigned hereby certifies that this document has been served today upon all parties of record in this docket, as listed on the docket service list, electronically or by mail.</p> <p>By: <u>Karen E. Cronm</u></p> <p>Date: <u>05/30/19</u></p> <p style="text-align: center;">(OFFICIAL SEAL)</p>
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BY ORDER OF THE COMMISSION:

Gary Hanson  
GARY HANSON, Chairman

Chris Nelson  
CHRIS NELSON, Commissioner

Kristie Fiegen  
KRISTIE FIEGEN, Commissioner



## PERMIT CONDITIONS

1. Applicant will obtain all governmental permits which reasonably may be required by any township, county, state agency, or federal agency, or any other governmental unit for construction and operation activity of the Project prior to engaging in the particular activity covered by that permit. Copies of any permits obtained by Applicant shall be sent to the Commission.
2. Applicant shall construct, operate, and maintain the Project in a manner consistent with (1) descriptions in the Application, (2) Application supplements and corrections, (3) responses to any data requests, (4) the Final Decision and Order Granting Permit to Construct Facilities, and attached Permit Conditions, (5) any applicable industry standards, (6) any permits issued by a federal, state, or local agency, and (7) evidence presented by Applicant at the evidentiary hearing.
3. Applicant agrees that the Commission's complaint process as set forth in ARSD Chapter 20:10:01 shall be available to landowners and other persons sustaining or threatened with damage as the result of Applicant's failure to abide by the conditions of the Permit or otherwise having standing to seek enforcement of the conditions of the Permit. Participating landowners are free to use the complaint process free from retribution or consequence regardless of any private easement term to the contrary.
4. At least 14 days prior to commencement of construction, Applicant shall provide each participating and non-participating landowner in the Project Area, using the addresses designated to receive the property tax bill sent by the county treasurer, with the following information:
  - a) A copy of the Final Decision and Order Granting Permit to Construct Facilities with attached Permit Conditions;
  - b) Detailed safety information describing:
    - 1) Reasonable safety precautions for existing activities on or near the Project;
    - 2) Known activities or uses that are presently prohibited near the Project; and
    - 3) Other known potential dangers or limitations near the Project;
  - c) Construction/maintenance damage compensation plans and procedures (only to participating landowners);
  - d) The Commission's address, website, and phone number;
  - e) Contact person for Applicant, including name, e-mail address, and phone number.
5. In order to ensure compliance with the terms and conditions of this Permit pursuant to SDCL 49-41B-33, it is necessary for the enforcement of this Order that all employees,

contractors, and agents of Applicant involved in this Project be made aware of the terms and conditions of this Permit.

6. Except as otherwise provided in the Permit Conditions, Applicant shall comply with all mitigation measures set forth in the Application and Applicant's responses to data requests, and Applicant exhibits and testimony at the evidentiary hearing. Material modifications to the mitigation measures shall be subject to prior approval of the Commission.
7. Applicant will negotiate road use agreements with Deuel County and all affected townships, if required. Applicant will follow the terms of all road use agreements. When using haul roads specified in applicable road use agreements, Applicant shall take appropriate action to mitigate wind-blown particles created throughout the construction process, including but not limited to implementation of dust control measures such as road watering, covering of open haul trucks when transporting material subject to being windblown, and the removal of any soils or mud deposits by construction equipment when necessary.
8. In accordance with applicable road use agreements or applicable law, Applicant shall comply with the following conditions regarding road protection:
  - a) Applicant shall acquire all necessary permits authorizing the crossing of federal, state, county, and township roads.
  - b) Applicant shall coordinate road closures with federal, state, and local governments and emergency responders.
  - c) Applicant shall implement a regular program of road maintenance and repair through the active construction period to keep paved and gravel roads in an acceptable condition for residents and the public.
  - d) After construction, Applicant shall repair and restore deteriorated roads resulting from construction traffic or compensate governmental entities for their repair and restoration of deteriorated roads, such that the roads are returned to their preconstruction condition.
  - e) Within 180 days of completing construction and reclamation of the Project, Applicant shall submit documentation to the Commission identifying that the roads were repaired in accordance with this Condition 8 and to the satisfaction of affected townships and county. If the townships or county will not provide such documentation, then Applicant shall provide a report to the Commission on the outstanding road repair issues and how those issues will be resolved.
  - f) Privately owned areas used as temporary roads or crane paths during construction will be restored to their preconstruction condition, except as otherwise requested or agreed to by the landowner.
  - g) Should Applicant need to widen any existing roadways during construction of the Project, Applicant shall return the roadways back to original width after completion of the Project, unless otherwise agreed upon with the federal, state, county, or township entities, or the landowner.

9. Applicant shall provide signage that identifies road closures and disturbances resulting from the Project in accordance with the most recent editions of the Manual on Uniform Traffic Control Devices as published by the Federal Highway Administration.
10. Applicant shall promptly report to the Commission the presence of any critical habitat of threatened or endangered species in the Project Area that Applicant becomes aware of and that was not previously reported to the Commission.
11. Applicant agrees to avoid direct impacts to cultural resources that are unevaluated, eligible for, or listed in the National Register of Historic Places (NRHP). When a NRHP unevaluated, eligible, or listed resource cannot be avoided, Applicant shall notify the South Dakota State Historic Preservation Office (SHPO) and the Commission of the reasons that complete avoidance cannot be achieved in order to coordinate minimization and/or treatment measures.
12. Applicant agrees to develop an unanticipated discovery plan for cultural resources and follow SDCL 34-27-25, 34-27-26, and 34-27-28 for the discovery of human remains.
13. Applicant shall file the final cultural resources report with the Commission prior to commercial operation. If any potential adverse impacts to NRHP unevaluated, listed, or eligible cultural resources are identified in the final cultural resources report, Applicant shall file with the Commission a report describing the SHPO-approved planned measures to ameliorate those impacts.
14. Applicant shall provide the Stormwater Pollution Prevention Plan (SWPPP) to the Commission when Applicant has a final design for the Project. The SWPPP will outline the water and soil conservation practices that will be used during construction to prevent or minimize erosion and sedimentation. The SWPPP will be completed before submittal of an application for a National Pollutant Discharge Elimination System (NPDES) general permit for construction activities. All contractors to be engaged in ground disturbing activities will be given a copy of the SWPPP and the requirements will be reviewed with them prior to the start of construction.
15. Applicant shall repair and restore areas disturbed by the construction or maintenance of the Project. Except as otherwise agreed to by the landowner, restoration shall include the replacement of the original pre-construction topsoil or equivalent quality topsoil to its original elevation, contour, and compaction and re-establishment of original vegetation as close thereto as reasonably practical. In order to facilitate compliance with this Permit Condition, Applicant shall:
  - a) Strip the topsoil to the actual depth of the topsoil, or as otherwise agreed to by the landowner in writing (e-mail is sufficient), in all areas disturbed by the Project; however, with respect to access roads, Applicant may remove less than the actual depth of the topsoil to ensure roads remain low-profile and the contours align with the surrounding area;
  - b) Store the topsoil separate from the subsoil in order to prevent mixing of the soil types;

- c) All excess soils generated during the excavation of the turbine foundations shall remain on the same landowner's land, unless the landowner requests, and the landowner agrees otherwise; and
  - d) When revegetating non-cultivated grasslands, Applicant shall use a seed mix that is recommended by the Natural Resource Conservation Service (NRCS), or other land management agency, unless otherwise agreed upon with the landowner in writing.
16. Applicant shall work closely with landowners or land management agencies, such as the NRCS, to determine a plan to control noxious weeds.
  17. Applicant shall stage construction materials in a manner that minimizes the adverse impact to landowners and land users as agreed upon between Applicant and landowner or Applicant and the appropriate federal, state, and/or local government agency. All excess (non-permanent) construction materials and debris shall be removed upon completion of the Project, unless the landowner agrees otherwise.
  18. In order to mitigate interference with agricultural operations during and after construction, Applicant shall locate all structures, to the extent feasible and prudent, to minimize adverse impacts and interferences with agricultural operations, shelterbelts, and other land uses or activities. Applicant shall take appropriate precautions to protect livestock and crops during construction. Applicant shall repair all fences and gates removed or damaged during construction or maintenance unless otherwise agreed upon with the landowner or designee. Applicant shall be responsible for the repair of private roads damaged when moving equipment or when obtaining access to the right-of-way.
  19. Applicant shall bury the underground collector system at a minimum depth of 48 inches, or deeper if necessary, to ensure the current land use is not impacted.
  20. Applicant shall repair or replace all property removed or damaged during all phases of construction, including but not limited to, all fences, gates, and utility, water supply, irrigation, or drainage systems. Applicant shall compensate the owners for damages or losses that cannot be fully remedied by repair or replacement, such as lost productivity and crop and livestock losses. All repair, replacement and/or compensation described above shall be in accordance with the terms and conditions of written agreements between Applicant and affected landowners where such agreements exist.
  21. Applicant shall, in the manner described in its written agreement with a landowner, indemnify and hold the landowner harmless for loss, damage, claim, or actions resulting from Applicant's use of the easement, including any damage resulting from any release, except to the extent such loss, damage claim, or action results from the negligence or willful misconduct of the landowner or his employees, agents, contractors, invitees, or other representatives.
  22. Applicant may make turbine adjustments of 250 feet or less from the turbine locations identified at the time a Facility Permit is issued without prior Commission approval, so long as the specified noise and shadow flicker thresholds are not exceeded, cultural resource impacts and documented habitats for listed species are avoided, and wetland impacts are avoided or are in compliance with applicable U.S. Army Corps of Engineers (USACE) regulations. Prior to implementing the turbine adjustment, Applicant will file in

the docket an affidavit demonstrating compliance with the limitations set forth above. Any turbine adjustment that does not comply with the aforesaid limitations, or turbine model change, would be considered a "material change," and Applicant shall file a request for approval of the "material change" prior to making the adjustment pursuant to the following approval process:

Applicant will file with the Commission and serve on the official Service List a request for approval of the adjustment that includes:

- An affidavit describing the proposed turbine adjustment, the reason for the adjustment, the reason the adjustment does not comply with one or more turbine flexibility limitations set forth above, and information regarding compliance with all other applicable requirements; and
- A map showing both the approved location and the proposed adjustment (in different colors).
  - Once received, the information would be reviewed by Commission staff, and Commission staff will have 10 calendar days within which to request further Commission review.
  - If no further review is requested, Applicant may proceed with the adjustment.
  - If further review is requested, the Commission will issue a decision regarding Applicant's request at its next available regularly scheduled Commission meeting, subject to notice requirements, after the request for further review is made by Commission staff.

23. Applicant may adjust access roads, the collector and communications systems, meteorological towers, ADLS facilities, the operations and maintenance facility, the Project Substation, and temporary facilities, so long as they are located on land leased for the Project, cultural resources are avoided or mitigated in consultation with the SHPO; documented habitats for listed species are avoided; wetland impacts are avoided or are in compliance with applicable USACE regulations; and all other applicable regulations and requirements are met.
24. If the Project causes interference with radio, television, or any other licensed communication transmitting or receiving equipment, Applicant shall take all appropriate action to minimize any such interference and shall make a good faith effort to restore or provide reception levels equivalent to reception levels in the immediate areas just prior to construction of the Project. This mitigation requirement shall not apply to any dwellings or other structures built after completion of the Project.
25. Applicant will provide Global Positioning System (GPS) coordinates of structure locations to affected landowners at any time during the life of the Project. Coordinates will be provided in writing to landowners within 30 days of a request.
26. The Project, exclusive of all unrelated background noise, shall not generate a sound pressure level (10-minute equivalent continuous sound level, Leq) of more than 45 dBA when all turbines are producing full acoustic output, as measured within 25 feet of any residence unless the owner of the residence has signed a waiver, or more than 50 dBA within 25 feet of any participating residence unless the owner of the residence has signed a waiver. Applicant shall, upon Commission formal request, conduct field surveys or provide post-construction monitoring data verifying compliance with specified noise

level limits. If the measured wind turbine noise level exceeds 45 dBA at any non-participating residence or 50 dBA at any participating residence, then the Project Owner shall take whatever steps are necessary in accordance with prudent operating standards to rectify the situation. Sound monitoring will not be repeated in a representative area during any five-year period unless operational or maintenance changes result in a reasonable assumption of higher turbine sound levels.

The post-construction monitoring survey, upon Commission formal request, shall be executed as follows:

- a) The post-construction monitoring survey shall follow the applicable portions of American National Standards Institute (ANSI) standard S12.9 Part 3, and other acoustical standard relating to equipment and calibration specifications.
- b) Noise levels shall be measured continuously for at least two weeks, or until such time that a sufficient number of valid 10-minute Leq periods are acquired to determine compliance to a reasonable degree of scientific certainty. At a minimum, data must be collected for multiple 10-minute periods on at least two different nights when the nearest turbines are operating at full acoustic emissions, and background noise levels are sufficiently low such that the measured total noise level can be assumed to equal the turbine-only noise level (ground wind speeds of approximately 2 m/s or less, and no presence of noise from traffic or other manmade sources).
- c) Measurements shall be conducted at a select number of non-participating and participating residences with the highest expected noise levels. Typically, 4 to 6 measurement locations total.
- d) Measurements shall be conducted using sound level meters meeting ANSI Type 1 specifications. An anemometer shall be placed within 20 feet of each microphone, and at a height of 2 meters above the ground.
- e) The measurement data shall be analyzed as follows:
  - i. Analyze those data acquired when the ~4 turbines nearest to each measurement location are operating at full capacity (80% electric power or more, which typically occurs at a hub-height wind speed of 10 m/s or greater).
  - ii. Discard those samples measured when the 10-minute average ground wind speed is 5 m/s or greater.
  - iii. Remove transient background noise (i.e. occasional traffic, activities of residents, farming activities, and wind gusts) per ANSI S12.9 Part 3.
  - iv. Remove continuous background noise by conducting turbine shut-downs, where the background noise is measured directly. Shut down testing will be conducted in a controlled manner, where consultant's staff will be present on site to observe and listen during the tests. Shut down testing shall continue until enough data has been collected when ground wind speeds are between approximately 2 and 5 m/s that a repeatable pattern is observed in the measured background noise level. Background noise levels will be subtracted from total noise levels measured during these wind conditions to calculate turbine-only noise levels.

- v. Review of the frequency spectra of potential turbine-only samples to identify and remove outliers (spectral shape clearly differing from those samples measured under very low (less than 2 m/s) ground wind conditions, which are the samples most representative of turbine-only noise).
  - f) Compare the resulting turbine-only noise levels to the 45 and 50 dBA limits. Compliance shall be demonstrated if all samples are less than the limits.
- 27. Not less than 30 days prior to commencement of construction work in the field for the Project, Applicant will provide to Commission staff the following information:
  - a) the most current preconstruction design, layout, and plans, including the turbine model selected;
  - b) a sound level analysis showing compliance with the applicable sound level requirements;
  - c) a shadow flicker analysis showing the anticipated shadow flicker levels will not exceed applicable requirements per year at any residence, absent a waiver agreement executed by the residence owner(s);
  - d) should Applicant decide at a later point to use a different turbine model, it shall provide the information required in parts a-c above. Applicant shall also demonstrate that in selecting locations for the other turbines, it considered how to reduce impacts on non-participating landowners; and
  - e) such additional Project preconstruction information as Commission staff requests.
- 28. Within 90 days after the Project's commercial operation date, Applicant shall submit a report to the Commission that provides the following information:
  - a) as-built location of structures and facilities, including drawings clearly showing compliance with the setbacks required by state and local governments set forth in Table 9-1 of the Application;
  - b) the status of remedial activities for road damage, landowner property damage, crop damage, environmental damage, or any other damage resulting from Project construction activities; and
  - c) a summary of known landowner complaints and Applicant's plan for resolving those complaints.
- 29. Applicant shall seek input from local emergency response personnel to properly and effectively coordinate an emergency response plan consistent with local resources and response abilities. Upon completion of construction, a Project operation emergency response plan shall be provided to Commission staff to make available to the general public on the Commission's website.

30. Prior to the construction of the Project, Applicant will notify public safety agencies by providing a schedule and the location of work to be performed within their jurisdiction. The agencies contacted will include the South Dakota Department of Public Safety, the sheriff of Deuel County, and the Deuel County Office of Emergency Management.
31. Applicant agrees to undertake a minimum of two years of independently-conducted post-construction avian and bat mortality monitoring for the Project, and to provide a copy of the report and all further reports to the USFWS, SDGFP, and the Commission.
32. Applicant shall file the Bird and Bat Conservation Strategy (BBCS) prior to beginning construction of the Project. The BBCS shall be implemented during construction and operation of the Project.
33. At least 30 days prior to commencement of construction, Applicant shall submit the identity and qualifications of a public liaison officer to the Commission for approval to facilitate the exchange of information between Applicant, including its contractors, landowners, local communities, and residents, and to facilitate prompt resolution of complaints and problems that may develop for landowners, local communities, and residents as a result of the Project. Applicant shall file with the Commission its proposed public liaison officer's credentials for approval by the Commission prior to the commencement of construction. After the public liaison officer has been approved by the Commission, the public liaison officer may not be removed by Applicant without the approval of the Commission. The public liaison officer shall be afforded immediate access to Applicant's on-site project manager, its executive project manager, and to the contractors' on-site managers and shall be available at all times to Commission staff via mobile phone to respond to complaints and concerns communicated to the Commission staff by concerned landowners and others. Within 10 working days of when Applicant's public liaison officer has been appointed and approved, Applicant shall provide contact information for him/her to all landowners in the Project Area and to law enforcement agencies and local governments in the vicinity of the Project. The public liaison officer's contact information shall be provided to landowners in each subsequent written communication with them. If the Commission determines that the public liaison officer has not been adequately performing the duties set forth for the position in this Order, the Commission may, upon notice to Applicant and the public liaison officer, take action to remove the public liaison officer. The public liaison's services shall terminate 90 days after the Project commences commercial operations, unless the appointment is extended by order of the Commission.
34. If the Project is decommissioned, Applicant will follow Section 23 of the Application and the decommissioning plan laid out in Appendix U of the Application. The Commission shall be notified prior to any decommissioning action.
35. Applicant shall utilize an Aircraft Detection Lighting System approved by the Federal Aviation Administration.
36. At least 60 days prior to commencement of commercial operation, Applicant shall file an escrow agreement with the Commission for Commission approval that provides a decommissioning escrow account. The escrow agreement shall incorporate the following requirements:



- a) The escrow account is funded by the turbine owner annually at a rate of \$5,000 per turbine per year for the first 30 years, commencing no later than the commercial operation date.
- b) Beginning in year ten following commercial operation of the project and each fifth year thereafter, the turbine owner shall submit to the Commission an estimated decommissioning date, if established, and estimated decommissioning costs and salvage values. Based on the verification of the information in the filing the Commission may determine that funds in escrow are sufficient to cover the costs of decommissioning and that reduced or no additional deposits are required. The Commission also may determine that additional funding is required and may require additional funding equal to the estimated amount needed for decommissioning.
- c) All revenues earned by the account shall remain in the account.
- d) An account statement shall be provided annually to the Commission and become a public record in this docket.
- e) The escrow account obligations will be those of Deuel Harvest and the escrow agreement shall include terms providing that the agreement binds Deuel Harvest's successors, transferees, and assigns. A sale of project assets shall include the associated Permit that requires Commission approval per SDCL § 49-41B-29.
- f) The escrow account agent shall have an office located in South Dakota.
- g) The escrow agreement shall be subject to the laws of South Dakota and any disputes regarding the agreement shall be venued in South Dakota.
- h) To minimize the risk that the escrow account would be subject to foreclosure, lien, judgment, or bankruptcy, the escrow agreement will be structured to reflect the follow factors:
  - 1) That Deuel Harvest agreed to the creation of the escrow account;
  - 2) Deuel Harvest exercises no (or the least amount possible of) control over the escrow;
  - 3) The initial source of the escrow;
  - 4) The nature of the funds put into the escrow;
  - 5) The recipient of its remainder (if any);
  - 6) The target of all its benefit; and
  - 7) The purpose and its creation.

- i) Account funds are to be paid to the project owner at the time of decommissioning, to be paid out as decommissioning costs are incurred and paid.
  - j) If the project owner fails to execute the decommissioning requirement found in this section of the Conditions, the account is payable to the landowner who owns the land on which associated project facilities are located as the landowner incurs and pays decommissioning costs.
37. If Applicant is purchased by an electric utility which is rate regulated by the Commission, Paragraph 36 of these conditions will not apply. Instead, the purchasing utility will assume financial responsibility and provide funding for the decommissioning and removal of the Project. As a regulated electric utility, the projected financial cost of decommissioning will be reviewed when the purchasing utility requests recovery of the Project investment and associated decommissioning cost from customers in a rate proceeding. The Commission may review and adjust the Project decommissioning cost recovered from customers in subsequent rate proceedings using the most current information available regarding decommissioning.
38. The terms and conditions of the Permit shall be made a uniform condition of construction and operation, subject only to an affirmative written request for an exemption addressed to the Commission. A request for an exemption shall clearly state which particular condition should not be applied to the property in question and the reason for the requested exemption. The Commission shall evaluate such requests on a case-by-case basis, which evaluation shall be completed within 60 days unless exigent circumstances require action sooner.
39. Applicant shall provide a copy of the Commission's Final Decision and Order Granting Permit to Construct Facilities; Notice of Entry and attached Permit Conditions in this docket to the affected county, townships, and municipalities in the Project Area.
40. Shadow flicker at residences shall not exceed 30 hours per year unless the owner of the residence has signed a waiver.
41. The Project will use the following method to detect icing conditions on turbine blades: (1) Applicant will install sensors on the nacelle and instrumentation that will measure air temperature, wind speed, and power output. That information, in addition to monitoring for deviations in each turbine's power curve, will then be used by an algorithm in the software system to assess whether there is ice buildup on the blades. (2) Applicant will also utilize meteorological data from on-site permanent meteorological towers, on-site anemometers, and other relevant meteorological sources to determine if ice accumulation is occurring. These control systems would either automatically shut down the turbine(s) in icing conditions, or Applicant would manually shut down turbine(s) if icing conditions are identified. Turbines would not return to normal operation until the control systems indicate icing is no longer a concern. Applicant will pay for any documented damage caused by ice thrown from a turbine.
42. For purposes of this Project and the commitments herein, "residences," "business(es)," "structures," "schools," "churches," "cemeteries," and "public buildings" shall include only those that are in existence and in use as of the date of the Commission's order issuing a

permit. Residences in existence include the recently constructed homes on property owned by Eugene Lorenzen and on property owned by Toben LP.

43. No turbine may be constructed within two miles of Lake Alice as currently specified in the Deuel County zoning ordinance unless
  - a) This ordinance is modified by a zoning ordinance amendment promulgated by the Deuel County Commission; or
  - b) The current ordinance is found by a court of law to mean something other than the stated language of two miles from Lake Alice.
44. All turbines shall be greater than 2,000 feet from the 20:1 approach surface of Homan Field and no turbine blades shall intrude on the traffic pattern airspace for Homan Field.
45. Turbines shall be set back at least 1.1 times the tip height, with a minimum set back distance of 558 feet, from any surrounding property line. However, if the owner of the wind turbine tower has a written agreement with an adjacent land owner allowing the placement of the tower closer to the property line, the tower may be placed closer to the property line shared with that adjacent land owner.