

**BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

**DOCKET EL19-027**

**IN THE MATTER OF THE APPLICATION OF CROWNED RIDGE WIND II, LLC FOR  
A PERMIT OF THE CROWNED RIDGE II WIND FARM IN CODINGTON, GRANT AND  
DEUEL COUNTIES, SOUTH DAKOTA**

**Direct Testimony of David M Hessler  
On Behalf of the Staff of the South Dakota Public Utilities Commission  
December 5, 2019**



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1   **Q.    Please state your name and business address.**

2   A.    My name is David M. Hessler.  The address of my company's administrative  
3       offices is 38329 Old Mill Way, Ocean View, Delaware 19970, and my personal  
4       office is located at 5096 N Silver Cloud Dr., St. George, Utah 84770.

5  
6   **Q.    Mr. Hessler, by whom are you employed and in what capacity?**

7   A.    I have been employed for over 28 years by Hessler Associates, Inc., as Vice  
8       President and a Principal Consultant.  Hessler Associates, Inc. is a family run  
9       engineering consulting firm that specializes in the acoustical design and analysis  
10      of power generation facilities of all kinds, including wind energy projects.

11  
12   **Q.    Please describe your educational background and your professional**  
13   **experience?**

14   A.    I received a Bachelor of Science degree in Mechanical Engineering in 1997,  
15       *Summa cum Laude*, from the A. James Clark School of Engineering, University  
16       of Maryland, College Park, Maryland, and a Bachelor of Arts degree, 1982, from  
17       the University of Hartford, Hartford, Connecticut.  I am a registered Professional  
18       Engineer (P.E.) in the Commonwealth of Virginia and I am a member of the  
19       Institute of Noise Control Engineering (INCE).  My professional specialization is  
20       the measurement, analysis, control and prediction of noise from both fossil fueled  
21       and renewable power generation facilities.  I have been the principal acoustical  
22       designer and/or test engineer on hundreds of power station projects all over the  
23       world and on roughly 70 industrial scale wind energy projects.  I wrote the



1 chapter on measuring and analyzing wind turbine noise in the book "Wind  
2 Turbine Noise"<sup>1</sup>, which was published in 2011. I also drafted a set of best  
3 practices guidelines<sup>2</sup> for siting new wind turbine projects and testing them once  
4 completed for the National Association of Regulatory Utility Commissioners  
5 (NARUC). My resume, which contains a list of the cases where I have testified  
6 as an expert witness, is also attached for reference as Exhibit DMH-1.

7  
8 **Q. What is the purpose of your testimony in this case?**

9 A. I have been asked by the Staff of the South Dakota Public Utilities Commission  
10 to review and independently evaluate the adequacy of the sound study carried  
11 out by EAPC Wind Energy in support of the Crowned Ridge II Wind Farm Project  
12 (CRII) and to review the testimony of other parties concerning noise.

13  
14 **Q. What materials have you reviewed in this matter?**

15 A. I have reviewed Appendix I of the Application, which is the original (July 7, 2019)  
16 sound study for the Project prepared by EAPC Wind Energy and its later revision  
17 dated September 18, 2019. I have also reviewed the direct and supplemental  
18 testimony of Jay Haley, who was the author of the sound study, Richard  
19 Lampeter and the supplemental direct testimony of Christopher Ollson and Dr.  
20 Robert McCunney.

21  

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<sup>1</sup> Bowdler, D., and Leventhall, G., Editors, "Wind Turbine Noise", Multi-Science Publishing Company, Brentwood, Essex, UK, 2011.

<sup>2</sup> Hessler, D., "Assessing Potential Impacts from Proposed Wind Farms & Measuring the Performance of Completed Projects", National Association of Regulatory Utility Commissioners, U.S. Department of Energy, October 2011.

1 **Q. Can you please summarize your overall opinion of the sound study**  
2 **submitted on behalf of the project?**

3 A. In general, the quality of the work and noise modeling is perfectly satisfactory  
4 and consistent with good industry practice. I agree with the modeling  
5 methodology and believe that the predictions are realistic, if not somewhat  
6 conservative because an explicit 2 dB uncertainty factor was added to the  
7 maximum turbine sound power level. However, I would fault the study for  
8 focusing exclusively on regulatory compliance rather than the minimization of  
9 potential community noise impacts. The project layout appears to have been  
10 aggressively devised, through careful placement and the now universal use of  
11 low noise trailing edge blades, to get the maximum number of turbines into the  
12 Project area while maintaining a predicted sound level at all non-participants of  
13 less than the Deuel and Grant County Ordinance limit of 45 dBA. In many cases  
14 the calculated sound level at non-participants is only an insignificant one or two  
15 tenths of decibel below that limit, which is still precariously close to the maximum  
16 allowable sound level even if the 2 dB uncertainty factor is neglected.

17  
18 **Q. Do you believe compliance with a 45 dBA noise limit is sufficient in and of**  
19 **itself to ensure that project noise will be considered acceptable to**  
20 **everyone?**

21 A. No. Based on my experience and numerous studies by others, any time wind  
22 turbine sound levels higher than about 40 dBA are predicted at residences  
23 annoyance and complaints become much more likely. In this case, I gather from

1 the latest sound study report that there are 96 non-participants throughout the  
2 Project area where a mean sound level above 40 dBA is predicted. If one were  
3 to back out the explicit 2 dB design margin, the number of non-participants above  
4 40 dBA (i.e. a predicted level of 42 dBA or greater) would still be 49. Those are  
5 large numbers and percentage of residents highly annoyed by sound levels  
6 above 40 dBA will not be zero - despite the argument to the contrary advanced  
7 by Mr. Ollson in his supplemental testimony.

8  
9 **Q. What did Mr. Ollson say about predicting annoyance?**

10 A. Mr. Ollson argues that annoyance and complaints cannot be correlated to sound  
11 level. He illustrates this in part by reproducing an excerpt from a table (Table IV)  
12 from a 2012 paper by Michaud, et al. (Exhibit CO-S-2) that shows that the  
13 distribution of 'formal complaints' was fairly uniform across all receptor sound  
14 levels from below 30 to more than 45 dBA. However, the same table also shows  
15 that those reporting a "high (very or extreme) level of annoyance" goes from 1%  
16 at sound levels between 30 and 35 dBA to nearly 14% for sound level in the 40  
17 to 46 dBA range. Mr. Ollson also refers to another table (Table 7) in a paper by  
18 Bakker, et al. (Exhibit CO-S-5) to make the point that the people in the study  
19 more commonly experienced sleep disturbance from noises other than wind  
20 turbines. Table 6 in that same paper, not mentioned in Mr. Ollson's testimony,  
21 shows that for a quiet, rural area 82% of the study participants were not annoyed  
22 by the adjacent wind project when the sound level at their house was in the 36 to

1 40 dBA range but that 45% were slightly to highly annoyed when the sound level  
2 increased into 41 to 45 dBA range.

3  
4 **Q. What do believe the Project should have done to address the potential for**  
5 **community disturbance?**

6 A. Rather than attempt to dismiss annoyance as something that doesn't exist or  
7 wave it away as something that can't be quantified very well, I would have liked  
8 to have seen more of an effort on the Applicant's part to go beyond simple  
9 regulatory compliance and reduce the density of turbines, use fewer higher  
10 output turbines or otherwise optimize the layout so that the sound levels at all  
11 non-participating residences were as close to 40 dBA as reasonably possible.  
12 While the recent upgrade of all units to have low noise trailing edge blades would  
13 appear to be a step in the right direction, the number of non-participants with  
14 predicted sound levels above 40 dBA (96) has not, by my count at least, changed  
15 from the original July 7 modeling analysis. As it is, the actual sound levels at  
16 many non-participants produced by the currently proposed layout will exceed 45  
17 dBA at times because wind turbine sound levels are highly variable with wind and  
18 atmospheric conditions and commonly fluctuate by +/- 5 dBA or more around the  
19 modeled sound level, which may be regarded as a long-term mean level.  
20 Consequently, it is good practice to attempt to keep the predicted project sound  
21 levels as far below the regulatory limit as is reasonably feasible.

**Q. Do you see any specific layout changes at this point that might reduce the noise impact of the project?**

A. Yes. According to Appendix B of the most recent revision of the sound study, which is a tabulation of the turbine coordinates and status, there are currently 6 alternate turbine locations: Turbines 94, 97, 103, 113, 134 and Alt6. In general, all of these sites are relatively far from non-participating residences and could be used as places to beneficially relocate units that are currently causing the sound levels at non-participants to exceed 40 dBA.

**Q. Which, in your opinion, would be best candidates for relocation to the alternate turbine sites?**

A. Unfortunately, there are a quite a few that I would like to see moved – many more than 6 – but the following 21 units, listed by the sound contour map inset section, would be at the top of my list.

| Contour Map Enlargement Section | Turbines recommended for relocation to alternate sites.                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------|
| A1                              | Alt4, 104, 125, 129                                                                                |
| A2                              | 98, 102                                                                                            |
| B1                              | 72, 77, 81                                                                                         |
| B2                              | Alt5, 53, Unit South of 98 (number illegible)                                                      |
| C1                              | 13                                                                                                 |
| C2                              | 3, 6, Alt9, Unit South of Alt9 (number illegible), 24, 30, 38, Unit South of 38 (number illegible) |

I would urge the Applicant to review and enact these suggested relocations to the extent feasible or explain why they are not possible.

1 **Q. Do you agree with the noise limits and sound testing protocol proposed on**  
2 **behalf of the Applicant by Richard Lampeter?**

3 A. Yes. I agree that at a bare minimum the sound emissions from the entire project,  
4 in all three counties, should be limited as a permit condition to the Grant County  
5 Ordinance level of no more than 45 dBA at all non-participating residences and  
6 50 dBA at participating residences. Short of a radical enlargement in the project  
7 footprint and/or a shift to higher MW units, I don't see any reasonable way of  
8 rearranging the project to realistically meet a lower acoustical design goal while  
9 still maintaining required PPA output. I also generally agree with the sound test  
10 procedure as proposed, especially the requirement that a minimum of 10 on/off  
11 tests be carried out to accurately quantify the concurrent background level  
12 allowing the project-only sound level to be determined with some confidence  
13 through logarithmic subtraction.

14  
15 **Q. There are two other wind projects in the vicinity of the Crowned Ridge II**  
16 **site: Crowned Ridge I Wind and the Deuel Harvest Wind Project. How**  
17 **should their sound emissions be factored into or possibly excluded from**  
18 **any operational sound test of the Crown Ridge II Project?**

19 A. The nearest Deuel Harvest turbines are over 5 miles away from any of the  
20 proposed new units, so the two projects have no acoustical interaction and the  
21 Deuel Harvest Project may be ignored as an influence on any test.

22 The Crowned Ridge II Project (CRII), on the other hand, will essentially  
23 become a southern extension of the Crowned Ridge I Project (CRI) with no

1 significant separation. Consequently, the two projects must be considered one  
2 project for the purposes of any testing at Crowned Ridge II; i.e. sound  
3 measurements made at the northern end of CRII must be taken with all turbines  
4 in the area operating, irrespective of which project they actually belong to, and  
5 any shutdowns associated with the on/off tests within at least 1 mile of the CRII  
6 units must also include the southernmost CRI units within at least 1 mile of the  
7 test site. Exhibit DMH-2 is a proposed revision of Richard Lampeter's sound test  
8 protocol that is slightly modified to consider the pre-existing Crowned Ridge I  
9 units as part of the Crowned Ridge II Project for sound testing purposes.

10  
11 **Q. Questions were raised at the August public input meeting about adverse**  
12 **effects from low frequency noise and the Applicant brought in additional**  
13 **consultants, Mr. Ollson and Dr. McCunney, to rebut those concerns. What**  
14 **is your opinion of their testimony on this matter?**

15 **A.** In general, I agree with their assessments, backed up by a number of valid  
16 technical papers, that no adverse health effects are likely to result from either the  
17 infrasonic or low frequency sound emissions from the Project. While I  
18 sympathize with those that I have met complaining of "wind turbine syndrome"  
19 symptoms, the preponderance of the current evidence, research and mainstream  
20 expert opinion indicates that there is no link between the extremely low levels of  
21 low frequency sound generated by wind turbines and any adverse health  
22 outcomes.

1 **Q. In your testimony in several previous wind turbine dockets before the**  
2 **SDPUC you indicated that you thought a tiny minority of people were**  
3 **sensitive to the infrasonic blade passing pulsation produced by wind**  
4 **turbines, but that this sensitivity was so extremely uncommon, based on**  
5 **the large number of operating wind projects without this problem, that the**  
6 **risk of it occurring was essentially negligible. Has your position on this**  
7 **evolved?**

8 **A.** Yes. As mentioned above, I have met with people seriously affected by what  
9 they feel is the low frequency sound from wind turbines and it is impossible to be  
10 dismissive or incredulous of their plight, which led me to have an open mind as to  
11 whether some link may be possible through some unknown and potentially  
12 unknowable mechanism. A research paper by Cooper in 2017<sup>3</sup> seemed to  
13 empirically demonstrate that those known to have a sensitivity to this type of  
14 sound could identify it when it was inaudibly reproduced in a laboratory setting.  
15 However, after talking about this study with colleagues at the most recent wind  
16 turbine noise conference in Lisbon last June I was made aware of a flaw in the  
17 study where the higher frequencies in the sample recording (of wind turbine  
18 sound inside a house at an Australian wind farm) were not completely inaudible  
19 as claimed in the text of the paper, nor was it clear if the reproduced sound  
20 actually contained the key low frequency content below 40 Hz, which is beyond  
21 the capability of conventional speakers to produce. Consequently, I had to

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<sup>3</sup> Cooper, S and Chan, C, "Subjective perception of wind turbine noise – The stereo approach", 174<sup>th</sup> Meeting of the Acoustical Society of America, New Orleans, December 2017.



1 dismiss this study as evidence that infrasonic sound from wind turbines is  
2 perceptible to certain people.

3 Moreover, a large number of additional new papers on the subject were  
4 presented at the conference that all overwhelmingly concluded that any link  
5 between the low frequency sound emissions of wind turbines and adverse health  
6 effects was either highly unlikely or impossible. Consequently, while I continue to  
7 maintain an open mind on the subject, I would now concur with Mr. Ollson and  
8 Dr. McCunney that this or any wind project poses no significant health risk due to  
9 infrasound.

10  
11 **Q. How would you then explain the complaints of those who claim adverse**  
12 **effects?**

13 A. The situation is still not entirely clear and may never be fully understood, but an  
14 interesting hypothesis by Crichton<sup>4</sup> (Exhibit DMH-3) and others is that such  
15 negative outcomes are related to negative expectations stemming largely from  
16 exposure to the large amount of rather frightening, non-scientific, anti-wind  
17 propaganda on the internet. In a nutshell, Crichton's experiment at the University  
18 of Auckland exposed two randomly selected groups of students to video  
19 presentations, one with anti-wind content from the internet and another that  
20 suggested low frequency sound was therapeutic<sup>5</sup>, while also exposing both

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<sup>4</sup> Crichton, F. et al., "The Power of Positive and Negative Expectations to Influence Reported Symptoms and Mood During Exposure to Wind Farm Sound", *Health Psychol* (2013), 33:1588-92. Doi:10.1037/hea0000037.

<sup>5</sup> It is believed by some that this may actually be the case. Crichton:

We found that alternative medicine practitioners have explored the therapeutic impact of infrasound (e.g., Yount, Taft, West, & Moore, 2004) and therapeutic infrasound producing

1 groups to recordings of sound from a wind project. Not surprisingly, the first  
2 group reported such things as headaches, ear pressure, tiredness, etc. while  
3 second group actually felt rejuvenated.

4  
5 **Q. Does this conclude your testimony?**

6 **A. Yes.**

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devices are now marketed to the public. These devices have been promoted as alleviating the very symptoms infrasound exposure from wind farms is said to trigger (Haneke, Carson, Gregorio, & Maull, 2001).

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## CURRICULUM VITAE

### DAVID M. HESSLER

Title: Principal Consultant, Vice-President  
Hessler Associates, Inc.

Professional Affiliations: Professional Engineer (P.E.), Commonwealth of Virginia  
Member Institute of Noise Control Engineering (INCE)

Education: Bachelor of Science in Mechanical Engineering (B.S.), 1997  
*Summa cum Laude*  
A. James Clark School of Engineering  
University of Maryland, College Park, MD

Bachelor of Arts (B.A.), 1982  
University of Hartford, Hartford, CT

Employer: Hessler Associates, Inc.  
38329 Old Mill Way, Unit 8  
Ocean View, DE 19970

Years in present position: 28

Office Location: St. George, UT

Current Job Description: Acoustical engineer specializing in the prediction, assessment and mitigation of environmental noise from new and existing power generation and industrial facilities. Typical tasks include:

- Field measurement studies of existing ambient sound levels in the vicinity of proposed project sites
- Computer noise modeling of new facilities prior to construction
- Environmental impact assessments for new projects
- Noise mitigation design studies of new facilities
- Verification measurements of completed facilities
- Diagnostic studies of facilities with existing noise problems
- Design and specification of noise mitigation measures
- Educational lectures on noise issues for private corporations
- Expert witness testimony

General Experience: As an outside consultant to nearly all the major power industry EPC contractors, developers and OEM's, I have been the principal acoustical designer of over 400 power plants and industrial facilities worldwide ranging from a 3900 MW power station in Saudi Arabia to numerous combustion turbine combined cycle plants to refineries and wind turbine projects. Typically, the focus of the work on these projects was to anticipate potential noise impacts at sensitive receptors near the project and recommend practical noise abatement measures to avoid them. In addition, extensive verification measurements in and around the completed power plants and wind farms have been performed to confirm that the design recommendations have been successfully executed.

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|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wind Turbine Experience:                | <p>Over the past 16 years I have performed noise impact evaluations and siting optimization studies for roughly 70 large wind turbine projects in the United States, Canada and the Caribbean, involving nearly all current makes and models of wind turbines. I have developed test protocols and conducted long-term field measurement surveys of numerous newly completed wind projects to evaluate compliance with applicable permit conditions, to investigate complaints and/or to verify the accuracy of pre-construction noise modeling. I have carried out field tests of wind turbine sound power level in strict accordance with the IEC 61400-11 test methodology. I have carried out field measurement studies of operating wind turbines to evaluate their low frequency sound emissions, nacelle noise sources and radial directivity characteristics. I have testified as an expert witness at permitting hearings for proposed wind projects. I have attended six bi-annual Wind Turbine Noise conferences organized by INCE Europe.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Representative Papers and Publications: | <p>"Wind Turbine Noise", Chapter 7 <i>Measuring and Analyzing Wind Turbine Sound Levels</i>, Multi-Science Publishing Co., Brentwood, Essex, UK, Jan. 2012. Comprehensive book on all aspects of wind turbine noise. Each chapter written by a recognized expert in that subject.</p> <p>Teleseminar "Wind Turbine Siting and Best Practices", National Regulatory Research Institute (NRRI), Invited speaker, Jan. 2012.</p> <p>"Best Practices Guidelines for Assessing Sound Emissions from Proposed Wind Farms and Measuring the Performance of Completed Projects", Prepared for the Minnesota Public Utilities Commission under the auspices of the National Association of Regulatory Utility Commissioners (NARUC), Oct. 2011.</p> <p>"Accounting for Background Noise when Measuring Operational Noise from Wind Turbines", Fourth International Meeting on Wind Turbine Noise, Rome, Italy, Apr. 2011.</p> <p>"Recommended noise level design goals and limits at residential receptors for wind turbine developments in the United States", <i>Noise Control Engineering Journal</i>, J.59 (1), January-February 2011.</p> <p>"Wind tunnel testing of microphone windscreen performance applied to field measurements of wind turbines", Third International Meeting on Wind Turbine Noise, Aalborg, Denmark, June 2009.</p> <p>"Experimental study to determine wind-induced noise and windscreen attenuation effects on microphone response for environmental wind turbine and other applications", <i>Noise Control Engineering Journal</i>, J.56, July-August 2008.</p> |
| Expert Witness Cases:                   | <p>Before the Washington State Energy Facilities Siting Board (EFSEC) on behalf of Bechtel and the Cherry Point Cogeneration Project, Bellingham, WA, 2003. Permitting support for a proposed combined cycle power plant facility.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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Before the Public Service Commission of West Virginia on behalf of the Longview Power Project near Morgantown, WV, 2006. Permitting support for a proposed coal-fired power plant facility.

Before the Pennsylvania Department of Environmental Protection on behalf of Waste Management and the Alliance Sanitary Landfill in Taylor, PA, 2006. Support in defending against a Class Action Lawsuit brought by neighbors of the landfill.

Before the Office of the Attorney General of New York on behalf of the Hudson Valley Community College Cogeneration (Diesel) Plant. Support in defending against a Class Action Lawsuit brought by neighbors.

Before the Hanover County (VA) Board of Supervisors on behalf of Martin Marietta Materials and the Doswell Quarry, 2008. Permitting support for a proposed quarry expansion.

Before the New Hampshire Site Evaluation Committee on behalf of Granite Reliable Power, LLC, 2008. Docket No. 2008, July 2008. Permitting support for a proposed wind turbine project in Northern New Hampshire.

Before the Public Utilities Commission of Ohio, Ohio Power Siting Board on behalf of EverPower Renewables and the Buckeye Wind Project, 2008. Permitting support for a proposed wind turbine project in Ohio.

Before the Wisconsin Public Service Commission on behalf of Clean Wisconsin with regard to the proposed Highland Wind Farm in Forest, WI. Docket No. 2535-CE-100. Engaged as an independent expert to evaluate the Applicant's sound studies and the testimony of opposition groups.

Before the Public Utilities Commission of Ohio, Ohio Power Siting Board on behalf of EverPower Renewables and the Buckeye II Wind Project, 2012. Permitting support for a proposed wind turbine project in Ohio.

Before the Maine State Government Energy, Utilities and Technology Committee on behalf of Patriot Renewables and the Beaver Ridge Wind Project, 2014. Peer review of operational sound testing by others.

Before the South Dakota Public Utilities Commission, serving as an outside expert to the PUC Staff reviewing the noise aspects of the Dakota Range Wind permit application, Docket EL 18-003, June 2018.

Before the South Dakota Public Utilities Commission, serving as an outside expert to the PUC Staff reviewing the noise aspects of the Prevailing Wind Park permit application, Docket EL 18-026, October 2018.

Before the Rhode Island Energy Facility Siting Board, serving as an outside expert to the Town of Burrillville, RI reviewing the noise aspects of the Clear River Energy Center permit application, Docket SB-2015-06, December 2018.

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Before the South Dakota Public Utilities Commission, serving as an outside expert to the PUC Staff reviewing the noise aspects of the Deuel Harvest Wind Project permit application, Docket EL18-053, April 2019.

Proposed Post Construction Sound Protocol

[Revised to consider the Crowned Ridge I turbines as being part of the Crowned Ridge II Project]

The Crowned Ridge II Wind Project (CRII), exclusive of all unrelated background noise *except for that associated with the pre-existing Crowned Ridge I Wind Project (CRI)*, shall not generate a sound pressure level (10-minute equivalent continuous sound level, Leq) of more than 45 dBA as measured within 25 feet of any non-participating residence unless the owner of the residence has signed a waiver, or more than 50 dBA (10-minute equivalent continuous sound level, Leq) within 25 feet of any participating residence unless the owner of the residence has signed a waiver. The Project Owner shall, upon Commission formal request, conduct field surveys and provide monitoring data verifying compliance with the specified noise level limits. If the measured wind turbine noise level exceeds a limit set forth above, then the Project Owner shall take whatever steps are necessary in accordance with prudent operating standards to rectify the situation.

If a field survey and monitoring data is requested by the Commission, the Project Owner shall submit the test protocol to the Commission prior to conducting the survey and sound monitoring for approval. The test protocol shall include and be implemented as follows:

- a) The post-construction monitoring survey shall be conducted following applicable American National Standard Institute (ANSI) methods.
- b) Sound levels shall be measured continuously for 14 days in an effort to capture a sufficient quantity of valid readings meeting the wind conditions delineated below in subpart (e). A sufficient quantity shall be defined as 0.5% of the total number of samples, or a minimum of 10 for a 14 day measurement period. As a precaution against the possibility that a sufficient number of valid readings are not automatically recorded during the chosen 14 day sampling period, 10 on/off tests shall be carried out during the survey period when *both the CRII and CRI Projects are* operating at full power production irrespective of the ground level wind speed. For the on/off tests, all units *within at least 1 mile of the measurement position shall* be shut down for a 10 minute period synchronized with the monitors clocks (starting, for example, at the top of the hour or 10 minutes after, 20 minutes after, etc.). The background level measured during the shutdown interval can then be subtracted from the average of the levels measured immediately before and after it to determine the project-only sound level. The results from these tests may be used to make up for any shortfall in collecting 10 samples measured when the ground level wind speed is low.
- c) Measurements shall be conducted at a select number of non-participating and participating residences with the highest expected noise levels and/or at specific residences identified in the Commission's formal request. *At least 6* measurement locations total should be selected.
- 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 approximately 2 meters above the ground.
- e) The measurement data shall be analyzed as follows:

- i. At a minimum, the closest five wind turbines [associated with the CRII and CRI Projects](#) will be operating for evaluation periods and when at least the closest wind turbine is operating at a condition at full (within one decibel of maximum sound power levels) acoustic emissions.
  - ii. Discard those samples measured when the 10-minute average ground wind speed is greater than 5 m/s.
  - iii. Discard those samples measured during periods with precipitation.
  - iv. If measured (total) sound levels exceed the sound level limits, determine project only sound levels by removing transient background noise (i.e. occasional traffic, activities of residents, farming activities, and wind gusts) based upon audio recordings, excessive wind gusts, personal observations, and/or comparison of sound level metrics.
  - v. If measured (total) sound levels exceed the sound level limits, determine project only sound levels by removing, continuous background noise. This approach requires wind turbine shutdowns, where the background noise is measured directly. [The background sound level shall be measured with all turbines within at least 1 mile of the measurement location temporarily shut down. This would include turbines that are part of the CRI Project for measurement positions in the northern part of the CRII Project.](#) Background noise levels will be subtracted from total noise levels measured during these wind conditions to calculate turbine-only noise levels.
  - vi. As necessary, 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.



# The Power of Positive and Negative Expectations to Influence Reported Symptoms and Mood During Exposure to Wind Farm Sound

Fiona Crichton, George Dodd, Gian Schmid, Greg Gamble, Tim Cundy, and Keith J. Petrie  
University of Auckland

**Objective:** Wind farm developments have been hampered by claims that sound from wind turbines causes symptoms and negative health reports in nearby residents. As scientific reviews have failed to identify a plausible link between wind turbine sound and health effects, psychological expectations have been proposed as an explanation for health complaints. Building on recent work showing negative expectations can create symptoms from wind turbines, we investigated whether positive expectations can produce the opposite effect, in terms of a reduction in symptoms and improvements in reported health. **Method:** 60 participants were randomized to either positive or negative expectation groups and subsequently exposed to audible wind farm sound and infrasound. Prior to exposure, negative expectation participants watched a DVD incorporating TV footage about health effects said to be caused by infrasound produced by wind turbines. In contrast, positive expectation participants viewed a DVD that outlined the possible therapeutic effects of infrasound exposure. **Results:** During exposure to audible windfarm sound and infrasound, symptoms and mood were strongly influenced by the type of expectations. Negative expectation participants experienced a significant increase in symptoms and a significant deterioration in mood, while positive expectation participants reported a significant decrease in symptoms and a significant improvement in mood. **Conclusion:** The study demonstrates that expectations can influence symptom and mood reports in both positive and negative directions. The results suggest that if expectations about infrasound are framed in more neutral or benign ways, then it is likely reports of symptoms or negative effects could be nullified.

**Keywords:** psychological expectations, symptom reporting, environmental risks, wind energy, infrasound

Sourcing renewable and sustainable energy is widely viewed as necessary to mitigate climate change and address the negative health impacts associated with fossil fuel consumption, such as mortality and morbidity due to cardiorespiratory diseases (Haines, Alleyne, Kickbusch, & Dora, 2012). To this end, harvesting wind power has become a key feature of clean energy development policies in many countries, with the aim of reducing greenhouse-gas emissions and related adverse health outcomes. Yet in many parts of the world wind farm implementation has been stalled by claims that living in the vicinity of wind farms may pose a health risk (Knopper & Ollson, 2011; Chapman, 2011). Given the importance of the role of wind energy in the attainment of clean energy targets worldwide, it is necessary to understand what could be causing reported health complaints and to explore approaches to address these complaints.

The type of health problems reported include a range of non-specific physical symptoms, such as headache, nausea, ear prob-

lems, dizziness, and sleep dysfunction, as well as negative mood states, such as depression (e.g., Pierpont, 2009). Negative health effects from wind turbines have been attributed to the infrasound produced by the operation of wind turbines. Infrasound (sound between .01 and 20 Hz) is generally below the threshold of human hearing and is a common everyday phenomenon. Infrasound is produced by air turbulence and ocean waves, as well as by machinery such as air conditioners, and by internal physiological processes, such as respiration and heartbeat (Leventhall, 2007). Infrasound generated by wind turbines is subaudible and does not exceed typical levels of everyday infrasound exposure (Turnbull, Turner, & Walsh, 2012). Moreover, reviews of the scientific evidence have found the evidence does not support a direct pathophysiological link between the sound produced by wind turbine operations and the health of people living in the vicinity of wind farms (e.g., Ellenbogen et al., 2012; Fortin, Rideout, Copes & Bos, 2013; Knopper & Ollson, 2011).

Research has more recently focused on whether the health complaints by residents in the vicinity of wind farms could be due to psychological expectations. This work suggests that expectations could be established by media and Internet information asserting that adverse health effects are caused by exposure to infrasound produced by wind turbines. The expectations hypothesis is supported by a recent epidemiological analysis of health and noise complaints of Australian wind farms operating since 1993. This analysis shows that the majority of complaints commenced after 2009 and coincided with adverse health effects being promoted by groups opposed to the construction of wind farms

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Keith J. Petrie and Fiona Crichton, Department of Psychological Medicine, University of Auckland; George Dodd and Gian Schmid, Acoustic Research Centre, University of Auckland; Tim Cundy and Greg Gamble, Department of Medicine, University of Auckland.

Correspondence concerning this article should be addressed to Keith J. Petrie, Psychological Medicine, Faculty of Medical and Health Sciences, University of Auckland, Private Bag 92019, Auckland, New Zealand. E-mail: kj.petrie@auckland.ac.nz

(Chapman, St. George, Waller, & Cakic, 2013). Further support for the expectations hypothesis comes from a recent sham-controlled double-blind experimental study we conducted. The study showed that healthy volunteers, when given information designed to invoke either high or low expectations that exposure to infrasound causes symptom complaints, reported symptoms that were consistent with the level of expectation (Crichton, Dodd, Schmid, Gamble, & Petrie, 2013).

The provocative question that this research raises is that if negative expectations can create symptoms from wind turbines, can positive expectations produce a reduction in symptoms and improvements in reported health? To investigate this idea further we explored whether infrasound had ever been used as a therapy. We found that alternative medicine practitioners have explored the therapeutic impact of infrasound (e.g., Yount, Taft, West, & Moore, 2004) and therapeutic infrasound producing devices are now marketed to the public. These devices have been promoted as alleviating the very symptoms infrasound exposure from wind farms is said to trigger (Haneke, Carson, Gregorio, & Maull, 2001). We used this information to investigate whether positive health information about infrasound might create positive expectations leading to improved subjective health evaluation during exposure to wind farm sound. Such a finding would have the potential to inform interventions designed to safeguard against future symptom reporting and to reduce or reverse symptomatic experiences attributed to wind farms.

In this experimental study we tested whether the provision of either positive or negative health information about infrasound generated by wind turbines was reflected in participants' symptoms and health perceptions in response to wind farm sound. It was hypothesized that during listening sessions involving simultaneous exposure to audible wind turbine sound and infrasound, participants given negative expectations would experience an increase in the number and intensity of physical symptoms, an increase in negative mood, and a decrease in positive mood, and would evaluate exposure sessions as having adverse health impacts. In contrast, it was also hypothesized that participants given positive expectations would experience a decrease in the number and intensity of physical symptoms, a decrease in negative mood, and an increase in positive mood, and would evaluate exposure sessions as having health benefits.

## Method

Sixty undergraduate participants (39 female, 21 male) with a mean age of 19.72 years ( $SD = 2.66$ ) were recruited by flyers distributed at the University of Auckland. Following recruitment participants were randomly allocated to positive or negative expectation groups. All participants were told the purpose of the study was to investigate the effect of sound below the threshold of human hearing (infrasound) on the experience of physical sensations and mood. Experimental procedures were conducted in a listening room purpose built for subjective sound experiments to the standard set by the International Electrotechnical Commission (IEC268-13). Consistent with the cover story, the research was conducted in the Acoustic Research Centre, a facility associated with the School of Engineering.

Once baseline measurements were undertaken, participants viewed one of two 5-minute, 27-second DVD presentations, each

of which contained wind turbine and health material available on the Internet. The negative health information DVD incorporated TV current affairs footage indicating that exposure to wind turbine sound, particularly infrasound, might pose a health risk. In contrast, the positive health information DVD framed wind turbine sound as containing infrasound, subaudible sound created by natural phenomena such as ocean waves and the wind, which had been reported to have positive effects and therapeutic benefits on health. Participants were contemporaneously and continuously exposed to infrasound (9Hz, 50.4dB) and audible wind farm sound (43dB), which had been recorded 1 km from a wind farm, during two 7-minute listening sessions. Both groups were made aware they were listening to the sound of a wind farm, and were being exposed to sound containing both audible and subaudible components and that the sound was at the same level during both sessions. Symptom and mood questionnaires were filled in at baseline and during each exposure period, prompted by a 2-second audible tone (middle C–262Hz) played 2 minutes into each session.

Symptoms and mood were assessed on a 7-point Likert scale ranging from 0 (*not at all*) to 6 (*extreme* or *extremely*). At baseline and during exposure sessions, participants evaluated their experience of 24 physical symptoms (e.g., headache, ear pressure, tiredness), and the extent to which they felt 12 positive mood items (e.g., relaxed, peaceful, cheerful) and 12 negative mood items (e.g., anxious, nervous, distressed). For each rating period a total symptom score was calculated as the number of symptoms experienced with a rating  $\geq 1$ , and a total symptom intensity score was calculated as the sum of the ratings given for all symptoms experienced. Reliability of the symptom questionnaire was established in a previous study (Crichton et al., 2013). Further, for each rating period total positive mood and total negative mood scores were calculated. The symptom and mood scales all demonstrated good internal consistency (Cronbach's alpha for symptom intensity scale = .82; positive mood scale = .95; negative mood scale = .92). As a manipulation check to see if participants believed that exposure periods had influenced their symptoms, participants were asked whether they had experienced an improvement or worsening of symptoms during sessions on two 7-point Likert scales ranging from 0 (*not at all*) to 6 (*extreme*). Symptom improvement or worsening was assessed as a score  $\geq 1$ . This assessment occurred in a room adjoining the listening room after experimental procedures had concluded.

## Results

We first conducted mixed model analysis of covariance to assess within- and between-group differences in terms of change from baseline in symptom reporting during exposure session 1 and exposure session 2, controlling for baseline scores. These data are depicted in Figure 1. Results showed a significant interaction between expectation group and exposure session in relation to both symptom change scores,  $F(1, 58) = 13.95, p < .001$ , and symptom intensity change scores  $F(1, 58) = 16.27, p < .001$ . Tukey-Kramer post-hoc tests revealed that expectation group allocation differentially influenced symptom reporting during exposure sessions. There were significant differences between the negative expectation group and the positive expectation group in relation to symptom change scores during session 1 ( $p = .005$ ) and session 2 ( $p < .001$ ), and similarly, in relation

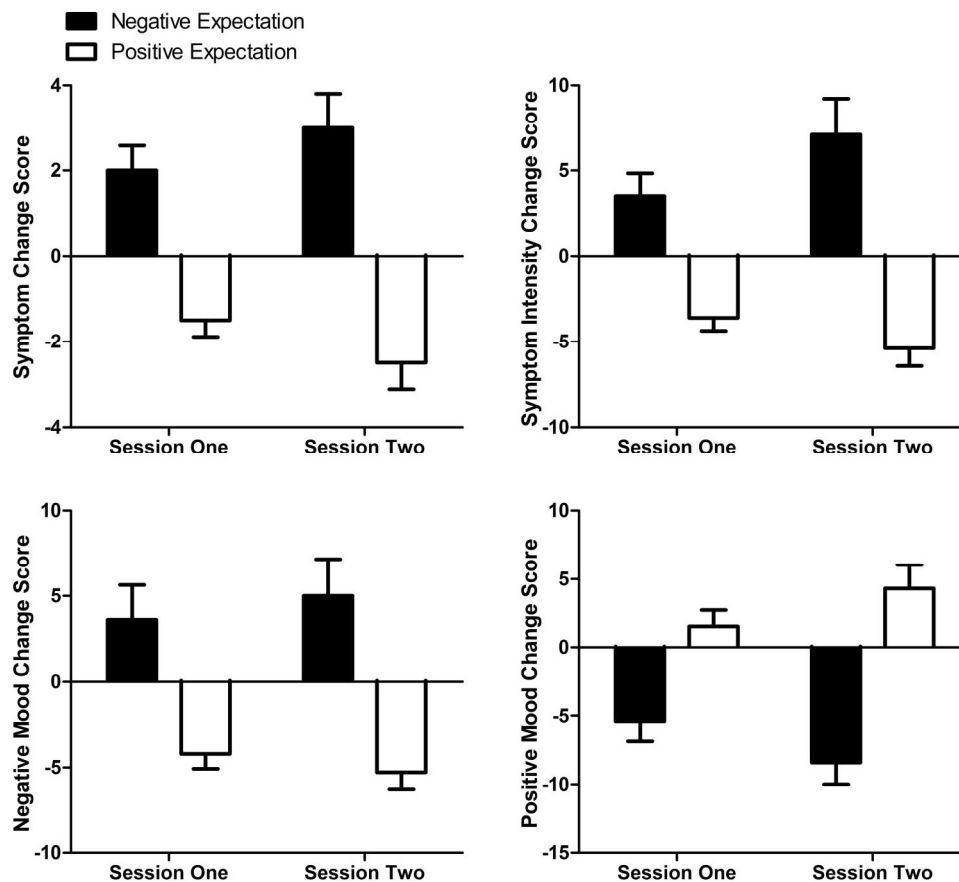


Figure 1. Changes in symptoms, symptom intensity, and mood in negative and positive expectation groups.

to symptom intensity change scores during session 1 ( $p = .01$ ) and session 2 ( $p < .001$ ). There were also within group differences in symptom reporting in the negative expectation group during session 1 and session 2 in respect of symptom change scores ( $p = .037$ ) and symptom intensity change scores ( $p = .002$ ). Thus negative expectation group participants became more symptomatic over time, suggesting that experiences during the first exposure session reinforced symptom expectations leading to heightened symptomatic experiences.

To check whether the manipulation had also triggered a significant symptomatic change from baseline, we conducted repeated measure ANOVAs, using Greenhouse-Geisser correction when the assumption of sphericity had been violated, on mean symptom and symptom intensity scores recorded at baseline, during Session 1, and during Session 2, as reported in Table 1. Results showed that participants in the negative expectation group recorded a significant increase from baseline in the number of symptoms experienced  $F(1.36, 39.45) = 12.12, p < .001, \eta_p^2 = .30$ . Analysis revealed there were significant increases from baseline in the number of symptoms reported during both session 1 ( $p = .002$ ) and during session 2 ( $p = .001$ ). This pattern was also seen in relation to symptom intensity, whereby, an increase in symptom intensity was recorded from baseline  $F(1.32, 38.35) = 9.57, p = .002, \eta_p^2 = .25$ , and analysis showed significant increases in symptom intensity from baseline reported both during session 1

( $p = .013$ ) and during session 2 ( $p = .002$ ). As predicted, in the positive expectation group there were significant decreases from baseline in the reported experience of both the number of symptoms  $F(1.31, 37.92) = 14.56, p < .001, \eta_p^2 = .34$  and symptom intensity  $F(1.25, 36.26) = 23.72, p < .001, \eta_p^2 = .45$ .

In terms of the number of symptoms, there were decreases from baseline during session 1 ( $p = .001$ ) and session 2 ( $p < .001$ ). This pattern was also reflected in relation to reported symptom intensity, whereby there was a decrease from baseline during session 1 ( $p < .001$ ) and session 2 ( $p < .001$ ).

Table 1  
Mean (SD) Symptom and Mood Scores in the Negative Expectation (NE) and Positive Expectation (PE) Groups

|                         | N  | Group | Baseline    | Session 1   | Session 2   |
|-------------------------|----|-------|-------------|-------------|-------------|
| Symptom score           | 30 | NE    | 5.2 (2.8)   | 7.2 (3.1)   | 8.2 (3.6)   |
|                         | 30 | PE    | 6.7 (3.2)   | 5.2 (2.9)   | 4.2 (3.3)   |
| Symptom intensity score | 30 | NE    | 9.1 (5.8)   | 12.7 (6.3)  | 16.3 (10.0) |
|                         | 30 | PE    | 11.8 (7.4)  | 8.2 (5.2)   | 6.4 (4.7)   |
| Negative mood score     | 30 | NE    | 7.5 (6.8)   | 11.1 (10.4) | 12.5 (11.0) |
|                         | 30 | PE    | 9.3 (10.7)  | 5.1 (8.1)   | 4.1 (6.8)   |
| Positive mood score     | 30 | NE    | 37.0 (10.1) | 31.5 (13.3) | 28.6 (14.1) |
|                         | 30 | PE    | 34.4 (9.3)  | 35.9 (9.7)  | 38.7 (10.4) |



We further performed a mixed model analysis of covariance to assess within and between group differences in terms of change in positive and negative mood from baseline during exposure session 1 and exposure session 2, controlling for baseline scores. These data are also illustrated in Figure 1. In terms of change in negative mood from baseline, there was a significant main effect of group allocation,  $F(1, 57) = 18.26, p < .001$ . In relation to change in positive mood from baseline, analysis revealed a significant interaction between group and session,  $F(1, 58) = 17.59, p < .001$ . Tukey-Kramer post-hoc tests showed differences between the groups in relation to positive mood change scores during session 1 ( $p = .011$ ) and during session 2 ( $p < .001$ ). Further, there were within-group differences, such that from session 1 to session 2 there was a significant decrease in positive mood in the negative expectation group ( $p = .016$ ), and a significant increase in positive mood in the positive expectation group ( $p = .03$ ).

To assess whether mood during exposure sessions was significantly different from baseline assessment, we also conducted repeated measures ANOVA. Mood scores are also presented in Table 1. In relation to the negative expectation group, analysis revealed an increase in negative mood  $F(1.48, 43.0) = 3.77, p = .043, \eta_p^2 = .12$ , and a decrease in positive mood  $F(1.46, 42.18) = 20.48, p < .001, \eta_p^2 = .41$  from baseline. The increase in negative mood from baseline occurred during session 2 ( $p = .031$ ). In relation to positive mood, there was a decrease from baseline during session 1 ( $p = .001$ ) and session 2 ( $p < .001$ ). In the positive expectation group there was a decrease from baseline in negative mood  $F(1.66, 48.12) = 21.54, p < .001, \eta_p^2 = .43$ , and an increase in positive mood  $F(1.46, 42.31) = 4.99, p < .05, \eta_p^2 = .15$ . Analysis showed a significant decrease from baseline in negative mood during session 1 ( $p < .001$ ) and session 2 ( $p < .001$ ). The significant increase in positive mood occurred during session 2 ( $p = .02$ ).

In terms of the evaluation of perceived health impacts of infrasound exposure, 90% of the positive expectation group reported an improvement in physical symptoms after the listening sessions had concluded compared to 10% of the negative expectation group ( $\chi^2(1, n = 60) = 16.48, p < .001, \phi = -.52$ ). Consistent with this finding, 77% of the negative expectation group reported a worsening of symptoms during exposure, compared to 10% of the positive expectation group ( $\chi^2(1, n = 60) = 27.15, p < .001, \phi = .67$ ).

## Discussion

In this study the experience of symptoms and mood during exposure to audible windfarm sound and infrasound was influenced by the type of expectations provided prior to the listening sessions. Participants randomized to the negative expectation group showed significant increases in the number and intensity of symptoms when exposed to windfarm sound, while participants given positive expectations about the sound showed the opposite pattern, with a significant reduction in the number and intensity of symptoms. The effect of expectations on mood following exposure to wind farm sound showed a very similar pattern with increases in negative mood in the negative expectation group and increases in positive mood in the positive expectation group.

The finding that negative expectations about windfarm sound prompted increased symptom reporting during exposure to infra-

sound is consistent with earlier research. In a previous sham-controlled experiment, the information that infrasound exposure has been reported to cause symptoms created elevated concern about the health effects of windfarms and triggered symptoms during exposure to both sham and genuine infrasound. The study demonstrated that symptom reports were provoked by expectations rather than any effect of actual infrasound (Crichton et al., 2013). The results are also consistent with other research indicating health warnings may elicit health complaints, even when the risk itself is purely one of perception and no genuine risk is posed (Colloca & Miller, 2011; Faasse, Gamble, Cundy, & Petrie, 2012; Faasse & Petrie, 2013). In one such study, viewing a TV report about purported health risks associated with exposure to electromagnetic fields produced by WiFi was shown to increase the likelihood of experiencing symptoms following sham exposure to a WiFi signal (Withthöft & Rubin, 2013). Evidence indicates that such information can increase anxiety and create related symptom expectations, which trigger later increased symptom reports (Faasse & Petrie, 2013).

It is important to note that this is the first study to demonstrate that participants exposed to wind farm sound experienced a placebo response elicited by positive pre-exposure expectations. Participants reported positive health effects during exposure to wind farm sound if they were given expectations that infrasound produced health benefits. These findings are consistent with previous work showing participants exposed to white noise, within a context designed to produce therapeutic expectations, evaluated the exposure as significantly more pleasant, relaxing, and beneficial than participants simply exposed to white noise without expectations (Kendrick & Elkins, 2012). The malleability of symptom reporting has also been demonstrated in an experiment where participants placing their finger on a rough vibrating surface interpreted the experience as pleasurable, painful or neutral, depending upon the way in which the stimulus was described prior to the experiment (Anderson & Pennebaker, 1980).

The study has two important implications. First, it provides further evidence that information easily accessible on the Internet concerning the health effects of wind turbines can create symptom expectations that are reflected in symptom and health reports. The fact that negative expectations in the current study were formed by viewing TV material sourced from the Internet suggests that a pathway for symptom reports attributed to wind farms could be via expectations created by media coverage about purported health effects. Second, the study demonstrates that if information about infrasound were framed in more neutral or benign ways, then reports of symptoms or negative health effects are likely to be nullified.

It should be noted that the study is limited by the fact that discrete sound exposure periods in a listening room may not entirely duplicate the experience of sound in the locale of a wind farm. However, the study has added ecological validity in that exposure was to audible sound recorded from a wind farm, overlaid with infrasound, and the health expectations were constructed using material easily available on the Internet. It should also be noted that it cannot be conclusively determined whether negative experiences triggered by negative health expectations can be reversed or alleviated by the later provision of positive information, or whether positive health information can protect against the future effects of exposure to negative health information, such as

is often circulated in communities where wind farms are proposed or operating (Chapman, 2011). This issue is of importance given that current media coverage has been shown to incorporate fright factors that may induce fear, anxiety, and concern about the health risk posed by wind farms (Deignan, Harvey, & Hoffman-Goetz, 2013). Future research should investigate whether positive expectations can change symptomatic experiences in participants previously made aware of negative health information, or provide a buffer against the influence of the later delivery of negative expectations. As part of this research, it will be important to discuss the ethical implications of using placebo effects as part of a public health strategy to counteract the effect of negative expectations. Such research could provide further evidence useful to inform strategies designed to reduce anxiety and symptom reporting in those living in the vicinity of wind farms.

## References

- Anderson, D. B., & Pennebaker, J. W. (1980). Pain and pleasure: Alternative interpretations of identical stimulation. *European Journal of Social Psychology*, 10, 207–212. doi:10.1002/ejsp.2420100208
- Chapman, S. (2011). Wind farms and health: Who is fomenting community anxieties? *Medical Journal of Australia*, 195, 495. doi:10.5694/mja11.11253
- Chapman, S., St. George, A., Waller, K., & Cacic, V. (2013). The pattern of complaints about Australian wind farms does not match the establishment and distribution of turbines: support for the psychogenic, 'communicated disease' hypothesis. *PLoS One*, 8(10), e76584. doi:10.1371/journal.pone.0076584
- Colloca, L., & Miller, F. G. (2011). Role of expectations in health. *Current Opinion Psychiatry*, 24, 149–155. doi:10.1097/YCO.0b013e328343803b
- Crichton, F., Dodd, G., Schmid, G., Gamble, G., & Petrie, K. J. (2013). Can expectations produce symptoms from infrasound associated with wind turbines? *Health Psychology*. Advance online publication. doi:10.1037/a0031760
- Deignan, B., Harvey, E., & Hoffman-Goetz, L. (2013). Fright factors about wind turbines and health in Ontario newspapers before and after the Green Energy Act. *Health, Risk & Society*, 15, 234–250. doi:10.1080/13698575.2013.776015
- Ellenbogen, J. M., Grace, S., Heiger-Bernays, W. J., Manwell, J. F., Mills, D. A., Sullivan, K. A., . . . Santos, S. L. (2012). *Wind Turbine Health Impact Study: Report of independent expert panel*. Prepared for Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health. Retrieved from <http://www.mass.gov/dep/public/press/0112wind.htm>
- Faasse, K., Gamble, G., Cundy, T., & Petrie, K. J. (2012). Impact of television coverage on the number and type of symptoms reported during a health scare: A retrospective pre-post observational study. *BMJ Open*, 2, e001607. doi:10.1136/bmjopen-2012-001607
- Faasse, K., & Petrie, K. J. (2013). The nocebo effect: Patient expectations and medication side effects. *Postgraduate Medical Journal*, 89, 540–546. doi:10.1136/postgradmedj-2012-131730
- Fortin, P., Rideout, K., Copes, R., & Bos, C. (2013). *Wind turbines and health*. National Collaborating Centre for Environmental Health Canada. Retrieved from [http://www.nccch.ca/sites/default/files/Wind\\_Turbines\\_Feb\\_2013.pdf](http://www.nccch.ca/sites/default/files/Wind_Turbines_Feb_2013.pdf)
- Haines, A., Alleyne, G., Kickbusch, I., & Dora, C. (2012). From the earth summit to Rio+20: Integration of health and sustainable development. *The Lancet*, 379, 2189–2197. doi:10.1016/S0140-6736(12)60779-X
- Haneke, K. E., Carson, B. L., Gregorio, C. A., & Maull, E. A. (2001). *Infrasound: Brief review of toxicological literature*. Research Triangle Park, NC: National Institute of Environmental Health Sciences.
- Kendrick, C., & Elkins, G. (2012). Development of a model for the conduct of randomized clinical trials of hypnotic suggestion. *BMC Complementary and Alternative Medicine*, 12(Suppl 1), P409. doi:10.1186/1472-6882-12-S1-P409
- Knopper, L. D., & Ollson, C. A. (2011). Health effects and wind turbines: A review of the literature. *Environmental Health*, 10, 78. doi:10.1186/1476-069X-10-78
- Leventhall, G. (2007). What is infrasound? *Progress in Biophysics and Molecular Biology*, 93, 130–137. doi:10.1016/j.pbiomolbio.2006.07.006
- Pierpont, N. (2009). *Wind turbine syndrome: A report on a natural experiment*. Santa Fe, NM: K-Selected Books.
- Turnbull, C., Turner, J., & Walsh, D. (2012). Measurement and level of infrasound from wind farms and other sources. *Acoustics Australia*, 40, 45–50.
- Witthöft, M., & Rubin, G. J. (2013). Are media warnings about the adverse effects of modern life self-fulfilling? An experimental study on idiosyncratic environmental intolerance attributed to electromagnetic fields. *Journal of Psychosomatic Research*, 74, 206–212. doi:10.1016/j.jpsychores.2012.12.002
- Yount, G., Taft, R., West, J., & Moore, D. (2004). Possible influence of infrasound on glioma cell response to chemotherapy: A pilot study. *Journal of Alternative and Complementary Medicine*, 10, 247–250. doi:10.1089/107555304323062239

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**BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

**DOCKET NO. EL19-027**

**IN THE MATTER OF THE APPLICATION BY CROWNED RIDGE WIND II, LLC  
FOR A PERMIT OF A WIND ENERGY FACILITY IN DEUEL, GRANT AND  
CODINGTON COUNTIES, SOUTH DAKOTA, FOR CROWNED RIDGE II WIND  
FARM**

Direct Testimony of Hilary Meyer  
On Behalf of the Staff of the South Dakota Public Utilities Commission  
December 5, 2019



1   **Q:     State your name.**

2   A:     Hilary Meyer

3

4   **Q:     State your employer.**

5   A:     State of South Dakota, Department of Game, Fish, and Parks

6

7   **Q:     State the program for which you work.**

8   A:     Division of Wildlife, Terrestrial Resource Section

9

10  **Q:     State the program roles and your specific job with the department.**

11  A:     The role of the Terrestrial Resources section is to study, evaluate, and

12         assist in the management of all wildlife and associated habitats.

13         Management includes game and non-game wildlife populations, habitat

14         management on public lands and technical assistance and habitat

15         development on private lands, population and habitat inventory, and

16         environmental review of local and landscape projects. As the

17         environmental review senior biologist, I coordinate reviews of various

18         development projects within the state of South Dakota to assist

19         developers with compliance with state wildlife laws and to serve as

20         stewards of our state's outdoor resources.

21

22  **Q:     Explain the range of duties you perform.**

1 A: Duties include coordinating environmental review evaluations and  
2 responses related to terrestrial and aquatic issues with department staff  
3 and represent the Department on state and national committees.  
4

5 **Q: On whose behalf was this testimony prepared?**

6 A: This testimony was prepared on behalf of the Staff of the South Dakota  
7 Public Utilities Commission.  
8

9 **Q: What role does the Department of Game, Fish and Parks have in the**  
10 **permitting process of a wind energy development project?**

11 A: Game, Fish and Parks has no regulatory authority when it comes to  
12 permitting wind energy development projects. The agencies role is to  
13 consult with developers and provide recommendations and suggestions  
14 on how to minimize or remove potential impacts to wildlife and associated  
15 habitats or provide available information to make informed decisions as  
16 related to natural resources.  
17

18 **Q: Have you reviewed the Application and attachments? How else did**  
19 **you learn details around the proposed project?**

20 A: Yes, relevant sections of the application and attachments and also  
21 discussed project details with GFP biologists who have had direct  
22 communications with the developer, or that have specialized expertise  
23 related to wildlife species or the project location.



1 **Q: Did the GF&P provide comments and recommendations to Crowned**  
2 **Ridge II about the project area? Please identify who provided those**  
3 **comments and provide a brief summary of them.**

4 A: Game, Fish and Parks was initially contacted in October 2007 by  
5 TetraTech to request a search of GFP listed threatened or endangered  
6 species, and any additional environmental concerns for the project area. A  
7 response was sent in December of 2007 by Silka Kempema, wildlife  
8 biologist. During this initial contact, information about species of concern  
9 and important or sensitive wildlife habitats in the project area were shared  
10 with the applicant. Additionally, in November 2007, Doug Backland,  
11 wildlife biologist provided a shapefile of threatened, rare, or endangered  
12 species present within the project area (natural heritage database review).  
13 In December 2009, TetraTech contacted GFP to request an additional  
14 natural heritage database review. Game, Fish and Parks provided a list of  
15 species occurrences for the project area. In November of 2010, Western  
16 Area Power Administration (WAPA) contacted GFP with a scoping notice  
17 for the Crowned Ridge Wind Energy Center in Codington County, South  
18 Dakota. GFP replied to the WAPA scoping notice in January 2011 with a  
19 letter describing important wildlife habitats (grasslands, wetlands, etc.),  
20 information about rare, endangered or threatened species that could occur  
21 in the project area as well as general wildlife survey guidelines. In March  
22 2014, GFP provided historic grouse lek locations in and around the project  
23 boundary. Game, Fish and Parks was contacted by TetraTech in February

1 2015 requesting information regarding ecologically significant areas and  
2 listed endangered, threatened or special concern species at a potential  
3 wind energy development site in Codington and Grant Counties, South  
4 Dakota. Game, Fish and Parks staff replied to their request in March 2015  
5 with a letter describing ecologically sensitive areas in the project area and  
6 advising an up-to-date Natural Heritage database request, based on the  
7 amount of time that passed since the previous request. Information was  
8 also included about important wildlife habitats, avoidance of turbine  
9 placement in and around public lands, recommendations on transmission  
10 line construction and general wildlife survey guidelines for pre and post  
11 construction surveys. In March 2017, GFP was first contacted by Nextera,  
12 and Ms. Kempema recommended an in-person meeting for the  
13 opportunity to review proposed turbine layout and wildlife surveys that had  
14 been conducted to-date. In April 2017, a conference call with GFP,  
15 USFWS and Nextera was conducted to share a project overview, as well  
16 as results from wildlife surveys. During this conference call, Ms. Kempema  
17 recommended Nextera avoid placing turbines in untilled grasslands and  
18 wetlands, and recommended a 1 mile no-construction buffer around  
19 grouse leks. Ms. Kempema also requested a copy of any wildlife survey  
20 reports, and recommended a site-visit with GFP and USFWS. In July  
21 2017, GFP received a request from SWCA Environmental Consultants to  
22 request information regarding ecologically sensitive areas and federally  
23 and state listed endangered, threatened or special concern species in the

1 Crowned Ridge project area. Results from a natural heritage database  
2 search was provided to SWCA in August 2017. On April 3<sup>rd</sup>, 2019, SWCA  
3 Environmental Consultants requested information regarding ecologically  
4 sensitive areas and federally and state listed endangered, threatened or  
5 special concern species in the Crowned Ridge project area. Results from  
6 a natural heritage database search were provided to SWCA on April 26<sup>th</sup>  
7 2019.

8

9 **Q: Do you agree with the comments and recommendations provided to**  
10 **Crowned Ridge II by Ms. Kempema? If not, please explain.**

11 A: Yes. These are typical discussion topics and recommendations our  
12 Department would share with wind power companies to identify, minimize,  
13 or reduce impacts to wildlife and wildlife habitats, especially those projects  
14 that are proposed in grassland and wetland habitats.

15

16 **Q: Based on the information provided in the Application, in your opinion**  
17 **did Crowned Ridge II utilize the proper studies and wildlife surveys**  
18 **necessary to identify potential impacts to the terrestrial**  
19 **environment?**

20 A: Pre-construction wildlife survey data usually incorporates a small snap-  
21 shot in time (ex. monthly large bird counts) but is used to assess risks for  
22 the life of a project (~30 years) therefore, it is important to perform surveys  
23 with a high degree of scientific rigor. The US Fish and Wildlife Service

1 (USFWS) Land-Based Wind Energy Guidelines (hereafter referred to as  
2 USFWS guidelines) are intended to encourage scientifically rigorous  
3 survey, monitoring, assessment and research designs, produce potentially  
4 comparable data across the nation, and improve the ability to predict and  
5 resolve effects of wind energy development locally, regionally and  
6 nationally. These guidelines, along with GF&P siting guidelines  
7 ([https://gfp.sd.gov/userdocs/docs/SDSitingGuides\\_2018-10-17.pdf](https://gfp.sd.gov/userdocs/docs/SDSitingGuides_2018-10-17.pdf)) are  
8 voluntary suggestions (USFWS 2012).

9  
10 Survey methods used by Crowned Ridge followed the USFWS guidelines,  
11 and were reasonable and appropriate. Crowned Ridge conducted aerial  
12 raptor nest surveys, avian use surveys, large bird use surveys, grouse lek  
13 surveys, bat acoustic surveys, bat habitat assessments and an  
14 endangered butterfly habitat assessment.

15

16 **Q: What are the potential impacts to wildlife as a result of the**  
17 **construction of a wind project?**

18 **A:** Direct; birds and bats can be killed by turbines due to direct strikes.  
19 Indirect; some species may be displaced from otherwise suitable habitat  
20 around turbines and roads. A research project on the effects of wind  
21 energy on breeding grassland bird densities in North and South Dakota  
22 showed seven of nine species of grassland birds had reduced densities  
23 around wind turbines over time (Shaffer and Buhl 2016).

1

2 **Q: What potential impacts to wildlife habitat can result from a wind**  
3 **project?**

4 A: Permanent loss; habitat is permanently converted to turbine pads, roads  
5 or buildings. This is often a small percent of the total project acreage (area  
6 defined by wind easements or otherwise defined project boundary).

7 Temporary loss; habitat is disturbed for a time during construction (e.g.  
8 widened roads, crane paths) but is restored. Fragmentation; habitat  
9 fragmentation is the division of a block of habitat into smaller, and at times  
10 into isolated patches. Habitat fragmentation can decrease the overall  
11 value of the remaining habitat.

12

13 **Q: Can you suggest methods to address temporary and permanent**  
14 **changes to habitat?**

15 A: Temporary impacts to habitat resulting from construction activities likely  
16 can be reclaimed by restoring impacted areas by grading and reseeding.  
17 Disturbed areas should be restored using native seed sources to reduce  
18 the introduction of new or discourage encroachment of already present  
19 exotic and/or invasive species.

20

21 For those areas that are permanently changed, lost grassland or wetland  
22 acres could be addressed through consideration of mitigation options.

23 Disturbed areas again should be restored using native seed sources to

1       reduce the introduction of new or discourage encroachment of already  
2       present exotic and/or invasive species. It would also be recommended  
3       that if lost acres are replaced to carry out these replacement activities in  
4       the closest possible proximity of the project.

5  
6       **Q:    Are there any other impacts besides temporary and permanent**  
7       **habitat impacts that are likely to occur as a result of the project?**

8       A:    Indirect habitat impacts are also a consideration. Potential indirect impacts  
9       created by wind turbines and associated infrastructure raise concerns with  
10       habitat fragmentation and potential displacement, especially with regards  
11       to breeding grassland and wetland species. Research into the effects of  
12       wind energy on habitat avoidance has shown that some species will not  
13       use grassland or wetland habitat within a certain distance of a wind turbine  
14       (Loesch et al. 2013, Shaffer and Buhl 2016).

15  
16       **Q:    Did GFP have any wildlife or habitat concerns regarding the**  
17       **proposed Crowned Ridge II project? If yes, what are they?**

18       A:    Yes. The area of primary interest is the potential impacts to the various  
19       grassland habitats and associated wildlife.

20  
21       **Q:    Did GFP provide any recommendations to avoid wildlife and habitat**  
22       **impacts from Crowned Ridge II? If yes, what were they?**

1 A: Yes. The primary recommendations were to site turbines and associated  
2 infrastructure in cropland, minimize fragmentation, utilize existing  
3 infrastructure and avoid siting turbines in grasslands, and completion of  
4 post-construction surveys for bat and bird mortality which could be used in  
5 assisting with operational adjustments in the future. Game, Fish and Parks  
6 also recommended a 1 mile no surface occupancy buffer for placement of  
7 project infrastructure near prairie grouse (greater prairie chicken and  
8 sharp-tailed grouse) leks, and a 2 mile no construction buffer around leks  
9 during the breeding season (1 March-30 June).

10

11 **Q: Are there different types of grasslands?**

12 A: Yes.

13

14 **Q: Please describe the following: native prairie, hayland, pasture, CRP,**  
15 **and cropland.**

16 A: Grasslands are areas that contain plants species such as graminoids and  
17 commonly used for grazing or set aside for conservation purposes. They  
18 can also be areas which are planted to a mixture of grasses and legumes  
19 for livestock grazing or feed. Native prairie is grassland upon which the  
20 soil has not undergone a mechanical disturbance associated with  
21 agriculture or any other type of development. Hayland is grassland that is  
22 managed by frequent mowing and often contains non-native plant species  
23 either intentionally or by encroachment. Pasture is grassland that may

1 contain non-native plant species either intentionally or by encroachment  
2 and is managed by through grazing. In some instances hayland and  
3 pasture could be native prairie; in other situations hayland and pasture in  
4 particular could be land once cultivated and restored to grassland habitat.  
5 Conservation Reserve Program acres (CRP) is grassland that occurs on  
6 land that was once tilled and used for crop production and has now been  
7 seeded to herbaceous cover to address soil loss, water quality, and  
8 provide wildlife habitat. Cropland could be described as agricultural lands  
9 cultivated and used to grow crops such as corn, soybeans, small grains,  
10 and others.

11

12 **Q: Are there any areas of native prairie in the proposed project?**

13 A: Yes. Spatial analysis conducted by Bauman et al. (2016) has identified  
14 potentially undisturbed lands within the proposed project boundary. This  
15 is one of the best available spatial data sets representing the location of  
16 untilled native grasslands. The applicant also identified within the  
17 application an estimated 17,889 acres of untilled grassland within the  
18 project area (pg. 49).

19

20 **Q: Do grasslands other than native prairie have conservation value?**

21 A: Yes. Given the loss of native prairie, working grasslands like pasture,  
22 hayland, and conservation grassland plantings serve as surrogates for  
23 native grasslands.



1   **Q:    To your knowledge, are there grazed grasslands in the project area?**

2   A:    Yes.

3

4   **Q:    Do grazed grasslands have any conservation value and what is the**  
5       **impact to grassland wildlife?**

6   A:    All grasslands have a conservation value, including those managed  
7       through grazing. Grassland birds require a diversity of grassland types  
8       and structure to complete life-cycle requirements. Studies have shown  
9       that grassland birds respond primarily not to variation in plant species  
10      composition but to the structure that these plants provide. Grassland birds  
11      have evolved with a gradation of grazing intensities. Grassland wildlife  
12      diversity can be maximized by creating a heterogeneous landscape  
13      comprised of short, medium and tall vegetation structures. Grazing  
14      (haying and burning) management can provide this variation in vegetative  
15      structure. Changes in land management and annual precipitation levels  
16      can alter plant species composition and vegetation structure of grassland  
17      within a short timeframe.

18

19   **Q:    One of the GF&P's recommendations was that efforts should be**  
20       **made to avoid placement of turbines and new roads in grasslands,**  
21       **especially untilled native prairie. Based on the information in the**  
22       **Application and the proposed turbine layout, did Crowned Ridge II**

1       **demonstrate efforts to address this recommendation? Please**  
2       **explain.**

3    A:    Data from the application indicates that approximately 11,599 acres of the  
4       60,996 acre project area is native prairie habitat. From reviewing the  
5       available maps within the application there were efforts to avoid placement  
6       of turbines on untilled native prairie as approximately less than 20 of the  
7       no more than 132 planned turbines appear to be positioned in native  
8       prairie. A continued recommendation for wind development is to avoid  
9       untilled native prairie habitat to the greatest extent possible. It appears  
10      that multiple turbines are being planned in cultivated land (disturbed)  
11      which from a wildlife perspective is a positive siting approach. Some  
12      turbines will likely be placed on other types of grassland habitats (hay and  
13      pasture) within the project area. Avoidance of all grassland habitat will be  
14      challenging in this part of the state and in the project area as a high  
15      proportion of the total area is some type of grassland/herbaceous habitat  
16      as demonstrated by the application indicating that project construction  
17      easement is approximately 22% grass/pasture (Table 11.1).

18

19   **Q:    One of GF&P's concerns around wind farm development is the**  
20       **fragmentation of contiguous blocks of grasslands. Why is**  
21       **fragmentation a concern?**

22    A:    Fragmentation results in the direct loss of habitat and diminishes the value  
23       of remaining habitat. Habitat fragmentation is the division of large

1 contiguous blocks of habitat into smaller, and in some instances isolated  
2 patches. Identification of contiguous blocks of habitat, especially in  
3 predominantly non-habitat landscapes is an important component of  
4 grassland and wetland bird conservation.

5  
6 **Q: Are there any areas of contiguous grassland habitat in the proposed**  
7 **project?**

8 A: Yes. Reviewing maps and figures provided with the application, it appears  
9 that the northern tier and southeastern section of the project area have the  
10 highest level of contiguous blocks of grassland habitat.

11  
12 **Q: Based on the information available does the GF&P have concerns**  
13 **over the placement of turbines and roads in contiguous blocks of**  
14 **grassland?**

15 A: Based on reviewing available information, fragmentation of grassland  
16 habitats were avoided/minimized in some of the project area through the  
17 proposed layout of the infrastructure of the project. This is a result of  
18 primarily utilizing tilled agricultural fields for turbine locations. There are  
19 other locations of the project area which the placement of turbines will  
20 likely create some level of fragmentation of smaller grassland blocks  
21 (comprised of different grassland cover types: hay, pasture, etc.).

22

1   **Q.    Does the state or GF&P have specific mitigation recommendations**  
2       **that will minimize or compensate potential impacts from wind energy**  
3       **development if they cannot be avoided?**

4   A.   At the current time South Dakota does not have a state mitigation policy  
5       that can be provided to wind energy developers. However, there are  
6       resources available which can provide guidance and suggestions that can  
7       be considered as well as self-imposed actions or activities that can  
8       minimize natural resource impacts.

9

10   **Q:    What are potential mitigation considerations?**

11   A:   Mitigation can take multiple forms and can be accomplished in a multitude  
12       of ways. It could be an approach which implements an applied  
13       management activity/strategy on impacted lands which elevates these  
14       lands to a more productive state or higher ecological state (example –  
15       grazing management) to an approach which is more sophisticated and  
16       detailed using tools developed to calculate acres of habitat to be restored  
17       or created based on impacted acres and other relevant research data  
18       (example – decision support tool). Examples that are available specifically  
19       for wind energy projects is a decision support tool based off the research  
20       conducted by Loesch et al. (2013) that considers breeding waterfowl and  
21       another which focuses on breeding grassland songbirds resulting from  
22       research findings of Shaffer and Buhl (2016). Additionally, Shaffer et al.

1 (2019) describes a standardized method to estimate offsets based on  
2 results of Shaffer and Buhl 2016 and Loesch et al. 2013).

3

4 As stated earlier South Dakota does not have a state mitigation policy nor  
5 does the state endorse these studies and resulting products, however it is  
6 worthy of mentioning these tools demonstrating resources available to  
7 developers and managers.

8

9 **Q: The GF&P recommended that turbines should not be placed in or**  
10 **near wetland basins and special care should be made to avoid areas**  
11 **with high concentrations of wetlands. Do you believe that Crowned**  
12 **Ridge II's proposed turbine layout incorporates this**  
13 **recommendation?**

14 **A:** The application mentions under the wetland and waterbody  
15 impacts/mitigation section that project facilities have been sited to avoid  
16 both temporary and permanent impacts to wetlands and waterbodies to  
17 the extent possible. These are appropriate measures. Reviewing the  
18 turbine layout and using NWI wetland information for the project area,  
19 some turbines appear to be placed in areas of higher concentrations of  
20 wetland basins (specifically in the central and southeastern portions of the  
21 project). However, based on review of recent aerial imagery, many of  
22 these wetlands appear to be converted to crop production or reduced in  
23 size. It will be challenging to avoid areas of wetland concentrations and

1 other water bodies simply based on the total number different water  
2 bodies present in this part of the state and project area.  
3 Recommendations to avoid areas of higher concentrations of wetlands is  
4 supported by findings from Loesch et al. (2013).

5  
6 **Q: Are you aware of any other wind farms near this proposed project?**

7 A: Yes. I am aware of projects in the area by reviewing the map of wind  
8 projects found on the PUC website indicating projects either in the status  
9 of existence, proposed, pending, or under construction.

10  
11 **Q: Does the GF&P have any thoughts regarding the potential for**  
12 **cumulative impacts the Project may have?**

13 A: As projects are completed and based on location and proximity to other  
14 projects, the question of cumulative impacts will become more apparent.  
15 Knowing the importance of native prairie tracts and other forms of  
16 grassland habitat to several grassland dependent species, continued  
17 development on these types of lands could result in reduced or limited  
18 habitat value. Placement of turbines in lands currently under cultivation  
19 and avoiding where possible the different varieties of grassland and  
20 wetland habitats will help minimize potential cumulative impacts.

21  
22 Our agency will continue to work with wind developers and provide  
23 recommendations that we believe will help minimize cumulative impacts.

1 No different than offered to this project, the focus could include, but not  
2 limited to, recommendations on avoiding grassland habitats, in particular  
3 native prairie remnants, avoidance of high wetland complex areas,  
4 maximize the use of existing corridors for infrastructure, and pre and post  
5 construction surveys to assess the proposed project area that may assist  
6 in operational decisions.

7  
8 **Q: Do any State threatened or endangered species have the potential to**  
9 **be impacted by the wind farm?**

10 A: Two creeks (Stray Horse and Willow Creek) within the project boundary  
11 are known Topeka Shiner streams. We have records of Topeka Shiners  
12 within the project area, and immediately outside the project area,  
13 According to the application, Crowned Ridge II will file a storm water  
14 pollution prevention plan and put in place practices to reduce or eliminate  
15 sedimentation. These actions will help reduce potential negative impacts  
16 to Topeka Shiners that may be in or near the project area. Additionally,  
17 Crowned Ridge II proposes to directionally bore under streams to reduce  
18 impacts to streams, which will also reduce impacts to Topeka Shiners.

19  
20 **Q: Are there any GF&P lands or other public lands that may be**  
21 **impacted by the wind farm?**

22 A: At the time of the application, there were five walk-in-area parcels within  
23 the project area; zero turbines are planned on these properties. These

1 properties are privately owned and an agreement with GFP opens them to  
2 free public access for hunting. Should a Walk-In Area be temporarily  
3 disrupted due to construction activities, GFP would ask we are notified to  
4 determine whether any action is required from our agency to notify the  
5 public.

6  
7 No Game Production Areas are present within the project area and three  
8 Game Production Areas are located immediately adjacent to the project  
9 boundary. For clarification, Game Production Areas and Waterfowl  
10 Production Areas are not private land leased by GFP. Game Production  
11 Areas are owned by the State of South Dakota and managed by GFP.  
12 Waterfowl Production Areas are federally owned public land and managed  
13 by the US Fish and Wildlife Service.

14

15 **Q: Does the GF&P have any recommendations to protect those GF&P**  
16 **lands or other public lands?**

17 A: The state does not have an established set-back policy or  
18 recommendation for wind turbine placement in proximity to state  
19 properties such as Game Production Areas. Set-back policies have been  
20 established at local levels by local government entities and in some  
21 instances have been suggested as the potential set-back distance from  
22 state properties. At this time, it is the state's belief that these types of  
23 policies be established at the local level and at the discretion of the PUC



1 Commission to impose such set-backs when considering wind energy  
2 permits. Game, Fish and Parks is not aware of any local laws or  
3 ordinances that establish set-back distances from state properties for this  
4 project.

5  
6 **Q: If the final turbine locations changed from those provided in the**  
7 **proposed turbine layout, could the potential terrestrial environment**  
8 **impacts change?**

9 A: Yes.

10

11 **Q: You mentioned the applicant requesting data from the Natural**  
12 **Heritage Database. What is the South Dakota Natural Heritage**  
13 **database? What type of information does it contain?**

14 A: The South Dakota Natural Heritage database tracks species at risk.  
15 Species at risk are those that are listed as threatened or endangered at  
16 the state or federal level or those that are rare. Rare species are those  
17 found at the periphery of their range, those that have isolated populations  
18 or those for which we simply do not have extensive information on.

19

20 This database houses and maintains data from a variety of sources  
21 including site-specific surveys, research projects and incidental reports of  
22 species that cover a time period from 1979 to the present. It is important to

1 note that the absence of data from this database does not preclude a  
2 species presence in the proposed project area.

3

4 **Q: In a previous docket (Crowned Ridge), Game, Fish and Parks**  
5 **recommendation related to post-construction prairie grouse lek**  
6 **monitoring. Does Game, Fish and Parks have a similar**  
7 **recommendation for the Crowned Ridge II project?**

8 A: Game, Fish and Parks recommended post-construction grouse lek  
9 monitoring of confirmed leks less than 1 mile from any wind turbines in the  
10 crowned ridge project. The Crowned Ridge II project had one GFP  
11 documented lek reported for the project area. Although the Department  
12 still has concerns over the effect of wind energy development on prairie  
13 grouse, we are not recommending a similar permit condition for the  
14 Crowned Ridge II project. Game, Fish and Parks is currently partnering  
15 with Crowned Ridge (Nextera and Excel Energy) to design and implement  
16 a prairie grouse telemetry study at the Crowned Ridge project to fulfill the  
17 applicants permit condition. This study will be more robust, and will be  
18 longer duration (3 year minimum vs. 2 years) as originally outlined in the  
19 permit condition. Due to the willingness of the applicant (Nextera/Crowned  
20 Ridge II) to undertake a more rigorous study on the potential impacts of  
21 wind energy to prairie grouse, Game, Fish and Parks is not recommending  
22 a similar permit condition for Crowned Ridge II.

23

1   **Q:    In summary, does GF&P offer any specific permit recommendations**  
2       **should the permit be granted?**

3   A:    Game, Fish and Parks recommends that the applicant be required to  
4       contact the department at least 60 days prior to the start of construction to  
5       coordinate public access to walk-in areas that may be temporarily  
6       disrupted due to construction activities. Game, Fish and Parks will then  
7       determine if any action is required from our agency to notify the public of  
8       any changes to public access. Possible actions by GFP include: updating  
9       the public hunting atlas (if notified before May 1<sup>st</sup> of construction year),  
10      updating the public access map in the GFP app and additional signage at  
11      affected properties during construction activities. Providing up-to-date  
12      information on timing of construction in or near walk-in areas will help  
13      ensure the safety of construction crews and hunters.

14

15   **Q:    Does this conclude your testimony?**

16   A:    Yes.

17

18   Bauman, P., B. L. Carlson, and T. Butler. 2016. Quantifying undisturbed (native)  
19      lands in eastern South Dakota: 2013. South Dakota State University.

20   Loesch, C. R., J. A. Walker, R. E. Reynolds, J. S. Gleason, N. D. Niemuth, S. E.  
21      Stephens, and M. A. Erickson. 2013. Effect of wind energy development  
22      on breeding duck densities in the Prairie Pothole Region. The Journal of  
23      Wildlife Management 77:587-598.

- 1 Shaffer, J. A., and D. A. Buhl. 2016. Effects of wind-energy facilities on breeding
- 2 grassland bird distributions. *Conservation Biology* 30:59-71.
- 3

# Hilary A Meyer

South Dakota Game, Fish and Parks  
523 E Capitol Ave  
Pierre, SD 57501  
605-773-6208 (office)  
Hilary.Meyer@state.sd.us

## Education

**2011 M.S. Wildlife and Fisheries Science-Fisheries Option.** South Dakota State University (SDSU), Brookings, SD.

Thesis: Influence of Diet and Environmental Variation on Physiological Responses of Juvenile Pallid Sturgeon (*Scaphirhynchus albus*).

**2009 B.S. Fisheries and Water Resources-Fisheries Option,** and Biology with Aquaculture minor. University of Wisconsin-Stevens Point (UWSP), Stevens Point, WI.

## Professional Experience

### Environmental Review Senior Biologist

October 2018-present

SD Game, Fish and Parks, Pierre, SD

I review proposed development projects in the state of South Dakota. As part of the review process, I provide information on wildlife, wildlife habitat and work with developers to help them avoid or minimize conflicts with wildlife and wildlife habitat. I serve on the Interagency Review Team (IRT) for reviewing wetland mitigation projects and banking instruments. I work extensively with other state agencies to provide information and recommendations related to wildlife and provide expert opinion and testimony. I represent South Dakota on the Midwest Landscape Initiative Wind Energy Working Group and the Western Association of Fish and Wildlife Agencies (WAFWA) Crucial Habitat Assessment Tool Technical and Policy Committee.

### Fisheries Biologist

April 2013 – October 2018

SD Game, Fish and Parks, Ft. Pierre, SD

I lead and assisted field crews to complete biological surveys on Lake Sharpe and Lake Oahe in central South Dakota. Biological surveys included deploying gear such as: mono and multifilament gill nets, boat electrofishing, trotlines, fyke nets and drifted trammel

nets. I was the project lead for conducting nighttime hydroacoustics surveys on Lake Oahe for coldwater prey fish (rainbow smelt and lake herring). I assisted with age-estimation of hard structures (otoliths, scales and fin rays), annual report review and preparation, manuscript preparation, manuscript reviews, creating presentations for public outreach, creating professional presentations and reviewing presentations for co-workers. I managed a multi-species acoustic telemetry database as part of multiple research projects on Lake Sharpe, SD. I wrote and reviewed research proposals to secure project funding. I hired, trained, supervised and mentored seasonal fisheries technicians (1-2 per field season) and assisted with mentoring and training numerous fisheries interns. I assisted with the development of new station projects, and performed data analysis as needs arose. I presented results of such analyses in the form of technical presentations to stakeholder groups and peer groups at professional meetings. I participated in and assisted in coordinating multiple outreach and education events throughout South Dakota.

**Biological Science Technician (Fisheries)**

December 2011 – April 2013

U.S. Fish and Wildlife Service, Columbia, MO.

I lead and assisted field crews to complete biological assessments on the lower Missouri River. Biological assessments include deploying gear such as the otter trawl, experimental mesh gillnets, trotlines, mini-fyke nets, drifted trammel nets, push trawl and electrofishing. I conduct and assist in data collection on field computers (tablets), and oversee data management/quality control. I conduct standardized sampling to monitor long-term pallid sturgeon population trends and long-term fish community trends. I have also lead electrofishing crews in the Chicago Area Waterway System (CAWS) to monitor for Asian carp presence, and assisted with environmental DNA (eDNA) sampling in the CAWS. I assisted the USFWS-Carterville office with reviewing Dual Frequency Identification Sonar (DIDSON) videos. I am responsible for writing annual reports, paper datasheet quality control, analyzing long-term datasets and maintaining multiple databases (Microsoft Access) for the Pallid Sturgeon Population Assessment Program. I participated in and assisted in coordinating multiple outreach and education events throughout the Columbia, Missouri area. I supervised and trained seasonal employees on Pallid Sturgeon Monitoring Protocols. I assisted with the development of new station projects, and performed data analysis as needs arose. I presented results of such analyses in the form of technical presentations to stakeholder groups and peer groups at professional meetings.

**Graduate Research Assistant (M.S.)**

June 2009 – November 2011

South Dakota State University, Brookings, SD.

I conducted research on pallid sturgeon physiology, including the effects of diet and temperature regime on growth, food consumption and metabolism. I maintained the U.S.G.S. cooperative research unit wet lab at SDSU, where we housed 48 federally

endangered pallid sturgeon and supervised and trained technicians. I presented the results of my research in the form of posters and technical presentations.

**Fisheries technician**

April - June 2009

Wisconsin Department of Natural Resources, Oshkosh, WI

I assisted with the spring lake sturgeon spawning assessment, including capturing and PIT tagging large spawning adults. I also embedded, sectioned, and aged otoliths for a Lake Winnebago System-wide research project.

**Assistant Laboratory Manager**

September 2004 – May 2009

Aquatic Biomonitoring Laboratory, UWSP, Stevens Point, WI

My primary job duties were to prepare slide mounts of Chironomidae larvae for identification, and sorting biotic index samples. I also prepared and updated laboratory protocols, tested new protocols, trained new personnel on laboratory protocols and participated in hiring and retention decisions. I identified aquatic insects to family level, assisted in quality control and assurance checks of sorted samples, and performed data transcription of sample information to proper log sheets.

**Aquaculture Laboratory Assistant**

January - May 2009

Aquaculture Laboratory, UWSP, Stevens Point, WI

I assisted in designing and conducting a compensatory growth study using juvenile yellow perch. Juvenile yellow perch were reared on three different feeding regimes, and growth was measured weekly. Duties included collecting and analyzing growth data, and general maintenance of aquaculture facilities.

**Fisheries Genetics Researcher**

September 2008 – May 2009

Molecular Conservation Genetics Laboratory, UWSP, Stevens Point, WI

I worked as an independent researcher identifying molecular markers for hybrid detection in *Morone* species. Job duties included DNA extraction from fin clips, polymerase chain reaction, microsatellite genotyping, data analysis and primer optimization.

**Student Ambassador**

May – August 2008

Nyumbani Village, Kitui, Kenya

Through the Global Environmental Management program at UWSP, I was selected to travel to Nyumbani Village, Kenya to assist in managing an organic farm. I created crop rotation, harvest, and planting schedules to maximize yields and reduce pest problems. Our overarching objective was to produce a surplus of food for the villagers

to sell in organic markets to bring income into the village. This position required collaboration with many different village officials, residents and farm laborers.

### **Fish Pathology Researcher**

September 2007 – May 2009

Histology Laboratory, UWSP, Stevens Point, WI

I worked as an independent researcher, characterizing the pathology of “white-tail syndrome” in cultured yellow perch using histological methods including preparing and embedding specimens, sectioning specimens, reagent preparation, microtome sectioning and examination of specimens using light microscopy. As part of a two person team, I worked with a number of private aquaculturists in central Wisconsin to collect specimens and determine a cause for this uncategorized disease.

### **Hydrologic Technician**

May – August 2007

Chequamegon-Nicolet National Forest, USDA Forest Service, Park Falls, WI

I conducted road-stream crossing inventories and fish passage surveys across the Chequamegon-Nicolet National Forest. I also assisted with hook and line surveys, remnant logging dam surveys, and stream crossing construction. I managed road-stream crossing data in Microsoft excel and access and used the program FishXing to identify possible fish passage barriers throughout the forest.

### **Hydrologic Technician**

May – July 2006

Chequamegon-Nicolet National Forest, USDA Forest Service, Park Falls, WI

I performed road-stream crossing inventories, fish passage surveys and backpack electro-fishing across the Chequamegon-Nicolet National Forest. I also assisted biologists with hook and line surveys and remnant logging dam surveys. I managed road-stream crossing data in Microsoft excel and access and used the program FishXing to identify possible fish passage barriers throughout the forest.

### **Fisheries Technician/Intern**

May – August 2005

Utah Division of Wildlife Resources, Vernal, UT

I performed extensive backpack electro-fishing in the Uinta Mountains. We used depletion-removal techniques to remove invasive brook trout and hybrid cutthroat trout to restore native and genetically pure Colorado River strain cutthroat trout. Other duties included riparian habitat improvements (i.e. - removing invasive plant species), trout egg collection and fertilization and various maintenance on stream sampling equipment.



## Professional Affiliation

|                |                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2004 – Present | American Fisheries Society<br>Parent society (2009-Present)<br>Fisheries Management Section (2013- 2018)<br>Education Section (2010-2018)<br>Genetics Section (2009-2018)<br>Dakota Chapter (2009-present)<br>South Dakota State University Student Sub-unit (2009-2011)<br>Wisconsin Chapter (2008-2012)<br>University of Wisconsin-Stevens Point Student Sub-unit (2004-2009) |
| 2012 - 2018    | North American Sturgeon and Paddlefish Society                                                                                                                                                                                                                                                                                                                                  |
| 2018-Present   | The Wildlife Society<br>South Dakota Chapter                                                                                                                                                                                                                                                                                                                                    |
| 2018-Present   | Association of State Wetland Managers                                                                                                                                                                                                                                                                                                                                           |

## Professional Service

|                                                            |              |
|------------------------------------------------------------|--------------|
| <b>Wind Energy Work Group Member</b>                       | 2019         |
| Midwest Landscape Initiative                               |              |
| Midwest Association of Fish and Wildlife Agencies          |              |
| <b>Crucial Habitat Assessment Tool Technical Committee</b> | 2019         |
| Western Association of Fish and Wildlife Agencies          |              |
| <b>Crucial Habitat Assessment Tool Policy Committee</b>    | 2019         |
| Western Association of Fish and Wildlife Agencies          |              |
| <b>AFS Professional Certification Committee</b>            | 2017-Present |
| American Fisheries Society                                 |              |
| <b>Website Manager</b>                                     | 2015-2018    |
| Dakota Chapter AFS                                         |              |
| <b>Secretary</b>                                           | 2015-2018    |
| North Central Division AFS Walleye Technical Committee     |              |

**Poster Judge**

February 2015

Annual Meeting, Dakota Chapter AFS, Bismarck, ND

**Young Professional Committee Member**

2013-2018

Fisheries Management Section

**Committee Chair**

2013-2014

North Central Division AFS Walleye Technical Committee

**Peer Reviewer**

September 2009 – November 2011

Fisheries Management and Ecology and Transactions of the American Fisheries Society.

**Awards**

2018 Outstanding Performance Award South Dakota Game, Fish and Parks

2018 Best Professional Poster Award Dakota Chapter AFS (co-author)

2017 Best Professional Poster Award Dakota Chapter AFS (co-author)

2017 Emerging Leader Mentorship Award American Fisheries Society

2016 Best Professional Poster Award Dakota Chapter AFS (lead author)

2016 Award of Merit American Fisheries Society Fish Management Section

2014 MICRA Sturgeon and Paddlefish Committee Travel Award

2011 American Fisheries Society John E. Skinner Memorial Award

2011 Honorable Mention for Best Student Poster Competition, 141<sup>st</sup> Annual Meeting of the American Fisheries Society, Seattle, WA.

2011 World Sturgeon Conservation Society-North American Chapter Student Travel Award

2011 2<sup>nd</sup> Place Oral Presentation, Missouri River Natural Resources Conference, Nebraska City, NE

2011 Graduate School Travel Award, South Dakota State University

2009 Clive A. David Memorial Research Scholarship, UWSP

2009 Royal Anderson Ecology Award 2009, UWSP

2009 Gerhardt Outstanding Water Student, UWSP

## Publications

- Fincel, M., N. Kludt, **H. Meyer**, M. Weber and C. Longhenry. 2019. Long-term data suggest potential interactions of introduced walleye and smallmouth bass on native sauger in four Missouri River impoundments. Journal of Fish and Wildlife Management. In Press.
- Maahs, B.C., **H.A. Meyer**, N.D. Huysman, J.M. Voorhees and M.E. Barnes. 2018. Mortality of landlocked fall chinook salmon broodstock after electrofishing or ascending a fish ladder. Jacobs Journal of Aquaculture and Research 3:1-3.
- Huysman N., J.M. Vorhees, **H. Meyer**, E. Krebs and M.E. Barnes. 2018. Characteristics of landlocked fall chinook salmon producing either viable or completely non-viable eggs. International Journal of Fisheries and Aquatic Sciences 6: 86-88.
- Reese, S.E., A.J. Long, H.A. **Meyer** and M.E. Barnes. 2017. Landlocked fall chinook salmon sperm motility after short term milt storage. International Journal of Innovative Studies in Aquatic Biology and Fisheries, 3:9-13.
- Meyer**, HA, SR Chipps, BDS Graeb, and RA Klumb. 2017. Growth, food consumption and energy status of age-0 pallid sturgeon (*Scaphirhynchus albus*) fed a commercial or invertebrate diet. Journal of Fish and Wildlife Management.
- Kaemingk, MA, DJ Dembkowski, **HA Meyer**, and LM Gigliotti. 2013. Some insight for undergraduates seeking an advanced degree in wildlife and fisheries sciences. Fisheries.

## Reports

- Meyer**, HA, RP Hanten, K Potter, MJ Fincel and MJ Smith. 2015. Annual Fish Population and Angler Use, Harvest and Preference Surveys on Lake Oahe, South Dakota, 2014.
- Meyer**, HA, CJ Wrasse, CJ Ridenour, WJ Doyle and TD Hill. 2012. Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: Segment 14 2011 annual report. U.S. Fish and Wildlife Service, Columbia Fish and Wildlife Conservation Office, Columbia, Missouri. Prepared for the U.S. Army Corps of Engineers Missouri River Recovery Program.
- Ridenour, CJ, **HA Meyer**, CJ Wrasse, WJ Doyle and TD Hill. 2012. Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: Segment 13 2011 annual report. U.S. Fish and Wildlife Service,

Columbia Fish and Wildlife Conservation Office, Columbia, Missouri. Prepared for the U.S. Army Corps of Engineers Missouri River Recovery Program.

Ridenour, CJ, CJ Wrasse, **HA Meyer**, WJ Doyle and TD Hill. 2012. Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: 2011 Contingency Sampling. U.S. Fish and Wildlife Service, Columbia Fish and Wildlife Conservation Office, Columbia, Missouri. Prepared for the U.S. Army Corps of Engineers Missouri River Recovery Program.

## **Presentations**

Goble, C., H. **Meyer**, M. Fincel, C. Pasbrig and D. Turner. 2019. Using acoustic telemetry to re-establish historic fisheries. Midwest Fish and Wildlife Conference Annual Meeting, Cleveland, OH.

**Meyer**, H., C. Pasbrig and M. Fincel. 2018. Population dynamics and movement of shovelnose sturgeon in a Missouri River impoundment. North American Sturgeon and Paddlefish Society Annual Meeting, Columbia, MO.

Turner, D., H. Meyer, L. Pierce and D. James. 2018. Movement of hatchery-reared Age-0 paddlefish in Lake Sharpe, South Dakota (poster). North American Sturgeon and Paddlefish Society Annual Meeting, Columbia, MO.

Jungwirth, J., B. Miller, H. **Meyer**, J. Davis, M. Fincel and C. Longhenry. 2018. Selective removal of largemouth bass in small prairie impoundments (presenting author). North Central Division AFS Walleye Technical Committee Meeting, Spirit Lake, IA.

Fincel, M., R. Hanten, D. Jost, J. Jungwirth, H. **Meyer**, K. Potter and M. Smith. 2018. Success of stocking walleye (*Sander vitreus*) in select bays of a large Missouri River reservoir. Dakota Chapter of the American Fisheries Society Annual Meeting, Brookings, SD.

Maahs, B., H. **Meyer**, R. Hanten and M. Fincel. 2018. Comparison of short-term survival of electroshocked and ladder caught chinook salmon in Lake Oahe, South Dakota (poster). Dakota Chapter of the American Fisheries Society Annual Meeting, Brookings, SD.

Gravenhof, D., B. Maahs, H. **Meyer**, R. Hanten and M. Fincel. 2018. Catch raceway escapement of chinook salmon at Whitlocks Bay spawning station (poster). Dakota Chapter of the American Fisheries Society Annual Meeting, Brookings, SD.

Turner, D., D. James, L. Pierce, H. **Meyer**, N. Starzl and J. Powell. 2018. Acoustic tag retention and initial dispersal of hatchery-reared juvenile paddlefish. Dakota Chapter of the American Fisheries Society Annual Meeting, Brookings, SD.

Davis, J., N. Kludt, H. **Meyer** and M. Fincel. 2018. Feasibility of hydro-acoustic surveys to monitor Rainbow smelt (*Osmerus mordax*) and rainbow trout (*Oncorhynchus mykiss*) in Pactola Reservoir, South Dakota. Dakota Chapter of the American Fisheries Society Annual Meeting, Brookings, SD.

**Meyer**, H.A., M.J. Fincel and R.P. Hanten. 2017. Use of acoustic telemetry to assess over-winter survival of gizzard shad. American Fisheries Society Annual Meeting, Tampa, FL.

Stacy, W., K. Grohs, D. James, L. Pierce, H. **Meyer** and D. Shuman. 2017. Distribution and movement of translocated paddlefish: Implications for future sport fishery potential in Lake Sharpe, SD. Dakota Chapter of the American Fisheries Society Annual Meeting, Jamestown, ND.

Reese, S., T. Long, H. **Meyer** and M. Barnes. 2017. Effects of short term storage on chinook salmon sperm motility (poster). Dakota Chapter of the American Fisheries Society Annual Meeting, Jamestown, ND.

**Meyer**, HA, R.P. Hanten, M.J. Fincel. 2016. Movement of tagged gizzard shad in a large Missouri River reservoir. American Fisheries Society Annual Meeting, Kansas City, MO.

**Meyer**, H.A., R.P. Hanten, M.J. Fincel and J.L. Davis. 2016. Survival of gizzard shad after dummy transmitter implantation (poster). Dakota Chapter of the American Fisheries Society Annual Meeting, Spearfish, SD.

Greiner, M.J., R.P. Hanten, H.A. **Meyer**, and M.J. Fincel. 2016. Detection efficiency of acoustic transmitters in three reservoir habitats (poster). American Fisheries Society Annual Meeting, Kansas City, MO.

**Meyer**, HA, K Grohs, D Shumann and MJ Fincel. 2015. Movement of translocated paddlefish in Lake Sharpe, South Dakota. North American Sturgeon and Paddlefish Society Annual Meeting, Oshkosh, WI.

**Meyer**, HA and MJ Fincel. 2015. Fast food: movement of gizzard shad in Lake Sharpe, South Dakota. North Central Division of the American Fisheries Society, Walleye Technical Committee Annual Meeting, Brookings, SD.

**Meyer**, HA, MJ Fincel, WE Adams and CL Longmire. 2014. The business of fishing: use and satisfaction of anglers on a large reservoir. 144<sup>th</sup> Annual Meeting of the

- Meyer, HA, CJ Ridenour, WJ Doyle and TD Hill.** 2012. Influence of flow regime on the condition of blue suckers in the lower Missouri River. 142<sup>nd</sup> Annual Meeting of the American Fisheries Society, St. Paul, MN.
- Meyer, HA, SR Chipps, BDS Graeb, and RA Klumb.** 2012. Evidence for countergradient variation in pallid sturgeon physiology (Poster). Missouri River Natural Resources Committee Conference, Pierre, SD.
- Meyer, HA, CJ Ridenour, and TD Hill.** 2012. Seasonal resource selection by blue suckers in the lower Missouri River (Poster). Missouri River Natural Resources Committee Conference, Pierre, SD.
- Meyer, HA, CJ Ridenour, WJ Doyle and TD Hill.** 2012. Lateral distribution of *Scaphirhynchus* sturgeon during flood flows in the lower Missouri River: 2010 case study. Mississippi Interstate Cooperative Resource Association Sturgeon and Paddlefish Committee Annual Meeting, Kirkwood, MO.
- Meyer, HA, SR Chipps, BDS Graeb, and RA Klumb.** 2011. Latitudinal variation in pallid sturgeon physiology. 141<sup>st</sup> Annual Meeting of the American Fisheries Society, Seattle, WA.
- Meyer, HA, SR Chipps, BDS. Graeb, and RA Klumb.** 2011. Growth and energy status of age-0 pallid sturgeon fed a commercial or invertebrate diet (Poster). 141<sup>st</sup> Annual Meeting of the American Fisheries Society, Seattle, WA.
- Meyer, HA, SR Chipps, BDS Graeb, and RA Klumb.** 2011. Growth, metabolism and energy density of juvenile pallid sturgeon fed commercial and natural diets. Missouri River Natural Resources Committee Conference, Nebraska City, NE.
- Meyer, HA, BL Sloss and R Franckowiak.** 2009. Hybrid detection in four species of temperate basses (*Morone spp.*). 2009 College of Natural Resources Undergraduate Research Symposium, Stevens Point, WI.
- Meyer, HA, and J Sheffy.** 2009. Quantifying organic food production in Nyumbani village, Kitui, Kenya (Poster). 2009 College of Natural Resources Undergraduate Research Symposium, Stevens Point, WI.
- Meyer, HA, AM Purdy, C Hartleb, and R Schmitz.** 2009. Investigation of white-tail syndrome in yellow perch in Wisconsin. 2009 Wisconsin, Minnesota and Ottawa Tri-Chapter meeting of the American Fisheries Society, Duluth, MN.

## Training Received

|                                                                                                      |                |
|------------------------------------------------------------------------------------------------------|----------------|
| Mitigation Banking and In-Lieu Fee Program Interagency Review Team Training<br>The Conservation Fund | June 2019      |
| Writing and reviewing NEPA documents<br>Shipley Group                                                | March 2019     |
| Overview of the NEPA Process<br>Shipley Group                                                        | January 2019   |
| Nationwide Permits<br>Wetland Training Institute                                                     | January 2019   |
| First Aid, Adult CPR<br>Red Cross                                                                    | August 2018    |
| S.C.U.B.A.-Openwater Diving<br>SSI                                                                   | October 2017   |
| Program MARK Workshop<br>Iowa State University                                                       | July 2017      |
| Sturgeon and Paddlefish tagging and age estimation<br>North American Sturgeon and Paddlefish Society | October 2015   |
| ATV Operation Training<br>SDGFP                                                                      | September 2014 |
| R for Fisheries Scientists<br>Michigan State University/American Fisheries Society                   | August 2013    |
| Electrofishing Safety (FWS-CSP2202-OLT)                                                              | June 2012      |
| Sturgeon Osmoregulation Workshop<br>North American Sturgeon Conservation Society                     | July 2011      |
| National Safety Council Defensive Driving Course<br>Department of the Interior                       | January 2011   |

Motorboat Operators Certification Course  
Department of the Interior

May 2010



**BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

**DOCKET NO. EL19-027**

**IN THE MATTER OF THE APPLICATION BY  
CROWNED RIDGE WIND II, LLC FOR A PERMIT OF A WIND ENERGY  
FACILITY IN DEUEL, GRANT AND CODINGTON COUNTIES, SOUTH DAKOTA**

DIRECT TESTIMONY OF PAIGE OLSON  
ON BEHALF OF THE COMMISSION STAFF  
December 6, 2019



1   **Q.     State your name.**

2   A.     Paige Olson.

3

4   **Q.     By who are you employed?**

5   A.     State of South Dakota.

6

7   **Q.     For what department or program do you work and what is your job title?**

8   A.     South Dakota State Historical Society, State Historic Preservation Office (SHPO),  
9         Review and Compliance Coordinator.

10

11  **Q.     Please explain the program goals and your role and duties within SHPO.**

12  A.     The National Historic Preservation Act of 1966 is the foundation for the  
13         preservation work of the South Dakota State Historical Society (SDSHS). The  
14         State Historic Preservation Office (SHPO), a program under the SDSHS, is  
15         responsible to survey historic properties and maintain an inventory; identify and  
16         nominate properties to the National Register of Historic Places; advise and assist  
17         federal, state, and local government agencies in fulfilling their preservation  
18         responsibilities; provide education and technical assistance in historic  
19         preservation; develop local historic preservation programs; consult with federal  
20         and state agencies on projects affecting historic properties; and advise and assist  
21         with rehabilitation projects involving federal assistance. My specific role is to  
22         monitor state permitted and federally funded, licensed or permitted projects to

1 ensure historic properties are taken into consideration. I provide technical  
2 analyses, reviews and assistance to government agencies to ensure compliance  
3 with state and federal guidelines. I serve as the lead over the review and  
4 compliance function of SHPO.

5  
6 **Q. On whose behalf was this testimony prepared?**

7 A. This testimony was prepared on behalf of the Staff of the South Dakota Public  
8 Utilities Commission.

9  
10 **Q. State and explain the South Dakota laws that protect archaeological and**  
11 **historic resources in this state.**

12 A. South Dakota Codified Law 1-19A-11.1 - Preservation of historic property –  
13 Procedures. The state or any political subdivision of the state may not undertake  
14 any project which will encroach upon, damage or destroy any property included in  
15 the State Register of Historic Places or National Register of Historic Places.

16  
17 **Q. Have you reviewed the Application and Crowned Ridge Wind II, LLC's**  
18 **testimony?**

19 A. I reviewed portions of the Application containing the project description and all  
20 portions of the Application specific to cultural resources, namely Section 2.0  
21 Description of the Nature and Location of the Project, Section 6.0 General Site and  
22 Project Component Description (ARSD 20:10:22:11), and Section 18.6 Cultural

Resources. I also review the direct and supplemental testimony of Sarah Sappington.

**Q. Has SHPO provided any recommendations to Crowned Ridge Wind II, LLC regarding places of historical significance and cultural resources?**

A. Yes. In a letter dated March 12, 2009, to Mr. Adam C. Holven at Tetra Tech EM Inc.

**Q. Please describe what those recommendations were.**

A. I recommended that an on the ground survey of the project area be conducted and that all sites identified during the survey be avoided. I also recommended an architectural survey of the project area, including a one-mile buffer around the perimeter of the project area. Finally, I recommend contacting American Indian tribes with specific knowledge of this area to discuss the identification Traditional Cultural Properties and places of religious and cultural significance.

**Q. Did Crown Ridge Wind II, LLC adequately address those recommendations? If not, please explain.**

A. Yes, the following reports were submitted by SWCA Environmental Consultants, consultant to NextEra Energy Resources, LLC, for SHPO review and comment.

- “Crowned Ridge Wind Energy Facility Overview and Cultural Resources Review, June 2017.”

- “Level III Intensive Archaeological and Traditional Cultural Property Resources Inventory for the Crowned Ridge II Generation Tie Line, Codington and Deuel Counties, South Dakota, March 2019.”
- “Historic Architectural Resources Assessment for the Crowned Ridge II Generation Tie Line, Codington and Deuel Counties, South Dakota,” March 2019.”
- “Addendum 1 to Level III Intensive Archaeological and Traditional Cultural Property Resources Inventory for the Crowned Ridge II Generation Tie Line, Codington and Grant Counties, South Dakota, July 2019”.
- “Level III Intensive Archaeological and Traditional Cultural Property Resources Inventory for the Crowned Ridge II Wind Turbine Array, Codington, Deuel and Grant Counties, South Dakota, July 2019”.
- “Historic Architectural Resources Assessment for the Crowned Ridge Wind II Turbine Array, Codington, Deuel, And Grant Counties, South Dakota, July 2019”.

**Q. Do you agree with Crowned Ridge Wind II, LLC’s conclusions made in the Application and testimony regarding impacts to cultural resources and places of historical significance? If not, please explain.**

**A.** Yes.

**Q. Is SHPO waiting for any additional studies to review? If so, please explain what those studies are and what SHPO will ultimately do with those studies.**

1 A. No, but will review and comment on any additional information submitted as a  
2 result of future construction modifications.

3  
4 **Q. In your opinion, does the Application and Crowned Ridge Wind II, LLC's pre-**  
5 **filed testimony as presented to the Commission contain enough information**  
6 **to properly understand any potential adverse impacts to places of historical**  
7 **significance and cultural resources? If not, please explain.**

8 A. Yes. It is my opinion that enough information has been submitted to properly  
9 understand any potential adverse impacts to places of historical significance and  
10 cultural resources.

11  
12 **Q. If Crowned Ridge Wind II, LLC changed any turbine locations from those**  
13 **presented in the preliminary layout could that change any of the conclusions**  
14 **Crowned Ridge made regarding potential impacts to places of historical**  
15 **significance and cultural resources? Please explain.**

16 A. It is unlikely that a change in the preliminary layout would physically impact any  
17 properties that are listed in the State or National Register of Historic Places.

18  
19 **Q. Do you have a recommendation for a permit condition, or conditions, the**  
20 **Commission should consider?**

21 A. 1. Not only are cultural resource sites non-renewable, but no two sites are same.  
22 Once a resource is damaged or destroyed, the information the resource may

1 contain about the history of South Dakota is gone. Therefore, I recommend the  
2 following condition:

3 “The Applicant agrees to avoid direct impacts to cultural resources that are  
4 unevaluated, eligible for or listed in the National Register of Historic Places  
5 (NRHP). When a NRHP unevaluated, eligible or listed site cannot be  
6 avoided, Applicant shall notify the State Historic Preservation Office  
7 (SHPO) and the Commission of the reasons that complete avoidance  
8 cannot be achieved in order to coordinate minimization and/or treatment  
9 measures.”

10  
11 2. The Sisseton-Wahpeton Oyate, Yankton Sioux, Rosebud Sioux and Spirit Lake  
12 Tribal Historic Preservation Officers (THPOs) have determined that the Project will  
13 impose setting-related impacts at sites of traditional, cultural and religious  
14 importance to Native peoples and have the support of the project archaeologists.  
15 The Project developers worked with the THPOs to create the following avoidance,  
16 minimization, and mitigation measures for TCPs. Therefore, I recommend the  
17 following condition as outlined in the Application on page 104, Section 18.6.3.1:

18  
19 “The Applicant agrees to implement the avoidance, minimization and  
20 mitigation measures identified for TCPs:

- 21 • Implement standard avoidance or resource protection  
22 practices (e.g., barrier fencing, contractor training) where  
23 feasible in collaboration with the Sisseton-Wahpeton Oyate,

Yankton Sioux, Rosebud Sioux and Spirit Lake THPOs and the Applicant.

- Make best effort to identify participating landowners who may be willing to work with the tribes on site preservation, accessibility and protection of TCPs on their property.
- Conduct site revisits prior to construction.
- Help facilitate post-construction site revisits for tribes with the landowners.
- Identify and implement education/interpretation opportunities regarding tribal resource preservation and/or Native American perspectives which may include sensitivity training when needed. “

3. “Prior to the commencement of construction, Applicant agrees to develop an unanticipated discovery plan for cultural resources and comply with SDCL 34-27-25, 34- 27-26, and 34-27-28 for the discovery of human remains.”

4. “Applicant shall file a Level III Archaeological survey of the remaining facilities (i.e. access roads, crane paths, collection lines, O&M facilities, concrete batch plant, and laydown areas) with the Commission and provide a copy of the survey to SHPO prior to commercial operation. The survey report may contain confidential information and all confidential portions of the survey report shall be filed as confidential and not for public disclosure. If any potential adverse impacts to NRHP



1           unevaluated, listed, or eligible cultural resources are identified in the survey,  
2           Applicant shall file with the Commission a report describing the SHPO-approved  
3           planned measures to ameliorate those impacts.”  
4

5   **Q.    Does this conclude your testimony?**

6   A.    Yes.

**PAIGE HOSKINSON OLSON**  
**Pierre, SD 57501**

**Education**

1998-2001      Master of Arts, Anthropology  
University of Montana, Missoula, MT  
Major: Cultural Resource Management  
Minor: Archaeology

1989-1995      Bachelor of Arts  
University of Montana, Missoula, MT  
Major: History  
Minor: Political Science

1985-1989      Whitehall High School, Whitehall, MT

**Professional Experience**

January 2007 - Present      Archaeological Review and Compliance Coordinator, South Dakota State Historical Society - State Historic Preservation Office (SHPO), 900 Governors Drive, Pierre, SD

- Assess impact of projects on historic properties and ensure those properties are taken into consideration during planning and implementation of project in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended and South Dakota's state preservation law, South Dakota Codified Law 1-19A-11.1.
- Assess the eligibility of properties for listing on the National Register of Historic Places in accordance with the criteria developed by the National Park Service.
- Review archaeological survey reports and documentation submitted by federal, state and contracting archaeologist to determine if proper methodology and standards established by state and federal government are met.
- Negotiate with and assist agencies in developing legal agreements to mitigate effects to historic properties, such as memorandums of agreement.
- Negotiate with and assist agencies in developing legal agreements to provide for alternative review and compliance procedures, such as programmatic agreements.
- Provide technical assistance to government and tribal officials, contactors, and the general public concerning federal and state laws.
- Participate in consultation meetings to discuss project effects on historic properties with federal, state and tribal officials.
- Develop effective public information programs about state and federal preservation laws and archaeology.
- Ensure a database of all projects submitted for review is maintained and accurate for reports and future federal funding requests.
- Monitor changes in the interpretation of federal and state rules and regulations.
- Provide work direction and training for review and compliance program staff to ensure project are reviewed in an accurate, consistent and timely manner.
- Supervise student interns and volunteers in various projects.
- Site Manager for Fort Pierre Chouteau National Historic Landmark.
- Prepare and write comprehensive plans to manage cultural resources in South Dakota and update guidelines to ensure historic properties are identified and protected.
- Manage contracts focused on archaeology.
- Coordinate annual Archaeology Camp for twenty school age children.

- Participate in State Hazard Mitigation Group.
- Participated as a member of the Social Cultural Economic Technical Team for the development of the Missouri River Ecosystem Restoration Plan.

June 2002 –  
January 2007

Historic Archaeologist, South Dakota State Historical Society - State Historic Preservation Office, 900 Governors Drive, Pierre, SD

- Assessed impact of projects on historic properties and ensure those properties are taken into consideration during planning and implementation of project in accordance with Section 106 of the National Historic Preservation Act and South Dakota's state preservation law, South Dakota Codified Law 1-19A-11.1.
- Assessed properties eligibility for listing on the National Register of Historic Places in accordance with criteria established by the National Park Service.
- Reviewed archaeological survey reports and documentation submitted by federal, state and contracting archaeologist to determine if proper methodology and standards established by the state and federal government are met.
- Negotiated with and assisted agencies in developing legal agreements to mitigate effects to historic properties, such as memorandums of agreement.
- Negotiated with and assisted agencies in developing legal agreements to provide for alternative review and compliance procedures, such as programmatic agreements.
- Provided technical assistance to government officials, contractors, and the general public concerning federal and state laws and compliance requirements under Section 106 of the National Historic Preservation Act.
- Maintained a database of all projects submitted for review.
- Supervised student interns in various projects.
- Site Manager for two National Historic Landmarks owned by the state.
- Updated state guidelines for cultural resource surveys and survey reports specifically for Section 106 review and compliance.
- Managed contracts focused on archaeology.
- Coordinated Archaeology/ Preservation Month.

April 2001-  
June 2002

Historic Preservation Specialist, South Dakota State Historical Society - State Historic Preservation Office  
900 Governors Drive, Pierre, SD

- Functioned as West River Coordinator for National and State Register of Historic Places Programs, Certified Local Government program and historic preservation grant program.
- Apply National Register Criteria to make preliminary determinations of eligibility for listing properties on the National Register of Historic Places.
- Prepared and edited in house National and State Register Nominations.
- Surveyed commercial and residential districts to update existing National Register nominations.
- Furnished technical advice and grant management services to local historic preservation organizations and the general public.
- Acted as contact for GIS Technical Advisory Group.
- Used GoeExplorer III for data collection and ArcView/Mapit to create accurate maps.
- Consulted on review and compliance issues under state preservation law.

January 2000 –  
April 2001

Archival Technician, National Park Service, Grant-Kohrs Ranch National Historic Site, PO Box 790, Deer Lodge, MT

- Functioned as field archaeologist observing ground disturbing activities and making

onsite assessments for work associated with Natural Resource Damage Assessment.

- Acted as liaison between NPS personnel and University of Montana field research crews.
- Worked closely with Natural Resource Management Division to protect cultural and natural resources.
- Oversaw groundwater, soil, vegetation and range management research occurring at the Grant-Kohrs Ranch.
- Provided relevant information to University of Montana field crews to comply with state and federal laws.
- Drafted necessary documents involving Section 106 compliance for the Montana State Historic Preservation Office.
- Attended and represented the Grant-Kohrs Ranch at Natural Resource Damage Assessment meetings.
- Gathered financial information for Natural Resource Damage Assessment cost recovery.
- Maintained Administrative Record for Grant-Kohrs Ranch damage assessment.
- Worked with confidential and sensitive legal material.
- Completed a two-month detail in Atlanta, Georgia working directly with NPS Natural Resource Damage Assessment staff.

January 2000 –  
May 2001

Thesis Project, Bureau of Land Management, Fort Missoula Road, Missoula, MT

- Updated Cultural Resource Inventory for abandoned mining town of Coloma.
- Surveyed and recorded approximately 149 structures and features related to mining activities.
- Used GeoExplorer II for data collection to map structures and features.
- Documented current condition of structures and features using appropriate Bureau of Land Management forms and photographs.
- Completed literature search and develop comprehensive history of Coloma.
- Researched and compiled annotated bibliography.
- Supervised documentation of archaeology sites by volunteers.

February 2000 –  
May 2000

Intern, Montana State Historic Preservation Office, Helena, MT

- Performed record searches and entered archaeology site data using Oracle databases: Cultural Resource Information System, Cultural Resource Annotated Bibliography System, and Project, Eligibility and Effect Reports System.
- Compiled information to complete narrative and physical descriptions for nomination of historic district.
- Completed National Register of Historic Places nomination for Slayton Mercantile, Lavina, Montana.
- Surveyed and evaluated historic structures located within historic district for nomination as National Historic Landmark.
- Reviewed and prepared site files to be assigned Smithsonian Numbers.

### **Field Schools and Volunteer Experience**

April 2014

Natural Resource Conservation Service, Pierre Field Office, Pierre, SD

- Assisted NRCS Archaeologist in three archaeological inventories for the placement of pipelines and tanks.
- Inventory included walking transects to identify historic and prehistoric resources.

October 1999 –

Bureau of Land Management, Fort Missoula Road, Missoula, MT

November 1999

- Assisted BLM Archaeologist in archaeological inventory for timber sale and land exchange.
- Walked 30 meter transects to identify historic and prehistoric artifacts and features.
- Identified and recorded prehistoric and historic sites

July 1998

University of Montana Field School, Prehistoric Campsite  
Department of Anthropology, Missoula, MT

- Laid out, excavated, and screened soil from excavation units.
- Conducted block style excavations.
- Mapped vertical and horizontal stratigraphy.
- Point plotted artifacts and established vertical provenience.
- Maintained detailed excavation notes.

August 1998 -  
December 1998

University of Montana Field School, Historic Structure at Fort Missoula  
Department of Anthropology, Missoula, MT

- Laid out, excavated, and screened soil from excavation units.
- Conducted block style excavations.
- Mapped vertical and horizontal stratigraphy.
- Point plotted artifacts and established vertical provenience.
- Maintained detailed excavation notes.

### **Training**

July 2015

*The Section 106 Advanced Seminar*  
Advisory Council on Historic Preservation  
Pierre, SD

July 2015

*Section 106 Essentials*  
Advisory Council on Historic Preservation  
Pierre, SD

June 2014

*Working in Indian Country*  
Larry D. Keown  
Rapid City, SD

May 2014

*Current Archaeological Prospection Advances for Non-Destructive Investigations in the 21<sup>st</sup> Century*  
National Park Service, Midwest Archeological Center  
Aztalan State Park., Aztalan, WI

September 2012

*Archaeological Damage Investigation and Assessment; Archaeological Violation Investigation Class*  
Martin E. McAllister  
Pierre, SD

August 2010

*National Register/ National Historic Landmark Workshop*  
National Park Service  
Virginia City, NV

June 2008

*Section 106 Essentials*  
Advisory Council on Historic Preservation, Pierre, SD

|                                  |                                                                                                                                                    |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| April 2008                       | Native American Sensitivity Training<br>Curley Youpee, Russell Eagle Bear and Ben Rhodd<br>Pierre, SD                                              |
| May 2007                         | <i>Identification and Management of Traditional Cultural Places</i><br>National Preservation Institute, Claudia Nissley<br>Seattle, WA             |
| February 2006                    | National Environmental Policy Act (NEPA) Training<br>Federal Highway Administration<br>Pierre, SD                                                  |
| November 2005 -<br>December 2005 | Native American Awareness Training<br>Albert White Hat, Dorothy LeBeau, Wayne Evans, and Craig Howe<br>Pierre, SD                                  |
| August 2005                      | <i>Shenandoah-Dives Mill HAER Documentation and Historic Structure Assessment Workshop</i><br>San Juan Historical Society<br>Silverton, CO         |
| September 2004                   | <i>Section 106: How to Negotiate and Write Agreements</i><br>National Preservation Institute, Claudia Nissley<br>Honolulu, HI                      |
| September 2004                   | <i>Integrating Cultural Resources in NEPA Compliance</i><br>National Preservation Institute, Claudia Nissley<br>Honolulu, HI                       |
| July 2003                        | <i>Archaeological Law Enforcement Class</i><br>Archaeological Resource Investigations, Martin McAllister, Wayne Dance and John Fryar<br>Pierre, SD |
| September 2002                   | <i>Section 106 for Practitioners</i><br>National Preservation Institute, Tom King<br>Seattle, WA                                                   |
| July 2001                        | <i>Introduction to ArcView GIS Version 3.1</i><br>Kadrmass, Lee and Jackson<br>Pierre, SD                                                          |

### **Publications**

*A Cultural Site Evaluation Coloma, Montana, 2000.* Missoula: University of Montana Press, 2001.

“Creations in Stone: Petroforms in East River SD”, South Dakota History. Vol. 35, No. 4 (Winter 2005): 347-362.

**BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

**DOCKET EL19-027**

**IN THE MATTER OF THE APPLICATION BY CROWNED RIDGE WIND II, LLC  
FOR A PERMIT OF A WIND ENERGY FACILITY IN THE COUNTIES OF  
DEUEL, GRANT AND CODINGTON SOUTH DAKOTA, FOR THE CROWNED  
RIDGE WIND II PROJECT**

**Pre-Filed Direct Testimony and Exhibits of David Lawrence  
On Behalf of the Staff of the South Dakota Public Utilities Commission  
December 6, 2019**



012815

1   **Q: State your name and occupation.**

2   A: My name is David Lawrence, and I am a real property appraiser.

3

4   **Q: State your business address.**

5   A: My business address is 4820 E. 57<sup>th</sup> Street, Sioux Falls, South Dakota.

6

7   **Q: By whom are you currently employed?**

8   A: I am a real property appraiser with DAL Appraisal & Land Services.

9

10   **Q: Please state your educational and professional background.**

11   A: I received a Bachelor of Business Administration from Western State University  
12   in Gunnison, Colorado. After completing a four-year degree, I worked in real estate  
13   development, site acquisition, and management for a nationally branded franchise  
14   system. My career transitioned to real property valuation, and I began work with  
15   the RJ Hobson Appraisal Firm. I continued my real property studies with the  
16   Appraisal Institute earning the MAI designation, the SRA designation, the AI-RRS,  
17   and AG-RRS designation. After completing my designations with the Appraisal  
18   Institute, I continued my real property studies with the International Right of Way  
19   Association, earning the SR/WA designation. I am currently active in the Appraisal  
20   Institute, the International Right of Way Association and the Professional  
21   Appraisers Association of South Dakota.

22

23



1 **Q: What work experience have you had that is relevant to your involvement**  
2 **in this project?**

3 A: I have a wide range of appraisal experience across South Dakota and  
4 neighboring states including property types such as residential, commercial, ranch  
5 and farm. I've been fortunate in my appraisal career to have worked across the  
6 diverse market areas of South Dakota, including East and West River. Most of my  
7 appraisal experience is in right-of-way, linear and energy projects. As part of my  
8 practice, I provide appraisal services for damaged property and diminution value  
9 studies. These assignments have ranged from measuring the impacts of a high-  
10 voltage transmission line on residential property values to analyzing the impacts  
11 of the 2011 Missouri River flood on residential and agricultural property values in  
12 Union County. In the last ten years, I've completed several studies analyzing the  
13 impacts of underground pipelines on agricultural land values in Montana, South  
14 Dakota, Minnesota, and Nebraska. I have extensive experience in South Dakota  
15 developing damage studies and their relationship to property values. I've  
16 developed South Dakota impact studies on the Keystone Phase I, Keystone XL,  
17 NuStar, SDIP, Northern Border, Lewis & Clark, Magellan, Rockies Express, and  
18 MDU pipelines. In May of 2018, I completed research that analyzed the influences  
19 from the Buffalo Ridge Wind Facility on rural property values in Brookings County.  
20 Since 2018 I have completed a considerable amount of work with related wind  
21 energy projects in South Dakota, including Docket EL17-055 Crocker Wind Farm,  
22 Docket EL18-003 Dakota Range I & II, Docket EL18-026 Prevailing Wind Park EL,  
23 Docket 18-046 Dakota Range III and Docket 18-053 Deuel Harvest Wind Energy.

1 My experience with impact studies across the state has given me the knowledge  
2 and experience to research and apply the methodology for credible analysis.

3

4 **Q: Have you testified before the South Dakota Public Utilities Commission?**

5 A: Yes. I have provided testimony in Docket EL18-003 for the Dakota Range Wind  
6 Project in Grant County and Codington County. I have also provided testimony in  
7 Docket EL17-055 for the Crocker Wind Farm in Clark County.

8

9 **Q: On whose behalf was this testimony prepared?**

10 A: This testimony was prepared on behalf of the Staff of the South Dakota Public  
11 Utilities Commission.

12

13 **Q: Have you previously provided research for the South Dakota Public**  
14 **Utilities Commission regarding property value impacts from wind energy**  
15 **facilities operating in South Dakota?**

16 A: Yes, in Docket EL17-055 Crocker Wind Farm, EL18-003 Dakota Range I and  
17 II, EL18-026 Prevailing Winds, EL18-46 Dakota Range III an EL18-053 Deuel  
18 Harvest. The previous research included a 2018 market impact study of the  
19 Buffalo Ridge wind development operating in Brookings County. This research is  
20 identified as Exhibit DAL\_1 in the previous Docket filings and included as an exhibit  
21 with my testimony.

22

23

1 **Q: What is the purpose of your testimony in this proceeding?**

2 A: The purpose of my testimony is to (1) assist the Commission in understanding  
3 valuation principles and techniques and how they can be appropriately applied to  
4 estimate value impacts from the Crowned Ridge Wind II project and (2) provide  
5 the Commission with an update to the 2018 market research completed for previous  
6 wind dockets.

7

8 **Q: Can you briefly describe the scope of work for the Brookings County**  
9 **research completed for the Dakota Range Wind Project in Docket EL18-003?**

10 A: In preparation for the Dakota Range hearing, I completed research in Brookings  
11 County to identify properties that have sold in proximity to a wind project, tower or  
12 turbine. My research identified thirteen arm's length transactions in Brookings  
13 County. Unfortunately, due to time constraints of the June hearing, I was not able  
14 to perform a complete case-by-case analysis for the thirteen sales identified. I did  
15 prioritize the residential sales BK1, BK2, BK3, BK4, BK5, and BK7. For these  
16 sales, I performed a site inspection, interview analysis, and sales analysis. The  
17 remaining sales were analyzed with site inspections and interviews. My field  
18 research and site inspections had a particular emphasis on examining the  
19 proximity of a wind tower and how the tower proximity relationship can influence  
20 rural properties. Inspections were done from the public roadway for sales BK1,  
21 BK2.5, BK6, BK7, BK9, BK10, BK11, and BK12. In five cases the property owner  
22 was present, and I was able to complete an on-site inspection with sales BK2, BK3,  
23 BK4, BK5, and BK8. I relied on high-resolution aerial images for sale JD13 and a

1 telephone participant interview. In addition to the BK sales, I visited several rural  
2 residential and agricultural properties in the market area influenced by a wind  
3 tower. These inspections allowed me to evaluate the influences a wind tower can  
4 have on the different property types in the market area of Brookings County. After  
5 completing the field work, the next step was to interview as many of the participants  
6 in the transaction as possible. I knew a buyer's name and address, and/or a broker  
7 involved with the transaction from preliminary research. Given the name and  
8 address, I was able to search for phone numbers. Unfortunately, finding a working  
9 phone number for participants is becoming more difficult, but I was able to talk with  
10 about twenty participants by phone or in person. The objective of the interview  
11 analysis was to verify terms of the sale and to inquire whether the sale and/or  
12 subsequent use of the property were in any way affected by the proximity of a wind  
13 tower. A set of scripted questions were asked in such a manner that no bias or  
14 preconceived notions were projected during the interview. Based on the recorded  
15 legal documents, site inspections, and information gathered, a detailed description  
16 of BK1, BK2, BK3, BK4, BK5, and BK7 was developed for the sales analysis. The  
17 next step was to develop data on property sales that were similar in time, location  
18 and property type to each of the BK sales, but not in proximity to a wind tower.  
19 The methodology of the analysis is similar to the sales comparison approach in the  
20 appraisal process, with South Dakota's definition of *market value* as the foundation  
21 for the sales selection. To identify this research, I used the Brookings County MLS,  
22 Beacon and aerial images to confirm that each comparable sale was unaffected  
23 by a wind tower, turbine or wind project. Then each of these sales was

1 summarized in terms of physical characteristics and qualitatively analyzed for  
2 differences. The uninfluenced sales were compared to the BK influenced sale for  
3 analysis. The final step was to analyze the information collected for each  
4 transaction and draw conclusions with respect to the effect, if any, of the proximity  
5 of the wind tower on the transaction or on use of the property. The summary of  
6 BK1, BK2, BK3, BK4, BK5, and BK7 can be found in Exhibit DAL\_1. My scope of  
7 work did not include: 1) a sales analysis for sales BK6, BK8, BK9, BK10, BK11,  
8 BK12, and JD13; 2) a site visit for JD13; 3) a review of the chain of title for each  
9 property ownership since the project first became operational; 4) a site visit and  
10 additional verification for the comparable sales identified with MLS; 5) an analysis  
11 of the history of the wind project(s) in Brookings County, such as installation date,  
12 tower characteristics, project capacity, project construction, operational history,  
13 etc. and 6) supplemental research in the other thirteen South Dakota counties with  
14 operating wind projects.

15  
16 **Q: What are your general conclusions from the research you completed from**  
17 **the May 2018 Impact Study of Brookings County?**

18 A: Based on my research within the Brookings County market, the evidence  
19 supports the presumption there have been no adverse effects on the selling price  
20 of rural residential properties in proximity to a wind tower, turbine or wind project.  
21 However, the interview and site analysis support the presumption that proximity to  
22 a wind tower can influence the quiet enjoyment of the property and view of the rural  
23 scenery. Given the responses from market participants, there is a relationship

1 between the distance from a turbine and the effects on the value perceived by  
2 individual property owners who live in proximity to wind towers. Wind tower noise  
3 is the number one reason cited by market participants for a perceived impact on  
4 value; however, the sales data suggests otherwise. More specifically, the  
5 Brookings County research for rural residential properties suggests: 1) there was  
6 no discernible adverse impact on the selling prices in Brookings County that could  
7 be supported for sales BK1, BK2, BK3, BK4, BK5 and BK7; 2) Interviews with  
8 buyers of properties near wind towers were unanimous to report the proximity of  
9 the wind tower did not influence the price they paid; 3) In six of six rural residential  
10 sales, the market data was consistent, even though the site inspection observed  
11 influences of noise and view obstructions within the property boundaries.

12 Although I did not complete a sales analysis for the agricultural sales, the research  
13 supports the presumption there have been no adverse effects on the selling price  
14 of agricultural properties in proximity to and within the boundaries of the property  
15 with a wind tower. During the interview process, participants of agricultural  
16 properties were consistent to report the price paid was not affected by a wind tower  
17 and in some cases reported a stronger price per acre when the wind payments  
18 transferred with the property. The most common issues farmers cited about wind  
19 towers are the limitation of aerial spraying, poor reclamation, and compaction  
20 issues after the installation of the towers, possible yield loss due to the inability to  
21 plant straight rows and the difficulties associated with working around the towers  
22 during planting and harvest. Without comparison of the sales evidence with the  
23 interview evidence, the agricultural analysis is determined to be inconclusive;

1 however, all agricultural participants were consistent to report there was no  
2 adverse effect on the price paid because of the presence of a wind tower. The  
3 summary of my research is limited to Brookings County and supported by  
4 analyzing six rural residential sales, seven agricultural sales, and twenty market  
5 participant interviews.

6

7 **Q: Have you completed any additional research since the EL 18-003 Docket?**

8 Yes, I was asked by the PUC staff to update the sales data for rural residential  
9 properties located near wind towers in the Buffalo Ridge wind project in Brookings  
10 County. The development of the research was completed with the same scope of  
11 work as the Brookings 2018 study and included sales research, site visits, and  
12 interviews. The research resulted in three additional market sale transactions for  
13 analysis that occurred since May 2018 in Brookings County. The sale analysis is  
14 identified as BK12, BK13, and BK14. During the research process, four additional  
15 market transactions were discovered within proximity to the Deuel Harvest Wind  
16 Project for analysis identified as DE1, DE3, DE4, and DE5. Coincidentally, back in  
17 May of 2018, these properties were all listed for sale on the Northeast MLS. I was  
18 told by a property owner the listings were a result of the announcement of the  
19 Deuel Harvest Wind Project, and the owners were selling because they did not  
20 want to live in proximity to wind development. I now have had the opportunity to  
21 investigate the transactions and complete a sale analysis for these market  
22 transactions. In the process of my research, I also found additional sale  
23 transactions for Tatanka Ridge and Crown Ridge wind development projects

1 identified as CD1, CD2, and DE2. As mentioned previously, the scope of the work  
2 and analysis were developed like the 2018 Brookings County research where I  
3 completed an interview analysis, site investigation, and sales analysis. In total, ten  
4 new market sale transactions have been identified and analyzed that have sold in  
5 proximity to a wind tower, turbine or project. It was important to point out that in  
6 DE1, DE2, DE3, DE4, and DE5 it is public knowledge the permitting process was  
7 approved at the time of the sale, but the construction of the project had not  
8 commenced. With sale analysis CD1 and CD2 project construction had started  
9 with various wind towers erected within the neighborhood, but the project was not  
10 operational. The sale transactions are identified in the DAL Exhibit\_2.

11  
12 **Q: Is the research completed in November 2019 consistent with the May 2018**  
13 **Analysis?**

14 A: In my opinion, the overall data is consistent with the research that was  
15 completed in May 2018 to support the conclusion that rural South Dakota  
16 residential property values have not been negatively influenced by the presence  
17 of a wind turbine, tower or wind project; however, there has been new evidence  
18 with a sale transaction in Codington County in the footprint of the Crown Ridge II  
19 wind development that showed a possible negative effect to the sale price due to  
20 the announcement of the project and future location of wind towers in proximity to  
21 the residence. Before I review this sale transaction, let me first start by reviewing  
22 the new sales data that has been identified since May 2018. In Brookings County,  
23 three sale transactions were identified within the Buffalo Ridge wind project. These



1 sales are referenced as BK12, BK13, and BK14. These sale transactions were  
2 consistent with the previous Brookings County research and did not show a  
3 negative measurable effect on the selling price. The interview analysis had similar  
4 results with pessimistic comments from South Dakota market participants. Most  
5 common cited comments by buyers and sellers of rural residential properties in  
6 Brookings County included invasion of noise, view obstruction, and a reduced pool  
7 of prospective buyers that were willing to purchase rural residences in the proximity  
8 to a wind tower. Although market participants were less optimistic about the  
9 presence of wind towers in proximity to rural residences, the Brookings sales data  
10 suggests there was no market evidence to support a negative effect on the selling  
11 price. For example, the most recent sale transaction identified as BK13 sold via  
12 the Brookings MLS in November 2019. Thirteen wind turbines surround the  
13 property providing influences from view obstructions, flicker effect and noise. An  
14 interview with the seller provided nothing positive about living within the proximity  
15 of the towers, but the sales data shows the property selling within 25 days on the  
16 market and having a market appreciation rate of 6.26% a year between the 2015  
17 purchase and the 2019 selling transaction. The seller reported numerous potential  
18 buyers that showed initial interest would not consider the property because of the  
19 surrounding proximity of the wind towers near the residence. Again, many  
20 negative comments from the market and the seller, but the sales data suggests a  
21 normal market transaction without any measurable effect on the selling price. BK12  
22 and BK14 buyer interviews provided similar negative comments about wind towers  
23 within the neighborhood but all proceeded to purchase the property with

1 knowledge of the wind towers, turbines, and project. Consistent with previous  
2 market evidence from the Brookings 2018 research, the market provided negative  
3 comments about the impacts of the wind projects to the rural landscape of South  
4 Dakota, yet the sales evidence did not support an impact or measurable effect to  
5 the selling price due to the proximity to a wind tower, turbine or wind project.  
6 Although the logic of increased days on the market due to the presence of wind  
7 towers seems logical, the data analyzed did not support that conclusion.

8

9 **Q: Did the 2019 Brookings County research include any updates with**  
10 **agricultural properties?**

11 A: No. Analyzing the effects on agricultural properties from wind towers, turbines  
12 and wind projects was not part of the scope of work for the Buffalo Ridge Brookings  
13 sales update, but during the interview analysis, market participants that owned  
14 agricultural properties were consistent to report inconveniences with wind towers,  
15 such as working around the towers, loss of acres due to the base of the tower and  
16 roads, and inconsiderate management from the wind tower companies such as  
17 leaving cattle gates open and poor reclamation. Overall impacts on agricultural  
18 property surrounding a wind tower or adjacent to a wind project were minimal, as  
19 long as the highest and best use was not affected. There seemed to be a  
20 consistent theme within the market that if a participant was receiving payments  
21 from wind towers, the participant was more likely to have positive or neutral  
22 comments regarding impacts from the wind towers. From the data analyzed, the  
23 market evidence supports the conclusion that agricultural properties with

1 consistent wind lease revenue can have a positive effect and may in some cases  
2 increase the property value due to the income above the property's agricultural  
3 production capabilities.

4  
5 **Q: Did you research rural residential sale transactions in the vicinity of the**  
6 **Deuel Harvest Wind Project?**

7 A: Yes. As mentioned previously, in May of 2018 my field researched identified  
8 four properties near Gary, South Dakota that all were listed on the market at the  
9 same time. Rural residential properties typically have a reduced population of  
10 listings and scattered around the rural area, so having four properties listed for  
11 sale in the same neighborhood and adjacent to the Deuel Harvest Wind Project  
12 struck me as odd. Back in May of 2018, I elected not to continue with the research  
13 because Deuel Harvest was not permitted and approved by the PUC and none of  
14 the properties were completed transactions. In October 2019 my investigation  
15 revealed that all properties have since sold via the Northeast MLS. The sale  
16 transactions are identified as DE1, DE3, DE4, and DE5. All transactions were  
17 influenced by a permitted wind project; however, tower construction has not  
18 commenced. Sales DE2 and DE3 were specifically influenced by recorded wind  
19 memorandums within the title records. After further investigation and interviews  
20 with the managing broker, the sale motivations were not influenced by the Deuel  
21 Harvest Wind Project and the sales evidence suggested the properties sold within  
22 the range of market transactions uninfluenced by the proximity of wind tower,  
23 turbine or project.

1

2 **Q: Are you familiar with any property owners in South Dakota that have**  
3 **claimed a negative impact on their property value due to the presence of**  
4 **wind turbines, towers, or a wind project?**

5 A: I am aware of three properties in South Dakota with claims of negative impacts  
6 on rural residential properties. The first property is located near Toronto South  
7 Dakota, identified as JE1. I became aware of this property from an article in a local  
8 newspaper. On May 23, 2018, I met at the property with the owner to understand  
9 the property characteristics and influences from wind towers located near the  
10 property. The property owner grew up in the area and decided to relocate to South  
11 Dakota for his retirement years. I sat at the kitchen table with the property owner  
12 and talked about experiences with living in the rural neighborhood before and after  
13 the wind towers, followed by a detailed tour of his property. The property includes  
14 15 treed acreages improved with a 1994 ranch home with 6,192 square feet, five  
15 bedrooms, and three bathrooms. The acreage also has geothermal heat and a  
16 shop building. The setting is typical of most acreages in rural South Dakota;  
17 however, turbines surround the property on all sides with the closest turbines being  
18 located within 1,200 +/- feet of the property. The day I toured the property; the  
19 weather conditions were typical of most South Dakota days in May with strong  
20 winds from the south. As I stood in the driveway and backyard, I was very surprised  
21 at the audible sounds of the turbines within the property effecting the peace and  
22 enjoyment of the property, along with the visual presence of the towers that  
23 bounded over the west and east boundaries. The shadow effect from the rotation

1 of the turbine blades was not evident at the time of my site inspection; however,  
2 the property owner reported shadow and flicker effects within the property  
3 boundaries and interior of the home through the west and east windows. The  
4 property was listed on July 22, 2019, for \$749,000 and expired on October 22,  
5 2019. According to the MLS, the property was only listed for 92 days on the market,  
6 with a listing price at the high end of current active listings in the market. My  
7 conclusion of JE1 is there could be a potential negative influence from the  
8 proximity of towers in terms such as view and noise; however, any value impacts  
9 are unknown at this time because there is no sale transaction to analyze and the  
10 complexities surrounding the measure of depreciation in relation to the ideal  
11 improvement.

12 I became aware of the second property through my field research and interview  
13 process. Three different brokers directed me to a sale transaction that took place  
14 near Waverly South Dakota and within the Crowned Ridge wind project. It is my  
15 understanding the property owner has also presented details to the PUC regarding  
16 this sale transaction. This sales analysis is referenced as CD2 in the DAL  
17 Exhibit\_2. My analysis included a site visit, sales analysis and interview analysis  
18 with parties to the transaction, including the seller and broker. The basic summary  
19 of the transaction is the property was listed for sale for \$369,000 on the MLS  
20 system. An offer was presented and accepted by the seller for \$350,000. After  
21 discussions with the agent, the seller felt an obligation to present material facts  
22 about the proximity of the Crown Ridge wind project. The offer was rescinded, and  
23 the property was relisted on the MLS with the updated disclosure of the wind

1 project. After extended marketing time, the seller accepted an offer of \$275,000.

2 From the perspective of the seller and broker, the presence of the wind project and

3 the proximity of the tower caused a market reduction in the selling price of \$75,000.

4 Preliminary facts of the transaction seem to support a negative influence on the

5 selling price from project anticipation stigma and/or influence from the timing of the

6 updated disclosure form during the negotiation process. This is the second

7 transaction that I'm aware of in eastern South Dakota in which disclosure of the

8 wind project or location of a wind tower in proximity to a rural residence has

9 influenced the negotiation process, and supports market participant comments that

10 some buyers are sensitive to living near wind towers. As concluded within the CD2

11 sales analysis, further investigation is required to support the facts for a final

12 conclusion as to the influence and effects from the proximity of the wind tower and

13 project.

14 The third property is north of Gary, South Dakota in the proximity of the Deuel

15 Harvest Wind Project. This transaction is identified as DE1. Preliminary

16 investigation completed in May 2018 revealed possible negative influences from

17 the disclosure of Deuel Harvest Wind Project during the negotiations process;

18 however, final review of the completed market sale transaction could not support

19 a measurable effect to the sale price from the announcement of the wind project

20 or future locations of the towers. DE1 can be referenced in the DAL Exhibit\_2.

21

1 **Q: Do you believe there is enough information with CD2 to support the**  
2 **position of the seller and agent that the proximity of the turbine, tower and/or**  
3 **project negatively influenced the selling price?**

4 A: My conclusion is that it is difficult to provide a definitive conclusion at this time  
5 without a complete investigation of the motivations surrounding the transaction  
6 including further interview participation from both seller(s), buyer-1, and buyer-2,  
7 an on-site property inspection to evaluate property characteristics and review of  
8 title and transactional documents to support the preliminary facts.

9

10 **A: Is there any other information that you have discovered through your**  
11 **research process the commission should be aware of that could influence a**  
12 **rural residential property in the proximity of a wind tower, turbine or wind**  
13 **project?**

14 A: Yes. During the interview process of my analysis with brokers working in the  
15 Codington, Deuel and Grant market area I started noticing varying opinions  
16 between agents about what materials facts should be disclosed on the South  
17 Dakota Seller's Property Condition Disclosure Statement for residential properties  
18 in regards to a wind development, permitted project or proximity to wind towers.  
19 Let me give the commission some quick background about the SD Real Property  
20 Disclosure form. In South Dakota, as required by law, a seller must complete a  
21 property disclosure statement in compliance with SDCL 43-4-38 when a  
22 residential property is listed and sold. As part of the disclosure statement, a seller  
23 and agent are to disclose any material facts about the property to potential buyers

1 and if the seller becomes aware of any change of material fact, the seller is  
2 required to provide an updated disclosure prior to closing. The South Dakota  
3 Seller's Property Condition Disclosure Statement can be referenced in DAL  
4 Exhibit\_3, specifically with reference to item number 11 which states, "*Are you*  
5 *aware of any other material facts or problems that have not been disclosed on this*  
6 *form?*" During the course of my interview investigation with brokers, there was  
7 inconsistency about the topic of whether the knowledge of a wind project or  
8 proximity to a future tower should be disclosed. Some brokers and sellers felt an  
9 ethical responsibility and a legal obligation, while others felt it wasn't their  
10 responsibility to disclose. My interview analysis did not result in a consistent  
11 answer of how the market deals with the material facts of towers, turbines or  
12 developing wind projects, but there seems to be a consensus that there is a  
13 segment of the market in which disclosure of the material facts of a wind project,  
14 turbine or tower could affect the decision-making process of a buyer. In attempting  
15 to further investigate, I contacted the South Dakota Real Estate Commission for  
16 guidance on the topic. I posed the hypothetical question to the compliance  
17 examiner:

18 *I have a rural acreage in eastern South Dakota. It's the typical South Dakota setting with a classic*  
19 *farmhouse, 10 acres, shelterbelt, and unobstructed rural views. I have become aware that a large*  
20 *wind development project has been approved by the PUC and construction will begin on the project*  
21 *within a year in my neighborhood. I attend a public project meeting at the local community center*  
22 *and have also learned the wind company is planning to construct two wind towers on the adjacent*  
23 *160-acre farmland. The wind turbines will be within 1,500 to 2,000 feet of my property. After*  
24 *becoming aware of the changes that will be taking place in the neighborhood as a result of the*  
25 *wind project, I have decided to sell my property and move to an area without any wind towers. I*  
26 *hire a licensed S.D. real estate agent to sell my property. The agent presents a Seller's Property*  
27 *Condition Disclosure Statement and explains this is a legal document required by South Dakota*  
28 *Law that I must complete in order to sell my residence. Am I obligated to report the material facts*  
29 *about the proximity of the wind turbines that will be constructed near my property and the future*  
30 *wind project that will be constructed in the neighborhood?*



1

2 The response I received from the Real Estate Commission provided me with the  
3 definition cited by the commission to assist brokers in understanding what must be  
4 legally disclosed and what a material fact is from *The Language of Real Estate*,  
5 Third Edition by author John W. Reilly. A material fact is defined as, “*Any fact that*  
6 *is relevant to a person making a decision*” The Real Estate Commission would not  
7 take a position on the topic and said to seek the counsel of an attorney for a legal  
8 opinion on how to answer the question for the disclosure statement. Regardless  
9 of the legal answer, this is an issue that is being created for sellers of residential  
10 property by the permitting of multiple wind projects and construction of hundreds  
11 of turbines across eastern South Dakota.

12

13 **Q: Do you have any concluding remarks?**

14 A: Based on my research within Brookings County and surrounding market, the  
15 overall evidence supports the presumption there have been no adverse effects on  
16 the selling price of rural residential properties in proximity to a wind tower, turbine  
17 or wind project; however, it does not rule out the fact that some market participants  
18 are sensitive to living in proximity to a wind tower, turbine or development. It is  
19 important to realize that as the rural landscape of South Dakota continues to be  
20 influenced by an increasing population of wind towers, there could be certain  
21 situations where there could be potential influences on a rural residential property  
22 as evident by the preliminary analysis of CD2 and the South Dakota Disclosure  
23 Statement. The South Dakota research I have conducted indicates that increasing

1 the distance relationship from a wind turbine and a rural residence can greatly  
2 alleviate potential negative impacts on rural residential properties from a wind  
3 tower, turbine or project.

4

5 **Q: Does this conclude your testimony?**

6 A: Yes.

**Exhibit 1:**

| Rural Residential Transaction Summary Table |                   |                              |                               |                           |                                                      |                       |
|---------------------------------------------|-------------------|------------------------------|-------------------------------|---------------------------|------------------------------------------------------|-----------------------|
| Transaction Reference                       | Property Type     | Physical Evidence of Effects | Interview Evidence of Effects | Sales Evidence of Effects | Consistency of Sale Evidence with Interview Evidence | Overall Conclusion    |
| <b>BK1</b>                                  | Rural Residential | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |
| <b>BK2</b>                                  | Rural Residential | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |
| <b>BK3</b>                                  | Rural Residential | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |
| <b>BK4</b>                                  | Rural Residential | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |
| <b>BK5</b>                                  | Rural Residential | *None*                       | None                          | None                      | Consistent                                           | No measurable effects |
| <b>BK7</b>                                  | Rural Residential | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |

**\*\*Turbines were not in operation during the site visit of BK5. Winds light and variable. \*\***

| Ag Transaction Summary Table |               |                              |                               |                           |                                                      |                             |
|------------------------------|---------------|------------------------------|-------------------------------|---------------------------|------------------------------------------------------|-----------------------------|
| Transaction Reference        | Property Type | Physical Evidence of Effects | Interview Evidence of Effects | Sales Evidence of Effects | Consistency of Sale Evidence with Interview Evidence | Overall Conclusion          |
| <b>BK2.5</b>                 | AG            | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |
| <b>BK6</b>                   | AG            | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |
| <b>BK8</b>                   | AG/Res        | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |
| <b>BK9</b>                   | AG            | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |
| <b>BK10</b>                  | AG            | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |
| <b>BK11</b>                  | AG            | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |
| <b>BK12</b>                  | AG            | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |
| <b>JD13</b>                  | AG            | None                         | None                          | <b>Not Developed</b>      | Inconclusive                                         | None apparent per interview |

**\*\*Sales analysis not developed due to time constraints\*\***

| Interview Summary Table |               |             |                                                                                                                                                                                                                                                                                                |
|-------------------------|---------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interview Reference     | Property Type | Participant | Interview Summary Comments                                                                                                                                                                                                                                                                     |
| <b>BK1</b>              | Residential   | Broker      | Can be noisy. Limits potential buyers . Doesn't seem to affect price.                                                                                                                                                                                                                          |
| <b>BK2</b>              | Residential   | Buyer       | Did not affect purchase decision. Don't like the noise. Flicker effect certain times of the day. Blade broke and threw fragments near the house. Sounds like a continual swooshing sound when it's windy.                                                                                      |
| <b>BK2<br/>BK2.5</b>    | Res/AG        | Seller      | Satisfied with price. Could feel vibrations inside the house. Glad not to be living near wind towers. Had to give up a wind lease option to sell the house.                                                                                                                                    |
| <b>BK2.5</b>            | AG            | Buyer       | No affect on purchase price of BK2.5. Own & lease farmland with wind towers. Live in proximity to wind towers. Noisy. Poor reclamation after construction of towers; compaction & loss of yields. Difficult to farm around towers. Currently have farmland under contract with towers.         |
| <b>BK3</b>              | Residential   | Broker      | Some buyers won't look at home near wind towers. However, there is demand for acreages in the market and it doesn't seem to affect the price.                                                                                                                                                  |
| <b>BK3</b>              | Residential   | Buyer       | The towers sound like jet planes when you are working in the yard. But paid the same, even though they don't like the noise.                                                                                                                                                                   |
| <b>BK4</b>              | Residential   | Buyer       | Some noise, but doesn't bother me. Paid the same. Happy with purchase.                                                                                                                                                                                                                         |
| <b>BK4</b>              | Residential   | Seller      | Got tired of the annoying noise. Decided to sell. We thought it would effect the value; but it didn't matter to the buyer. Glad to not be living next to wind towers.                                                                                                                          |
| <b>BK4</b>              | Residential   | Broker      | Though sellers initially expressed concerns about the turbines affecting the price, it took only four months to sell a high-end rural home. Agent doesn't think there was any effect on the price.                                                                                             |
| <b>BK5</b>              | Residential   | Broker      | Really noisy. Distracts some buyers. Limited acreages in the market. Doesn't seem to be a negative effect on the price. Distance from Brookings is more of a concern to buyers than the wind towers.                                                                                           |
| <b>BK5</b>              | Residential   | Buyer       | Can be noisy, but didn't matter to us when we purchased the home. Paid the same. No issues.                                                                                                                                                                                                    |
| <b>BK6</b>              | AG            | Broker      | Sales and manages properties with wind towers. Doesn't seem to affect the price or ability to get market rents. There are issues with towers. Can't aerial spray. Breaks up the land; can't plant straight rows. Some guys like them; some don't. It really comes down to a personal decision. |
| <b>BK7</b>              | Residential   | Buyer       | No affect on value. Property value has increased. Proximity to towers doesn't matter. Little bit of noise when working in the yard. No affect to animals. No concerns or issues.                                                                                                               |
| <b>BK8</b>              | AG            | Buyer       | No issues or concerns. Cattle don't care about the noise. Purchased the land on a CFD and paid market price with towers located on the quarter and no wind payment. No difference in price to me.                                                                                              |

| Interview Summary Table (continued) |               |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------|---------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interview Reference                 | Property Type | Participant | Interview Summary Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| BK9                                 | AG            | Buyer       | Has over 47 towers located on various ground. Lives near towers, too. Issues with lightning strikes and shattered blades. The company does not clean up well. Good wind payments. Have some towers that pay \$12,000/year. Increases land value with wind payments. No affect with land without payments. People who complain are not getting the payments. Just purchased another 152 acres with a wind tower with no payment. Doesn't affect the price as long as you can farm it and there are no affects with yields.                                                               |
| BK12                                | AG            | Broker      | Managed auction with wind payments from two towers. Pasture land sold to adjoining land owner. Wind payments \$12,373 per year. Property sold in 2018 for \$616,000. Wind payments alone are approximately a 2% return and you still can lease or use the property. Believes sale price was positively influenced by the wind payments. No issues with pasture land; have had some issues with tillable ground. Can't plant straight rows, no aerial spraying and can't hunt around the towers. You can hear them run if you are near a tower. Payments offset the hassles with towers. |
| JD13                                | AG            | Broker      | Managed a pasture land auction with towers. Wind lease with 43 years remaining and a 1% annual increase. Land sold for a 10%-15% premium according to auctioneer. Some restrictions because of the towers. You can't shoot around them. Noisy and limits aerial applications.                                                                                                                                                                                                                                                                                                           |
| BKGH                                | Residential   | Seller      | Trying to sell a house within the proposed project area. Currently listed on MLS. Had an offer on the property, but believes the disclosure of the proposed wind project near the property ended the deal.                                                                                                                                                                                                                                                                                                                                                                              |
| BKDJ                                | Residential   | Owner       | Built retirement home prior to the wind project. Towers within 1,000 ft of property on all sides. Noisy. Shadow and flicker effect during certain times of the day. Have to deal with constant noise. Some days louder than others, depending of direction on the wind. Believes the towers are effecting his ability to sell the property.                                                                                                                                                                                                                                             |
| BKBB                                | Residential   | Owner       | Purchased home prior to the wind project. There are periods of the day when there is a shadow effect depending on the angle of the sun. Best way to describe it is like a camera flash. The curtains in the house have to be closed during the flicker times. The flash scares the horses. The red lights, light up the night sky and destroy star gazing. The house was listed for sale and most potential buyers drove away when they saw how close the towers are to the house. The wind company over promised and under delivered.                                                  |

|                           |                 |              |
|---------------------------|-----------------|--------------|
| <b>SALES ANALYSIS BK1</b> | <b>SALE No.</b> | BK1          |
|                           | <b>STATE</b>    | South Dakota |
|                           | <b>COUNTY</b>   | Brookings    |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 8 Acres  
**Improvements:** 2003 Ranch modular design  
**Finished Area:** 2,356 S.F. GLA, 300 S.F. Lower Level  
**Garage:** Attached 2-Stall  
**Features:** Treed shelter belt. (2) Pole buildings 40x96 & 34x50  
**Access:** Gravel road linkage

**Sales Analysis Data:**

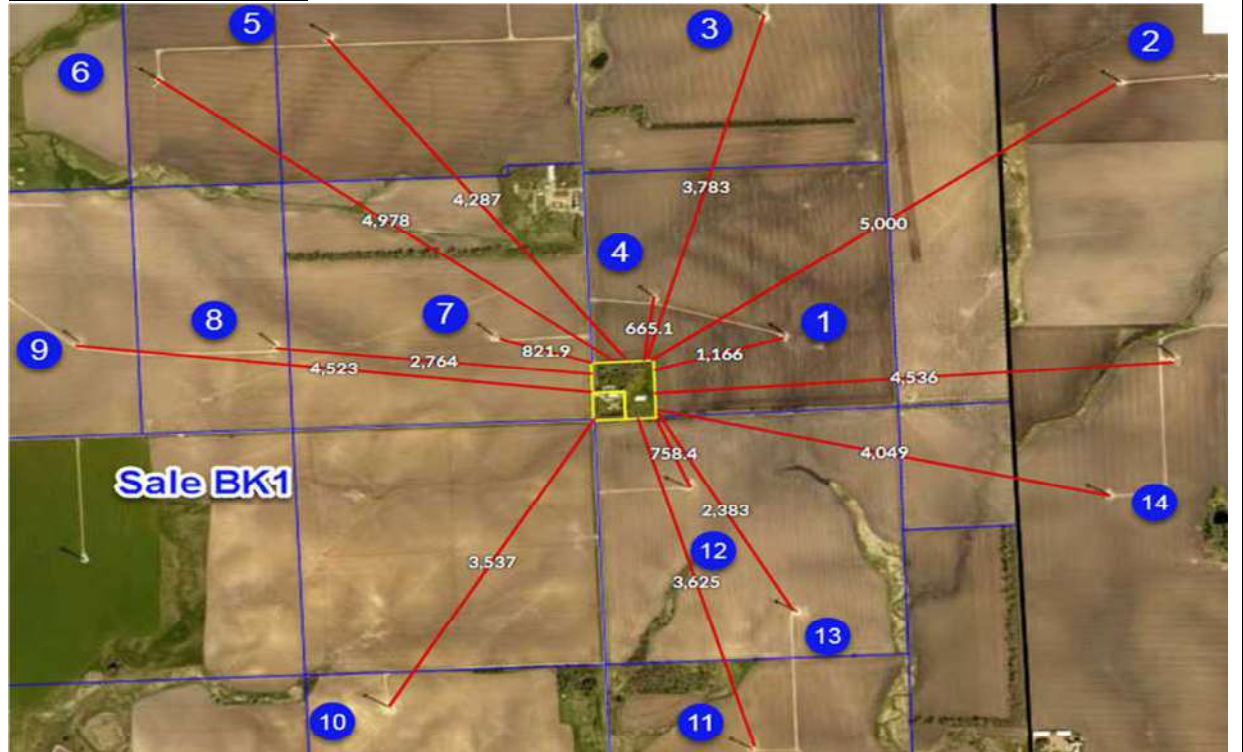
**Date of Sale:** January 28, 2016  
**Market Exposure:** MLS  
**Listing Price:** \$218,000  
**Sale Price:** \$183,000  
**Verification:** Deed; Beacon; Interview with Broker  
**Type:** Arm's Length Sale  
**DOM:** 153

**Wind Project:**

**Project:** Buffalo Ridge  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height from Ground:** 399 feet  
**Wind Tower Property Notes:** Encompassed by 14 wind turbines circling the property. Tower #1 1,200 +/- feet to the east. Tower #2 5,000 +/- feet to the northeast. Tower #3 3,800 +/- feet to the north. Tower #4 665 +/- feet to the north. Tower #5 4,300 +/- feet to the northwest. Tower #6 5,000 +/-

feet to the northwest. Tower #7 800 +/- feet west. Tower #8 2,700 +/- feet west. Tower #9 4,500 +/- feet southwest. Tower #10 3,500 +/- feet southwest. Tower #11 3,600 +/- feet southeast. Tower #12 750 +/- feet southeast. Tower #13 2,400 +/- feet southeast. Tower #14 4,000 +/- feet southeast.

**Wind Tower Aerial Map:**



**Appreciation Analysis:**

|                                           |                         |                   |
|-------------------------------------------|-------------------------|-------------------|
| (Influenced by Tower) Sale 1 Bk1:         | October 30, 2009        | \$166,000         |
| (Influenced by Tower) Sale 2 BK1:         | <u>January 28, 2016</u> | <u>\$183,000</u>  |
|                                           | 6.24 Years              | \$23,000          |
| <b>BK1 Appreciation:</b>                  | <b>\$3,685/Year</b>     | <b>1.64%/Year</b> |
| (Uninfluenced) Sale 1 486 <sup>th</sup> : | December 7, 2004        | \$133,000         |
| (Uninfluenced) Sale 2 486 <sup>th</sup> : | <u>October 11, 2013</u> | <u>\$145,000</u>  |
|                                           | 9.25 Years              | \$12,000          |
| <b>486<sup>th</sup> Appreciation:</b>     | <b>\$1,298/Year</b>     | <b>.98%/Year</b>  |
| (Uninfluenced) Sale 213 <sup>th</sup> :   | August 10, 2013         | \$266,000         |
| (Uninfluenced) Sale 213 <sup>th</sup> :   | <u>May 24, 2018</u>     | <u>\$290,903</u>  |
|                                           | 4.62 Years              | \$24,906          |
| <b>213<sup>th</sup> Appreciation:</b>     | <b>\$5,390/Year</b>     | <b>2.02%/Year</b> |



**Conclusion:** Sale BK1 has market appreciation within the range of the market sales that are not influenced by a wind tower, turbine or wind project.

**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** May 23, 2018  
**View Obstruction:** Wind towers within view of residence  
**Noise Analysis:** Operational & blade noise present during site visit.

**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Broker  
**Interview Date:** May 28, 2018

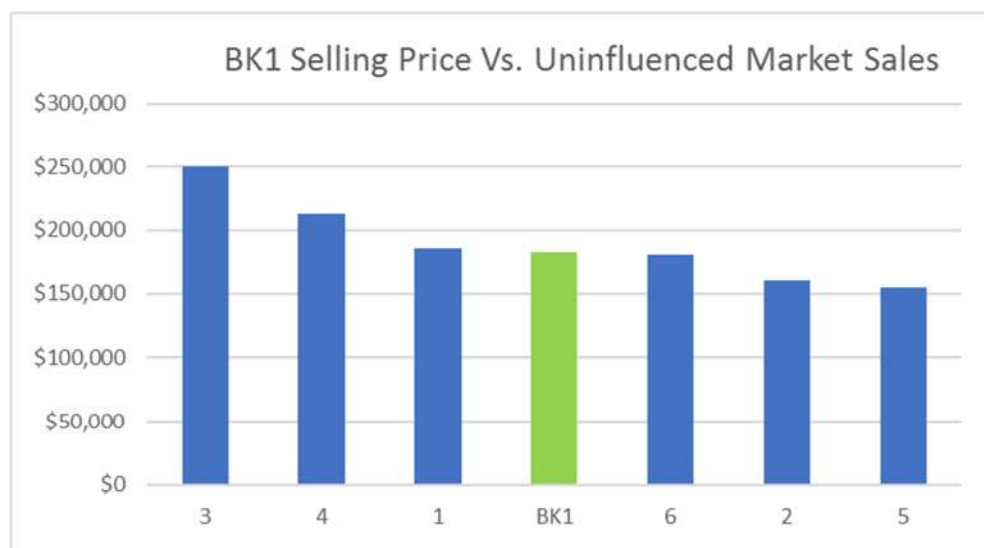
**Interview Notes with Broker:**

This is the second time the broker has sold the property. The property sold within 150 days. The broker made sure to include pictures of the wind towers in the photos so potential buyers would be aware of the proximity. The broker stated that some potential buyers did not like the proximity of the wind turbines, while other potential buyers didn't care. There were more issues with the manufactured home design than concern for the wind towers. Broker stated the buyers liked the majestic beauty of the towers and there was no detrimental effect on the selling price because of the proximity of the wind towers.

**Interview Notes with Buyer:**

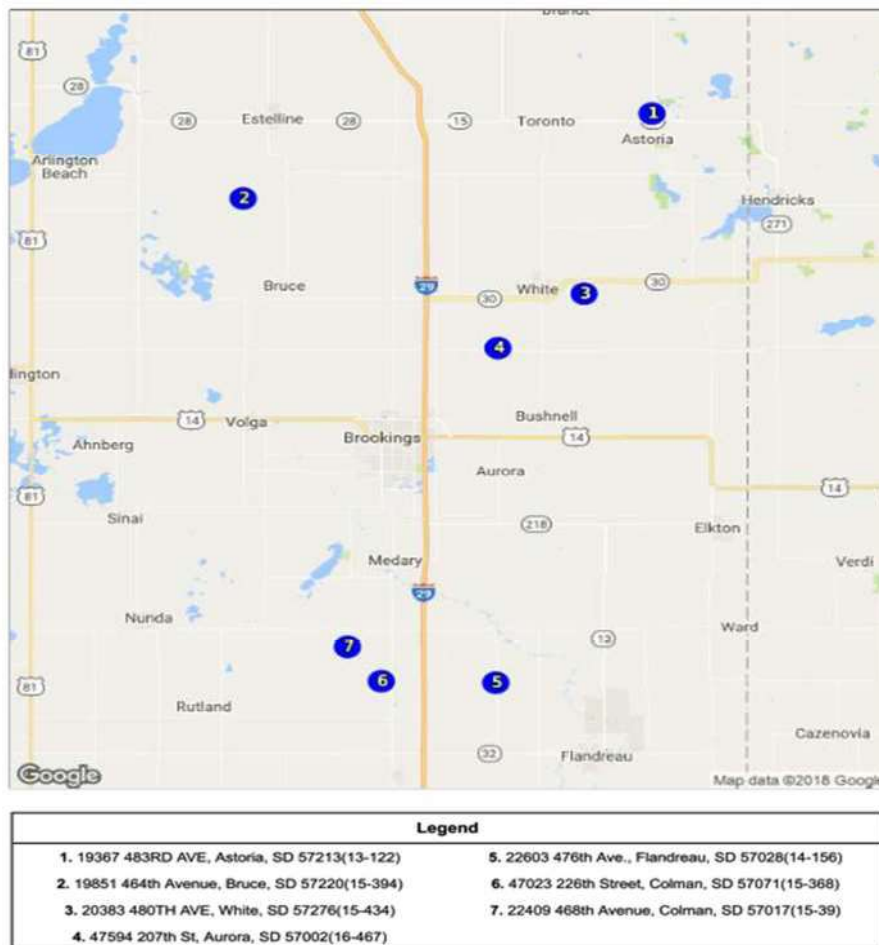
The owner was not available during the site visit. I left a voice mail message; the owner did not return my phone call.

**Market Sales Analysis:**



| Sales Analysis BK1 |          |           |              |             |              |             |             |                    |                  |
|--------------------|----------|-----------|--------------|-------------|--------------|-------------|-------------|--------------------|------------------|
| Sale No.           | Location | Sale Date | Price        | Year/E.A.   | GLA          | Acres       | Style       | Outbuildings       | Overall Analysis |
| BK1                | Elkton   | 2016      | \$183,000    | 2003        | 2,356        | 8           | Ranch       | Pole Buildings     |                  |
| 1                  | Astoria  | 2015      | \$186,000    | 1910        | 1,472        | 14          | Story1/2    | Outbuildings       | Comparable       |
|                    |          |           | Adjustments: | Similar(=)  | Inferior (+) | Superior(-) | Similar (=) | Similar(=)         |                  |
| 2                  | Bruce    | 2015      | \$161,000    | 1952        | 1,134        | 6.44        | Ranch       | 1-car garage       | Inferior         |
|                    |          |           | Adjustments: | Similar(=)  | Inferior (+) | Similar(=)  | Similar(=)  | Inferior (+)       |                  |
| 3                  | White    | 2015      | \$250,000    | 2010        | 1,518        | 22.48       | Ranch       | Barn/Guest House   | Superior         |
|                    |          |           | Adjustments: | Superior(-) | Inferior (+) | Superior(-) | Similar(=)  | Superior(-)        |                  |
| 4                  | Aurora   | 2016      | \$213,000    | 1910        | 1,140        | 12.37       | Story 1/2   | Pole Building/Barn | Comparable       |
|                    |          |           | Adjustments: | Similar(=)  | Inferior (+) | Superior(-) | Similar(=)  | Similar(=)         |                  |
| 5                  | Colman   | 2015      | \$155,000    | 1979        | 1,568        | 3.13        | Ranch       | Quonset/Garage     | Inferior         |
|                    |          |           | Adjustments: | Similar(=)  | Inferior(+)  | Inferior(+) | Similar(=)  | Inferior(+)        |                  |
| 6                  | Colman   | 2015      | \$180,400    | 1961        | 2,240        | 10          | Ranch       | Barn/Outbuildings  | Comparable       |
|                    |          |           | Adjustments: | Similar(=)  | Similar(=)   | Similar(=)  | Similar(=)  | Similar(=)         |                  |

**Sale Location Map:**



|                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><u>Market Sales Analysis Conclusion:</u></b> | Seven sales are from the market without the influence of a wind tower. All transactions have similar highest and best use and are bracketed by the market sales. Sales one, four and six have stronger similarities for comparison and bracket the range of BK1. The market evidence suggests the selling price was not affected by the proximity of the wind towers.                                                                                                                                                                                |
| <b><u>Overall Conclusion:</u></b>               | An interview analysis, site observation, and sales analysis were completed for BK1. The research and data suggest the proximity of the wind towers did not influence the selling price. Sale BK1 sold in 2009 and then resold in 2016 with a market appreciation rate within the range of other uninfluenced sales not in the proximity of a wind tower. Even though there are visual & noise effects observed during the site visit, the interview and market data suggest the proximity of the wind towers has not negatively influenced sale BK1. |

|                           |                 |              |
|---------------------------|-----------------|--------------|
| <b>SALES ANALYSIS BK2</b> | <b>SALE No.</b> | BK2          |
|                           | <b>STATE</b>    | South Dakota |
|                           | <b>COUNTY</b>   | Brookings    |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 10 Acres  
**Improvements:** 1998 Story 1/2 design  
**Finished Area:** 1,850 S.F. GLA, 1,004 S.F. Lower Level  
**Garage:** Attached 1-Stall  
**Features:** Treed shelter belt. Shed, storage building & hobby building  
**Access:** Paved highway linkage

**Sales Analysis Data:**

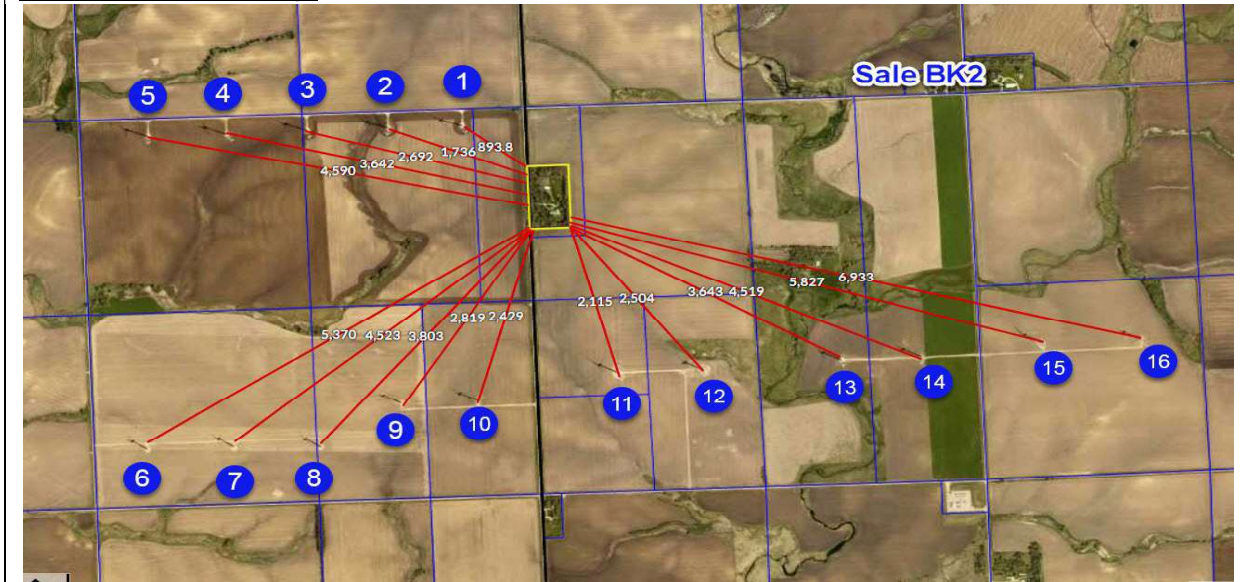
**Date of Sale:** March 14, 2011  
**Market Exposure:** MLS  
**Listing Price:** \$339,000  
**Sale Price:** \$235,000  
**Verification:** Deed; Beacon; Interview with Buyer & Seller  
**Type:** Arm's Length Sale

**Wind Project:**

**Project:** Buffalo Ridge  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height From Ground:** 399 feet  
**Property & Wind Tower** Encompassed by 16 wind turbines. Tower #1 890 +/- feet northwest.  
**Notes:** Tower #2 1,700 +/- feet northwest. Tower #3 2,700 +/- feet northwest.  
 Tower #4 3,600 +/- feet northwest. Tower #5 4,600 +/- feet northwest.  
 Tower #6 5,400 +/- feet southwest. Tower #7 4,500 +/- feet southwest.  
 Tower #8 3,800 +/- feet southwest. Tower #9 2,800 +/- feet southwest.  
 Tower #10 2,400 +/- feet south. Tower #11 2,100 +/- feet southeast.

Tower #12 2,500 +/- feet southeast. Tower #13 3,600 +/- feet southeast. Tower #14 4,500 +/- feet. Tower #15 5,800 +/- feet southeast. Tower #16 7,000 +/- feet southeast.

**Wind Tower Aerial Map:**



**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** May 23, 2018  
**View Obstruction:** Wind towers within view of residence  
**Noise Analysis:** Operational & blade noise present during site visit.

**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Buyer & Seller  
**Interview Date Buyer:** May 28, 2018  
**Interview Date Seller:** April 11, 2018

**Interview Notes with Buyer:**

The home was purchased with the assistance of a real estate agent. Towers were in place at the time of purchase. Turbines surrounding the property didn't affect purchase decision or price paid; although they would prefer not to have them. Some flicker effect and noise. Haven't noticed any health effects. When they purchased the home, there was an encumbrance on the title for a wind easement they had to work with the seller to clean up before closing.

**Interview Notes with Seller:**

(Interview performed by Northern Plains Appraisal) Sellers desired their privacy and would only allow an interview with NPA. Seller stated when they sold the house, they couldn't get the listing price of \$339,000, the price was lowered and sold it for what they could. They also owned the adjoining land around the home. The buyer did not

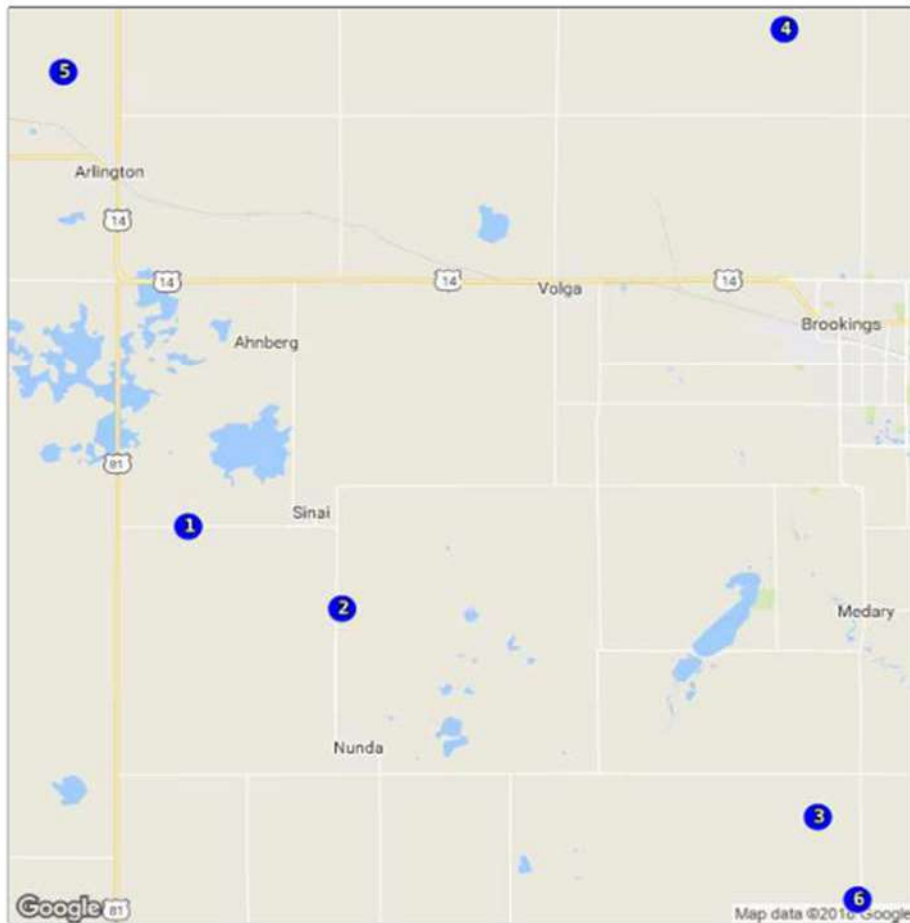
want any wind towers near the house and therefore had a condition of sale not to sign a wind lease. Seller stated it was difficult to find a buyer, but they were satisfied with the purchase price. Seller stated you could feel the vibrations in the air and towers create issues with the body. They are glad they do not live around wind towers.

### Market Sales Analysis:



| Sales Analysis BK2 |           |           |              |              |              |              |            |                  |                  |
|--------------------|-----------|-----------|--------------|--------------|--------------|--------------|------------|------------------|------------------|
| Sale No.           | Location  | Sale Date | Price        | Year/E.A.    | GLA          | Acres        | Style      | Outbuildings     | Overall Analysis |
| BK2                | Toronto   | 2011      | \$239,000    | 1998         | 1,850        | 10           | Story 1/2  | Shed/Storage Bld |                  |
| 1                  | Arlington | 2009      | \$214,000    | 2007         | 1,748        | 13           | Ranch      | Barn/Shed/2car   | Comparable       |
|                    |           |           | Adjustments: | Similar(=)   | Similar(=)   | Similar(=)   | Similar(=) | Similar(=)       |                  |
| 2                  | Volga     | 2012      | \$240,000    | 1983         | 1,784        | 4.5          | Ranch      | Shed/Pole        | Comparable       |
|                    |           |           | Adjustments: | Similar(=)   | Similar(=)   | Inferior(+)  | Similar(=) | Similar(=)       |                  |
| 3                  | Colman    | 2009      | \$265,000    | 2006         | 1,500        | 9.88         | Ranch      | Barn/2Car/Shed   | Superior         |
|                    |           |           | Adjustments: | Superior (-) | Inferior (+) | Similar(=)   | Similar(=) | Superior(-)      |                  |
| 4                  | Brookings | 2011      | \$200,000    | 1949         | 1,344        | 9.75         | Story1/2   | Barn/Shed        | Inferior         |
|                    |           |           | Adjustments: | Inferior(+)  | Inferior (+) | Similar(=)   | Similar(=) | Similar(=)       |                  |
| 5                  | Arlington | 2011      | \$180,000    | 1917         | 1,510        | 11.79        | Story1/2   | 2cGarage/Sheds   | Inferior         |
|                    |           |           | Adjustments: | Inferior(+)  | Inferior(+)  | Similar(=)   | Similar(=) | Similar(=)       |                  |
| 6                  | Volga     | 2011      | \$187,000    | 1954         | 1,491        | 5            | Story1/2   | Outbuildings     | Inferior         |
|                    |           |           | Adjustments: | Inferior(+)  | Inferior(+)  | Inferior (+) | Similar(=) | Similar(=)       |                  |

**Sale Location Map:**



| Legend                                         |                                                |
|------------------------------------------------|------------------------------------------------|
| 1. 45674 217th St, Arlington, SD 57002(09-653) | 4. 46922 205TH ST, Brookings, SD 57006(11-219) |
| 2. 45916 219TH ST, Volga, SD 57071(12-313)     | 5. 45279 206TH ST, Arlington, SD 57212(11-307) |
| 3. 22406 470th Ave, Colman, SD 57017(09-852)   | 6. 22609 471ST AVE, Colman, SD 57017(11-511)   |

**Market Sales Analysis**

**Conclusion:**

The analysis uses six sales from the Brookings market with similar highest and best use. All sales are without the influence of a wind tower in proximity to the property. Sales one and two are the most similar sales and bracket the selling price of the subject. The remaining sales provide further market support of the selling range of market substitutes. After analyzing the elements of comparison, sale BK2 is within the range of the uninfluenced market sales. The data suggests the wind towers did not negatively influence the selling price.

**Overall Conclusion:**

An interview analysis, site visit, and sales analysis have been completed for BK2. During the site visit, wind tower noise was present on the on the property. The buyer interview indicated this was not a factor during

the buying process. There are inconsistencies between the seller interview and the buyer interview; however, the sales data and the buyer's interview comments are consistent. The evidence suggests the proximity of the wind towers did not negatively influence the purchase price.



| SALES ANALYSIS BK3 |              |           |
|--------------------|--------------|-----------|
| SALE NO.           | STATE        | COUNTY    |
| BK3                | South Dakota | Brookings |



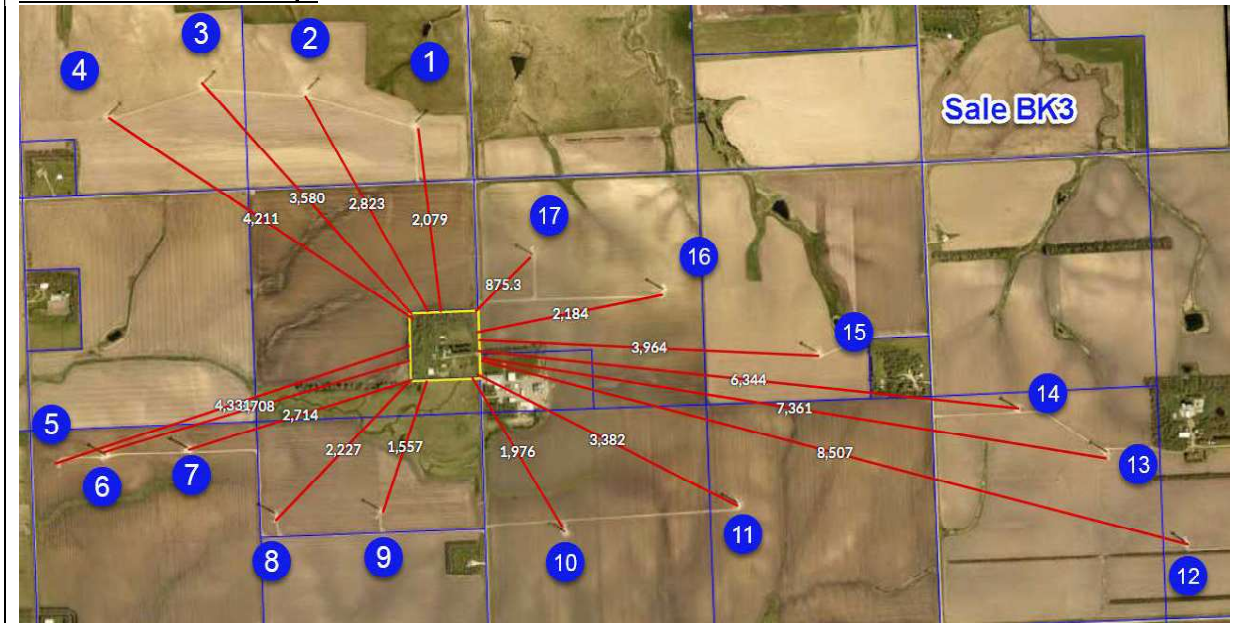
| Property Characteristics: |                                            |
|---------------------------|--------------------------------------------|
| Highest & Best Use:       | Rural Acreage                              |
| Land Size:                | 14.28 Acres                                |
| Improvements:             | 1918 Story 1/2 design                      |
| Finished Area:            | 2,208 S.F. GLA                             |
| Garage:                   | Attached 2- Stall                          |
| Features:                 | Treed shelter belt. Shed, storage building |
| Access:                   | Paved highway linkage                      |

| Sales Analysis Data: |                                            |
|----------------------|--------------------------------------------|
| Date of Sale:        | December 06, 2011                          |
| Market Exposure:     | MLS                                        |
| Listing Price:       | \$189,000                                  |
| Sale Price:          | \$175,000                                  |
| Verification:        | Deed, Beacon, Interview with Buyer & Agent |
| Type:                | Arm's Length Sale                          |

| Wind Project:              |                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project:                   | Buffalo Ridge                                                                                                                                                                                                                                                                                                                                           |
| Turbine Type:              | Gamesa G87 2.0 MW                                                                                                                                                                                                                                                                                                                                       |
| Hub Height/Rotor Diameter: | 78/87 meters                                                                                                                                                                                                                                                                                                                                            |
| Height From Ground:        | 399 feet                                                                                                                                                                                                                                                                                                                                                |
| Wind Tower Property Notes: | Tower # 1 2,000 +/- feet north. Tower #2 2,800 +/- feet northwest. Tower #3 3,600 +/- feet northwest. Tower #4 4,200 feet +/- northwest. Tower #5 4,300 +/- feet southwest. Tower #6 3,700 +/- feet southwest. Tower #7 2,700 +/- feet southwest. Tower #8 2,200 +/- feet southwest. Tower #9 1,500 +/- feet south. Tower #10 1,900 +/- feet southeast. |

Tower #11 3,400 +/- feet southeast. Tower #12 8,500 +/- southeast. Tower #13 7,400 +/- feet southeast. Tower #14 6,400 +/- feet east. Tower #15 4,000 +/- feet east. Tower #16 2,100 +/- northeast. Tower #17 875 +/- feet northeast.

**Wind Tower Aerial Map:**



**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** May 23, 2018  
**View Obstruction:** Wind towers within view of residence  
**Noise Analysis:** Operational & blade noise present during site visit.

**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Buyer & Agent  
**Interview Date:** May 23, 2018 (Buyer) May 28, 2018 (Agent)

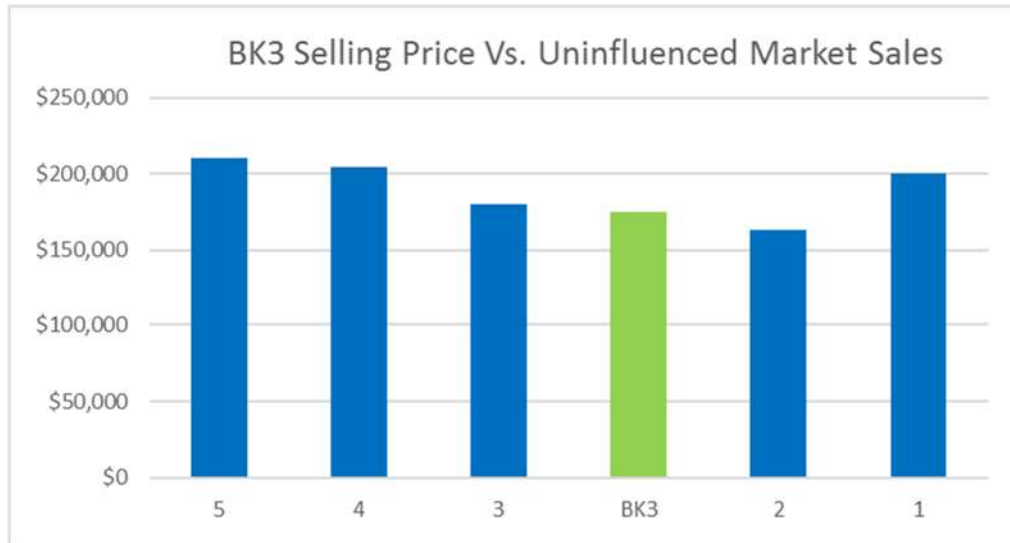
**Interview Notes with Buyer:**

The buyer was interested in the property because of the proximity to work. When the agent showed the property, the wind towers were not a factor in their purchase decision. Paid the same even though they do not like the noise and could see the towers from the house. Buyer stated the wind towers could be loud when you are working in the yard.

**Interview Notes with Agent:**

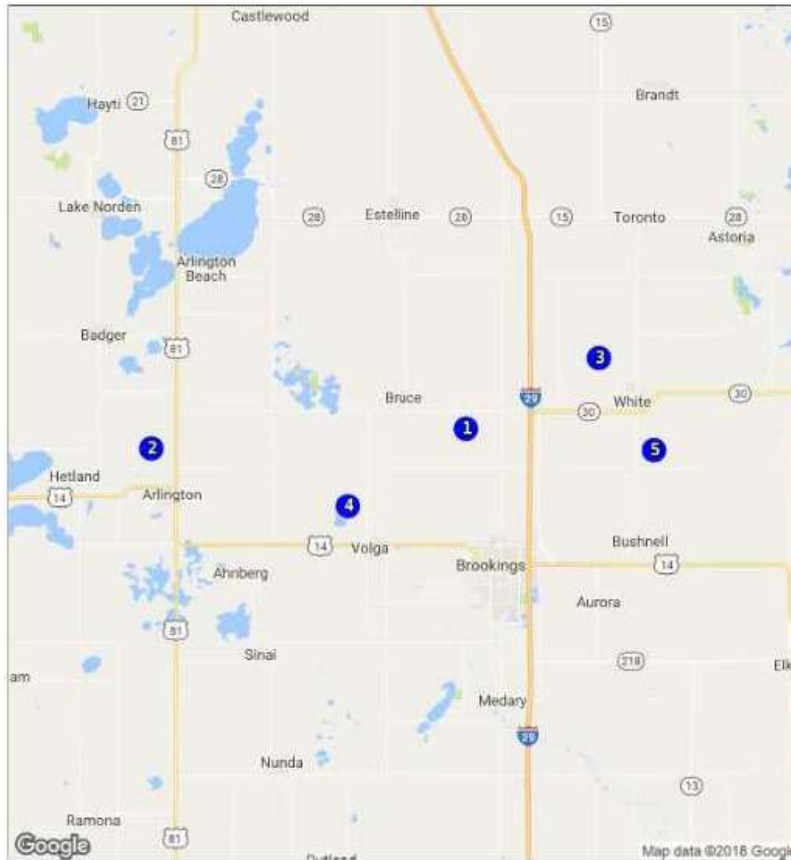
There is high demand for acreages in the Brookings market. Most buyers do not care about the wind towers. Buyers are looking for the features of an acreage. Although there have been potential buyers, some buyers refuse to look at a property near wind towers. The price seems unaffected by properties I've sold near wind towers.

**Market Sales Analysis:**



| Sales Analysis BK3 |           |              |           |            |              |             |             |                  |                  |
|--------------------|-----------|--------------|-----------|------------|--------------|-------------|-------------|------------------|------------------|
| Sale No.           | Location  | Sale Date    | Price     | Year/E.A.  | GLA          | Acres       | Style       | Outbuildings     | Overall Analysis |
| BK3                | Elkton    | 2011         | \$175,000 | 1918       | 2,208        | 14.28       | Story 1/2   | Shed/Storage Bld |                  |
| 1                  | Brookings | 2011         | \$200,000 | 1949       | 1,344        | 9.75        | Story1/2    | Barn/Shed        | Inferior         |
|                    |           | Adjustments: |           | Similar(=) | Inferior (+) | Inferior(+) | Similar (=) | Similar(=)       |                  |
| 2                  | White     | 2009         | \$163,000 | 1910       | 1,762        | 3.84        | Story 1/2   | Barn/Shed        | Inferior         |
|                    |           | Adjustments: |           | Similar(=) | Inferior (+) | Inferior(+) | Similar (=) | Similar(=)       |                  |
| 3                  | Arlington | 2011         | \$180,000 | 1917       | 1,510        | 11.79       | Story1/2    | 2cGarage/Sheds   | Comparable       |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+)  | Similar(=)  | Similar(=)  | Similar(=)       |                  |
| 4                  | Volga     | 2011         | \$204,000 | 1910       | 2,294        | 12.65       | Story1/2    | Barn/Shed/2car   | Comparable       |
|                    |           | Adjustments: |           | Similar(=) | Superior(-)  | Similar(=)  | Similar (=) | Similar(=)       |                  |
| 5                  | White     | 2012         | \$210,500 | 1938       | 2,405        | 17.12       | Story1/2    | Shed/Pole        | Superior         |
|                    |           | Adjustments: |           | Similar(=) | Superior(-)  | Superior(-) | Similar(=)  | Similar(=)       |                  |

**Sale Location Map:**



| Legend |                                             |
|--------|---------------------------------------------|
| 1.     | 46922 205TH ST, Brookings, SD 57006(11-219) |
| 2.     | 45279 206TH ST, Arlington, SD 57212(11-307) |
| 3.     | 47812 201ST ST, White, SD 57276(09-474)     |
| 4.     | 46306 209TH ST, Volga, SD 57071(11-436)     |
| 5.     | 20608 479th Ave., White, SD 57276(12-315)   |

**Market Sales Analysis**

**Conclusion:**

Five sales are analyzed in the sales grid from the market area. All sales are uninfluenced by the proximity of a wind tower. Sales one and two are inferior sales and bracket the lower end of the range. Sale five is superior and brackets the higher end of the range. Sales three and four have stronger similarities. After considering the differences in the elements of comparison, the market evidence indicates the selling price was not negatively influenced by the proximity of the wind towers.

**Overall Conclusion:**

An interview analysis, site visit and sales analysis has been completed for BK3. Although the buyer commented about the noise and view obstructions, the market evidence is consistent with the interview comments. The evidence suggests the overall purchase price was not negatively influenced by the proximity of the wind tower.

|                           |                 |              |
|---------------------------|-----------------|--------------|
| <b>SALES ANALYSIS BK4</b> | <b>SALE No.</b> | BK4          |
|                           | <b>STATE</b>    | South Dakota |
|                           | <b>COUNTY</b>   | Brookings    |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 13 Acres  
**Improvements:** 1989 Story ½  
**Finished Area:** 2,728 SF GLA; 4500 SF Finished (Updated)  
**Garage:** Attached 3-Stall  
**Features:** Treed shelter belt. 50x112 & 160x120 Commercial Building  
**Access:** Gravel road linkage; paved driveway

**Sales Analysis Data:**

**Date of Sale:** November 21, 2013  
**Market Exposure:** MLS  
**Listing Price:** \$569,000  
**Sale Price:** \$530,000  
**Verification:** Deed; Beacon; Interview with buyer, seller & agent  
**Type:** Arm's Length Sale  
**DOM:** 117 days

**Wind Project:**

**Project:** Buffalo Ridge  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height From Ground:** 399 feet.  
**Property & Wind Tower** Tower #1 10,500 +/- feet east. Tower #2 9,200 +/- feet east. Tower #3  
**Notes:** 7,700 +/- feet southeast. Tower #4 6,500 +/- feet southeast. Tower #5  
 5,400 +/- feet southeast. Tower #6 4,100 +/- feet southeast. Tower #7



3,100 +/- feet southeast. Tower #8 2,400 +/- feet southeast. Tower #9 1,800 +/- feet south, southeast.

**Wind Tower Aerial Map:**



**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** May 23, 2018  
**View Obstruction:** Wind towers within view of residence  
**Noise Analysis:** Operational & blade noise present during site visit.

**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Buyer, Seller & Agent  
**Interview Date Buyer:** May 23, 2018  
**Interview Date Seller:** May 24, 2018  
**Interview Date Agent:** May 29, 2018

**Interview Notes with Buyer:**

Proximity to wind turbines didn't make a difference in the purchase. Paid the same. Purchased property because it had a perfect setup with a remodeled house and two metal buildings. Towers are south of the house, so it doesn't affect the view from the house. The towers make noise and you can hear them in the yard. Doesn't matter, happy with the purchase.

**Interview Notes with Seller:**

We moved because we were sick and tired of the wind tower noise. We thought it would matter when we sold, but a buyer purchased the house and never mentioned the wind towers. Didn't have any issues with closing or the appraisal. We are happy not to be living next to a wind tower.

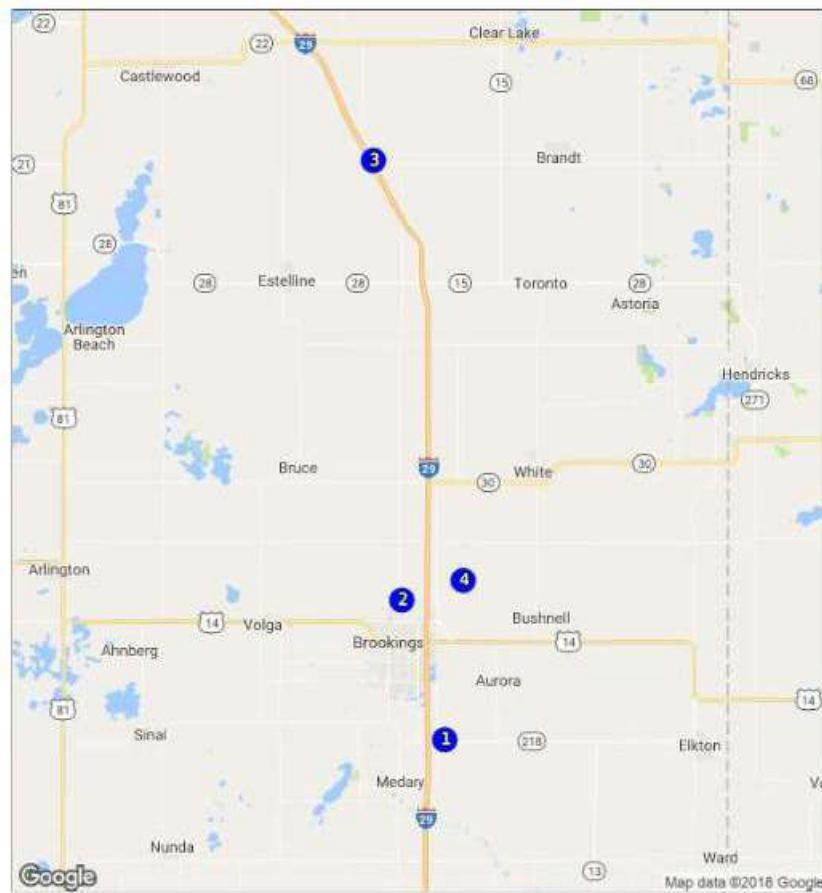
**Interview Notes with Agent:** Although the sellers initially expressed concerns about the turbines, and it took four months to sell the property, the agent does not think there was any real effect with potential buyers and she did not hear that from any other realtors regarding this property. The home is an executive home and the market is smaller in that price range according to the agent.

**Market Sales Analysis:**



| Sales Analysis BK4 |           |           |              |             |              |             |             |                     |                  |
|--------------------|-----------|-----------|--------------|-------------|--------------|-------------|-------------|---------------------|------------------|
| Sale No.           | Location  | Sale Date | Price        | Year/E.A.   | GLA          | Acres       | Style       | Outbuildings        | Overall Analysis |
| BK4                | Elkton    | 2013      | \$530,000    | 1989        | 2,728        | 13          | Story 1/2   | (2) Metal Buildings |                  |
| 1                  | Brookings | 2016      | \$578,264    | 1920        | 3,365        | 39.87       | Story1/2    | Barn/Shed           | Superior         |
|                    |           |           | Adjustments: | Inferior(+) | Superior(-)  | Superior(-) | Similar (=) | Similar(=)          |                  |
| 2                  | Brookings | 2015      | \$482,500    | 2007        | 1,726        | 5           | Ranch       | Metal Building      | Inferior         |
|                    |           |           | Adjustments: | Similar(=)  | Inferior (+) | Inferior(+) | Similar (=) | Inferior(+)         |                  |
| 3                  | Esteline  | 2016      | \$480,000    | 2003        | 2,651        | 4.99        | Story1/2    | Metal Buildings     | Inferior         |
|                    |           |           | Adjustments: | Similar(=)  | Similar(=)   | Inferior(+) | Similar(=)  | Similar(=)          |                  |
| 4                  | Aurora    | 2010      | \$455,000    | 1890        | 3,342        | 15          | Story1/2    | Barn/Shed/2car      | Inferior         |
|                    |           |           | Adjustments: | Inferior(+) | Superior(-)  | Similar(=)  | Similar (=) | Inferior(+)         |                  |

**Sale Location Map:**



| Legend                                               |
|------------------------------------------------------|
| 1. 47358 SD Highway 324, Brookings, SD 57006(16-276) |
| 2. 1320 W 30TH ST, Brookings, SD 57006(14-381)       |
| 3. 46958 188TH ST, Estelline, SD 57234(15-251)       |
| 4. 47437 209th St, Aurora, SD 57002(10-196)          |

**Market Sales Analysis**

**Conclusion:**

No sales could be found to bracket the selling price within the time of the transaction date; therefore, the sales search was expanded into 2017. Only one sale was found prior to the selling date in 2010. Sales one, two, and three occurred after the selling date in 2015 and 2016 and located near the city of Brookings. According the MLS data, BK4 was the highest sale price in 2013. The sale evidence suggests the selling price was not influenced by the proximity of the wind towers.

**Overall Conclusion:**

An interview analysis, site visit and sales analysis has been completed for BK4. The buyer's comments are consistent with the sales evidence. All evidence suggests the sale price was not affected by the proximity of the wind towers.



|                           |                 |              |
|---------------------------|-----------------|--------------|
| <b>SALES ANALYSIS BK5</b> | <b>SALE No.</b> | BK5          |
|                           | <b>STATE</b>    | South Dakota |
|                           | <b>COUNTY</b>   | Brookings    |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 6.95 Acres  
**Improvements:** 1936 Two-Story Design  
**Finished Area:** 2,160 SF GLA. Basement 864 S.F.  
**Garage:** Attached 1-Stall  
**Features:** Treed shelter belt. Shed, storage building. Detached 1-Stall  
**Access:** Gravel linkage

**Sales Analysis Data**

**Date of Sale:** March 26, 2014  
**Market Exposure:** MLS  
**Listing Price:** \$219,000  
**Sale Price:** \$190,000 (Previous sale 2010 \$215,000)  
**Verification:** Deed; Beacon; Interview with Buyer  
**Type:** Arm's Length Sale

**Wind Project:**

**Project:** Buffalo Ridge  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height From Ground:** 399 feet  
**Property & Wind Tower** Four turbines located east, north and west. Tower #1 2,000 +/- feet northeast. Tower #2 3,600 +/- feet north. Tower #3 745 +/- feet west. Tower #4 2,700 +/- feet west.

**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** May 23, 2018  
**View Obstruction:** Wind towers within view of residence  
**Noise Analysis:** None at time of site visit. (no wind present)

**Wind Tower Aerial Map:**



**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Buyer  
**Party Interviewed:** Agent  
**Interview Date:** May 23, 2018 (Buyer) May 30, 2018 (Agent)

**Interview Notes with Buyer:**

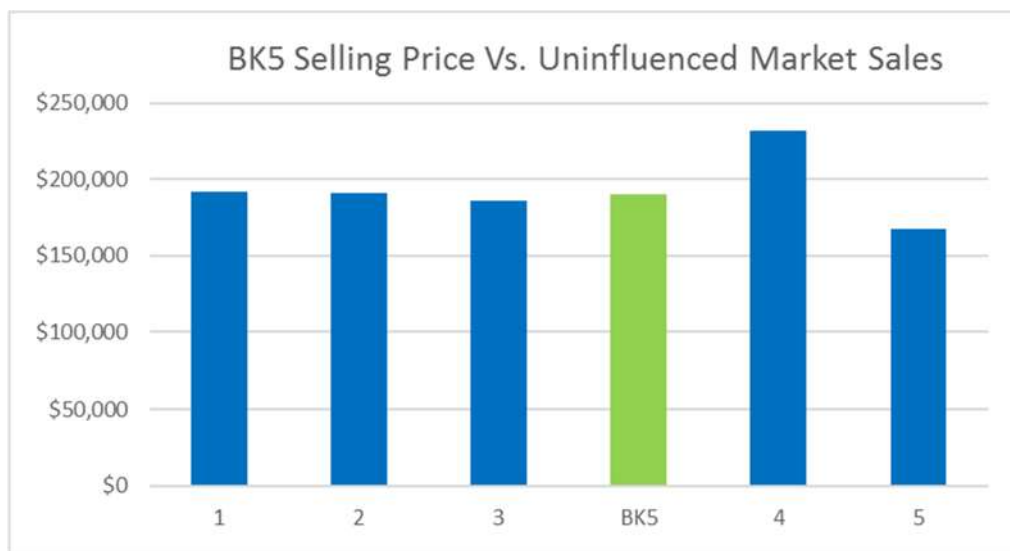
Property was listed for 3 years and seller had two previous offers fall through; seller was living alone and motivated to sell. Made a good deal. Wind towers can be noisy but didn't matter to us when we bought the home. Really no issues, besides the noise. Doesn't seem to bother wild life, deer come in the yard while the turbines are running.

**Interview Notes with Agent:**

There are limited acreages within the Brookings market and if the property is in good condition with the features of an acreage, it sells. Lots of buyers looking for acreages. The price was reduced (BK5) because of a dysfunctional floor plan and seller motivations. The floor

plan eliminated older buyers. Steep stairs. Old house and new house addition with weird layout. During the open house, buyers did not comment about the proximity of the wind towers, even though you can hear them in the yard. Distance from Brookings is what effects the price with acreages, not wind towers. If a property is past the 15-mile mark, price drops considerably. Price/distance relationship. Closer to Brookings prices increase. Acreage buyers are young people with kids. Lots of work to maintain an acreage. If it is too far from town, less buyers. No negative effects on purchase price from wind towers. Buyers did not seem to comment or raise concerns.

### Market Sales Analysis:



| Sales Analysis BK5 |           |              |           |            |             |             |            |                  |                  |
|--------------------|-----------|--------------|-----------|------------|-------------|-------------|------------|------------------|------------------|
| Sale No.           | Location  | Sale Date    | Price     | Year/E.A.  | GLA         | Acres       | Style      | Outbuildings     | Overall Analysis |
| BK5                | Elkton    | 2014         | \$190,000 | 1936       | 2,160       | 6.95        | Story 1/2  | Shed/Storage Bld |                  |
| 1                  | Flandreau | 2014         | \$191,900 | 1880       | 1,950       | 8.95        | Story1/2   | Barn/Shed        | Comparable       |
|                    |           | Adjustments: |           | Similar(=) | Similar(=)  | Similar(=)  | Similar(=) | Similar(=)       |                  |
| 2                  | Volga     | 2015         | \$190,600 | 1918       | 1,680       | 15          | Story 1/2  | Barn/Shed        | Inferior         |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+) | Superior(-) | Similar(=) | Inferior(-)      |                  |
| 3                  | Astoria   | 2014         | \$186,000 | 1910       | 1,472       | 14          | Story1/2   | Outbuildings     | Comparable       |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+) | Superior(-) | Similar(=) | Similar(=)       |                  |
| 4                  | Brookings | 2013         | \$232,000 | 1912       | 2,075       | 30.59       | Story1/2   | Barn/Shed/2car   | Superior         |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+) | Superior(-) | Similar(=) | Superior(-)      |                  |
| 5                  | Nunda     | 2013         | \$167,900 | 1922       | 1,198       | 14.63       | Story1/2   | Shed/Barn/Metal  | Inferior         |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+) | Superior(-) | Similar(=) | Superior(-)      |                  |

**Sale Location Map:**



| Legend                                           |
|--------------------------------------------------|
| 1. 22603 476th Ave., Flandreau, SD 57028(14-156) |
| 2. 19367 483RD AVE, Astoria, SD 57213(13-122)    |
| 3. 612 Wicklow Ln, Brookings, SD 57006(13-312)   |
| 4. 22125 457th Ave., Nunda, SD 57050(13-147)     |
| 5. 46464 218TH ST, Volga, SD 57071(14-579)       |

**Market Sales Analysis**

**Conclusion:**

Five sales uninfluenced by the proximity of wind towers are used for the analysis. The sales have similar highest and best use as acreages in the Brookings rural market. Sale BK5 is bracketed by the market sales. Sales two and five are inferior sales. Sale four is a superior sale. Sales one and three are the most similar. The market evidence suggests the selling price of BK5 was not influenced by the proximity of the wind towers.

**Overall Conclusion:**

An interview analysis, site visit, and sales analysis have been completed for sale BK5. The buyer's comments indicated the purchase price was influenced by seller motivations and not by the presence of the wind towers. The market data is consistent with the interview analysis and suggests the proximity of the wind towers did not negatively influence the selling price of BK5

|                           |                 |              |
|---------------------------|-----------------|--------------|
| <b>SALES ANALYSIS BK7</b> | <b>SALE No.</b> | BK7          |
|                           | <b>STATE</b>    | South Dakota |
|                           | <b>COUNTY</b>   | Brookings    |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 13.35 Acres  
**Improvements:** 1992 Ranch  
**Finished Area:** 1680 SF GLA; 1680 L.L.  
**Garage:** Attached 2-Stall  
**Features:** Treed shelter belt. Metal outbuilding  
**Access:** Gravel road linkage

**Sales Analysis Data:**

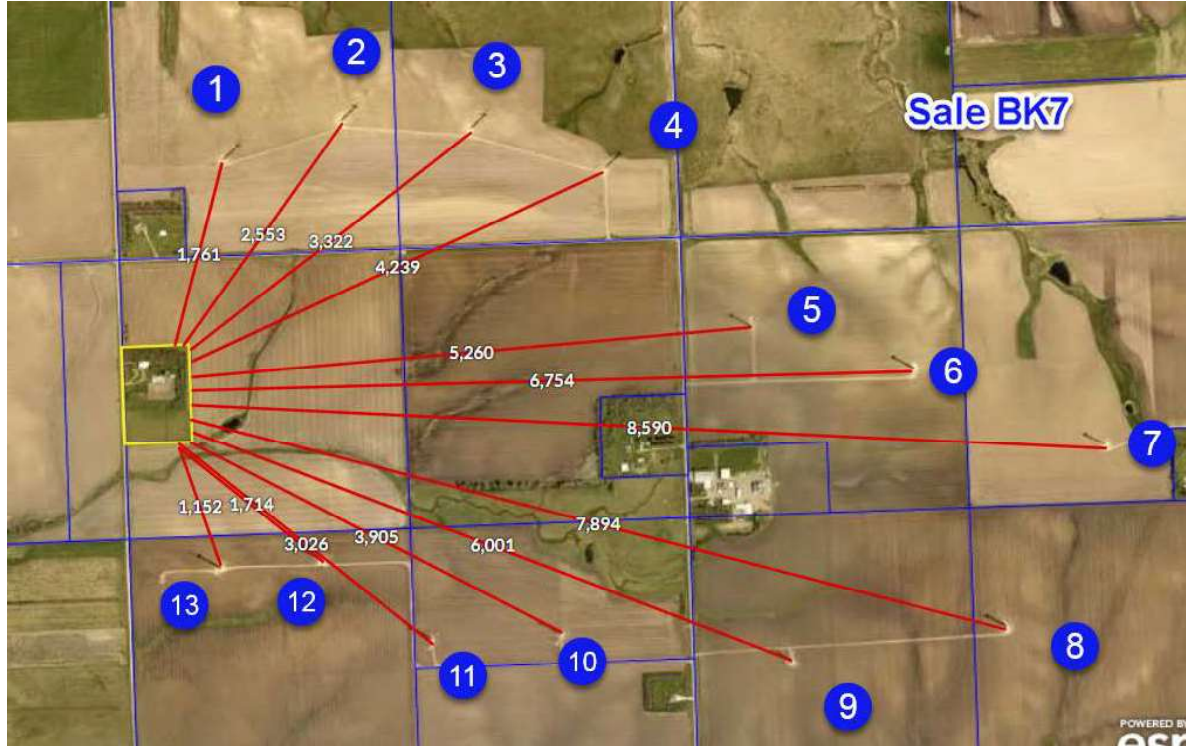
**Date of Sale:** August 4, 2010  
**Market Exposure:** Word of mouth  
**Sale Price:** \$180,000  
**Verification:** Deed; Beacon; Interview with Buyer  
**Type:** Arm's Length Sale (estate sale, purchased based on appraisal)

**Wind Project:**

**Project:** Buffalo Ridge  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height from Ground:** 399 feet  
**Wind Tower Property Notes:** Thirteen wind turbines surround the property. Tower #1 1,800 +/- feet north. Tower #2 2,500 +/- feet northeast. Tower #3 3,300 +/- feet northeast. Tower #4 4,200 +/- feet northeast. Tower #5 5,200 +/- feet northeast. Tower #6 6,700 +/- feet east. Tower #7 8,500 +/- feet east. Tower #8 7,900 +/- feet southeast. Tower #9 6,000 +/- feet southeast. Tower #10 3,900 +/- feet southeast. Tower #11 3,000 +/- feet southeast. Tower #12 1,700 +/- feet southeast. Tower #13 1,100 +/- feet south



**Wind Tower Aerial Map:**



**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** May 23, 2018  
**View Obstruction:** Wind towers within view of residence  
**Noise Analysis:** Operational & blade noise present during site visit.

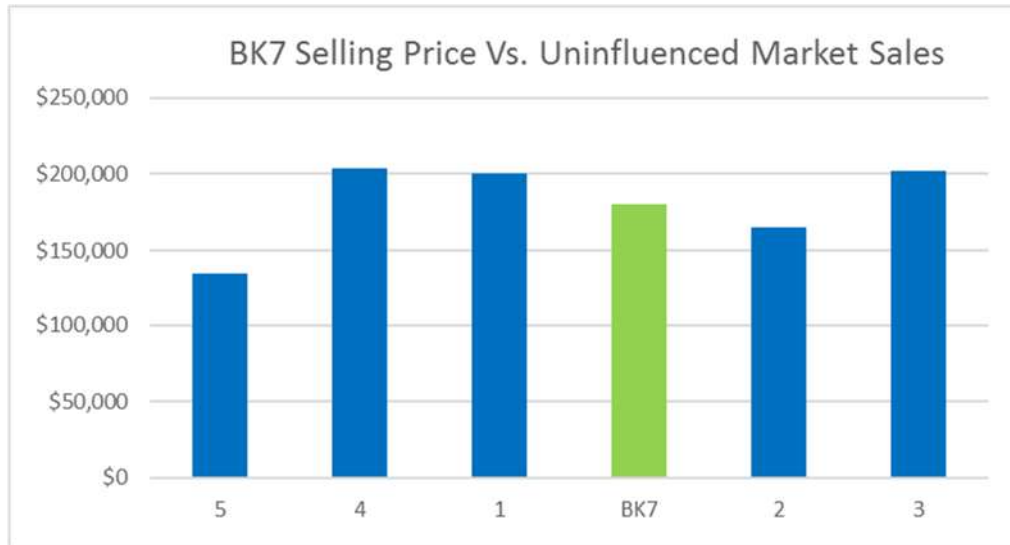
**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interview:** Buyer  
**Interview Date Buyer:** May 30, 2018

**Interview Notes with Buyer:**

Property value has increased by at least \$75,000 since purchase. No issues or concerns with living near wind towers. There is no effect on the value. No effect to the animals. Can hear a faint "swoosh" noise. No big deal.

**Market Sales Analysis:**



| Sales Analysis BK7 |           |              |           |             |             |             |            |                     |                  |
|--------------------|-----------|--------------|-----------|-------------|-------------|-------------|------------|---------------------|------------------|
| Sale No.           | Location  | Sale Date    | Price     | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings        | Overall Analysis |
| BK7                | Elkton    | 2010         | \$180,000 | 1992        | 1,680       | 13.35       | Ranch      | Outbuild/2Car       |                  |
| 1                  | Volga     | 2011         | \$200,000 | 2005        | 1,232       | 10          | Ranch      | Barn/2Car           | Superior         |
|                    |           | Adjustments: |           | Superior(-) | Inferior(+) | Superior(-) | Similar(=) | Similar(=)          |                  |
| 2                  | Colman    | 2009         | \$165,000 | 2001        | 910         | 22.03       | Ranch      | None                | Inferior         |
|                    |           | Adjustments: |           | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Inferior(-)         |                  |
| 3                  | White     | 2010         | \$202,000 | 1967        | 1,304       | 12.78       | Ranch      | Metal Building/Shed | Superior         |
|                    |           | Adjustments: |           | Similar(=)  | Inferior(+) | Similar(=)  | Similar(=) | Superior(-)         |                  |
| 4                  | Volga     | 2011         | \$204,000 | 1910        | 2,294       | 12.65       | Story1/2   | Barn/Shed/2car      | Superior         |
|                    |           | Adjustments: |           | Similar(=)  | Superior(-) | Similar(=)  | Similar(=) | Superior(-)         |                  |
| 5                  | Brookings | 2010         | \$135,000 | 1974        | 1,288       | 7.5         | Ranch      | Shed/2Car           | Inferior         |
|                    |           | Adjustments: |           | Similar(=)  | Inferior(+) | Inferior(+) | Similar(=) | Inferior(+)         |                  |

**Sale Location Map:**



| Legend                                       |                                                     |
|----------------------------------------------|-----------------------------------------------------|
| 1. 47005 225th St., Colman, SD 57017(09-595) | 4. 46306 209TH ST, Volga, SD 57071(11-436)          |
| 2. 21935 461ST AVE, Volga, SD 57071(11-226)  | 5. 20456 469TH Ave, Brookings, SD 57006(09-581)     |
| 3. 20787 482ND AVE, White, SD 57276(10-599)  | 6. 47318 SD Highway 30, Brookings, SD 57006(10-430) |

**Market Sales Analysis**

**Conclusion:**

Six sales are utilized in the grid that is not influenced by the proximity of a wind tower. All sales share in highest and best use as a rural acreage and sold around the same time as BK7. After analyzing the elements of comparison, the market sales bracket the selling price of BK7 and suggest the selling price has not been negatively affected by the proximity of the wind tower.

**Overall Conclusion:**

An interview analysis, site observation, and sales analysis were completed for sale BK7. The market sales and buyer interview comments are consistent. The evidence suggests wind towers have not negatively impacted the selling price of BK7.



| Rural Residential Transaction Summary Table |                      |                              |                               |                           |                                                      |                       |
|---------------------------------------------|----------------------|------------------------------|-------------------------------|---------------------------|------------------------------------------------------|-----------------------|
| Transaction Reference                       | Property Type        | Physical Evidence of Effects | Interview Evidence of Effects | Sales Evidence of Effects | Consistency of Sale Evidence with Interview Evidence | Overall Conclusion    |
| BK12                                        | Rural/AG Residential | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |
| BK13                                        | Rural Residential    | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |
| BK14                                        | Rural Residential    | Yes                          | None                          | None                      | Consistent                                           | No measurable effects |
| CD1                                         | Rural Residential    | *NA*                         | None                          | None                      | Consistent                                           | No measurable effects |
| CD2                                         | Rural Residential    | *NA*                         | Yes                           | Yes                       | Consistent                                           | Possible effects      |
| DE1                                         | Rural Residential    | *NA*                         | Yes                           | None                      | Inconsistent                                         | No measurable effects |
| DE2                                         | Rural Residential    | *NA*                         | None                          | None                      | Consistent                                           | No measurable effects |
| DE3                                         | Rural Residential    | *NA*                         | None                          | None                      | Consistent                                           | No measurable effects |
| DE4                                         | Rural Residential    | *NA*                         | None                          | None                      | Consistent                                           | No measurable effects |
| DE5                                         | Rural Residential    | *NA*                         | None                          | None                      | Consistent                                           | No measurable effects |

\*NA=No wind towers installed at the time of sale\*

| SALES ANALYSIS BK12 |          |              |
|---------------------|----------|--------------|
| SALES ANALYSIS BK12 | SALE No. | BK12         |
|                     | STATE    | South Dakota |
|                     | COUNTY   | Brookings    |



#### Property Characteristics:

**Highest & Best Use:** Rural acreage & 1,000 head cattle operation  
**Land Size:** 30.00 Acres  
**Improvements:** 1938 Updated Story ½  
**Finished Area:** 2182 SF GLA; 584 L.L. & Crawl space  
**Garage:** Attached 2-Stall  
**Out buildings:** 25x105, 128x50, 60x30, 62x30, 21,x80, 40x152 pole buildings, 42x66 flat barn, 40x60 Quonset, 5 grain bins, and misc. buildings.  
**Features:** Treed shelter belt, outbuildings, and rural setting  
**Access:** Paved road linkage; gravel driveway

#### Sales Analysis Data:

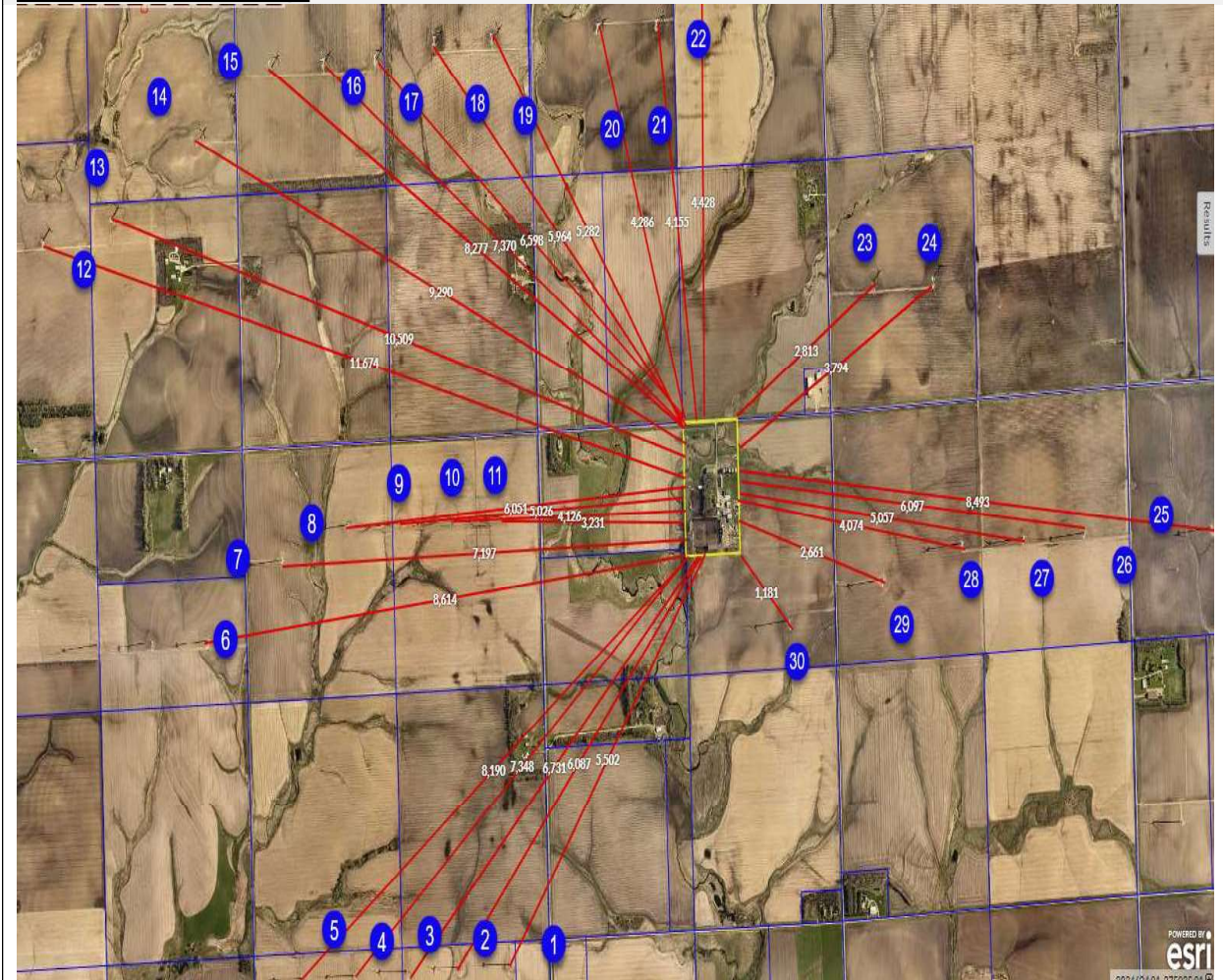
**Date of Sale:** May 5, 2019  
**Market Exposure:** Auction managed by First Bank  
**Sale Price:** \$450,000  
**Verification:** Deed; Beacon; Interview with Buyer  
**Type:** Arm's Length Sale

#### Wind Energy Project:

**Development:** Buffalo Ridge  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Roto Diameter:** 78/87 meters  
**Height From Ground:** 399 Feet per docket  
**Property & Wind Tower Notes:** Thirty wind turbines surround the property. Tower #1 5,502 +/- feet southwest. Tower #2 6,087 +/- feet southwest. Tower #3 6,731 +/- feet southwest. Tower #4 7,348 +/- feet southwest. Tower #5 8,190

+/- feet southwest. Tower #6 8,614 +/- feet west. Tower #7 7,197 +/- feet west. Tower #8 6,051 +/- feet west. Tower #9 5,026 +/- feet west. Tower #10 4,126 +/- feet west. Tower #11 3,231 +/- feet west. Tower #12 11,674 +/- feet northwest. Tower #13 10,509 +/- feet northwest. Tower #14 9,290 +/- feet northwest. Tower #15 8,277 feet northwest. Tower #16 7,370 +/- feet northwest. Tower #17 6,598 +/- feet northwest. Tower #18 5,964 feet +/- feet northwest. Tower #19 5,286 +/- feet north. Tower #20 4,286 +/- feet north. Tower #21 4,155 +/- feet north. Tower #22 4,428 +/- feet north. Tower #23 2,813 +/- feet northeast. Tower #24 3,794 +/- feet northeast. Tower #25 8,493 +/- feet east. Tower #26 6,079 +/- feet east. Tower #27 5,057 +/- feet east. Tower #28 4,074 +/- feet east. Tower #29 2,661 +/- feet southeast. Tower #30 1,181 +/- feet southeast.

**Wind Tower Aerial Map:**



**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** November 18, 2019  
**View Obstruction:** Wind towers within view of residence and all side of the property.  
**Noise Analysis:** Operational & blade noise present during site visit.

**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interview:** Buyer  
**Interview Date Buyer:** October 31, 2019  
**Interview Notes with Buyer:** The property was managed by First Bank & Trust and sold by auction. According to the buyer interview, there were three competing parties that participated in the bidding process. Their motivation to purchase the property was to expand their farming operations and provide a residence for their parents. It was common knowledge the property was located near the Buffalo Ridge wind farm. The buyer explained when they looked at the property, it was surrounded by towers. The buyer explained that the wind towers were not a concern and didn't influence the price they paid for the property.

**Site Photos:**

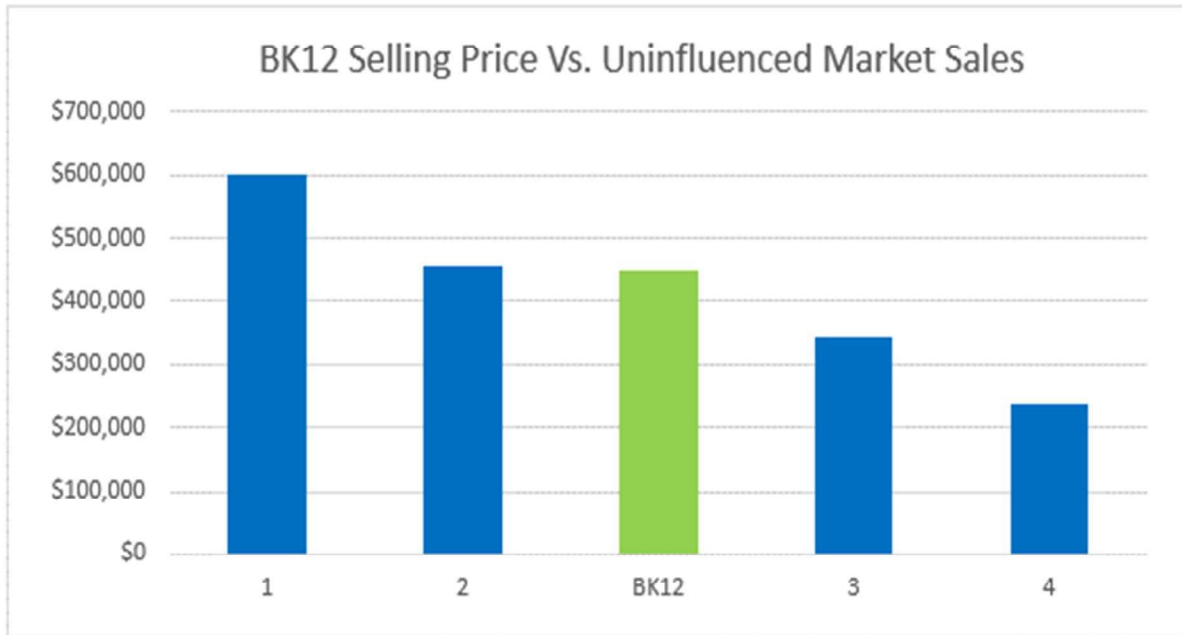






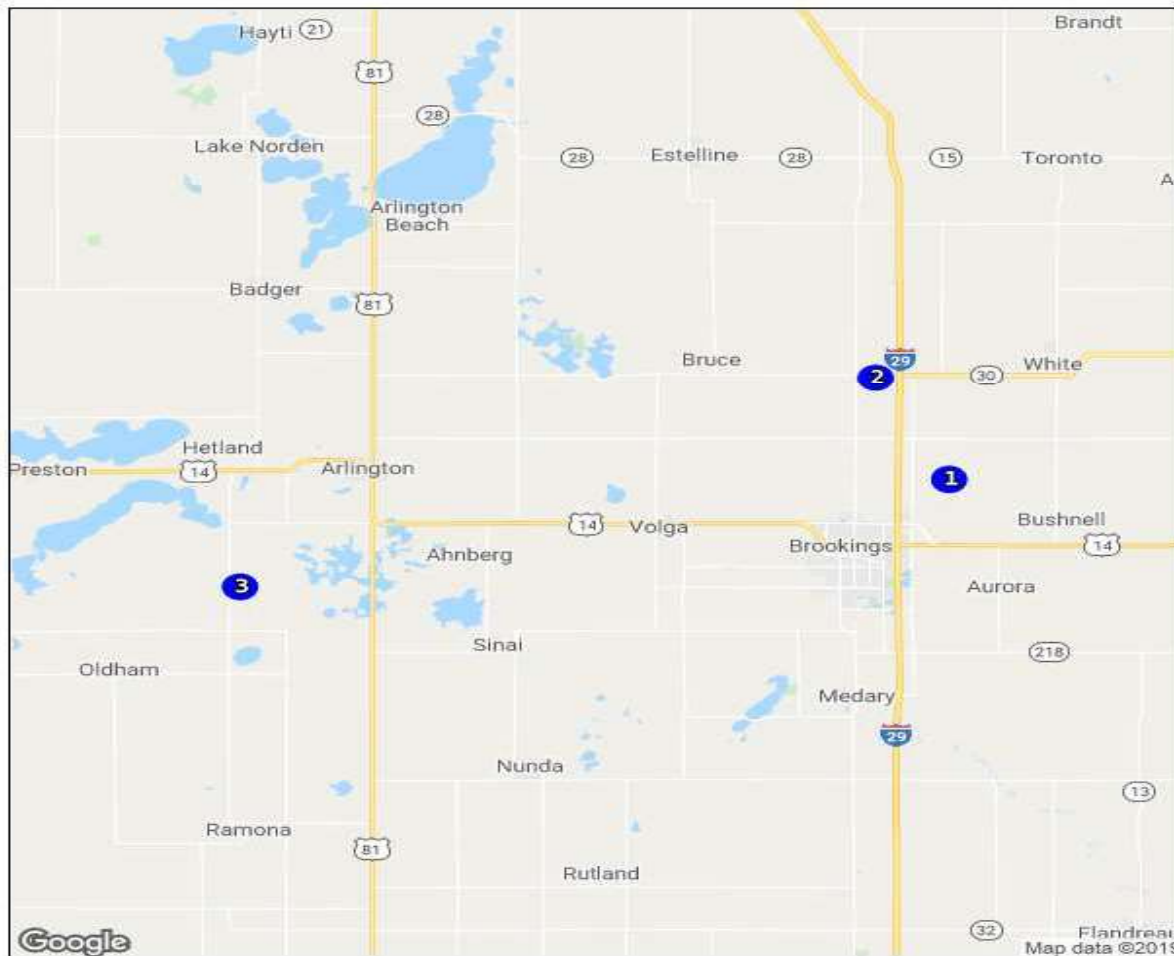


**Market Sales Analysis:**



| Sales Analysis BK12 |           |              |             |             |             |             |            |                |                  |
|---------------------|-----------|--------------|-------------|-------------|-------------|-------------|------------|----------------|------------------|
| Sale No.            | Sale Date | Price        | Location    | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings   | Overall Analysis |
| BK12                | 2019      | \$450,000    | White       | 1938        | 2,182       | 30.97       | Story 1/2  | 6 Buildings    |                  |
| 1                   | 2019      | \$600,000    | Brookings   | 2016        | 1,792       | 10          | Ranch      | 3 Bldpole/barn | Superior         |
|                     |           | Adjustments: | Superior(-) | Superior(-) | Inferior(+) | Inferior(+) | Similar(=) | Similar(=)     |                  |
| 2                   | 2017      | \$455,000    | Brookings   | 1920/Upd    | 2,085       | 15          | Story1/2   | Barn/2Bld      | Superior         |
|                     |           | Adjustments: | Superior(-) | Superior(-) | Similar(=)  | Inferior(+) | Similar(=) | Inferior(+)    |                  |
| 3                   | 2018      | \$342,000    | Arlington   | 1900        | 1,860       | 42          | Story1/2   | 3 Pole         | Inferior         |
|                     |           | Adjustments: | Inferior(+) | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Inferior(+)    |                  |
| 4                   | 2019      | \$239,000    | Renville    | 1900        | 1,392       | 23.35       | Story 1/2  | 4 Pole Bld     | Inferior         |
|                     |           | Adjustments: | Inferior(+) | Similar(=)  | Inferior(+) | Inferior(+) | Similar(=) | Inferior(+)    |                  |

**Sale Location Map:**



**Legend**

1. 47437 209th Street, Aurora, SD 57002(10-196)
2. 20441 472nd Avenue, Brookings, SD 57006(19-120)
3. 44947 214th Street, Arlington, SD 57212(18-212)

*\*Renville sale 4 not located on map\**

**Market Sales Analysis**

**Conclusion:**

Four sales are utilized in the grid without influences from a wind turbine, tower or development. All sales are rural acreages within the market with similar features and outbuilding utility. Sales two and one are superior sales with proximity to Brookings; these are less comparable as acreages in proximity to Brookings and not operating cattle yards. Sale 3 has stronger similarities as a rural acreage and cattle yard. Sale 4 is not from the Brookings market; however, it provides a comparison sale for a 1,000 head cattle operation and rural residence. After analyzing the elements of comparison, the market sales bracket the selling price of BK12 and suggest the selling price has not been negatively affected by the proximity of the wind tower.



**Overall Conclusion:**

Evidence from the interview analysis, sales analysis, and site observation support the conclusion there is no negative affect on the selling price. The property was sold with competing bids with a selling price bracketed by uninfluenced sales. The buyer had knowledge of the wind towers prior to the sale and purchased the property within the range of the market comparables. The market data is consistent with the buyer's comments that the proximity of the wind towers had no influence on the price paid for the property. All evidence suggests there is no negative affect on the selling price.

| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS BK13</b>                           | <b>SALE No.</b> | BK13         |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Brookings    |



**Property Characteristics:**

**Highest & Best Use:** Rural acreage  
**Land Size:** 3.20 Acres  
**Improvements:** 1975 Ranch  
**Finished Area:** 1144 SF GLA; 1144 L.L. Finished  
**Garage:** Attached 1-Stall  
**Out buildings:** 40x56 Pole Building  
**Features:** Treed shelter belt  
**Access:** Paved road linkage

**2015 Sales Analysis Data:**

**Date of Sale:** September 9, 2015  
**DOM:** 91  
**Market Exposure:** Advertised Sale  
**Sale Price:** \$188,000  
**Verification:** Deed; Beacon; Interview with Buyer  
**Type:** Arm's Length Sale

**2019 Sales Analysis Data:**

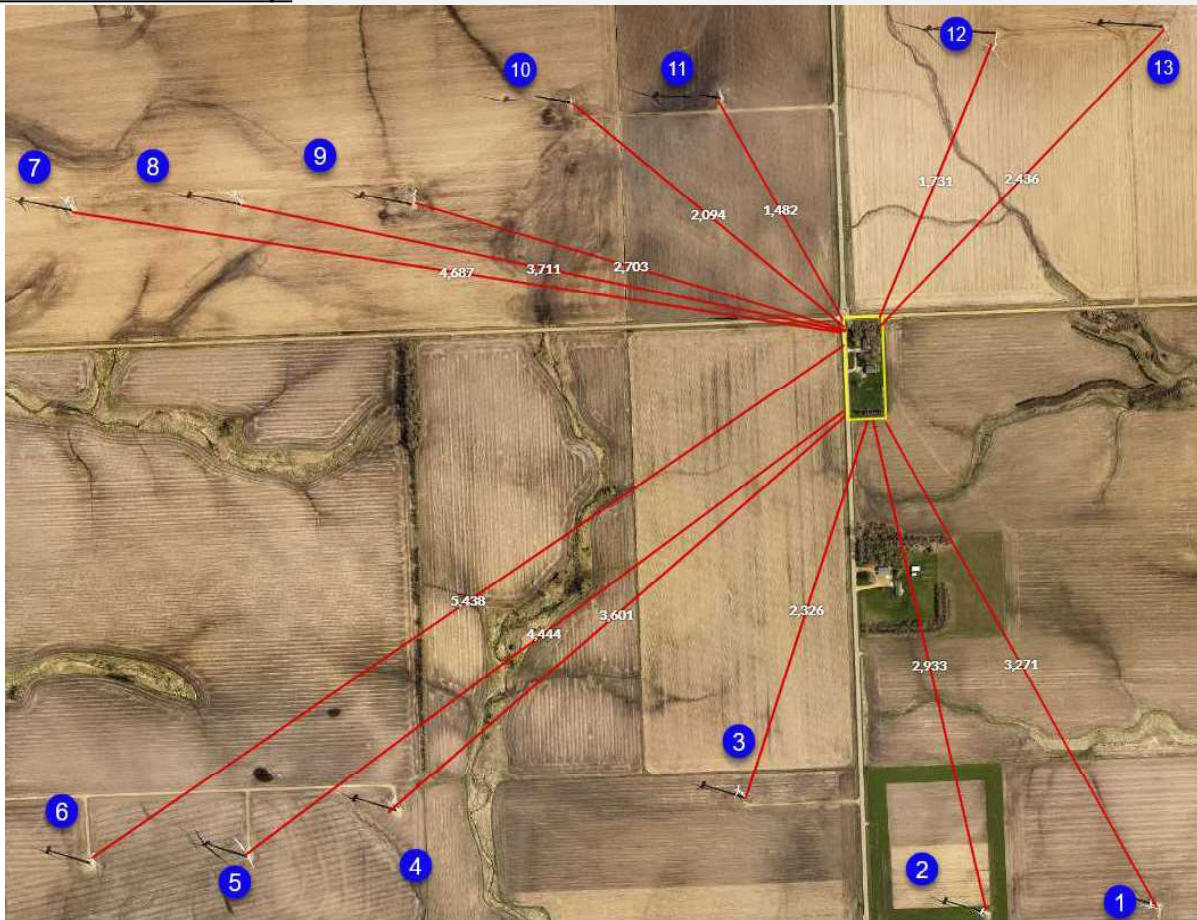
**Date of Sale:** October 31, 2019  
**DOM:** 25  
**Market Exposure:** Advertised Sale  
**Sale Price:** \$237,000  
**Verification:** MLS, Interview with Seller (previous buyer in 2015)  
**Type:** Arm's Length Sale

**Wind Energy Project:**

**Development:** Buffalo Ridge  
**Turbine Type:** Gamesa G87 2.0 MW

**Hub Height/Roto Diameter:** 78/87 meters  
**Height From Ground:** 399 Feet  
**Property & Wind Tower Notes:** Thirteen wind turbines surround the property. Tower #1 3,271 +/- feet southeast. Tower #2 2,933 +/- feet south. Tower #3 2,326 +/- feet south. Tower #4 3,601 +/- feet southwest. Tower #5 4,444 +/- feet southwest. Tower #6 5,438 +/- feet southwest. Tower #7 4,687 +/- feet northwest. Tower #8 3,711 +/- feet northwest. Tower #9 2,703 +/- feet north. Tower #10 2,094 +/- feet north. Tower #11 1,482 +/- feet north. Tower #12 1,731 +/- feet northeast. Tower #13 2,436 +/- feet northeast.

**Wind Tower Aerial Map:**



**Appreciation Analysis:**

|                                                |                         |                   |
|------------------------------------------------|-------------------------|-------------------|
| <b>(Influenced by Tower) Sale 1 Bk13:</b>      | September 3, 2015       | \$188,000         |
| <b>(Influenced by Tower) Sale 2 BK13:</b>      | <u>October 31, 2019</u> | <u>\$237,000</u>  |
|                                                | 4.16 Years              | \$49,000          |
| <b>BK13 Appreciation:</b>                      | <b>\$11,778/Year</b>    | <b>6.26%/Year</b> |
| <b>(Uninfluenced) Sale 1 486<sup>th</sup>:</b> | December 7, 2004        | \$133,000         |
| <b>(Uninfluenced) Sale 2 486<sup>th</sup>:</b> | <u>October 11, 2013</u> | <u>\$145,000</u>  |
|                                                | 9.25 Years              | \$12,000          |
| <b>486<sup>th</sup> Appreciation:</b>          | <b>\$1,298/Year</b>     | <b>.98%/Year</b>  |

|                                         |                     |                   |
|-----------------------------------------|---------------------|-------------------|
| (Uninfluenced) Sale 213 <sup>th</sup> : | August 10, 2013     | \$266,000         |
| (Uninfluenced) Sale 213 <sup>th</sup> : | <u>May 24, 2018</u> | <u>\$290,903</u>  |
|                                         | 4.62 Years          | \$24,906          |
| 213 <sup>th</sup> Appreciation:         | <b>\$5,390/Year</b> | <b>2.02%/Year</b> |

**Conclusion:** Sale BK13 has market appreciation at the higher end of the market sales that are not influenced by a wind tower, turbine or wind project.

#### Site Analysis:

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** November 18, 2019  
**View Obstruction:** Wind towers within view of the residence  
**Noise Analysis:** Operational & blade noise present during site visit.

#### Interview Analysis:

**Interview Conducted by:** David Lawrence  
**Party Interview:** 2015 Buyer & 2019 Seller  
**Interview Date Buyer/Seller:** November 4, 2019  
**Interview Notes with Buyer:** The property was listed in 2014 and sold via the Brookings MLS system with 91 DOM. The buyer stated the wind towers were installed prior to their purchase with the closest tower 2,500 feet from the house. The buyer stated the towers can be noisy, and you can hear them inside the house. They experienced about 5-10 minutes a day of shadows from the towers depending on the time of year. South Dakota wind can make a lot of noise so the wind towers were less of a concern; however, they can't really find anything positive to say about living around wind towers. Not sure it affects the value of the property but having wind towers next to your property limits the buyer pool when you go to sell. There is a narrow group of people who want to live in rural S.D. and when you add wind towers to the proximity of a rural home, most people would prefer not to have them. The buyer stated if there was a choice between a rural property without the proximity of a wind tower, he would choose that property every time, but unfortunately, the market options are not readily available. The property was recently listed in September 2019 and sold within 25 DOM. The seller stated some of the prospective buyers didn't want to live in proximity to a wind tower.

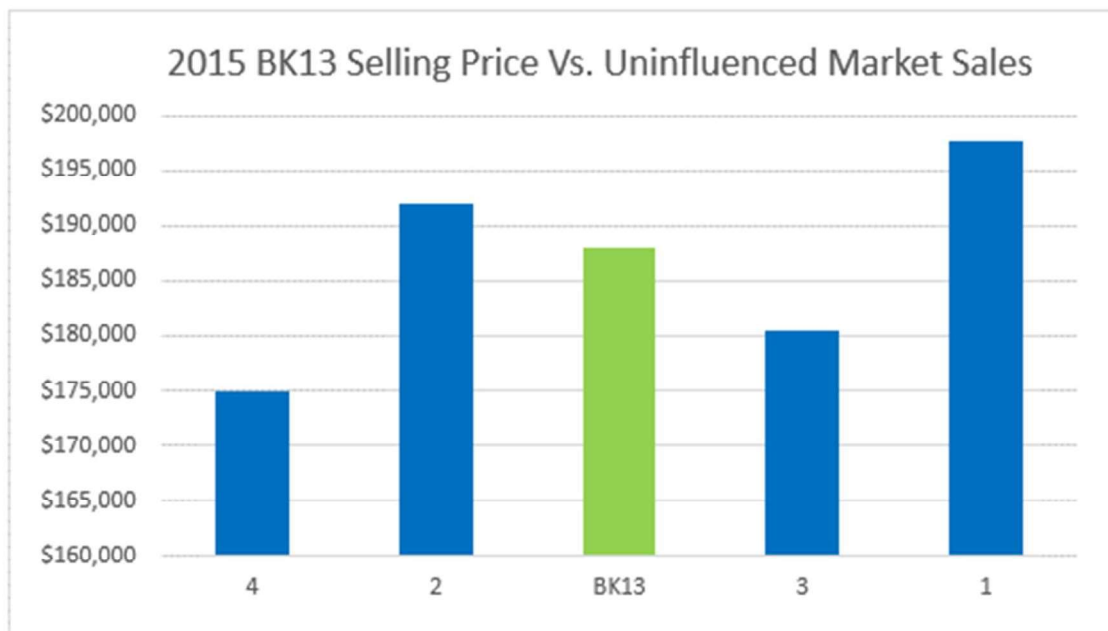


**Site Photos:**





**2015 Market Sales Analysis:**



| Sales Analysis BK13 -- 2015 |           |           |              |             |             |             |             |               |                  |
|-----------------------------|-----------|-----------|--------------|-------------|-------------|-------------|-------------|---------------|------------------|
| Sale No.                    | Location  | Sale Date | Price        | Year/E.A.   | GLA         | Acres       | Style       | Outbuildings  | Overall Analysis |
| BK13                        | Toronto   | 2015      | \$188,000    | 1975        | 1,144       | 3.2         | Ranch       | Pole Building |                  |
| 1                           | Brookings | 2014      | \$197,750    | 1975        | 1,534       | 2.02        | Ranch       | Barn/Shed     | Comparable       |
|                             |           |           | Adjustments: | Similar(=)  | Superior(-) | Inferior(+) | Similar (=) | Similar(=)    |                  |
| 2                           | Flandreau | 2014      | \$191,900    | 1880        | 1,250       | 8.95        | Story1/2    | Barn/Shed     | Comparable       |
|                             |           |           | Adjustments: | Inferior(+) | Similar(=)  | Superior(-) | Similar (=) | Similar (=)   |                  |
| 3                           | Colman    | 2015      | \$180,400    | 1961        | 1,440       | 10          | Ranch       | Shed/Bld      | Superior         |
|                             |           |           | Adjustments: | Similar(=)  | Superior(-) | Superior(-) | Similar (=) | Similar(=)    |                  |
| 4                           | Bruce     | 2015      | \$175,000    | 1961        | 1,392       | 4.6         | Ranch       | Bld/Barn      | Comparable       |
|                             |           |           | Adjustments: | Similar(=)  | Superior(-) | Similar(=)  | Similar (=) | Similar(=)    |                  |

**2015 Sale Location Map:**



| Legend                                             |
|----------------------------------------------------|
| 1. 20444 471st Avenue, Brookings, SD 57006(14-284) |
| 2. 22603 476th Avenue, Flandreau, SD 57028(14-156) |
| 3. 22409 468th Avenue, Colman, SD 57017(15-39)     |
| 4. 46153 199TH Street, Bruce, SD 57220(15-350)     |

**2019 Market Sales Analysis:**



| Sales Analysis BK13 -- 2019 |           |           |              |             |             |             |            |               |                  |
|-----------------------------|-----------|-----------|--------------|-------------|-------------|-------------|------------|---------------|------------------|
| Sale No.                    | Location  | Sale Date | Price        | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings  | Overall Analysis |
| BK13                        | Toronto   | 2019      | \$237,000    | 1975        | 1,144       | 3.2         | Ranch      | Pole Building |                  |
| 1                           | Volga     | 2019      | \$272,000    | 2003        | 1,576       | 2.08        | Ranch      | OutBld        | Superior         |
|                             |           |           | Adjustments: | Superior(-) | Superior(-) | Similar(=)  | Similar(=) | Similar(=)    |                  |
| 2                           | Brookings | 2018      | \$206,000    | 1974        | 1,460       | 2.37        | Ranch      | None          | Inferior         |
|                             |           |           | Adjustments: | Similar(=)  | Superior(-) | Similar(=)  | Similar(=) | Inferior(+)   |                  |
| 3                           | White     | 2018      | \$195,000    | 2008        | 1,008       | 5           | Ranch      | None          | Inferior         |
|                             |           |           | Adjustments: | Superior(-) | Inferior(+) | Superior(-) | Similar(=) | Inferior(+)   |                  |
| 4                           | Brookings | 2018      | \$236,500    | 1976        | 1,300       | 5.29        | Ranch      | Shed/OS Garg  | Similar          |
|                             |           |           | Adjustments: | Similar(=)  | Superior(-) | Superior(-) | Similar(=) | Similar(=)    |                  |



**Market Sales Analysis**  
**Conclusion:**

The data set includes eight market sales that are not influenced by the proximity of a wind tower, turbine or wind project. The analysis includes two sales of the BK13 between 2015 and 2019, with a market appreciation rate of 6.26%. The selling price of BK13 falls within the range of market substitutes. The value range of BK13 is bracketed by uninfluenced superior and inferior sales for both selling dates. The sales data is consistent with the interview comments. The market sales evidence supports the conclusion the proximity to the wind towers did not affect the selling price of BK13.

**Overall Conclusion:**

An interview analysis, site observation, and sales analysis were completed for sale BK13. The sale evidence suggests the proximity to the wind towers did not influence the selling price. Sale BK13 sold in 2015 and then in 2019 with a market appreciation rate on the higher end of the uninfluenced sales. Even though there is evidence of noise & visual effects from the interview analysis and site visit, the market data suggests the proximity to the wind tower has not negatively influenced sale BK13.

| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS BK14</b>                           | <b>SALE No.</b> | BK14         |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Brookings    |



**Property Characteristics:**

**Highest & Best Use:** Rural acreage  
**Land Size:** 5.70 Acres  
**Improvements:** 1988 Ranch  
**Finished Area:** 1344 SF GLA; 806 L.L.  
**Garage:** Attached 2-Stall  
**Out buildings:** 80x40 Pole Building  
**Features:** Treed shelter belt  
**Access:** Gravel road linkage

**Sales Analysis Data:**

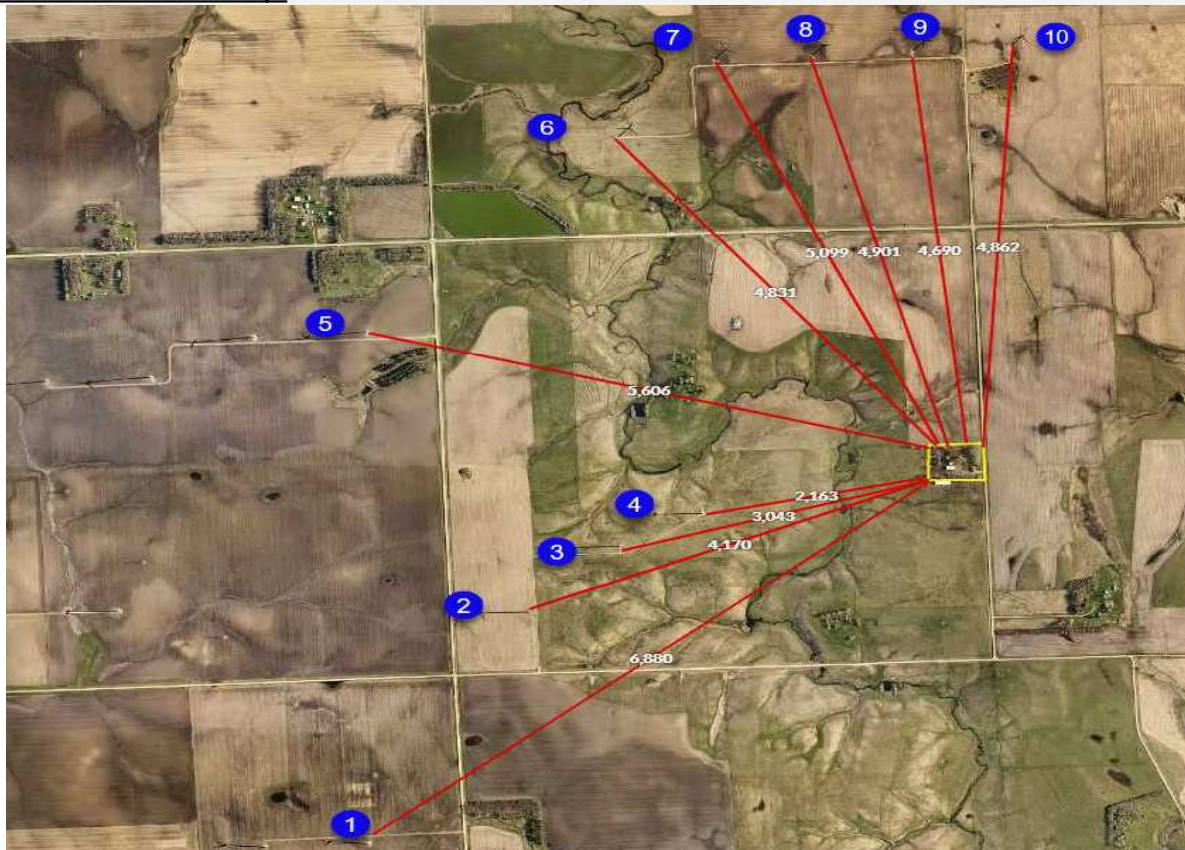
**Date of Sale:** April 30, 2019  
**Market Exposure:** Auction managed by First Bank  
**Sale Price:** \$165,000  
**Verification:** Deed; Beacon; Interview with Buyer  
**Type:** Arm's Length Sale

**Wind Energy Project:**

**Development:** Buffalo Ridge  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Roto Diameter:** 78/87 meters  
**Height From Ground:** 399 Feet  
**Property & Wind Tower Notes:** Thirty wind turbines surround the property. Tower #1 5,502 +/- feet southwest. Tower #2 6,087 +/- feet southwest. Tower #3 6,731 +/- feet southwest. Tower #4 7,348 +/- feet southwest. Tower #5 8,190 +/- feet southwest. Tower #6 8,614 +/- feet west. Tower #7 7,197 +/- feet west. Tower #8 6,051 +/- feet west. Tower #9 5,026 +/- feet west. Tower #10 4,126 +/- feet west. Tower #11 3,231 +/- feet west.

Tower #12 11,674 +/- feet northwest. Tower #13 10,509 +/- feet northwest. Tower #14 9,290 +/- feet northwest. Tower #15 8,277 feet northwest. Tower #16 7,370 +/- feet northwest. Tower #17 6,598 +/- feet northwest. Tower #18 5,964 feet +/- feet northwest. Tower #19 5,286 +/- feet north. Tower #20 4,286 +/- feet north. Tower #21 4,155 +/- feet north. Tower #22 4,428 +/- feet north. Tower #23 2,813 +/- feet northeast. Tower #24 3,794 +/- feet northeast. Tower #25 8,493 +/- feet east. Tower #26 6,079 +/- feet east. Tower #27 5,057 +/- feet east. Tower #28 4,074 +/- feet east. Tower #29 2,661 +/- feet southeast. Tower #30 1,181 +/- feet southeast.

**Wind Tower Aerial Map:**



**Appreciation Analysis:**

|                                           |                         |                   |
|-------------------------------------------|-------------------------|-------------------|
| (Influenced by Tower) Sale 1 Bk14:        | December 08, 2015       | \$125,000         |
| (Influenced by Tower) Sale 2 BK14:        | <u>April 30, 2019</u>   | <u>\$165,000</u>  |
|                                           | 3.39 Years              | \$40,000          |
| <b>BK14 Appreciation:</b>                 | <b>\$11,799/Year</b>    | <b>9.43%/Year</b> |
| (Uninfluenced) Sale 1 486 <sup>th</sup> : | December 7, 2004        | \$133,000         |
| (Uninfluenced) Sale 2 486 <sup>th</sup> : | <u>October 11, 2013</u> | <u>\$145,000</u>  |
|                                           | 9.25 Years              | \$12,000          |
| <b>486<sup>th</sup> Appreciation:</b>     | <b>\$1,298/Year</b>     | <b>.98%/Year</b>  |

|                                         |                     |                   |
|-----------------------------------------|---------------------|-------------------|
| (Uninfluenced) Sale 213 <sup>th</sup> : | August 10, 2013     | \$266,000         |
| (Uninfluenced) Sale 213 <sup>th</sup> : | <u>May 24, 2018</u> | <u>\$290,903</u>  |
|                                         | 4.62 Years          | \$24,906          |
| 213 <sup>th</sup> Appreciation:         | <b>\$5,390/Year</b> | <b>2.02%/Year</b> |

**Conclusion:** Sale BK4 has market appreciation on the higher end of the range of the market sales that are not influenced by a wind tower, turbine or wind project.

#### Site Analysis:

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** November 18, 2019  
**View Obstruction:** Wind towers within view of the residence  
**Noise Analysis:** Operational & blade noise present during site visit.

#### Interview Analysis:

**Interview Conducted by:** David Lawrence  
**Party Interview:** Buyer  
**Interview Date Buyer:** October 31, 2019  
**Interview Notes with Buyer:** The property was purchased with knowledge of wind towers in proximity to the property. The buyer stated they have been trying to purchase the property for years. They sent an email to the bank and after four years the bank finally agreed to sell the property. The buyer thinks they paid too much but wanted to assemble the property into their pasture that is contiguous to the west. The buyer explained they are not very impressed with the wind company as they rent ground around the area and are always leaving the cattle gates open and had the cows get out on numerous occasions. The towers make all kinds of noise and leak grease everywhere. The property had to be cleaned up when we purchased it. We have tenants in the property but are eventually planning to move there soon. Do not know if it negatively effects the property; we paid a market price for the land and house. Towers destroy the rural view.

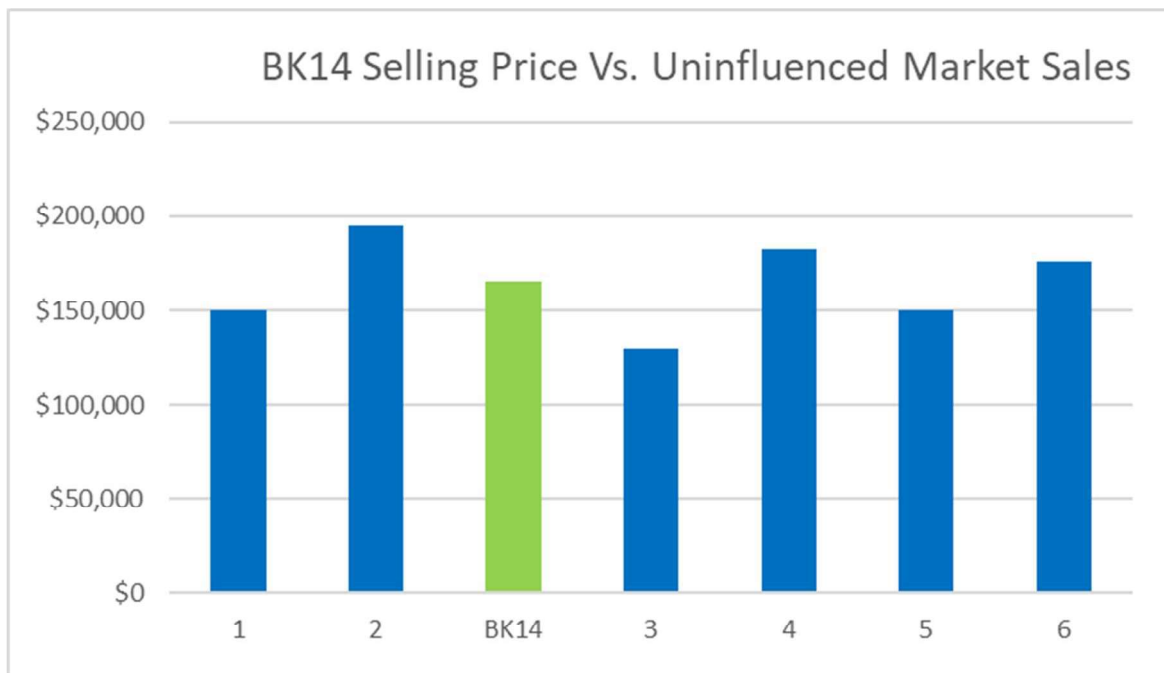


Site Photos:



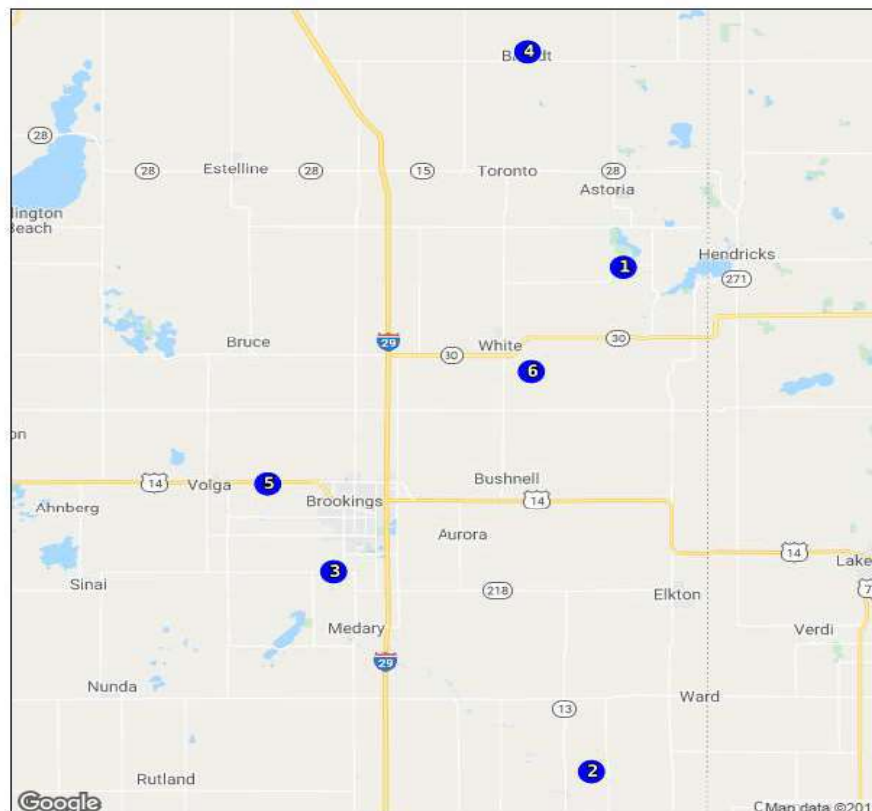


**Market Sales Analysis:**



| Sales Analysis BK14 |           |              |           |             |             |             |            |                | Overall Analysis |
|---------------------|-----------|--------------|-----------|-------------|-------------|-------------|------------|----------------|------------------|
| Sale No.            | Location  | Sale Date    | Price     | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings   |                  |
| BK14                | Astoria   | 2019         | \$165,000 | 1988        | 1,344       | 5.7         | Ranch      | Pole Building  |                  |
| 1                   | Brookings | 2017         | \$150,000 | 1973        | 1,232       | 2.28        | Ranch      | None           | Inferior         |
|                     |           | Adjustments: |           | Similar(=)  | Inferior(+) | Inferior(+) | Similar(=) | Inferior(+)    |                  |
| 2                   | White     | 2018         | \$195,000 | 2008        | 1,008       | 5           | Ranch      | Pole Barn      | Superior         |
|                     |           | Adjustments: |           | Superior(-) | Inferior(+) | Similar(=)  | Similar(=) | Similar(=)     |                  |
| 3                   | White     | 2017         | \$129,500 | 1994        | 1,404       | 13.8        | Ranch      | Pole Bld       | Superior         |
|                     |           | Adjustments: |           | Similar(=)  | Superior(-) | Superior(-) | Similar(=) | Similar(-)     |                  |
| 4                   | Flandreau | 2018         | \$182,000 | 1978        | 1,976       | 7.01        | Story1/2   | Pole Blds/Barn | Superior         |
|                     |           | Adjustments: |           | Similar(=)  | Superior(-) | Superior(-) | Similar(=) | Superior(-)    |                  |
| 5                   | Brandt    | 2017         | \$150,000 | 1977        | 1,162       | 2.14        | Ranch      | None           | Inferior         |
|                     |           | Adjustments: |           | Similar(=)  | Inferior(+) | Inferior(+) | Similar(=) | Inferior(+)    |                  |
| 6                   | Brookings | 2017         | \$175,900 | 1990        | 1,660       | 4.55        | Ranch      | 3 Pol Blds     | Superior         |
|                     |           | Adjustments: |           | Similar(=)  | Superior(-) | Similar(=)  | Similar(=) | Superior(-)    |                  |

#### Sale Location Map:



| Legend                                              |                                                  |
|-----------------------------------------------------|--------------------------------------------------|
| 1. 48360 199A Street, White, SD 57276(18-211)       | 4. 200 Madison Street, Brandt, SD 57218(17-375)  |
| 2. 48221 227th Street, Flandreau, SD 57028(18-266)  | 5. 21119 467 Avenue, Brookings, SD 57006(17-319) |
| 3. 518 W 44th Street S. Brookings, SD 57006(17-324) | 6. 47930 205th Street, White, SD 57276(17-359)   |

**Market Sales Analysis**

**Conclusion:**

Five sales are utilized in the grid and uninfluenced by the proximity of a wind tower, turbine or project. All sales are rural acreages within the market. Sales 3 and 5 have proximity to Brookings. The remaining sales have inferior and superior features that bracket the selling price of the BK14. The buyer stated the property was purchased at a market price even though sale details mentioned a bank-owned property. After qualitatively analyzing the sales, the data suggests the wind towers did not negatively influence the selling price.

**Overall Conclusion:**

An interview, site, and sales analysis have been completed for BK14. During the site visit, the wind towers were observed within the proximity of the property. Buyer interview comments stated the price paid was not affect by the wind towers, although the buyer had negative comments regarding the wind towers. Although there are inconsistencies between interview comments and the market data, the selling price of BK14 is bracketed by uninfluenced market sales. The market evidence suggests there was no negative influence on the selling price of the property because of the proximity of the wind towers.



|                                                      |          |              |
|------------------------------------------------------|----------|--------------|
| Wind Energy Development Analysis – Rural Residential |          |              |
| SALES ANALYSIS CD1                                   | SALE No. | CD1          |
|                                                      | STATE    | South Dakota |
|                                                      | COUNTY   | Codington    |



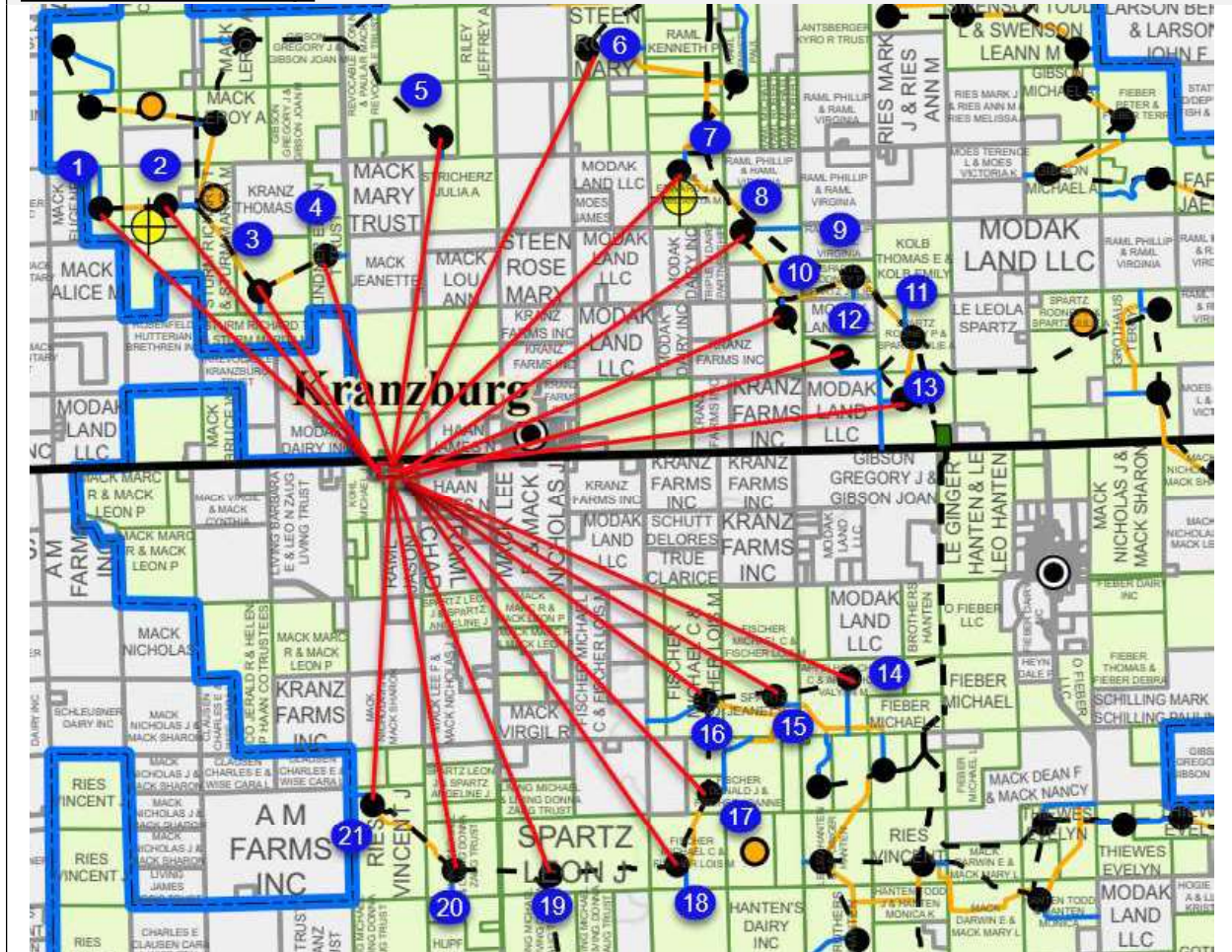
|                                  |                                          |
|----------------------------------|------------------------------------------|
| <b>Property Characteristics:</b> |                                          |
| <b>Highest &amp; Best Use:</b>   | Rural Acreage                            |
| <b>Land Size:</b>                | 1.91 Acres                               |
| <b>Improvements:</b>             | 1918 Story 1/2                           |
| <b>Finished Area:</b>            | 1,776 S.F. GLA                           |
| <b>Garage:</b>                   | Attached 1-Stall                         |
| <b>Features:</b>                 | Treed shelter belt. Shed/Detached Garage |
| <b>Access:</b>                   | Paved highway linkage                    |

|                             |                   |
|-----------------------------|-------------------|
| <b>Sales Analysis Data:</b> |                   |
| <b>Date of Sale:</b>        | August 1, 2019    |
| <b>Market Exposure:</b>     | MLS               |
| <b>Listing Price:</b>       | \$199,000         |
| <b>Sale Price:</b>          | \$190,000         |
| <b>Verification:</b>        | MLS/Broker        |
| <b>Type:</b>                | Arm's Length Sale |
| <b>DOM:</b>                 | 72                |

|                                   |                                                                                                                                                                                                                                                                                       |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wind Energy Project:</b>       |                                                                                                                                                                                                                                                                                       |
| <b>Development:</b>               | Crowned Ridge Wind Farm                                                                                                                                                                                                                                                               |
| <b>Turbine Type:</b>              | Gamesa G87 2.0 MW                                                                                                                                                                                                                                                                     |
| <b>Hub Height/Rotor Diameter:</b> | 80/116 meters                                                                                                                                                                                                                                                                         |
| <b>Height From Ground:</b>        | 150 meters or 500 feet +/- per PUC exhibit                                                                                                                                                                                                                                            |
| <b>Wind Tower Property Notes:</b> | Crowned Ridge II wind Farm is in the permitting phase of the project. According to the turbine siting constraints map, twenty-one turbines will be in the proximity of the residence. The map shows the turbines to the northwest will be in closest proximity of approximately 4,000 |

feet. Site photos of the wind towers below are from Crown Ridge I by Waverly that are currently being constructed in the neighborhood. Towers 6-13, and 14-21 do not exist as of the effect selling date of CD1. Towers located northwest by Waverly are currently in the construction phase. According to the listing broker, he is was informed of the wind tower project in the neighborhood.

**Wind Tower Aerial Map:**



**Appreciation Analysis:**

|                                           |                         |                  |
|-------------------------------------------|-------------------------|------------------|
| (Influenced by Tower) Sale 1 CD1:         | August 2, 2019          | \$190,000        |
| (Influenced by Tower) Sale 2 CD1:         | <u>July 15, 2003</u>    | <u>\$116,000</u> |
|                                           | 16 Years                | \$74,000         |
| BK14 Appreciation:                        | <b>\$4,625/Year</b>     | <b>3.9%/Year</b> |
| (Uninfluenced) Sale 1 486 <sup>th</sup> : | December 7, 2004        | \$133,000        |
| (Uninfluenced) Sale 2 486 <sup>th</sup> : | <u>October 11, 2013</u> | <u>\$145,000</u> |
|                                           | 9.25 Years              | \$12,000         |
| 486 <sup>th</sup> Appreciation:           | <b>\$1,298/Year</b>     | <b>.98%/Year</b> |

|                                         |                     |                   |
|-----------------------------------------|---------------------|-------------------|
| (Uninfluenced) Sale 213 <sup>th</sup> : | August 10, 2013     | \$266,000         |
| (Uninfluenced) Sale 213 <sup>th</sup> : | <u>May 24, 2018</u> | <u>\$290,903</u>  |
|                                         | 4.62 Years          | \$24,906          |
| 213 <sup>th</sup> Appreciation:         | <b>\$5,390/Year</b> | <b>2.02%/Year</b> |

**Conclusion:** Sale BK4 has market appreciation on the higher end of the range of the market sales that are not influenced by a wind tower, turbine or wind project.

**Site Analysis:**

**Site Visit Conducted by:** David Lawrence

**Site Visit Date:** November 19, 2019

**View Obstruction:** Wind towers to the north, south, and east within distance view of the residence. Wind tower citing maps show the nearest tower less than a mile to the northwest.

**Noise Analysis:** NA

**Site Photos:**







Wind tower construction by Waverly November 2019



Wind tower construction by Waverly November 2019



**Interview Analysis:**

**Interview Conducted by:** David Lawrence

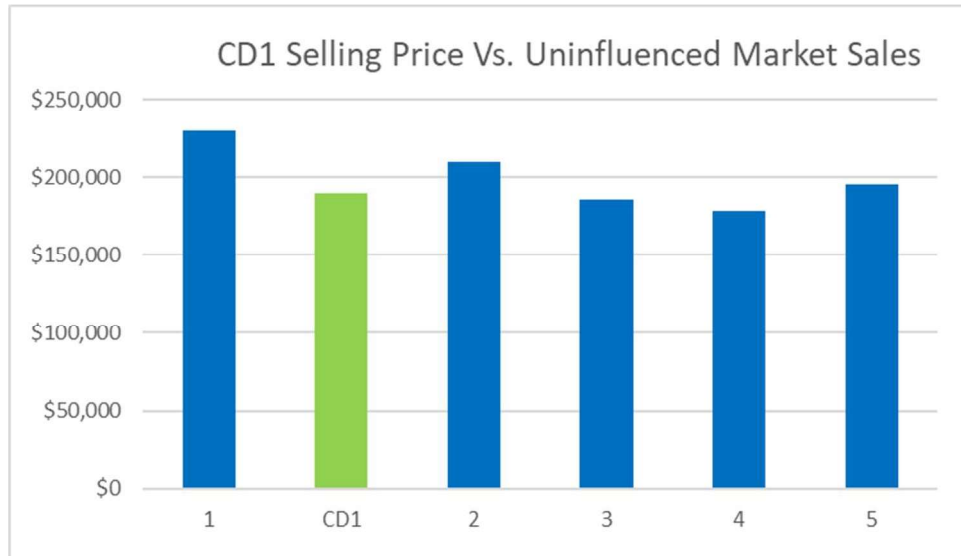
**Party Interviewed:** Broker

**Interview Date:** November 11, 2019

**Interview Notes with Broker:** The property sold via the MLS within 72 days on the market. It is common knowledge in the market that wind towers are being constructed in the neighborhood. Obviously, there are some buyers that are sensitive to wind towers, but there were no motivating factors by either the buyer or seller that negatively affected the selling price because of the wind towers. This property has a sales

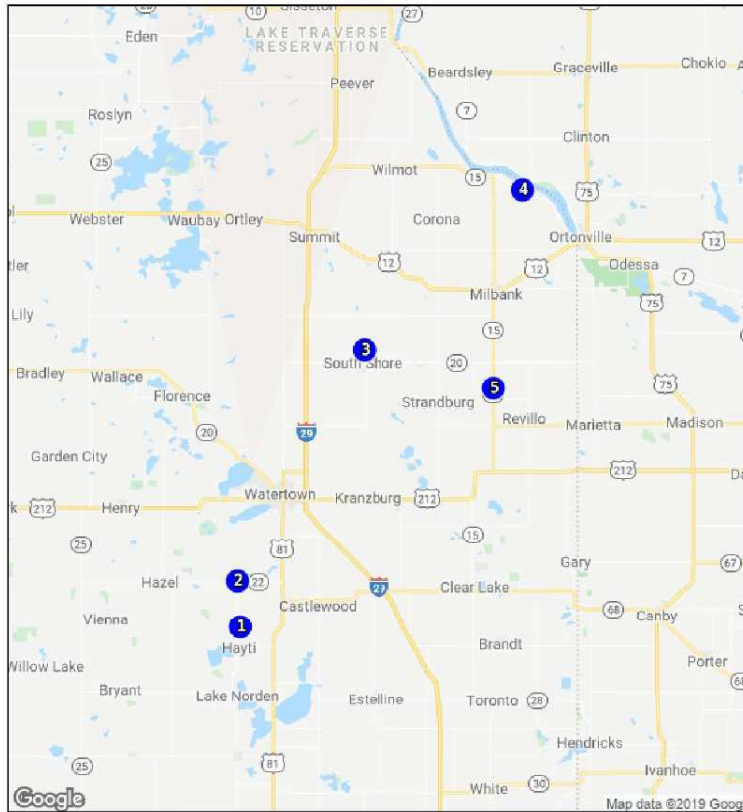
history that supports an appreciating market with features that have continued to attract buyers for the property.

**Market Sales Analysis:**



| Sales Analysis CD1 |           |              |           |            |             |             |            |              |                  |
|--------------------|-----------|--------------|-----------|------------|-------------|-------------|------------|--------------|------------------|
| Sale No.           | Location  | Sale Date    | Price     | Year/E.A.  | GLA         | Acres       | Style      | Outbuildings | Overall Analysis |
| CD1                | Kranzburg | 2019         | \$190,000 | 1918       | 1,776       | 1.9         | 2-Story    | Shed         |                  |
| 1                  | Labolt    | 2019         | \$230,000 | 1968       | 1,429       | 4.48        | Ranch      | Pole         | Superior         |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+) | Superior(-) | Similar(=) | Superior(-)  |                  |
| 2                  | Vienna    | 2019         | \$210,000 | 1912       | 1,595       | 10          | 2-Story    | Pole         | Superior         |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+) | Superior(-) | Similar(=) | Superior(-)  |                  |
| 3                  | Hayti     | 2019         | \$186,000 | 1910       | 1,743       | 21.92       | Story1/2   | Pole Shed    | Similar          |
|                    |           | Adjustments: |           | Similar(=) | Similar(=)  | Superior(-) | Similar(=) | Similar(=)   |                  |
| 4                  | S. South  | 2019         | \$178,250 | 1919       | 1,830       | 5           | Story1/2   | Pole Blds    | Similar          |
|                    |           | Adjustments: |           | Similar(=) | Similar(=)  | Superior(-) | Similar(=) | Similar(=)   |                  |
| 5                  | Big Stone | 2019         | \$195,000 | 1972       | 1,432       | 4.42        | Ranch      | Shed/Pole    | Similar          |
|                    |           | Adjustments: |           | Similar(=) | Inferior(+) | Superior(-) | Similar(=) | Similar(=)   |                  |

**Sale Location Map:**



**Legend**

1. 45049 186TH STREET, Hayti, SD 57241(30-3598)
2. 45019 SD-22 HIGHWAY, Hayti, SD 57241(17-18)
3. 15582 464TH AVENUE, South Shore, SD 57263(35-217)
4. 48115 SD-109 HIGHWAY, Big Stone City, SD 57216(35-222)
5. 16002 SD-15 HIGHWAY, LaBolt, SD 57246(35-136)

**Market Sales Analysis**

**Conclusion:**

The sales analysis uses five market sales that are not influenced by a wind tower, turbine or project. Sales one and two are within similar proximity to Watertown, with sales five, four and three in similar proximity to Millbank. The selling price of CD1 falls within the range of the uninfluenced sales with sales three, four and five the stronger market substitutes. The sales evidence suggests there was no negative influence on the selling price of the sale CD1.

**Overall Conclusion:**

An interview analysis, site observation, and sales analysis were completed for CD1. The research and data suggest the proximity of the future wind towers and the announcement of the project did not influence the selling price. Interview comments were consistent with the sales evidence that showed there was no effect on the selling price. Even though the wind project construction is not complete, the data support the proximity to the future wind towers and the announcement of the project has not negatively influenced the sale transaction for CD1.



| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS CD2</b>                            | <b>SALE No.</b> | CD2          |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Codington    |



#### **Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 2.65 Acres  
**Improvements:** 2001  
**Finished Area:** 1,570 SF GLA 1544 SF L.L. Finished  
**Garage:** Attached 2-Stall  
**Features:** Treed shelter belt. 60x57 Modern pole barn with concrete  
**Access:** Gravel road – Shared driveway per broker and aerial

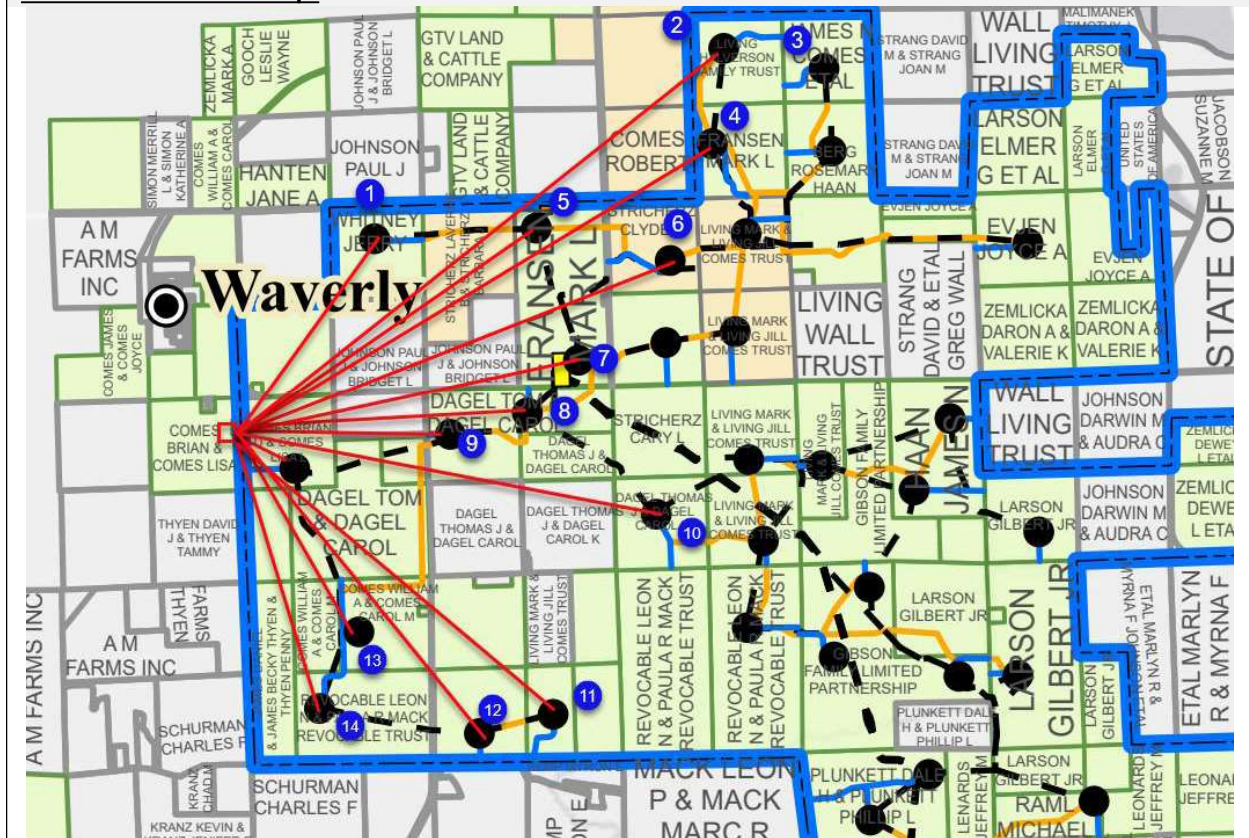
#### **Sales Analysis Data:**

**Date of Sale:** August 8, 2019  
**Market Exposure:** MLS  
**Listing Price:** \$329,000  
**Sale Price:** \$275,000  
**Verification:** MLS/Broker/Seller/CRV/Codington GIS/Site Visit  
**Type:** Arm's Length Sale  
**DOM:** 189

#### **Wind Energy Project:**

**Development:** Crowned Ridge Wind Project  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 80/116 meters  
**Height from Ground:** 150 meters or 500 feet +/- per PUC exhibit  
**Wind Tower Property Notes:** Crowned Ridge Wind Farm is in the construction phase of the project. According to the turbine siting constraints map, fifteen turbines will be in the proximity of the residence, with the nearest turbine CR11-134 within 2,000 feet of the property.

### Wind Tower Aerial Map:

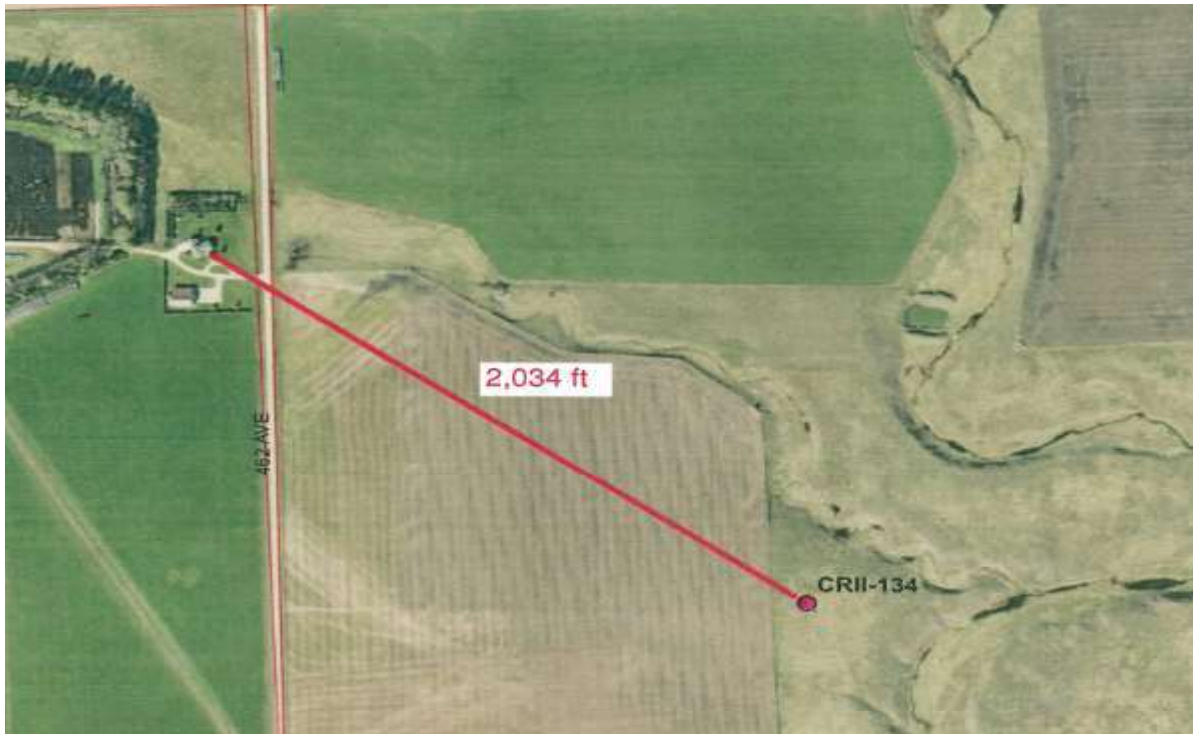


### Site Analysis:

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** November 19, 2019  
**View Obstruction:** None – wind towers under construction around the Waverly market area  
**Noise Analysis:** NA – wind towers not operational at time of site visit  
**Site Photos:**









**Interview Analysis:**

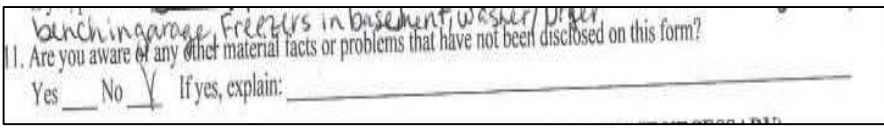
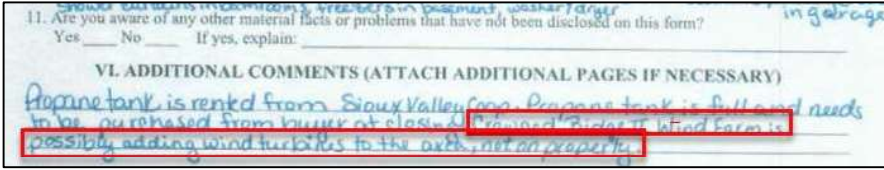
**Interview Conducted by:** David Lawrence

**Party Interviewed:** Broker-1/Broker-2/Seller/Buyer

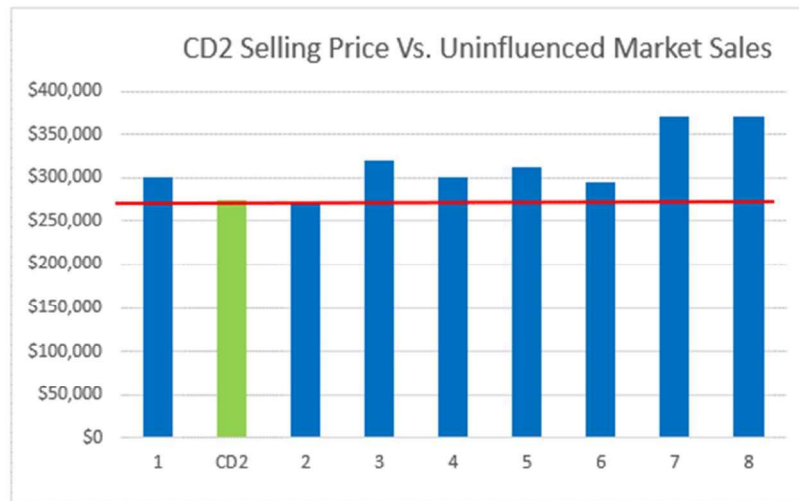
**Interview Date:** November 11, 2019

**Interview Notes with Broker-1:** Broker-1 listed the property in June of 2018 for \$424,900. After 26 days on the market, the listing price was reduced to \$409,000. After 20 days the listing price was reduced to \$398,500. After a total of 93 days on the market, the listing expired. Per broker-1 the listing price was not supported by the market. The June 2, 2018 disclosure statement did not disclose the wind project or location of the tower within 2,000 of the residence.

**Interview Notes with Broker-2:** Broker-2 was contacted by the owner in April of 2019. Prior to the listing, broker-2 had the seller complete a disclosure statement on April 25, 2019; the wind project was not disclosed. The property was listed at \$379,900, which the agent admitted was most likely on the higher end of the market range. After 60 days on the market, the price was lowered to \$369,900. On July 30, 2019, buyer-1 submitted a written offer for \$350,000. The offer was accepted by the seller; however, broker-2 updated the disclosure form on July 30, 2019, to include statements about the Crowned Ridge Wind Farm. After receiving the updated disclosure statement, the offer was rescinded by buyer-1. On August 21, 2019, the listing price was reduced to \$329,000. After approximately 183 days buyer-2 submitted an offer with the knowledge of the wind project and wind towers for \$275,000. The seller accepted the offer. According to broker-2 the disclosure of the wind

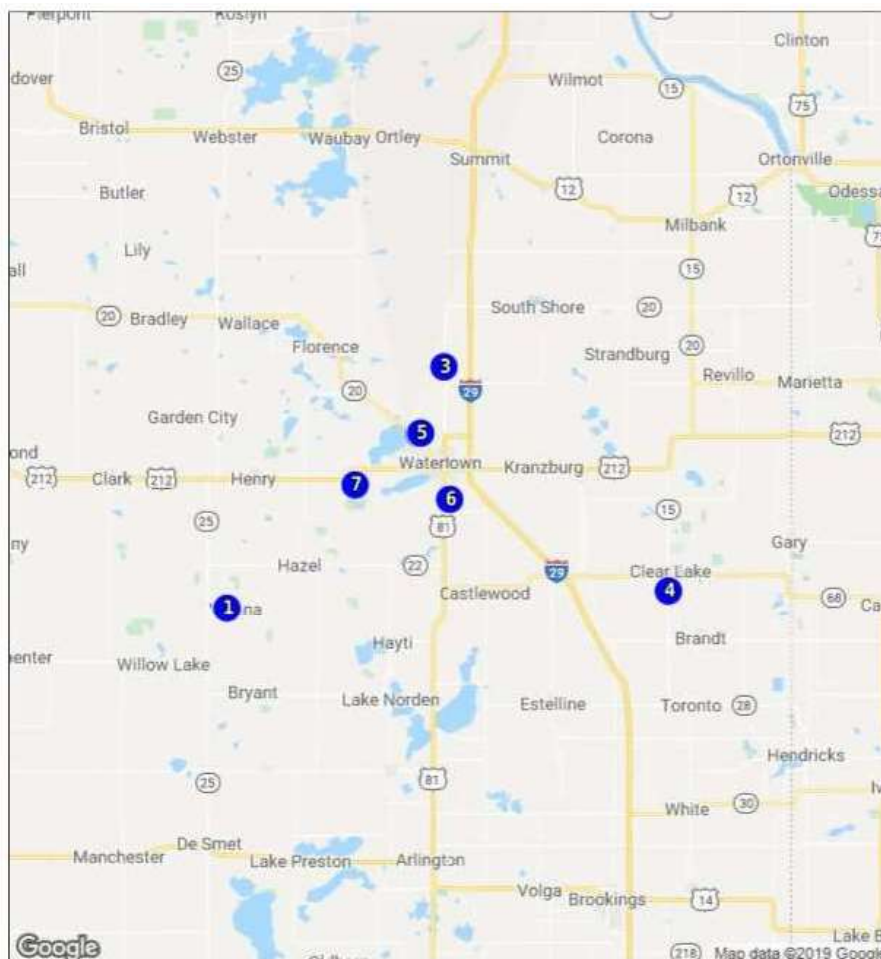
|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                  | <p>project and wind tower within 2,000 of property resulted in a \$75,000 or 27% difference to the seller (the difference between buyer-1 before disclosure and buyer-2 after disclosure). Broker-2 stated as evident with the CD2 transaction and experiences with selling real estate in S.D., residential property values are negatively affected by wind towers. Broker-2 stated wind towers will continue to be an issue for property owners as more and more towers are built. There is a segment of the market that refuses to look at properties near wind towers. Broker-2 recently built a house by Waverly prior to any knowledge of the project and will soon be living in the middle of the Crowned Ridge project. Broker-2 strongly believes their investment of a rural residence will be negatively affected by towers surrounding their home and will result in a segment of the market that will have less interest in the property when it comes time to sell.</p> |
| <p><b>Interview Notes with Seller:</b></p>       | <p>The seller had a signed purchase agreement for \$350,000. After talking with broker-2, the seller decided to update the disclosure statement to include information about the wind project. Buyer-1 recinded the offer after facts of the wind project were disclosed. Broker-2 relisted the property with full disclosure of the wind project. Buyer-2 knowledgeable of the wind project and towers offered \$275,000, which the seller accepted. The seller stated the proximity of the Crown Ridge Wind Farm reduced the value of the property by \$75,000 and is supported by the facts and documents of the transaction.</p>                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>Interview Notes with Buyer-1</b></p>       | <p>The seller would not provide contact information or documents at this time because of pending litigation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>Interview Notes with Buyer-2</b></p>       | <p>During my site visit on November 18, 2019, I knocked on the front door to talk with the buyer; no one answered the door. I left my card. I was unsuccessful in obtaining a working phone number to contact the buyer.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>June 2018 Disclosure Statement:</b></p>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>March 2019 Disclosure Statement:</b></p>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>2019 Updated Disclosure Statement:</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**Market Sales Analysis:**



| Sales Analysis CD2 |            |              |           |             |             |             |            |               | Overall Analysis |
|--------------------|------------|--------------|-----------|-------------|-------------|-------------|------------|---------------|------------------|
| Sale No.           | Location   | Sale Date    | Price     | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings  |                  |
| CD2                | Waverly    | 2019         | \$275,000 | 2001        | 1,570       | 2.6         | Split      | Pole Building |                  |
| 1                  | Watertown  | 2019         | \$300,000 | 1976/upd    | 1,106       | 3.21        | Split      | Pole Bld      | Comparable       |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Similar(=)  | Similar(=) | Similar(=)    |                  |
| 2                  | Watertown  | 2018         | \$270,000 | 2005        | 1,920       | 5           | Ranch      | None          | Comparable       |
|                    |            | Adjustments: |           | Similar(=)  | Superior(-) | Superior(-) | Similar(=) | Inferior(+)   |                  |
| 3                  | Vienna     | 2019         | \$275,000 | 1980        | 1,400       | 8.16        | Ranch      | None          | Inferior         |
|                    |            | Adjustments: |           | Inferior(+) | Inferior(+) | Superior(-) | Similar(=) | Inferior(+)   |                  |
| 4                  | Watertown  | 2019         | \$319,000 | 1974/upd    | 1,476       | 9.46        | Ranch      | Pole Blds     | Superior         |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Superior(-)   |                  |
| 5                  | Clear Lake | 2019         | \$301,000 | 1952/upd    | 1,556       | 8.9         | Ranch      | Pole Blds     | Comparable       |
|                    |            | Adjustments: |           | Similar(=)  | Similar(=)  | Superior(-) | Similar(=) | Similar(=)    |                  |
| 6                  | Watertown  | 2019         | \$312,500 | 1970        | 1,352       | 5.63        | Ranch      | Sheds         | Inferior         |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Inferior(+)   |                  |
| 7                  | Watertown  | 2019         | \$295,000 | 1976        | 1,440       | 1.88        | Ranch      | None          | Inferior         |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Similar(=)  | Similar(=) | Inferior(+)   |                  |
| 8                  | Watertown  | 2019         | \$370,000 | 2000        | 1,556       | 12.01       | Ranch      | Pole Blds     | Superior         |
|                    |            | Adjustments: |           | Similar(=)  | Similar(=)  | Superior(-) | Similar(=) | Similar(=)    |                  |

### Sale Location Map:



#### Legend

- |                                                       |                                                     |
|-------------------------------------------------------|-----------------------------------------------------|
| 1. 18509 435TH AVENUE, Vienna, SD 57271(20-8178)      | 5. 2217 STADHEIM DRIVE, Watertown, SD 57201(42-9)   |
| 2. 2502 STADHEIM DRIVE, Watertown, SD 57201(24-6016)  | 6. 45581 175TH STREET, Watertown, SD 57201(98-91)   |
| 3. 16276 455TH AVENUE, Watertown, SD 57201(28-1048)   | 7. 17375 447TH AVENUE, Watertown, SD 57201(24-6249) |
| 4. 18215 SD 15 HIGHWAY, Clear Lake, SD 57226(24-6243) |                                                     |

### Market Sales Analysis

#### Conclusion:

Eight sales are from the market without the influence of a wind tower, project or turbine. All transactions have similar highest and best use as a rural acreage and located within the market area. Sales one, two, and five are most similar to CD2. Sales two, five and six are inferior sales. Sale three has slightly superior site size and outbuildings. The market evidence suggests the bracketed market range for CD2 should fall within \$275,000 to \$370,000 as demonstrated by the uninfluenced market sale transactions. The selling price at \$275,000 is at the low end of the market range suggesting there could be an influence on the selling price of CD2 as a result of the anticipation of the wind project,



the proximity of the wind tower near the property and/or disclosure of the wind project. To further provide a substantiate conclusion, a detailed site inspection, investigation, and appraisal would need to be completed. A review of the sales data suggests there is some type of negative influence or motivating factor for the sale transaction for CD2 resulting in a sale price that is on the lower end of the market range.

**Overall Conclusion:**

This is the first transaction in South Dakota that has been identified with possible negative influences from the announcement of a wind project and/or influences from a wind tower in proximity to a rural residential property. During the listing of CD2, the project was announced with a location of a wind tower southeast of the property. Buyer-1 submitted a written offer that was accepted by the seller for \$350,000. The offer was rescinded by Buyer-1 when the seller disclosed the wind project. Buyer-2 submitted a written offer for \$275,000, with knowledge and consideration given from the future influence of the wind towers. Both the buyer and seller acted prudently, knowledgeably and for self-interest. The difference between Buyer-1 uninfluenced offer and Buyer-2 influenced offer is \$75,000. The sales data and interview analysis are consistent to support the evidence there was some type of motivating factor or market penalty due to the future location of the wind tower; however, what makes this sale transaction difficult to substantiate loss in market value is that a wind tower did not exist at the time of the sale; only the perception regarding the project and location of a wind tower near the property. The disclosure statement provides vague information about tower locations with no direct relation to CD2. The disclosure statement just says, "Crown Ridge II is possibly adding wind towers to the area, not on property." Maybe additional information was provided to the Buyer-1, but the vague information seems to provide some initial stigma or influence on the decision making of Buyer-1? As concluded in the sale analysis, an on-site inspection, interview investigation, and appraisal are required to further substantiate the facts presented by the seller, and broker to support the change in market value before and after the disclosure of the wind project. Based on completed researched within the Buffalo Ridge wind development in Brookings County, I have not found market evidence to support an adverse impact on the selling price of rural residential properties in proximity to an existing wind tower, turbine or wind project. This sale transaction might be the first sale in South Dakota to document a negative influence on the selling price due to the anticipation of the project or initial project stigma, resulting from the management of the listings. The details of the transaction are consistent with market participant comments showing there is a segment of the market that is sensitive to living in proximity to wind towers, turbines and wind development.

| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS DE1</b>                            | <b>SALE No.</b> | DE1          |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Deuel        |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 30.00 Acres  
**Improvements:** 2008  
**Finished Area:** 2,640 GLA  
**Garage:** Attached  
**Features:** Treed valley, running creek and hills. Detached garage.  
**Access:** Paved highway linkage and paved driveway

**Sales Analysis Data:**

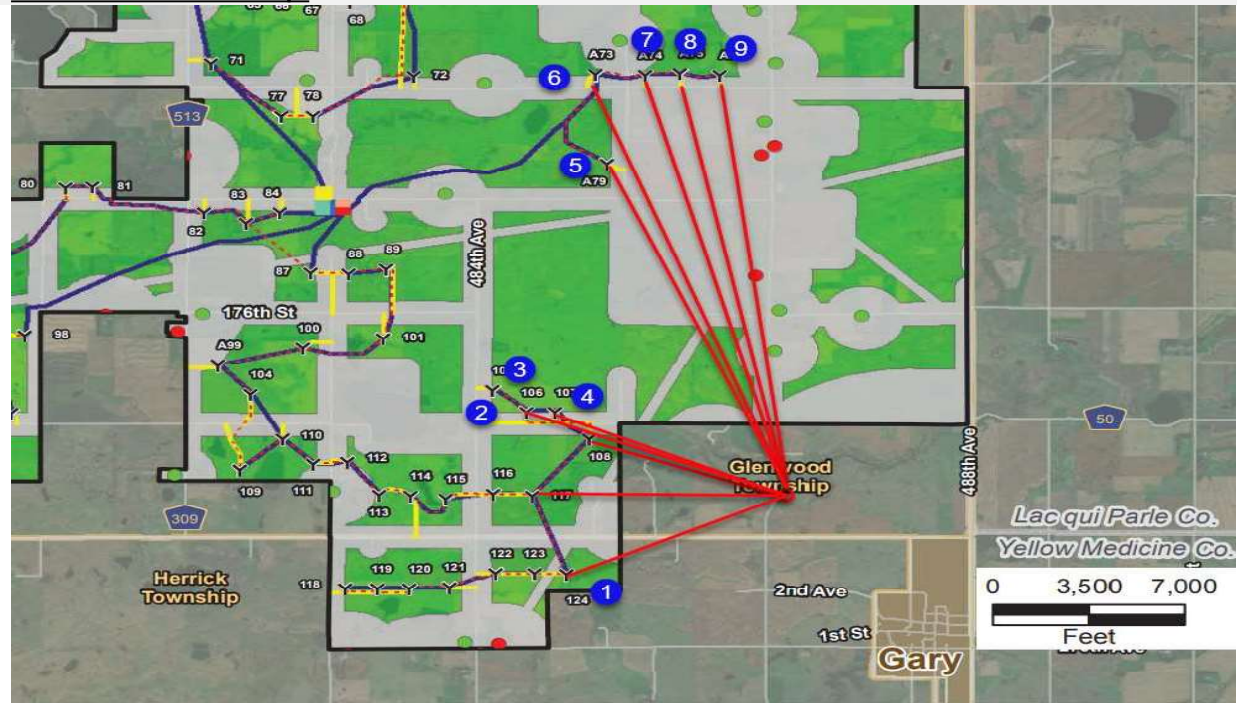
**Date of Sale:** February 28, 2019  
**Market Exposure:** MLS  
**Listing Price:** \$549,900  
**Sale Price:** \$517,000  
**Verification:** MLS/Broker/Seller/Site Visit  
**Type:** Arm's Length Sale  
**DOM:** 245

**Wind Energy Project:**

**Development:** Deuel Harvest  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height From Ground:** 150 meters or 500 feet +/- ground to blade height per PUC exhibit  
**Wind Tower Property Notes:** Deuel Harvest is a permitted wind development that is currently in the construction phase of the project. Nine wind towers will be in proximity west of the property. Distances from the residence range

from 3,500 feet to over 10,000 feet. The turbines are north, northwest, west, and southwest of the property.

**Wind Tower Aerial Map:**



**Site Analysis:**

**Site Visit Conducted by:** David Lawrence

**Site Visit Date:** May 23, 2018 & November 18, 2019

**View Obstruction:** NA – Deuel Harvest is a permitted wind project; however, construction has not yet started so there are no towers constructed within the project area. DE1 is located in a treed valley that is protected by the varying topography and landscape. The location is unique and highly desirable for a rural acreage in South Dakota. The features of the treed valley would protect any future view obstructions within the property boundaries, including if any towers would be constructed within the minimum zoning setbacks of 2,000 feet.

**Noise Analysis:** NA -- There are no existing towers within the neighborhood at this time.

**Site Photos:**









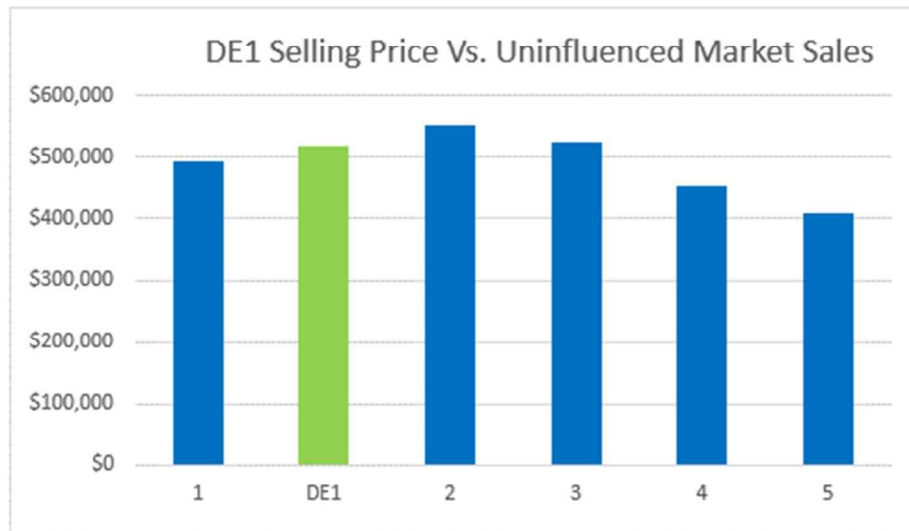
**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Broker/Seller  
**Interview Date:** November 18, 2019

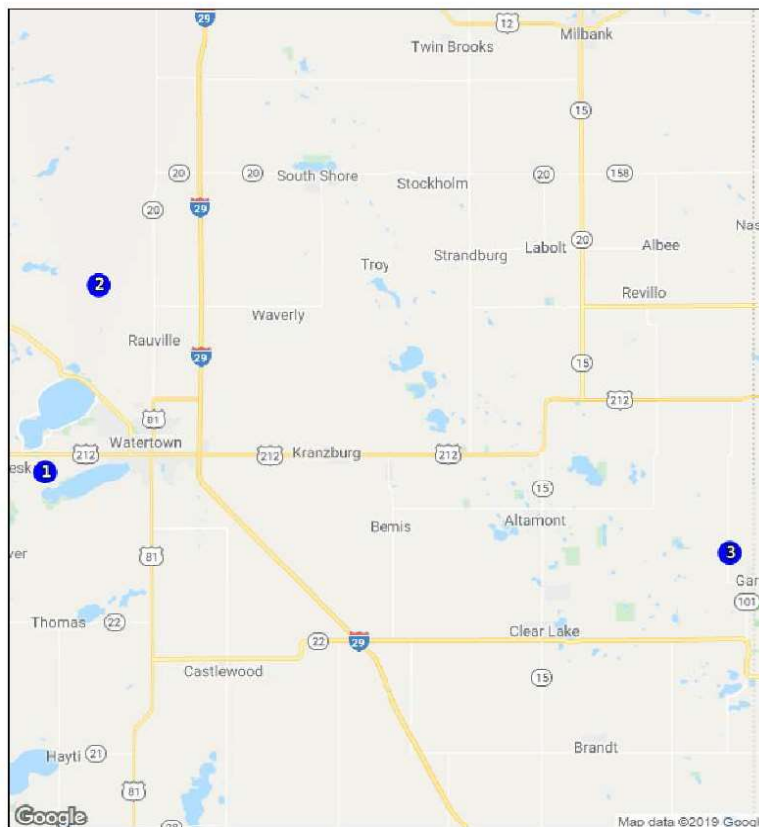
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interview Notes with Broker:</b> | The property was listed for sale for \$549,900. This very unique property prompted interest from the market. We had an offer at \$500,000 and the seller countered \$535,000. The negotiations ended without a signed purchased agreement. The seller believes the parties backed out because of the wind tower; however, the agent explained there could be other motivating factors. The agent has listed a number of properties in the immediate neighborhood and the wind project was not a reason they were selling. It seems the fear of the project has subsided as there has been a number of new buyers in the neighborhood purchasing property around the project area. The property sold for \$517,000 to a buyer who previously looked at the property. The agent stated the property took about 6 months to sell which is typical of property in this price range at the higher end of the market. |
| <b>Interview Notes with Seller:</b> | The seller explained that disclosing the wind project caused the offer to fall through and believes property values are affected by wind development in the rural area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Market Sales Analysis:**

| Sales Analysis DE1 |           |           |              |             |             |             |            |              | Overall Analysis |
|--------------------|-----------|-----------|--------------|-------------|-------------|-------------|------------|--------------|------------------|
| Sale No.           | Location  | Sale Date | Price        | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings |                  |
| DE1                | Gary      | 2019      | \$517,000    | 2008        | 2,640       | 30          | Ranch      | Outbuilding  |                  |
| 1                  | Watertown | Active    | \$495,000    | 2007        | 1,428       | 32          | Ranch      | Barn/Blgs    | Inferior         |
|                    |           |           | Adjustments: | Similar(=)  | Inferior(+) | Similar(=)  | Similar(=) | Similar(=)   |                  |
| 2                  | Watertown | Active    | \$549,900    | 2007        | 1,428       | 32          | Story1/2   | Barn/Pol     | Similar          |
|                    |           |           | Adjustments: | Inferior(+) | Inferior(+) | Similar(=)  | Similar(=) | Superior(-)  |                  |
| 3                  | Watertown | 2017      | \$525,000    | 2012        | 1,832       | 44          | Ranch      | Pole         | Superior         |
|                    |           |           | Adjustments: | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Similar(=)   |                  |
| 4                  | Watertown | 2018      | \$454,900    | 2015        | 1,440       | 15          | Ranch      | Pole/Shed    | Inferior         |
|                    |           |           | Adjustments: | Superior(-) | Inferior(+) | Inferior(+) | Similar(=) | Inferior(+)  |                  |
| 5                  | Gary      | 2018      | \$410,000    | 2005        | 1,928       | 34          | Story1/2   | Pole         | Similar          |
|                    |           |           | Adjustments: | Similar(=)  | Inferior(+) | Similar(=)  | Similar(=) | Superior(-)  |                  |



**Sale Location Map:**



**Legend**

- 1. 44928 173RD STREET, Watertown, SD 57201(26-8625)
- 2. 16297 452ND AVENUE, Watertown, SD 57201(26-8761)
- 3. 17724 486TH AVENUE, Gary, SD 57237(24-6100)



**Market Sales Analysis**  
**Conclusion:**

Five sales are from the market without the influence of a wind tower, with exception to sale five. All transactions have similar highest and best use and from the rural Watertown market area. DE1 has a selling price on the higher end of the market range and active listings were used to support a bracketed market range. Sales one and two are active listings. Sale three is slightly superior. Sale four is an inferior sale. Sale one and two also have locations in proximity to Watertown. Sale five is a contiguous sale just to the north of the subject and is a strong market substitute yet has a much lower selling price than DE1. The sales data does not suggest the selling price of DE1 was negatively impacted by the permitting of the Deuel Harvest Wind Project. All sale evidence suggests the sale was a market transaction.

**Overall Conclusion:**

An interview analysis, site observation, and sales analysis were completed for DE1. The sales evidence does not support the seller's comments there was a negative effect on the selling price because of the announcement of the Deuel Harvest Wind Project. There was no observed effect from a future view of a wind tower due to the secluded valley location of the residence and distance from the tower locations to the west. Although there are inconsistencies with the seller's statements about negative impacts from the wind project, the sales evidence suggests just the opposite.

| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS DE2</b>                            | <b>SALE No.</b> | DE2          |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Deuel        |



#### Property Characteristics:

**Highest & Best Use:** Rural Acreage  
**Land Size:** 10 Acres  
**Improvements:** 1979 Story ½  
**Finished Area:** 1,792 SF GLA; 2,700 SF Finished (Updated)  
**Garage:** Attached 2-Stall  
**Features:** Treed shelter belt. Outbuilding  
**Access:** Paved HWY linkage; gravel & concrete driveway

#### Sales Analysis Data:

**Date of Contract:** October 9, 2019  
**Market Exposure:** Word of Mouth – Told neighbors and friends it was for sale  
**Listing Price:** \$300,000  
**Sale Price:** \$275,000  
**Verification:** Purchase Contract/Seller/Appraiser  
**Type:** Arm's Length Sale  
**DOM:** 45+/-

#### Wind Energy Project:

**Development:** Tatanka Ridge Wind Project  
**Turbine Type:** Gamesa G82.127  
**Hub Height/Rotor:** 88.60 meters/ 116 meters  
**Height From Ground:** 148 meters or 485 feet  
**Property & Wind Tower Notes:** The property is located north of the Tatanka Ridge wind development. Two wind towers will be constructed to the southwest. Tower F2 and F4 will be within 2.5 miles. Future towers will be north of home within 1 mile reported by the owner. Invenergy Wind Development LLC has been granted a wind easement and memorandum of wind lease granted by the

property owner on August 11, 2016. Deuel County setbacks from the rural residence limit any type of wind development within the 10 acres. The agreement is for 25 years. (See interview comments)

## Memorandum of Wind Agreement

Drafted by and after recording return to:  
Invenergy Wind Development LLC  
Attn: Land Administration  
One South Wacker Drive  
Suite 1800  
Chicago, Illinois 60606

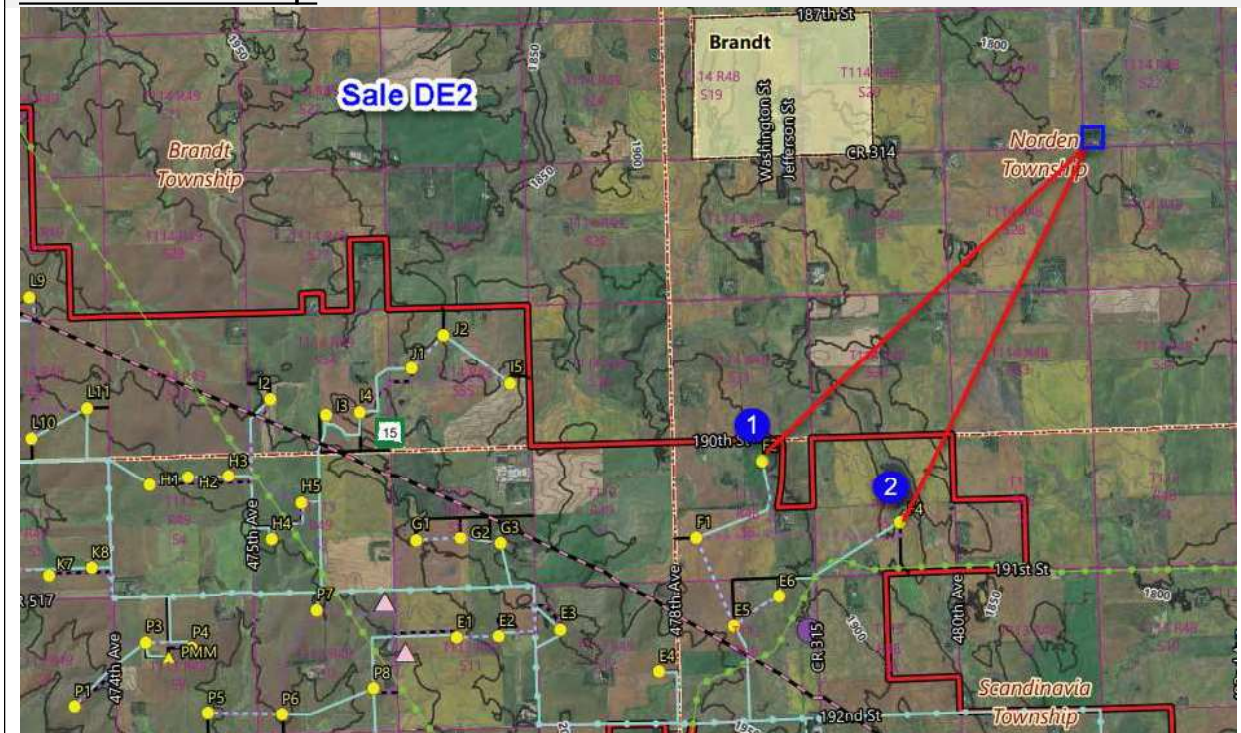
### MEMORANDUM OF WIND LEASE AND EASEMENT AGREEMENT

THE STATE OF SOUTH DAKOTA §  
COUNTY OF DEUEL §

KNOW ALL PERSONS BY THESE PRESENTS:

THIS MEMORANDUM OF WIND LEASE AND EASEMENT AGREEMENT (this "Memorandum"), is made, dated and effective as of August 11, 2016 (the "Effective Date"), between (together with its successors, assigns and heirs, "Owner"), whose address is and **Invenergy Wind Development LLC**, a Delaware limited liability company (together with its transferees, successors and assigns, "Grantee"), whose address is One South Wacker Drive, Suite 1800, Chicago, IL 60606, with regards to the following:

## Wind Tower Aerial Map:



## Site Analysis:

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** November 18, 2019  
**View Obstruction:** None. Proposed wind development and construction are common knowledge among property owners and residences within the neighborhood.  
**Noise Analysis:** NA – no towers constructed at the time of site visit



Site Photos:





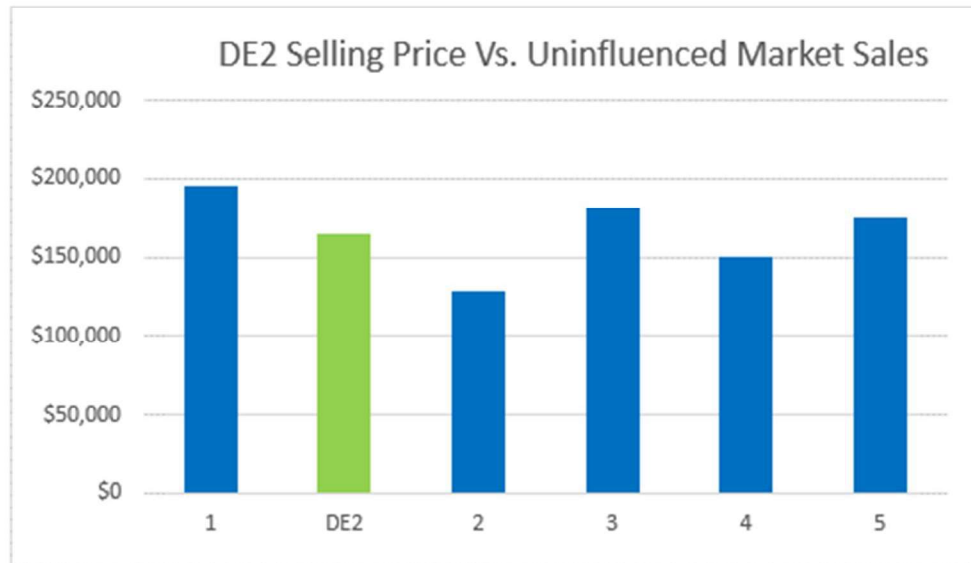
**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Seller/Property Owner  
**Interview Date Seller:** November 18, 2019

**Interview Notes with Seller:** The seller has been a mailman in the area for the last ten years. The wind company approached him with a "hush payment" so he wouldn't complain about the wind towers. The agreement was \$500 for the first 5 years and \$1,500 per year for the remaining 25 years. The seller explained that he knew he couldn't stop the wind project and agreed to the lease. The seller decided he didn't want to live around the wind towers and listed the property for sale. The property was purchased by a buyer who had family just up the road. The price was not influenced by the proximity of the wind project. The seller stated that he agreed to pass on the wind lease payments to the buyer, and the buyer was happy to have them to cover the property taxes.

**Interview Notes with Buyer:** The buyer is fully aware of the lease agreement and terms. His parents own the acreage directly to the west of the subject and they also have a wind lease agreement with the same company. The buyer understands the lease to be a payment for having to look at the blinking lights on the wind towers and is aware more towers could be placed in the area. The closest a tower could be located to the property is 1,500 feet in Deuel. These factors were not significant motivators for the purchase of the property, rather location and proximity to family.

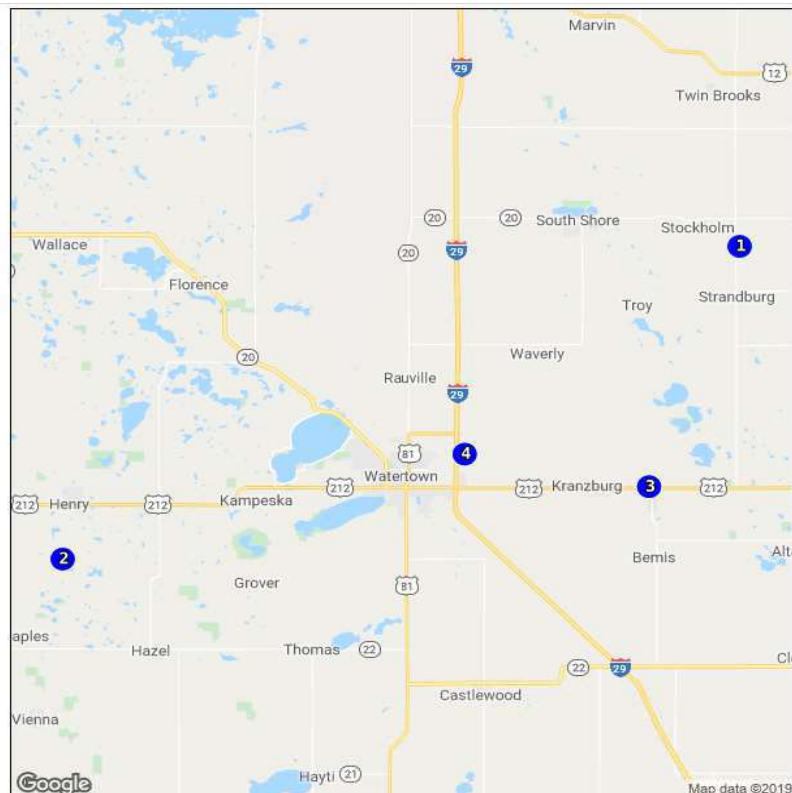
**Market Sales Analysis:**



| Sales Analysis DE2 |           |           |              |             |             |             |            |              |                  |
|--------------------|-----------|-----------|--------------|-------------|-------------|-------------|------------|--------------|------------------|
| Sale No.           | Location  | Sale Date | Price        | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings | Overall Analysis |
| DE2                | Brandt    | 2019      | \$275,000    | 1976        | 1,792       | 10          | Story 1/2  | Building     |                  |
| 1                  | Henry     | 2019      | \$285,000    | 1900        | 1,820       | 12          | 2-Story    | Barn         | Superior         |
|                    |           |           | Adjustments: | Inferior(+) | Similar(=)  | Superior(-) | Similar(=) | Similar(=)   |                  |
| 2                  | Stockholm | 2019      | \$200,000    | 1900        | 2,690       | 9.94        | Story1/2   | Barn/Pol     | Inferior         |
|                    |           |           | Adjustments: | Inferior(+) | Inferior(+) | Similar(=)  | Similar(=) | Superior(-)  |                  |
| 3                  | Henry     | 2019      | \$298,500    | 1953        | 1,620       | 10          | Story1/2   | Pole (2)     | Superior         |
|                    |           |           | Adjustments: | Similar(=)  | Similar(=)  | Similar(=)  | Similar(=) | Superior(-)  |                  |
| 4                  | Goodwin   | 2018      | \$210,000    | 1976        | 1,752       | 5           | Ranch      | Shed         | Inferior         |
|                    |           |           | Adjustments: | Similar(=)  | Similar(=)  | Inferior(+) | Similar(=) | Inferior(+)  |                  |
| 5                  | Watertown | 2018      | \$250,000    | 1977        | 1,120       | 2           | Ranch      | Shed         | Inferior         |
|                    |           |           | Adjustments: | Similar(=)  | Inferior(+) | Inferior(+) | Similar(=) | Inferior(+)  |                  |



**Sale Location Map:**



| Legend                                               |
|------------------------------------------------------|
| 1. 47225 159TH STREET, Stockholm, SD 57264(24-6197)  |
| 2. 17632 437TH AVENUE, Henry, SD 57243(33-1582)      |
| 3. 46754 US-212 HIGHWAY, Goodwin, SD 57238(30-3694)  |
| 4. 4221 12TH AVENUE NE, Watertown, SD 57201(22-1879) |

**Market Sales Analysis**

**Conclusion:**

Six market sales are selected for the analysis without influences from a wind project, tower or turbine. The sales share similar features of rural acreages. All sales are market transactions and advertised on the MLS system. Sales one and three are slightly superior sales, while sales two and five are slightly inferior. The selling price of DE2 falls within the market range of uninfluenced sales. An interview with the seller provided consistent comments, stating the wind tower easement was not a factor to the buyer or price negotiated. The sales data suggests there was no influence from the wind project or wind easement on the selling price of the property.

**Overall Conclusion:**

A sales analysis, site visit, and interview analysis have been completed for DE2. The sales data and interview comments are consistent and support the conclusion there was no affect from the wind easement or announcement of the wind project on the selling price of the property. The market evidence leads to the conclusion the purchase price was not affected and, in this case, the wind payment could be a benefit to the property according to the seller.

| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS DE3</b>                            | <b>SALE No.</b> | DE3          |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Deuel        |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 7.42 Acres  
**Improvements:** 1912 Story ½  
**Finished Area:** 1,680 S.F. GLA  
**Garage:** Detached  
**Features:** Treed shelter belt. 40x60 Pole building shed and grain bin  
**Access:** Highway linkage

**2018 Sales Analysis Data:**

**Date of Sale:** May 25, 2018 (Influenced Sale)  
**Market Exposure:** MLS  
**Listing Price:** \$184,900  
**Sale Price:** \$183,000  
**Verification:** MLS/Broker  
**Type:** Arm's Length Sale  
**DOM:** 123

**2016 Sales Analysis Data:**

**Date of Sale:** September 1<sup>st</sup>, 2016 (Influenced Sale)  
**Listing Price:** NA  
**Sale Price:** \$164,000  
**Verification:** Deed/County Records  
**Type:** Arm's Length Sale  
**DOM:** NA

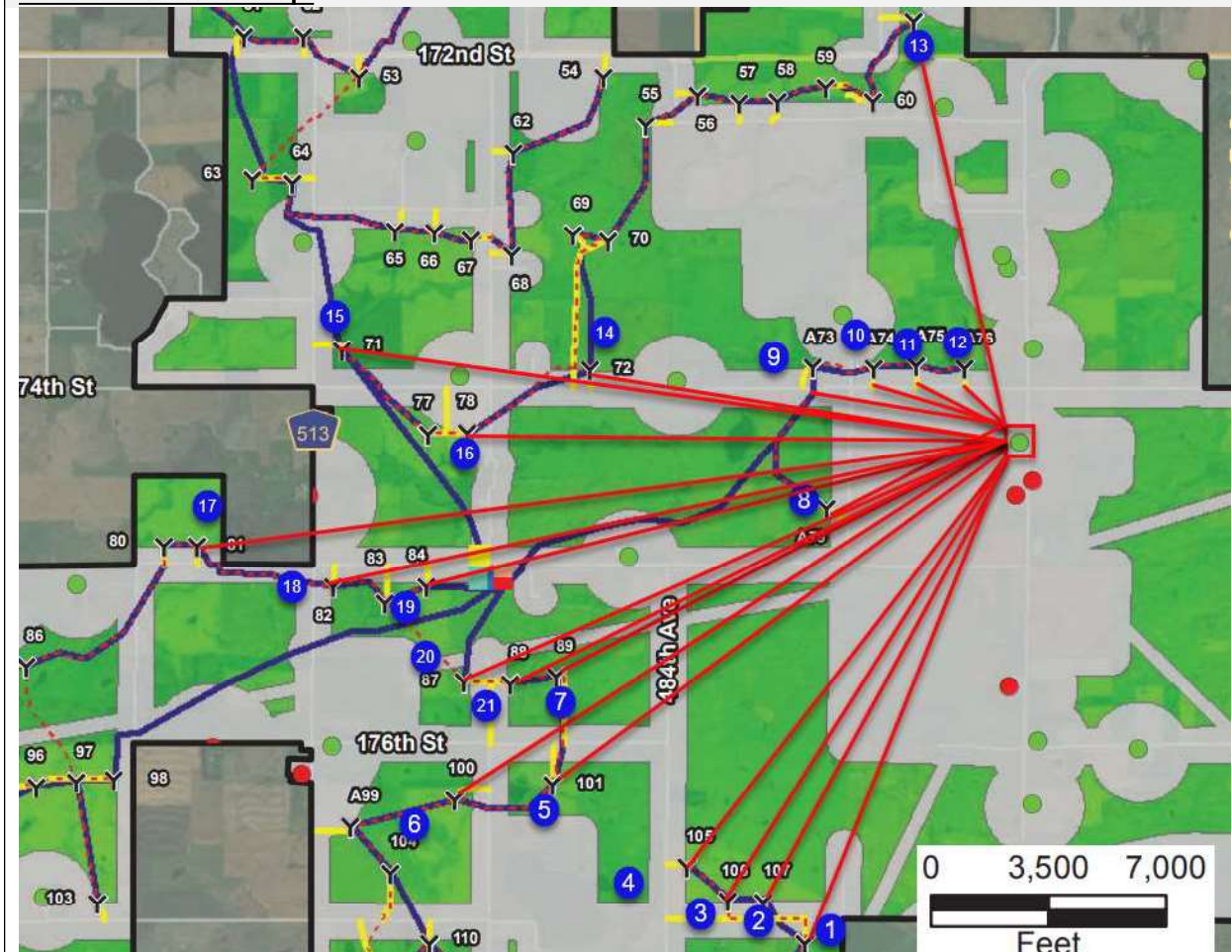
**2007 Sales Analysis Data:**

**Date of Sale:** October 1, 2007 (Uninfluenced Sale)  
**Market Exposure:** MLS  
**Listing Price:** \$75,000  
**Sale Price:** \$64,000  
**Verification:** MLS/Broker  
**Type:** Arm's Length Sale  
**DOM:** 81

**Wind Energy Project:**

**Development:** Deuel Harvest  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height From Ground:** 150 meters or 500 feet +/- ground to blade height per PUC exhibit  
**Wind Tower Property Notes:** Deuel Harvest is a permitted wind development that is currently in the construction phase of the project. Twenty-one wind towers will be in proximity to the residence. Distances from the residence range from 1,600 feet to over 5,000 feet. The turbines are north, northwest, west, southwest, and south of the property.

**Wind Tower Aerial Map:**



**Appreciation Analysis:**

|                                                |                          |                                        |
|------------------------------------------------|--------------------------|----------------------------------------|
| <b>2007 Sale 1 DE3:</b>                        | October 01, 2007         | \$64,000 (Uninfluenced by Lease)       |
| <b>2016 Sale 2 DE3:</b>                        | <u>September 1, 2016</u> | <u>\$164,000 (Influenced by Lease)</u> |
|                                                | 5.31 Years               | \$100,000                              |
| <b>DE3 Appreciation</b>                        | <b>\$18,832/Year</b>     | <b>29%/Year</b>                        |
| <b>2016 Sale 2 DE3:</b>                        | September 1, 2016        | \$164,000 (Influenced by Lease)        |
| <b>2018 Sale 3 DE3</b>                         | <u>May 19, 2018</u>      | <u>\$183,000</u>                       |
|                                                | 1.74 years               | \$19,000                               |
| <b>DE3 Appreciation:</b>                       | <b>\$10,919/Year</b>     | <b>6.65%/Year</b>                      |
| <b>(Uninfluenced) Sale 1 486<sup>th</sup>:</b> | December 7, 2004         | \$133,000                              |
| <b>(Uninfluenced) Sale 2 486<sup>th</sup>:</b> | <u>October 11, 2013</u>  | <u>\$145,000</u>                       |
|                                                | 9.25 Years               | \$12,000                               |
| <b>486<sup>th</sup> Appreciation:</b>          | <b>\$1,298/Year</b>      | <b>.98%/Year</b>                       |
| <b>(Uninfluenced) Sale 213<sup>th</sup>:</b>   | August 10, 2013          | \$266,000                              |
| <b>(Uninfluenced) Sale 213<sup>th</sup>:</b>   | <u>May 24, 2018</u>      | <u>\$290,903</u>                       |
|                                                | 4.62 Years               | \$24,906                               |
| <b>213<sup>th</sup> Appreciation:</b>          | <b>\$5,390/Year</b>      | <b>2.02%/Year</b>                      |

**Conclusion:** DE3 sold in 2007, 2016 and 2018. On June 21, 2016, a wind memorandum was signed by owner-1. In 2016 DE3 sold with a recorded wind agreement. According to the broker and MLS DE3 remodeled condition affected the sale price and appreciation rates from 2007 to 2016 at 29%. The 2016 and 2018 were influenced by the recorded wind agreement and had market appreciation rates at 6.65% a year which is on the higher end of the market scale. The appreciation rates of DE3 are well-above the market average and the data shows there was no negative influence from the recorded wind agreement. It is important to note that at the time of the sale transactions no wind towers were constructed in the neighborhood or project area.

**Site Analysis:**

**Site Visit Conducted by:** David Lawrence  
**Site Visit Date:** May 23, 2018  
**View Obstruction:** Wind towers within view of the residence  
**Noise Analysis:** Operational & blade noise present during site visit.  
**Site Photos:**





**Interview Analysis:**

**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Broker  
**Interview Date:** November 18, 2019  
**Interview Notes with Broker:** The property was listed by Exit Realty Connection and sold within 123 DOM. The property was recently updated. The property was being sold because of a job relocation, not because of the wind project. The seller's disclose statement did not disclose the wind project; however, according to the agent, there was a wind lease recorded with the property and future location of the turbines that will be in proximity to the residences. The buyers had full knowledge of the project and lease and it did not affect the selling price or buyer's decision to purchase the property. The broker explained that in his experience the proximity to wind towers affects some buyers and they do not want to live around wind development.

**Wind Memorandum:**

Deuel Harvest Wind Energy LLC  
1 S. Wacker Dr., Suite 1800  
Chicago, IL 60606

**ASSIGNMENT AND ASSUMPTION AGREEMENT**

THIS ASSIGNMENT AND ASSUMPTION AGREEMENT (this "Assignment") is made as of October 22, 2019, by Invenergy Wind Development LLC, a Delaware limited liability company ("Assignor") and Deuel Harvest Wind Energy LLC, a Delaware limited liability company ("Assignee").

**Lease 125**

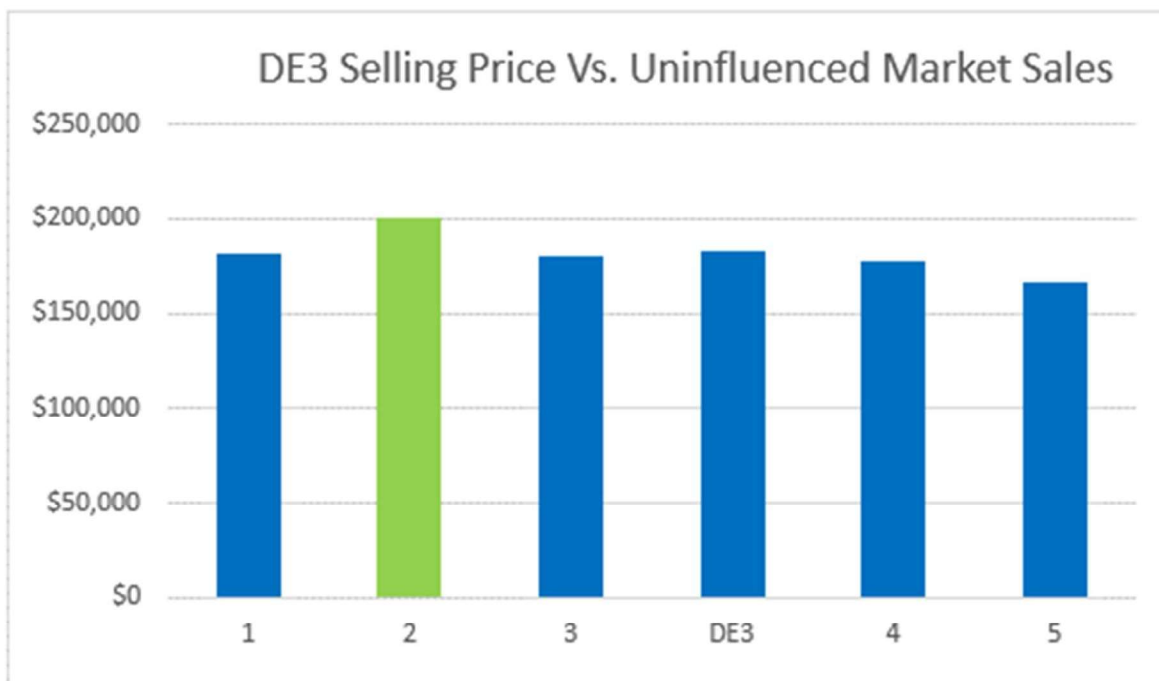
**WSDNDC0171**

Wind Lease and Easement Agreement dated June 21, 2016 by and between [redacted] and Invenergy Wind Development LLC as evidenced by that Memorandum of Wind Lease and Easement Agreement recorded on August 30, 2016 in Book 2016 Page 3381 in the Official Public Records of Deuel County, South Dakota.

**Legal Description:**

Block One (1) Jacobson Addition, located in the Southeast Quarter of the Northeast Quarter (SE1/4NE1/4 in Section Seventeen (17), Township One Hundred Sixteen (116) North, Range Forty-seven (47), West of the 5<sup>th</sup> P.M., Deuel County, South Dakota.

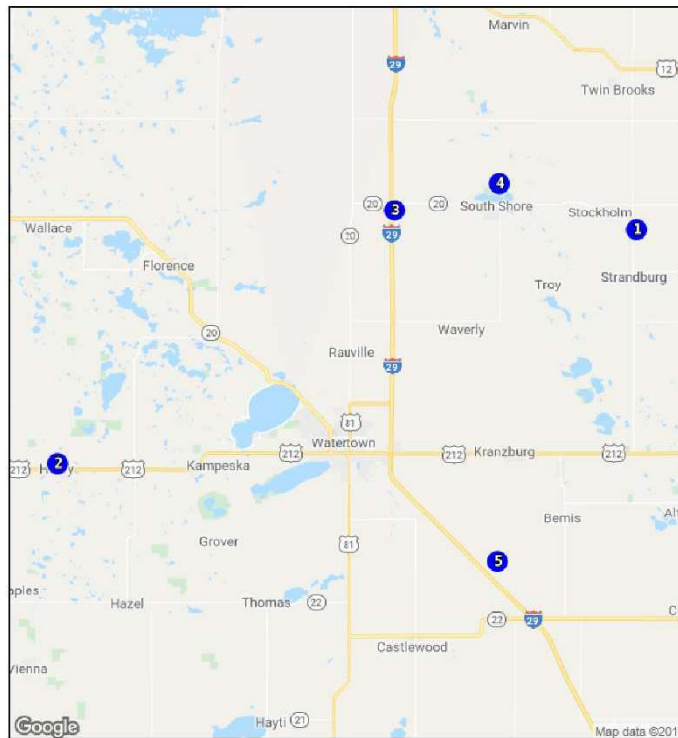
**Market Sales Analysis:**





| Sales Analysis DE3 |           |           |              |             |             |             |            |                | Overall Analysis |
|--------------------|-----------|-----------|--------------|-------------|-------------|-------------|------------|----------------|------------------|
| Sale No.           | Location  | Sale Date | Price        | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings   |                  |
| DE3                | Gary      | 2018      | \$183,000    | 1910        | 1,680       | 7.42        | Story 1/2  | Pole Building  |                  |
| 1                  | Henry     | 2018      | \$182,000    | 1915        | 2,384       | 6.89        | 2-Story    | Shed           | Similar          |
|                    |           |           | Adjustments: | Inferior(+) | Superior(-) | Similar(=)  | Similar(=) | Inferior(+)    |                  |
| 2                  | Stockholm | 2018      | \$200,000    | 1900        | 2,690       | 9.94        | Story1/2   | Barn/Pol       | Superior         |
|                    |           |           | Adjustments: | Similar(=)  | Superior(-) | Similar(=)  | Similar(=) | Superior(-)    |                  |
| 3                  | S. Shore  | 2018      | \$180,000    | 1956        | 1,390       | 17.1        | Story1/2   | None           | Inferior         |
|                    |           |           | Adjustments: | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Inferior(+)    |                  |
| 4                  | S. Shore  | 2019      | \$178,250    | 1919        | 1,830       | 5           | Story1/2   | Pole Blds/Barn | Similar          |
|                    |           |           | Adjustments: | Similar(=)  | Superior(-) | Inferior(+) | Similar(=) | Similar(=)     |                  |
| 5                  | Goodwin   | 2018      | \$166,500    | 1998        | 2,400       | 2.85        | Ranch      | None           | Inferior         |
|                    |           |           | Adjustments: | Superior(-) | Superior(-) | Inferior(+) | Similar(=) | Inferior(+)    |                  |

#### Sale Location Map:



#### Legend

1. 47225 159TH STREET, Stockholm, SD 57264(24-6197)
2. 107 N PINE STREET, Henry, SD 57243(30-3617)
3. 15753 458TH AVENUE, South Shore, SD 57263(38-95)
4. 15582 464TH AVENUE, South Shore, SD 57263(35-217)
5. 17857 464TH AVENUE, Goodwin, SD 57238(30-3740)

**Market Sales Analysis**

**Conclusion:**

Five sales are from the market without the influence of a wind tower. All transactions have similar highest and best use and are bracketed by the market sales. Sale two is slightly superior with a larger acreage and GLA. Sales three and five are slightly inferior, with sales one and four having more similarities. The market evidence suggests the selling price was not affected by the proximity of the wind towers as evident by the uninfluenced bracketed range.

**Overall Conclusion:**

An interview analysis, site observation, and sales analysis were completed for DE3. The research and data suggest the proximity of the proposed wind towers and the project did not influence the selling price. Sale DE3 sold in 2007, 2016 and then resold in 2018 with market appreciation rates on the higher end of the market range. The agent reported the buyer was aware of the wind project and that it didn't affect the purchase price. The sales data is consistent with the interview analysis and does not show any negative affect on the selling price.

| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS DE4</b>                            | <b>SALE No.</b> | DE4          |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Deuel        |



**Property Characteristics:**

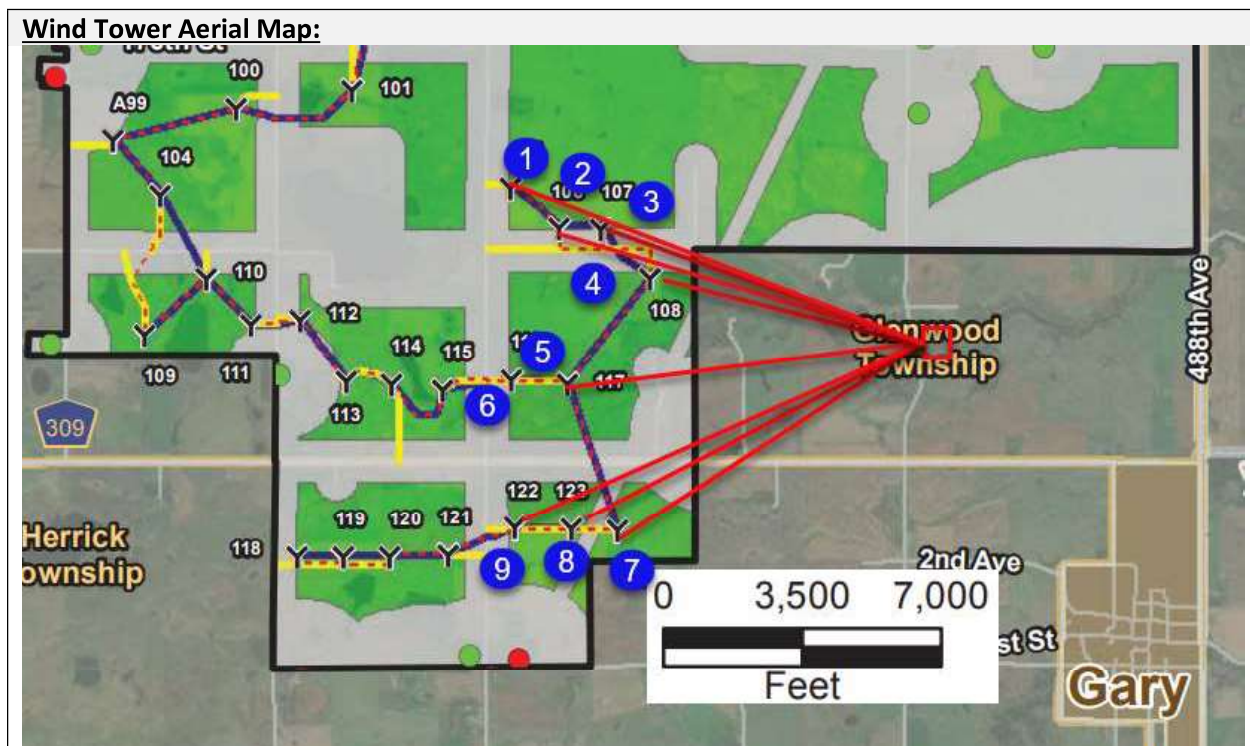
**Highest & Best Use:** Rural Acreage  
**Land Size:** 34 Acres  
**Improvements:** 2005 Story 1/2  
**Finished Area:** 1,928 S.F. GLA, 1,160 S.F. Lower Level  
**Garage:** Tuck-under 2-Stall  
**Features:** Treed shelter belt. (2) Pole buildings 30x56, 24x36  
**Access:** Gravel road linkage

**Sales Analysis Data:**

**Date of Sale:** March 15, 2019  
**Market Exposure:** MLS  
**Listing Price:** \$434,900  
**Sale Price:** \$410,000  
**Verification:** MLS/Broker  
**Type:** Arm's Length Sale  
**DOM:** 242

**Wind Energy Project:**

**Development:** Deuel Harvest  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height From Ground:** 150 meters or 500 feet +/- ground to blade height per PUC exhibit  
**Wind Tower Property Notes:** Deuel Harvest is a permitted wind development and in the construction phase of the project. Nine wind towers will be located west of the DE4, within proximity of 5,000 to 6,000 feet per the Invenergy turbine siting constraints map.



**Site Analysis:**

**Site Visit Conducted by:** David Lawrence

**Site Visit Date:** November 13, 2019 & May 23, 2018

**View Obstruction:** Wind towers to the west within distance view of the residence.

**Noise Analysis:** NA

**Site Photos:**





**Interview Analysis:**

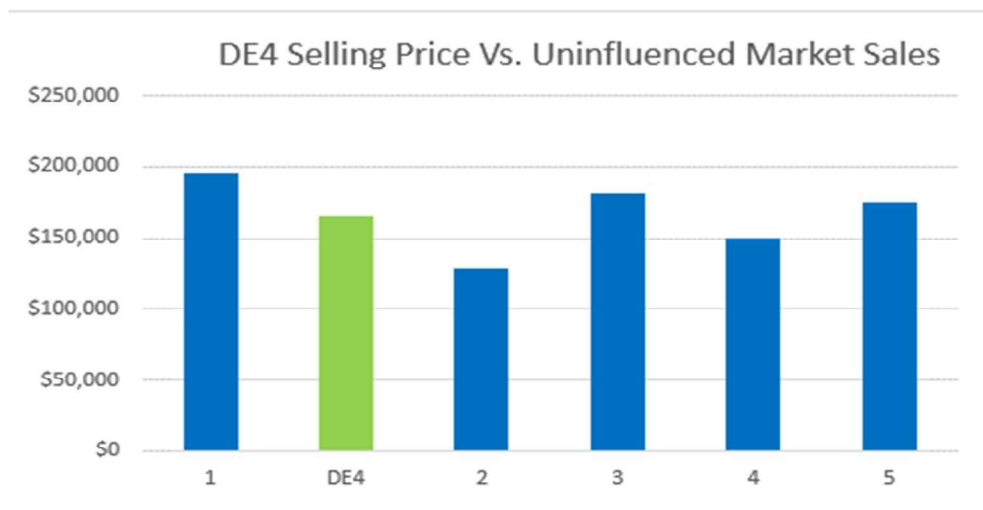
**Interview Conducted by:** David Lawrence

**Party Interviewed:** Broker

**Interview Date:** November 11, 2019

**Interview Notes with Broker:** The property was listed for sale because the owner was being relocated to Minnesota. The wind project was not a concern or a motivating factor to sell the property. The sellers were satisfied with the transaction and market price. There was no influence from the wind project on the selling price. The buyers were from Nebraska and previously lived around a wind project. They purchased the property with knowledge of the wind project, and it did not affect the price paid or purpose decision.

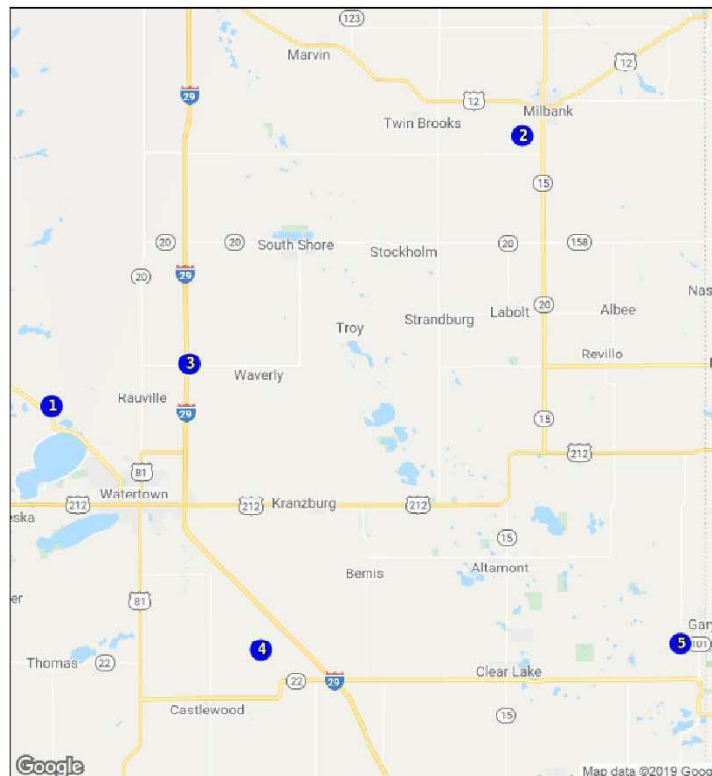
**Market Sales Analysis:**





| Sales Analysis DE4 |            |           |              |            |             |             |            |              |                  |
|--------------------|------------|-----------|--------------|------------|-------------|-------------|------------|--------------|------------------|
| Sale No.           | Location   | Sale Date | Price        | Year/E.A.  | GLA         | Acres       | Style      | Outbuildings | Overall Analysis |
| DE4                | Gary       | 2019      | \$410,000    | 2005       | 1,928       | 34          | Story 1/2  | Building     |                  |
| 1                  | Watertown  | 2019      | \$430,000    | 1915upd    | 2,857       | 8.54        | 2-Story    | Barn/Pole    | Superior         |
|                    |            |           | Adjustments: | Similar(=) | Superior(-) | Inferior(+) | Similar(=) | Similar(=)   |                  |
| 2                  | Millbank   | 2019      | \$395,000    | 2011       | 2,728       | 19.9        | Ranch      | Barn         | Inferior         |
|                    |            |           | Adjustments: | Similar(=) | Superior(-) | Inferior(+) | Similar(=) | Inferior(+)  |                  |
| 3                  | Watertown  | 2019      | \$390,000    | 1999       | 2,288       | 8.08        | Story1/2   | Pole/Barn    | Similar          |
|                    |            |           | Adjustments: | Similar(=) | Superior(-) | Inferior(+) | Similar(=) | Similar(=)   |                  |
| 4                  | Castlewood | 2019      | \$360,000    | 2010       | 1,845       | 16.45       | Ranch      | Barn         | Inferior         |
|                    |            |           | Adjustments: | Similar(=) | Inferior(+) | Inferior(+) | Similar(=) | Inferior(+)  |                  |
| 5                  | Gary       | 2019      | \$517,000    | 2008       | 2,640       | 30          | Ranch      | Garage       | Similar          |
|                    |            |           | Adjustments: | Similar(=) | Superior(-) | Similar(=)  | Similar(=) | Inferior(+)  |                  |

#### Sale Location Map:



#### Legend

1. 16641 450TH AVENUE, Watertown, SD 57201(30-3623)
2. 47695 151ST STREET, Millbank, SD 57252(35-174)
3. 45776 164TH STREET, Watertown, SD 57201(26-8785)
4. 18037 462ND AVENUE, Castlewood, SD 57223(28 1037)
5. 17752 486TH AVENUE, Gary, SD 57237(24-6031)



**Market Sales Analysis**

**Conclusion:**

Five sales are from the market without the influence of a wind tower. All transactions have similar highest and best use and are bracketed by the market sales. The selling price of the subject is supported by the uninfluenced sales suggesting there was no influence from the wind project or future location of wind towers.

**Overall Conclusion:**

An interview analysis, site observation, and sales analysis were completed for DE4. The broker stated the buyers were knowledgeable of the wind project and the purchase price was not influenced. Although no tower was constructed at the time of the sale, the wind tower exhibits show the nearest wind towers more than 4,000 feet to the west. The sales data is consistent with the interview comments and support the conclusion the sale price was not affected by the wind project or future tower locations.

| Wind Energy Development Analysis – Rural Residential |                 |              |
|------------------------------------------------------|-----------------|--------------|
| <b>SALES ANALYSIS DE5</b>                            | <b>SALE No.</b> | DE5          |
|                                                      | <b>STATE</b>    | South Dakota |
|                                                      | <b>COUNTY</b>   | Deuel        |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 9.45 acres  
**Improvements:** 2008 Pole designed Ranch  
**Finished Area:** 1,024 SF GLA  
**Garage:** Attached 2-stall  
**Features:** Treed shelter belt.  
**Access:** Gravel road linkage

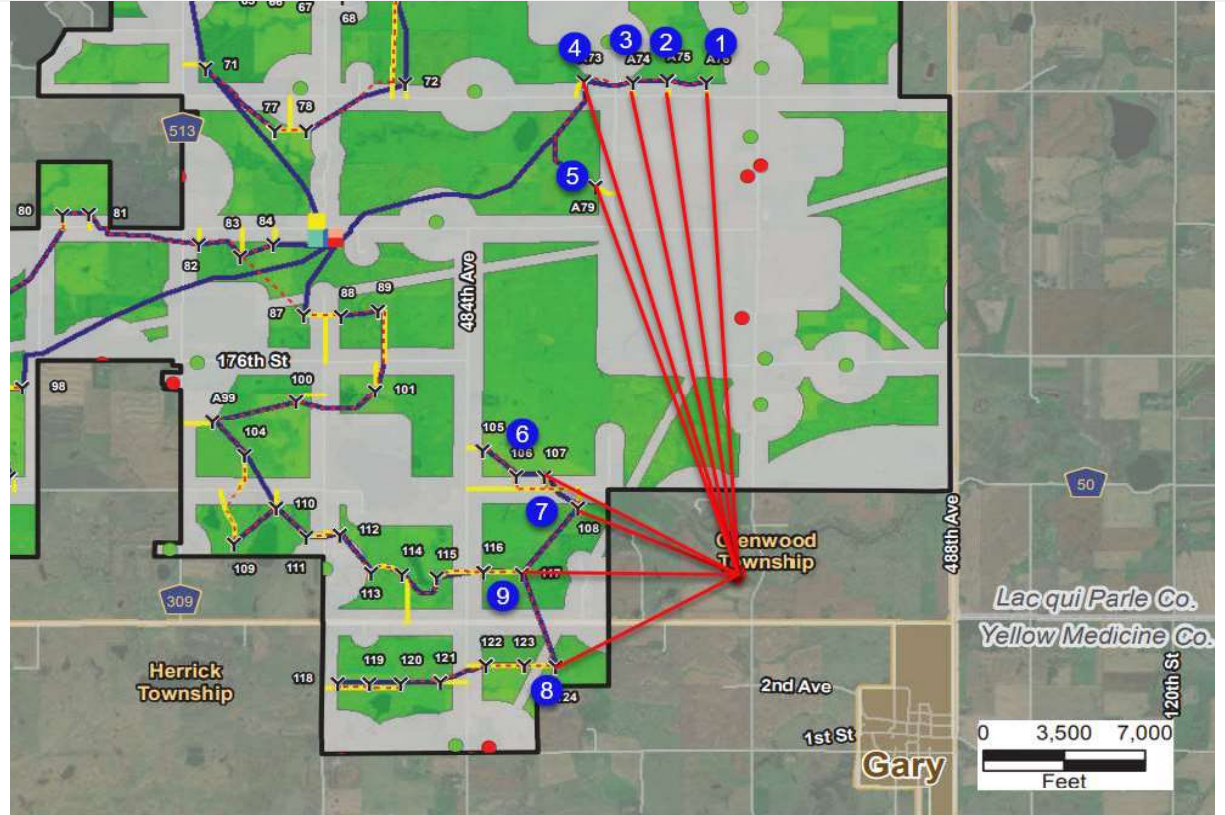
**Sales Analysis Data:**

**Date of Sale:** March 08, 2019  
**Market Exposure:** MLS  
**Listing Price:** \$169,000  
**Sale Price:** \$163,000  
**Verification:** MLS/Broker  
**Type:** Arm's Length Sale  
**DOM:** 296

**Wind Energy Project:**

**Development:** Deuel Harvest  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 78/87 meters  
**Height From Ground:** 150 meters or 500 feet +/- ground to blade height per PUC exhibit  
**Wind Tower Property Notes:** Deuel Harvest is a permitted wind development and in the construction phase of the project. Nine wind towers will be located west of the DE5, within proximity of 4,000 to 6,000 feet per the Invenergy turbine siting constraints map.

### Wind Tower Aerial Map:



### Site Analysis:

**Site Visit Conducted by:** David Lawrence

**Site Visit Date:** November 13, 2019 & May 23, 2018

**View Obstruction:** Future wind towers to the west within distant view of the residence.

**Noise Analysis:** NA – No wind tower constructed as the time of site visit

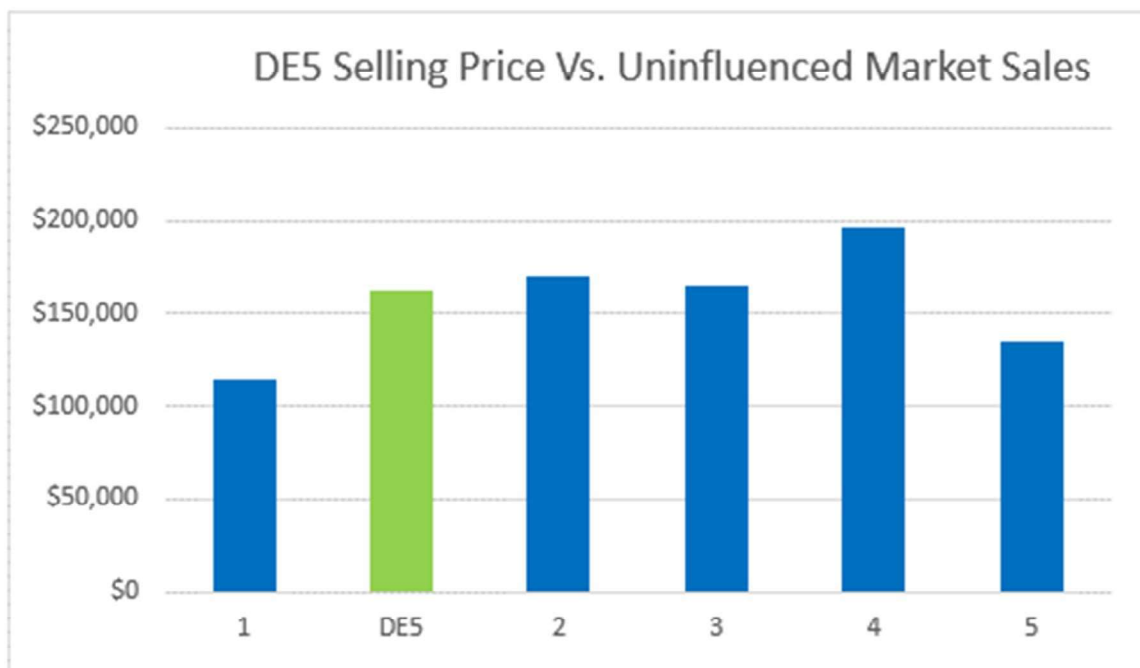
**Site Photos:**



**Interview Analysis:**

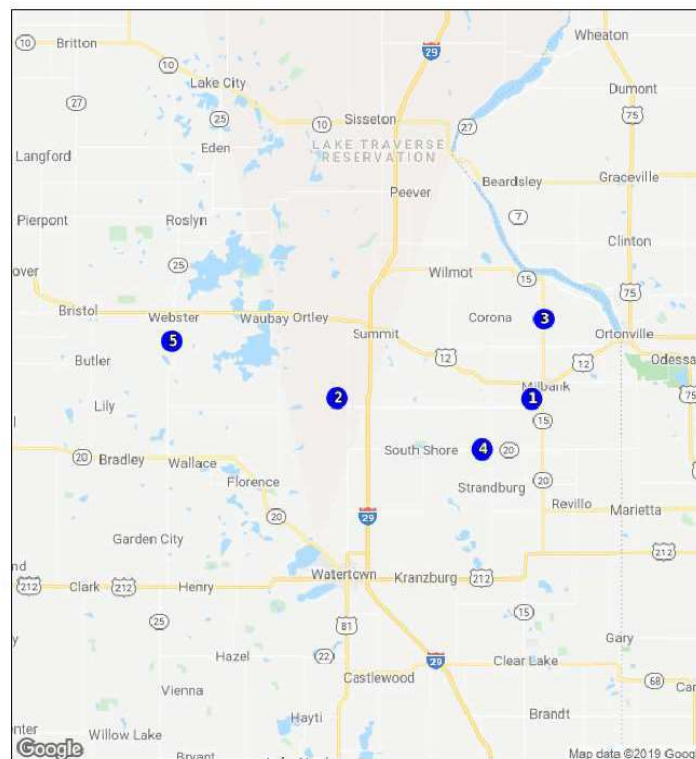
**Interview Conducted by:** David Lawrence  
**Party Interviewed:** Broker  
**Interview Date:** November 25, 2019  
**Interview Notes with Broker:** The buyer did not have concerns about the possibilities of wind towers being built in the neighborhood. The property offered the features the buyer was looking for within the price range. The agent commented that when the Deuel Harvest project was first announced many residences had concerns about property values, but that has seemed to go away and the market has moved forward. There have been three other properties sold in the neighborhood within the last 12 months near the project area.

**Market Sales Analysis:**



| Sales Analysis DES |           |           |              |             |             |             |            |              |                  |
|--------------------|-----------|-----------|--------------|-------------|-------------|-------------|------------|--------------|------------------|
| Sale No.           | Location  | Sale Date | Price        | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings | Overall Analysis |
| DE5                | Gary      | 2019      | \$163,000    | 2008        | 1,024       | 9.45        | Ranch      | Attached     |                  |
| 1                  | Milbank   | 2019      | \$114,000    | 2014        | 1,260       | 3.2         | Ranch      | None         | Inferior         |
|                    |           |           | Adjustments: | Similar(=)  | Superior(-) | Inferior(+) | Similar(=) | Similar(=)   |                  |
| 2                  | Stockholm | 2019      | \$170,000    | 2016        | 1,008       | 5           | Ranch      | None         | Similar          |
|                    |           |           | Adjustments: | Similar(=)  | Similar(=)  | Inferior(+) | Similar(=) | Similar(=)   |                  |
| 3                  | Milbank   | 2019      | \$165,000    | 1930        | 864         | 4.66        | Ranch      | Barn         | Inferior         |
|                    |           |           | Adjustments: | Inferior(+) | Inferior(+) | Inferior(+) | Similar(=) | Superior(-)  |                  |
| 4                  | Webster   | 2019      | \$197,000    | 1971        | 1,288       | 26.9        | Ranch      | Barn/Pole    | Superior         |
|                    |           |           | Adjustments: | Inferior(+) | Superior(-) | Superior(-) | Similar(=) | Superior(-)  |                  |
| 5                  | Summit    | 2019      | \$135,000    | 1890        | 1,390       | 10          | Ranch      | Old Barn     | Inferior         |
|                    |           |           | Adjustments: | Inferior(+) | Superior(-) | Similar(=)  | Similar(=) | Similar(=)   |                  |

**Sale Location Map:**



**Legend**

1. 47687 151ST STREET, Milbank, SD 57252(35-207)
2. 45366 151ST STREET, Summit, SD 57266(24-6131)
3. 14190 SD 15 HIGHWAY, Milbank, SD 57252(35-201)
4. 47211 SD-20 HIGHWAY, Stockholm, SD 57264(24-6203)
5. 14447 SD-25 HIGHWAY, Webster, SD 57274(26-8769)



**Market Sales Analysis**

**Conclusion:**

The market analysis includes six sales that are not influenced by the proximity of a wind tower, turbine or development. The selected sales for the analysis include similar rural properties with features of an acreage. The uninfluenced sales present a bracketed range for the DE5. Sales three, five and one are inferior sales. Sale two has is stronger for comparison, with sale four bracketing the higher end of the range. The market evidence suggests the selling price was not affected by the proximity of the wind towers.

**Overall Conclusion:**

An interview analysis, site observation, and sales analysis were completed for DE5. The broker comments were consistent with the sales evidence the proximity to the wind towers did not negatively influence the selling price. Although the towers were not constructed as of the date of the site visit, the future location of the towers was over 4,000 feet to the west. The sales data and interview analysis suggest there was no influence on the selling price.



## SELLER'S PROPERTY CONDITION DISCLOSURE STATEMENT

(This disclosure shall be completed by the seller. This is a disclosure required by law. If you do not understand this form, seek legal advice.)

Seller \_\_\_\_\_ Property Address \_\_\_\_\_

This Disclosure Statement concerns the real property identified above situated in the City of \_\_\_\_\_  
County of \_\_\_\_\_, State of South Dakota.

THIS STATEMENT IS A DISCLOSURE OF THE CONDITION OF THE ABOVE DESCRIBED PROPERTY IN COMPLIANCE WITH § 43-4-38. IT IS NOT A WARRANTY OF ANY KIND BY THE SELLER OR ANY AGENT REPRESENTING ANY PARTY IN THIS TRANSACTION AND IS NOT A SUBSTITUTE FOR ANY INSPECTIONS OR WARRANTIES THE PARTIES MAY WISH TO OBTAIN.

Seller hereby authorizes any agent representing any party in this transaction to provide a copy of this statement to any person or entity in connection with any actual or anticipated sale of the property.

IF ANY MATERIAL FACT CHANGES BEFORE CONVEYANCE OF TITLE TO THIS PROPERTY, THE SELLER MUST DISCLOSE SUCH MATERIAL FACT WITH A WRITTEN AMENDMENT TO THIS DISCLOSURE STATEMENT.

### I. LOT OR TITLE INFORMATION

1. When did you purchase or build the home? \_\_\_\_\_

*If the answer is yes to any of the following, please explain under additional comments or on an attached separate sheet.*

2. Were there any title problems when you purchased the property? Yes \_\_\_ No \_\_\_

3. Are there any recorded liens or financial instruments against the property, other than a first mortgage?  
Yes \_\_\_ No \_\_\_

4. Are there any unrecorded liens or financial instruments against the property, other than a first mortgage; or have any materials or services been provided in the past one hundred twenty days that would create a lien against the property under chapter 44-9? Yes \_\_\_ No \_\_\_ Unknown \_\_\_

5. Are there any easements which have been granted in connection with the property (other than normal utility easements for public water and sewer, gas and electric service, telephone service, cable television service, drainage, and sidewalks)? Yes \_\_\_ No \_\_\_ Unknown \_\_\_

6. Are there any problems related to establishing the lot lines/boundaries? Yes \_\_\_ No \_\_\_ Unknown \_\_\_

7. Do you have a location survey in your possession or a copy of the recorded plat? If yes, attach a copy.  
Yes \_\_\_ No \_\_\_ Unknown \_\_\_

8. Are you aware of any encroachments or shared features, from or on adjoining property (i.e. fences, driveway, sheds, outbuildings, or other improvements)? Yes \_\_\_ No \_\_\_

9. Are you aware of any covenants or restrictions affecting the use of the property in accordance with local law? If yes, attach a copy of the covenants and restrictions. Yes \_\_\_ No \_\_\_

10. Are you aware of any current or pending litigation, foreclosure, zoning, building code or restrictive covenant violation notices, mechanic's liens, judgments, special assessments, zoning changes, or changes that could affect your property?  
Yes \_\_\_ No \_\_\_

11. Is the property currently occupied by the owner? Yes \_\_\_ No \_\_\_

12. Does the property currently receive the owner occupied tax reduction pursuant to SDCL 10-13-39? Yes \_\_\_ No \_\_\_

13. Is the property currently part of a property tax freeze for any reason? Yes \_\_\_ No \_\_\_ Unknown \_\_\_

14. Is the property leased? Yes \_\_\_ No \_\_\_

15. If leased, does the property use comply with local zoning laws? Yes \_\_\_ No \_\_\_

16. Does this property or any portion of this property receive rent? Yes \_\_\_ No \_\_\_  
If yes, how much \$ \_\_\_ and how often \_\_\_?

### III. SYSTEMS/UTILITIES INFORMATION

|                                      | None/Not Included | Working | Not Working |
|--------------------------------------|-------------------|---------|-------------|
| 1. 220 Volt Service                  |                   |         |             |
| 2. Air Exchanger                     |                   |         |             |
| 3. Air Purifier                      |                   |         |             |
| 4. Attic Fan                         |                   |         |             |
| 5. Burglar Alarm & Security System   |                   |         |             |
| 6. Ceiling Fan                       |                   |         |             |
| 7. Central Air – Electric            |                   |         |             |
| 8. Central Air – Water Cooled        |                   |         |             |
| 9. Cistern                           |                   |         |             |
| 10. Dishwasher                       |                   |         |             |
| 11. Disposal                         |                   |         |             |
| 12. Doorbell                         |                   |         |             |
| 13. Fireplace                        |                   |         |             |
| 14. Fireplace Insert                 |                   |         |             |
| 15. Garage Door/Opener Control(s)    |                   |         |             |
| 16. Garage Wiring                    |                   |         |             |
| 17. Heating System                   |                   |         |             |
| 18. Hot Tub, Whirlpool, and Controls |                   |         |             |
| 19. Humidifier                       |                   |         |             |
| 20. Intercom                         |                   |         |             |
| 21. Light Fixtures                   |                   |         |             |
| 22. Microwave/Hood                   |                   |         |             |
| 23. Plumbing and Fixtures            |                   |         |             |
| 24. Pool and Equipment               |                   |         |             |
| 25. Propane Tank                     |                   |         |             |
| 26. Radon System                     |                   |         |             |
| 27. Sauna                            |                   |         |             |
| 28. Septic/Leaching Field            |                   |         |             |
| 29. Sewer Systems/Drains             |                   |         |             |
| 30. Smoke/Fire Alarm                 |                   |         |             |
| 31. Solar House – Heating            |                   |         |             |
| 32. Sump Pump(s)                     |                   |         |             |
| 33. Switches and Outlets             |                   |         |             |
| 34. Underground Sprinkler and Heads  |                   |         |             |
| 35. Vent Fan                         |                   |         |             |
| 36. Water Heater – Electric or Gas   |                   |         |             |
| 37. Water Purifier                   |                   |         |             |
| 38. Water Softener – Leased or Owned |                   |         |             |
| 39. Well and Pump                    |                   |         |             |
| 40. Wood Burning Stove               |                   |         |             |

### IV. HAZARDOUS CONDITIONS

Are you aware of any existing hazardous conditions of the property and are you aware of any tests having been performed?

|                                        | Existing Conditions |    | Tests Performed |    |
|----------------------------------------|---------------------|----|-----------------|----|
|                                        | Yes                 | No | Yes             | No |
| 1. Methane Gas                         |                     |    |                 |    |
| 2. Lead Paint                          |                     |    |                 |    |
| 3. Radon Gas (House)                   |                     |    |                 |    |
| 4. Radon Gas (Well)                    |                     |    |                 |    |
| 5. Radioactive Materials               |                     |    |                 |    |
| 6. Landfill, Mineshaft                 |                     |    |                 |    |
| 7. Expansive Soil                      |                     |    |                 |    |
| 8. Mold                                |                     |    |                 |    |
| 9. Toxic Materials                     |                     |    |                 |    |
| 10. Urea Formaldehyde Foam Insulations |                     |    |                 |    |
| 11. Asbestos Insulation                |                     |    |                 |    |
| 12. Buried Fuel Tanks                  |                     |    |                 |    |
| 13. Chemical Storage Tanks             |                     |    |                 |    |
| 14. Fire Retardant Treated Plywood     |                     |    |                 |    |
| 15. Production of Methamphetamines     |                     |    |                 |    |

If the answer is yes to any of the questions above, please explain in additional comments or on an attached separate sheet.

17. Do you pay any mandatory fees or special assessments to a homeowners' or condominium association?  
Yes \_\_\_\_ No \_\_\_\_  
If yes, what are the fees or assessments? \$ \_\_\_\_ per \_\_\_\_ (i.e. annually, semi-annually, monthly)  
Payable to whom: \_\_\_\_\_ For what purpose? \_\_\_\_\_
18. Are you aware if the property has ever had standing water in either the front, rear, or side yard more than forty-eight hours after heavy rain? Yes \_\_\_\_ No \_\_\_\_
19. Is the property located in or near a flood plain? Yes \_\_\_\_ No \_\_\_\_ Unknown \_\_\_\_
20. Are wetlands located upon any part of the property? Yes \_\_\_\_ No \_\_\_\_ Unknown \_\_\_\_
21. Are you aware of any private transfer fee obligations, as defined pursuant to § 43-4-48, that would require a buyer or seller of the property to pay a fee or charge upon the transfer of the property, regardless of whether the fee or charge is a fixed amount or is determined as a percentage of the value of the property?  
Yes \_\_\_\_ No \_\_\_\_ Unknown \_\_\_\_  
If yes, what are the fees or charges? \$ \_\_\_\_\_ per \_\_\_\_\_ (i.e. annually, semi-annually, monthly)

## II. STRUCTURAL INFORMATION

*If the answer is yes to any of the following, please explain under additional comments or on an attached separate sheet.*

1. Are you aware of any water penetration problems in the walls, windows, doors, basement, or crawl space?  
Yes \_\_\_\_ No \_\_\_\_
2. What water damage related repairs, if any, have been made? \_\_\_\_\_  
If any, when? \_\_\_\_\_
3. Are you aware if drain tile is installed on the property? Yes \_\_\_\_ No \_\_\_\_
4. Are you aware of any interior cracked walls or floors, or cracks or defects in exterior driveways, sidewalks, patios, or other hard surface areas? Yes \_\_\_\_ No \_\_\_\_  
What related repairs, if any, have been made? \_\_\_\_\_
5. Are you aware of any roof leakage, past or present? Yes \_\_\_\_ No \_\_\_\_  
Type of roof covering: \_\_\_\_\_ Age: \_\_\_\_\_  
What roof repairs, if any, have been made, when and by whom? \_\_\_\_\_  
Describe any existing unrepaired damage to the roof: \_\_\_\_\_
6. Are you aware of insulation in:  
the ceiling/attic? Yes \_\_\_\_ No \_\_\_\_ the walls? Yes \_\_\_\_ No \_\_\_\_ the floors? Yes \_\_\_\_ No \_\_\_\_
7. Are you aware of any pest infestation or damage, either past or present? Yes \_\_\_\_ No \_\_\_\_
8. Are you aware of the property having been treated for any pest infestation or damage?  
Yes \_\_\_\_ No \_\_\_\_ If yes, who treated it and when? \_\_\_\_\_
9. Are you aware of any work upon the property which required a building, plumbing, electrical, or any other permit?  
Yes \_\_\_\_ No \_\_\_\_ If yes, describe the work: \_\_\_\_\_  
Was a permit obtained? Yes \_\_\_\_ No \_\_\_\_ Was the work approved by an inspector? Yes \_\_\_\_ No \_\_\_\_
10. Are you aware of any past or present damage to the property (i.e. fire, smoke, wind, floods, hail, or snow)?  
Yes \_\_\_\_ No \_\_\_\_ If yes, describe \_\_\_\_\_  
Have any insurance claims been made? Yes \_\_\_\_ No \_\_\_\_ Unknown \_\_\_\_  
Was an insurance payment received? Yes \_\_\_\_ No \_\_\_\_ Unknown \_\_\_\_  
Has the damage been repaired? Yes \_\_\_\_ No \_\_\_\_ If yes, describe in detail: \_\_\_\_\_
11. Are you aware of any problems with sewer blockage or backup, past or present? Yes \_\_\_\_ No \_\_\_\_
12. Are you aware of any drainage, leakage, or runoff from any sewer, septic tank, storage tank, or drain on the property into any adjoining lake, stream, or waterway? Yes \_\_\_\_ No \_\_\_\_ If yes, describe in detail: \_\_\_\_\_



### V. MISCELLANEOUS INFORMATION

1. Is the street or road located at the end of the driveway to the property public or private?  
Public \_\_\_\_ Private \_\_\_\_
2. Is there a written road maintenance agreement? Yes \_\_\_\_ No \_\_\_\_  
If yes, attach a copy of the maintenance agreement.
3. When was the fireplace/wood stove/chimney flue last cleaned? \_\_\_\_\_
4. Within the previous twelve months prior to signing this document, are you aware of any of the following occurring on the subject property?
  - a. A human death by homicide or suicide? Yes \_\_\_\_ No \_\_\_\_  
If yes, explain: \_\_\_\_\_
  - b. Other felony committed against the property or a person on the property? Yes \_\_\_\_ No \_\_\_\_  
If yes, explain: \_\_\_\_\_
5. Is the water source (select one) \_\_\_\_ public or \_\_\_\_ private?
6. If private, what is the date and result of the last water test? \_\_\_\_\_
7. Is the sewer system (select one) \_\_\_\_ public or \_\_\_\_ private?
8. If private, what is the date of the last time the septic tank was pumped? \_\_\_\_\_
9. Are there broken window panes or seals? Yes \_\_\_\_ No \_\_\_\_  
If yes, specify: \_\_\_\_\_
10. Are there any items attached to the property that will not be left, such as: towel bars, mirrors, swag lamps and hooks, curtain rods, window coverings, light fixtures, clothes lines, swing sets, storage sheds, ceiling fans, basketball hoops, mail boxes, etc. Yes \_\_\_\_ No \_\_\_\_  
If yes, please list \_\_\_\_\_
11. Are you aware of any other material facts or problems that have not been disclosed on this form?  
Yes \_\_\_\_ No \_\_\_\_ If yes, explain: \_\_\_\_\_

### VI. ADDITIONAL COMMENTS (ATTACH ADDITIONAL PAGES IF NECESSARY)

### CLOSING SECTION

The Seller hereby certifies that the information contained herein is true and correct to the best of the Seller's information, knowledge, and belief as of the date of the Seller's signature below. If any of these conditions change before conveyance of title to this property, the change will be disclosed in a written amendment to this disclosure statement.

|                 |                 |
|-----------------|-----------------|
| _____<br>Seller | _____<br>Seller |
| _____<br>Date   | _____<br>Date   |

THE SELLER AND THE BUYER MAY WISH TO OBTAIN PROFESSIONAL ADVICE AND INSPECTIONS OF THE PROPERTY TO OBTAIN A TRUE REPORT AS TO THE CONDITION OF THE PROPERTY AND TO PROVIDE FOR APPROPRIATE PROVISIONS IN ANY CONTRACT OF SALE AS NEGOTIATED BETWEEN THE SELLER AND THE BUYER WITH RESPECT TO SUCH PROFESSIONAL ADVICE AND INSPECTIONS.

I/We acknowledge receipt of a copy of this statement on the date appearing beside my/our signature(s) below. Any agent representing any party to this transaction makes no representations and is not responsible for any conditions existing in the property.

|                |                |
|----------------|----------------|
| _____<br>Buyer | _____<br>Buyer |
| _____<br>Date  | _____<br>Date  |

**BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

**DOCKET NO. EL19-027**

**IN THE MATTER OF THE APPLICATION BY CROWNED RIDGE WIND II, LLC  
FOR A PERMIT OF A WIND ENERGY FACILITY IN THE COUNTIES OF  
DEUEL, GRANT AND CODINGTON SOUTH DAKOTA, FOR THE CROWNED  
RIDGE WIND II PROJECT**

**Supplemental Testimony of David Lawrence  
On Behalf of the Staff of the South Dakota Public Utilities Commission  
January 23, 2020**



012938

1 **Q: State your name.**

2 A: My name is David Lawrence.

3

4 **Q: Did you provide Direct Testimony in the Docket on December 6, 2019?**

5 A: Yes.

6

7 **Q: What is the purpose of your Supplemental Testimony?**

8 A: The purpose of my Supplemental Testimony is to provide updates to the sales  
9 analysis and research that was completed since my direct testimony on December  
10 6, 2019.

11

12 **Q: What additional Research have you completed?**

13 A: Since my December 6, 2019, direct testimony I continued to investigate  
14 transactional details relating to CD2. I completed additional interviews with parties  
15 to the transaction including both sellers who had a 50/50 ownership interest in the  
16 property, the potential buyer that made an offer that was cancelled after disclosure  
17 of the location of the wind tower, and an interview with the purchaser of the  
18 property who currently resides at the property. I was not presented with the  
19 opportunity for a detailed site inspection of the property and improvements. Results  
20 of the research have been updated within the sales analysis and can referenced  
21 as Exhibit\_DAL-4.

22



1 **Q: Does the additional research for CD2 change your opinion regarding the**  
2 **impacts on the selling prices to rural residences in proximity to a wind tower,**  
3 **turbine or development?**

4 A: Overall it does not; however, the CD2 transaction does show there could be  
5 situations where a rural residence could be negatively influenced by a wind tower,  
6 turbine or proposed wind project. In total, I have analyzed sixteen sale transactions  
7 of South Dakota rural residences in proximity to a wind turbine and this is the first  
8 market sale that my research has identified with factors that show a negative  
9 influence due to the prospective location of a wind tower. It is my opinion the  
10 influence due to the prospective wind tower in proximity to CD2 are specific to the  
11 details of the transaction and it would be difficult to generally apply the results of  
12 one sale to all rural residences in proximity to a wind turbine or tower at this time.  
13 The research from CD2 suggests three interesting conclusions: (1) there is  
14 growing segment of the market (including buyers, sellers, and brokers) in Eastern  
15 South Dakota that are becoming evidently aware of and sensitive to the  
16 development of wind towers and turbines within the rural neighborhoods, (2) there  
17 is a segment of the potential buyer pool of rural residences that do not want to live  
18 in proximity to a wind turbine, tower or development, and (3) depending on how  
19 the legal question is interpreted for the South Dakota disclosure form, there could  
20 be a situation in which a seller of a rural residence in proximity to wind development  
21 could limit potential buyers by disclosing material facts of a proposed wind tower.  
22 It continues to be my opinion that even though the majority of market evidence  
23 supports the overall presumption that the selling prices of rural residences have

1 not been influenced by the presence of a wind tower, turbine or project, it does not  
2 rule out the fact that there could be certain situations where there could be potential  
3 negative influences to the selling price of rural residences as evident by the  
4 analysis of CD2. The research that I have completed in South Dakota continues to  
5 indicate that increasing the distance relationship from a wind turbine and a rural  
6 residence is the best measure to avoid any potential negative impacts on rural  
7 residential property values from a wind tower, turbine or development. Any rural  
8 residence that shows some type of factors that might have negatively influenced  
9 the selling price, should be analyzed on a case-by-case basis with a consistent  
10 scope of work for the analysis.

11  
12 **Q: Are you aware of any additional information that has been presented to**  
13 **you for the research you completed in Deuel County?**

14 A: Yes, on January 8, 2020, I received information from the property owner of sale  
15 DE1. The information provides additional information for DE1, DE4, and DE5. I  
16 have considered the new information to be helpful for consistency within the data  
17 and the information that is measured within the analysis. However, the additional  
18 information does not change the results of the comparable sales analysis  
19 performed for these properties that showed no negative influence. This additional  
20 information can be found in Exhibit\_DAL-5.

21  
22 **Q: Does this conclude your supplemental testimony?**

23 A: Yes.

| Wind Energy Development Analysis – Rural Residential |                 |                              |
|------------------------------------------------------|-----------------|------------------------------|
| <b>SALES ANALYSIS CD2</b>                            | <b>SALE No.</b> | CD2 Updated January 15, 2020 |
|                                                      | <b>STATE</b>    | South Dakota                 |
|                                                      | <b>COUNTY</b>   | Codington                    |



**Property Characteristics:**

**Highest & Best Use:** Rural Acreage  
**Land Size:** 2.65 Acres  
**Improvements:** 2001  
**Finished Area:** 1,570 SF GLA 1544 SF L.L. Finished  
**Garage:** Attached 2-Stall  
**Features:** Treed shelter belt. 60x57 Modern pole barn with concrete  
**Access:** Gravel road – Shared driveway per broker and aerial  
**Zoning:** AG

**MLS Photos:**



**Sales Analysis Data:**

**Date of Sale:** August 8, 2019  
**Market Exposure:** MLS  
**Listing Price:** \$329,000 (See complete listing history below)  
**Sale Price:** \$275,000  
**Verification:** MLS/Broker/Seller/CRV/Codington GIS/Site Visit/Buyer  
**Type:** Arm's Length Sale  
**DOM:** 189

**MLS Listing History:**

| MLS #   | Status       | Price     | % Change | Date       | DOM |
|---------|--------------|-----------|----------|------------|-----|
| 32-1666 | Expired      | \$398,500 |          | 09/01/2018 | 93  |
| +       | Status       | \$398,500 |          | 09/02/2018 |     |
| +       | Documents    | \$398,500 |          | 08/06/2018 | 26  |
| +       | Price Change | \$398,500 | -2.8%    | 07/01/2018 | 62  |
| +       | Price Change | \$409,900 | -3.5%    | 06/14/2018 | 79  |
| +       | Text, etc.   | \$424,900 |          | 06/05/2018 | 88  |
| +       | Photos, etc. | \$424,900 |          | 06/04/2018 | 89  |
| +       | New          | \$424,900 |          | 06/01/2018 | 92  |
| MLS #   | Status       | Price     | % Change | Date       | DOM |
| 39-103  | Expired      | \$329,000 |          | 10/22/2019 | 183 |
| +       | Status       | \$329,000 |          | 10/23/2019 |     |
| +       | Price Change | \$329,000 | -6.0%    | 08/21/2019 | 62  |
| +       | Documents    | \$350,000 |          | 07/30/2019 | 84  |
| +       | Price Change | \$350,000 | -5.4%    | 07/15/2019 | 99  |
| +       | Price Change | \$369,900 | -2.6%    | 06/25/2019 | 119 |
| +       | Documents    | \$379,900 |          | 06/25/2019 | 119 |
| +       | Photos       | \$379,900 |          | 04/25/2019 | 180 |
| +       | New          | \$379,900 |          | 04/24/2019 | 181 |

**Property Transfer History:**

**Transfer 1:** November 23, 2005, James & Joyce Comes to Brian & Lisa Comes in Book 415 at Page 927 for \$500. Transfer of acreage lot.

**Transfer 2:** August 8, 2005, Chad & Heidi Comes to Gregory & Anita Richter in Book 415 at Page 449 for \$145,000. Transfer of improvements & land.

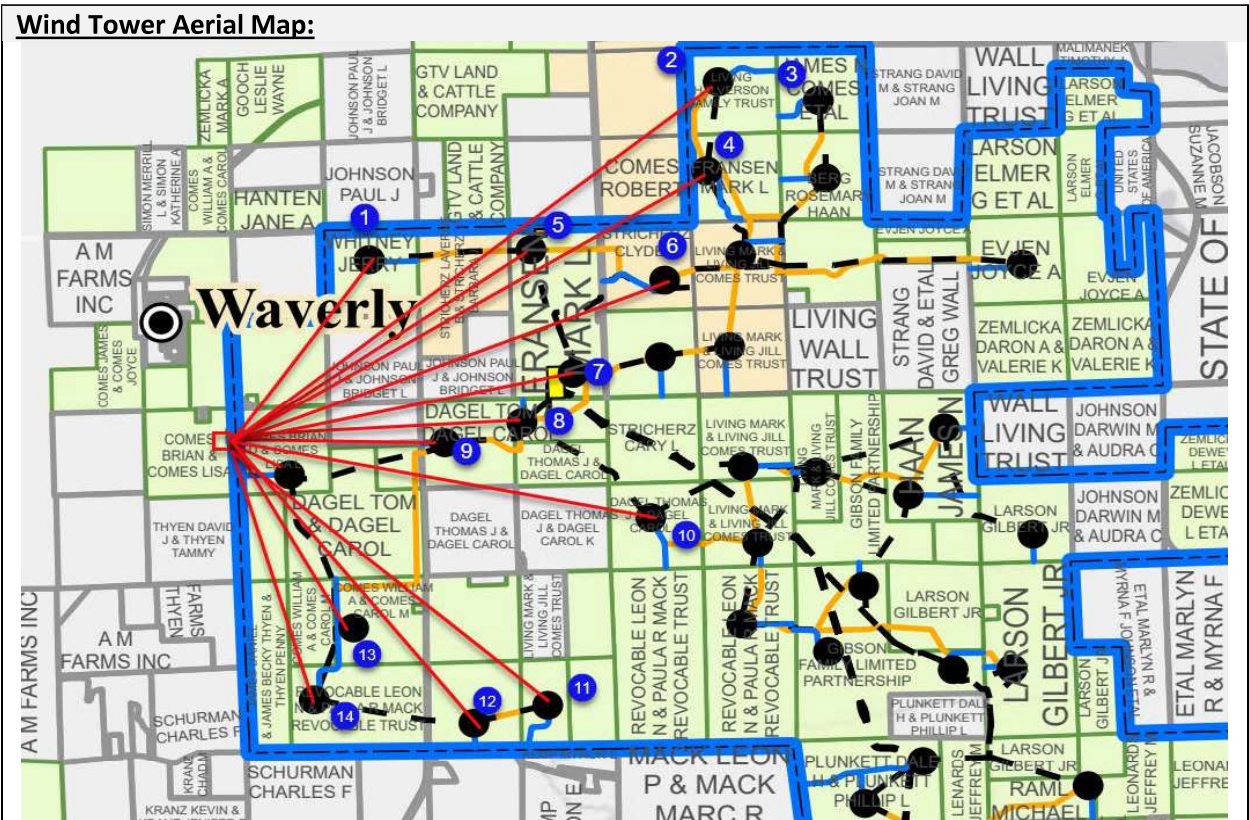
**Transfer 3:** October 31, 2005, Brian Comes and Lisa Comes to Gregory & Anita Richter in Book 415 at page 928 for \$500. Additional land purchase for accessory pole building.

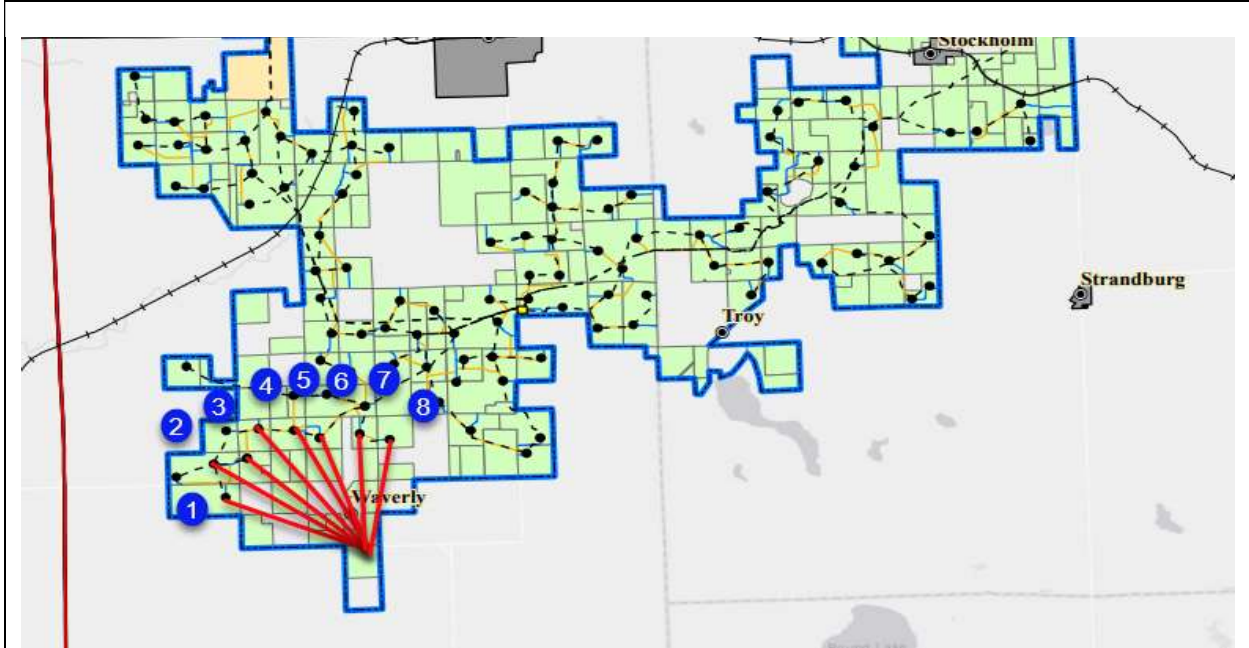
**Transfer 4:** October 25, 2019, Gregory Richter and Anita Richter to Robert and Kelli Johnson in Book 425 at page 4619 for \$275,000. Transfer of improvements & land.

**Wind Energy Project:**

**Development:** Crowned Ridge Wind Project  
**Turbine Type:** Gamesa G87 2.0 MW  
**Hub Height/Rotor Diameter:** 80/116 meters







**Site Analysis:**

**Site Visit Conducted by:** David Lawrence

**Site Visit Date:** November 19, 2019

**Interior/Exterior Site Visit:** The site visit is limited by an exterior only observation from the road. A detailed site inspection was not available for the analysis.

**View Obstruction:** None – wind towers under construction around the Waverly market area

**Noise Analysis:** NA – wind towers not operational at time of site visit

**Site Photos:**





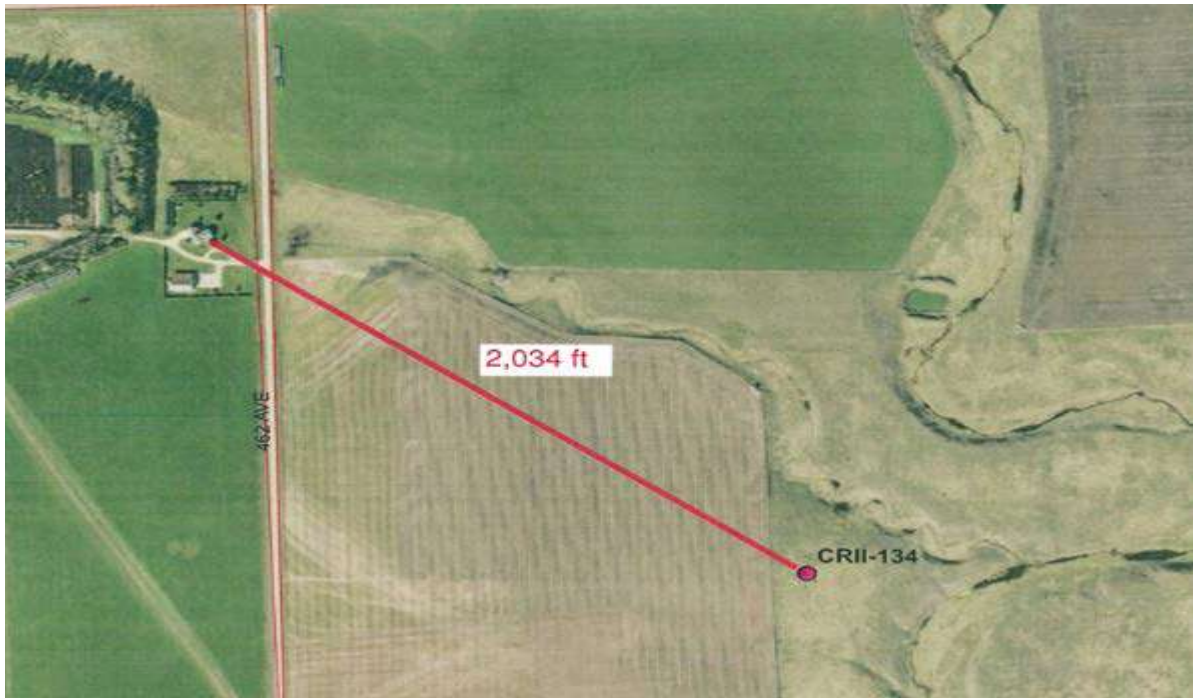


Photo: Wind tower construction west of Waverly.



Photo: Wind tower construction west of Waverly

**Interview Analysis:**

**Interview Conducted by:** David Lawrence

**Party Interviewed:** Broker-1/Broker-2/Seller-1 50%/Seller-2 50% (Seller-1 & 2 husband & wife)/Buyer-1/Buyer-2

**Interview Date(s):** November 11, 2019. December 10, 13, 14 and 15, 2019. January 09, 15, 20, 2020. (Various dates and interviews)

**Interview Notes with Broker-1:** Broker-1 listed the property in June of 2018 for \$424,900. After 26 days on the market, the listing price was reduced to \$409,000. After 20 days the listing price was reduced to \$398,500. After a total of 93 days on the market, the listing expired. Per Broker-1 the listing price was not supported by the market. The June 2, 2018 disclosure statement did not disclose the wind project or location of the tower within 2,000 feet of the residence.

**Interview Notes with Broker-2:** Broker-2 was contacted by the owner in April of 2019. Prior to the listing, Broker-2 had the seller complete a disclosure statement on April 25, 2019; the wind project was not disclosed. The property was listed at \$379,900, which the agent admitted was most likely on the higher end of the market range. After 60 days on the market, the price was lowered to \$369,900. On July 30, 2019, Buyer-1 submitted a written offer for \$350,000. The offer was accepted by the seller; however, Broker-2 updated the disclosure form on July 30, 2019, to include statements about the Crowned Ridge Wind

project. After receiving the updated disclosure statement, the offer was cancelled by Buyer-1. On August 21, 2019, the listing price was reduced to \$329,000. After approximately 183 days Buyer-2 submitted an offer with the knowledge of the wind project and wind towers for \$275,000. The seller accepted the offer. According to Broker-2 the disclosure of the wind project and wind tower within 2,000 of the property resulted in a \$75,000 or 21% difference to the seller (the difference between Buyer-1 before disclosure and Buyer-2 after disclosure). Broker-2 stated as evident with the CD2 transaction and experiences with selling real estate in S.D., residential property values are negatively affected by wind towers. Broker-2 stated wind towers will continue to be an issue for property owners as more and more towers are built. There is a segment of the market that refuses to look at properties near wind towers. Broker-2 recently built a house near Waverly prior to any knowledge of the project and will soon be living in the middle of the Crowned Ridge project. Broker-2 strongly believes their investment of a rural residence will be negatively affected by towers surrounding their home and will result in a segment of the market that will have less interest in the property when it comes time to sell.

**Interview Notes with  
Seller-1:**

The seller(s) had a signed purchase agreement for \$350,000. After talking with Broker-2, the seller decided to update the disclosure statement to include new information about the wind project and location of a tower southeast of the property. Buyer-1 cancelled the offer after facts of the wind project were disclosed. Broker-2 relisted the property with full disclosure of the wind project and tower location. Buyer-2 knowledgeable of the wind project and towers offered \$275,000, which the sellers accepted. Seller-1 stated the proximity of the Crown Ridge Wind Farm reduced the value of the property by \$75,000 and is supported by the facts and documents of the transaction.

**Additional Interview  
Notes with Seller-1:**

When the original property disclosure form was completed, Seller-1 did not have specific knowledge of the wind tower location in proximity to the property; only a general knowledge of the wind development in the area. The timing of the updated disclosure form was presented when Seller-1 became aware of the location of the tower to the southeast in proximity to the property. They (Seller-1 & Seller-2) thought it was best to notify Buyer-1 of this material change as they believed it was their obligation to inform Buyer-1 of this new information per the South Dakota Disclosure form.

**Interview Notes with  
Seller-2:**

The home was built in 2001 and listed for sale in the local paper in 2005 because of a job relocation. The home was purchased in 2005 for approximately \$155,000. The basement was not finished at the time of purchase. Starting around 2006 the sellers received two home improvement loans for \$50,000 & \$50,000, plus savings for the pole shed, basement finish, land purchase, and remodeling. The remodeling was completed a few years ago. The home was in excellent condition. Around 2018 the sellers were approached by a neighbor (Buyer-2) considering a \$375,000 offer; however, Buyer-2 did not receive approval for financing.

The property was listed on the MLS and received a \$350,000 offer from Buyer-1. The sellers disclosed the wind development to Buyer-1 and newly discovered location of the turbine and the offer was cancelled. Broker-2 advised to counter a lower price. The sellers countered \$300,000 to Buyer-1 and Buyer-1 said they would not be interested at any price because of the proximity of the turbine to the residence. The property was relisted on the MLS. According to Seller-2, Buyer-1 was not interested in the property because of the wind development surrounding the property. After three months the sellers contacted Buyer-2, who had initial interest, and asked what they would be willing to pay for the property. \$275,000 was offered and accepted. Seller-2 explained the wind development and location of the tower influenced the selling price of the property by \$75,000.

**Interview Notes with  
Buyer-1**

Buyer-1 lives in the area and wanted to find an acreage in proximity to Watertown for his family. The property was listed on the MLS for \$379,000. Buyer-1 reported the improvements to be in good condition; however, some modification would have to be made to the house for their family. Buyer-1 presented a written offer for \$350,000. An updated disclosure was presented to Buyer-1 disclosing the wind development after the offer was made to the sellers. After further discussions and investigation Buyer-1 confirmed a tower was going to be located just southeast of the property. Buyer-1 explained this was the final factor for withdraw of the offer to purchase the property. Buyer-1 stated they had general knowledge that wind towers were going to be built in the area but didn't want to live within 1500+/- feet of a tower. Buyer-1 cancelled the offer and purchased a home in an area that was not in proximity to a wind project.

**Interview Notes with  
Buyer-2**

Buyer-2 lived an avenue over, and their family has a dairy farm one mile south of the property; the property was ideally located to work and family. Buyer-2 was friends with Seller-1 and Seller-2 and they offered the property to them for \$420,000. The price was beyond what Buyer-2 could afford. The house was listed on MLS and did not sell. The sellers approached Buyer-2 with disclosure of the wind tower and offered the property for \$350,000. Buyer-2 presented their max offer they could afford at \$275,000 and the offer was accepted. Buyer-2 explained the wind towers were not a factor at the price they paid; however, if the price would have been more, they would have likely negotiated because of the wind tower factor. According to Buyer-2, the appraisal completed for bank financing was appraised at \$320,000. The condition of the property was reported to be in good condition at the time of the sale and are satisfied with the purchase.

**June 2018 Disclosure  
Statement:**

*binching garage, Freezers in basement, washer/dryer*

1. Are you aware of any other material facts or problems that have not been disclosed on this form?

Yes ☐ No ☒ If yes, explain: \_\_\_\_\_



**March 2019 Disclosure  
Statement:**

11. Are you aware of any other material facts or problems that have not been disclosed on this form?  
Yes \_\_\_ No ☒ If yes, explain: \_\_\_\_\_

**2019 Updated Disclosure  
Statement:**

11. Are you aware of any other material facts or problems that have not been disclosed on this form?  
Yes \_\_\_ No \_\_\_ If yes, explain: \_\_\_\_\_

VI. ADDITIONAL COMMENTS (ATTACH ADDITIONAL PAGES IF NECESSARY)

Propane tank is rented from Sioux Valley Corp. Propane tank is full and needs to be purchased from buyer at closing. Crowned Ridge II Wind Farm is possibly adding wind turbines to the area, not on property.

**July 2, 2019  
\$350,000 Offer:**

3. PURCHASE PRICE: The total purchase price is to be \$350,000  
THREE HUNDRED FIFTY THOUSAND AND 00/100 DOLLARS  
After earnest money herein is credited, the remaining balance is to be paid by Purchaser at closing.

**Broker-2 Statement:**

To Whom this may concern, 10/7/2019 Outstanding Result

My name is [REDACTED] I am a Broker at [REDACTED] in Watertown, South Dakota. I had the property listed of [REDACTED] house at [REDACTED] Waverly, SD 57201.

During this time of the listing we had several showings. We did get an offer together but when the buyers found out about the possibility of future wind turbines they decided not to purchase the property.

I was contacted by an appraiser who was hired by Next Era asking me about the property and what my opinion was about the list price. I told him it had previously been listed for \$429,000 and did not sell at that time. The next spring I put the house on the market for \$379,900. The offer that was accepted was for \$350,000. The appraiser felt the house was priced strong and I said it has a nice shed and the house is in immaculate condition and sits on a little over 2 acres. I also told him that small acreages were in demand in our area which also drives up the price. I also told him the property was worth what someone was willing to pay for it. And since we did have an offer at \$350,000 that is what that buyer thought the property was worth.

The sellers now have accepted an offer of \$275,000 so they can move on. The sellers had to take a huge hit on this property due to the concern of the wind turbines.

**Buyer-1 Statement:**

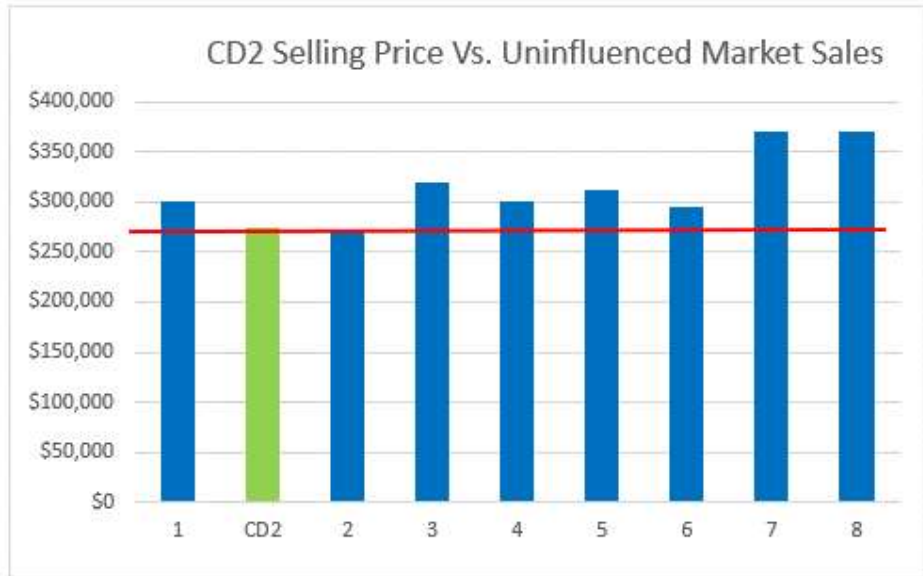
October 8, 2019

To Whom It May Concern,

RE: [REDACTED] Waverly, SD Property

On July 2<sup>nd</sup>, 2019 my wife [REDACTED] and I entered an agreement to purchase the above mentioned property for \$350,000. In the preceding to finalize documentation it was disclosed that the Crown Ridged II Windfarm was going to have a tower in the proximity of the [REDACTED] home. The decision was then made to not purchase the home in proximity to the Crown Ridge II Windfarm in the Wavery area and proximity of the [REDACTED] property due to the windfarm and signed purchase cancellation was sent on July 9<sup>th</sup> ending the purchase of the property by us.

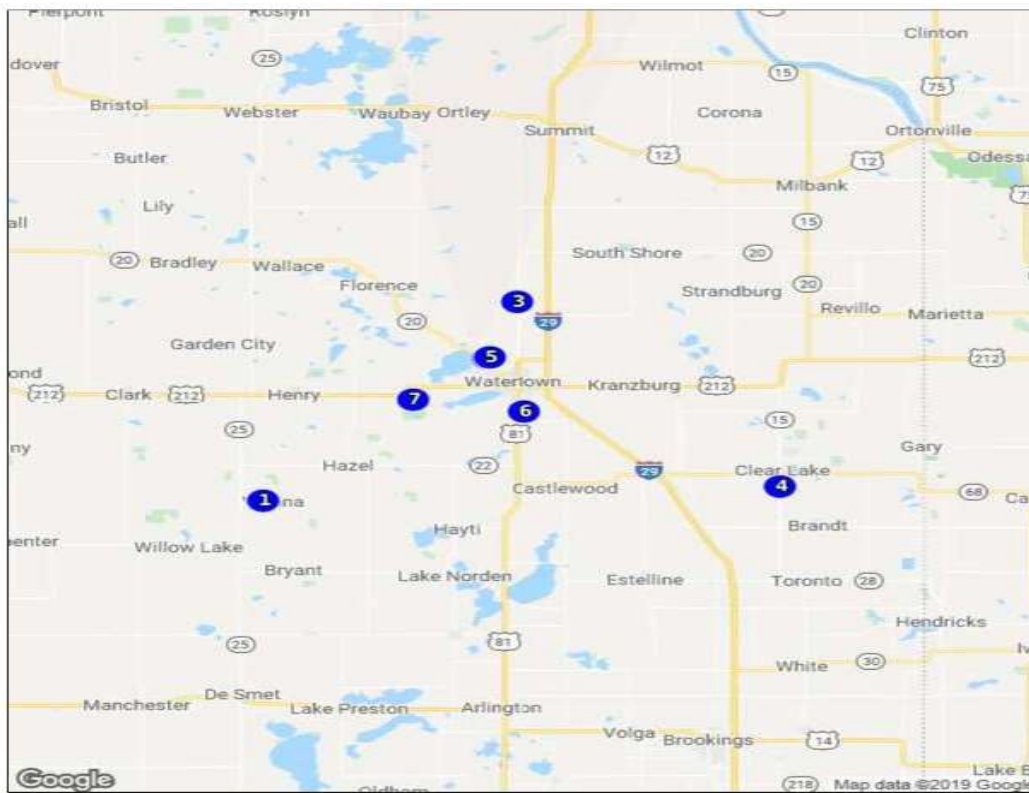
**Market Sales Analysis:**



| Sales Analysis CD2 |            |              |           |             |             |             |            |               | Overall Analysis |
|--------------------|------------|--------------|-----------|-------------|-------------|-------------|------------|---------------|------------------|
| Sale No.           | Location   | Sale Date    | Price     | Year/E.A.   | GLA         | Acres       | Style      | Outbuildings  |                  |
| CD2                | Waverly    | 2019         | \$275,000 | 2001        | 1,570       | 2.6         | Split      | Pole Building |                  |
| 1                  | Watertown  | 2019         | \$300,000 | 1976/upd    | 1,106       | 3.21        | Split      | Pole Bld      | Comparable       |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Similar(=)  | Similar(=) | Similar(=)    |                  |
| 2                  | Watertown  | 2018         | \$270,000 | 2005        | 1,920       | 5           | Ranch      | None          | Comparable       |
|                    |            | Adjustments: |           | Similar(=)  | Superior(-) | Superior(-) | Similar(=) | Inferior(+)   |                  |
| 3                  | Vienna     | 2019         | \$275,000 | 1980        | 1,400       | 8.16        | Ranch      | None          | Inferior         |
|                    |            | Adjustments: |           | Inferior(+) | Inferior(+) | Superior(-) | Similar(=) | Inferior(+)   |                  |
| 4                  | Watertown  | 2019         | \$319,000 | 1974/upd    | 1,476       | 9.46        | Ranch      | Pole Blds     | Superior         |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Superior(-)   |                  |
| 5                  | Clear Lake | 2019         | \$301,000 | 1952/upd    | 1,556       | 8.9         | Ranch      | Pole Blds     | Comparable       |
|                    |            | Adjustments: |           | Similar(=)  | Similar(=)  | Superior(-) | Similar(=) | Similar(=)    |                  |
| 6                  | Watertown  | 2019         | \$312,500 | 1970        | 1,352       | 5.63        | Ranch      | Sheds         | Inferior         |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Superior(-) | Similar(=) | Inferior(+)   |                  |
| 7                  | Watertown  | 2019         | \$295,000 | 1976        | 1,440       | 1.88        | Ranch      | None          | Inferior         |
|                    |            | Adjustments: |           | Similar(=)  | Inferior(+) | Similar(=)  | Similar(=) | Inferior(+)   |                  |
| 8                  | Watertown  | 2019         | \$370,000 | 2000        | 1,556       | 12.01       | Ranch      | Pole Blds     | Superior         |
|                    |            | Adjustments: |           | Similar(=)  | Similar(=)  | Superior(-) | Similar(=) | Similar(=)    |                  |



### Sale Location Map:



#### **Legend**

- |                                                       |                                                     |
|-------------------------------------------------------|-----------------------------------------------------|
| 1. 18509 435TH AVENUE, Vienna, SD 57271(20-8178)      | 5. 2217 STADHEIM DRIVE, Watertown, SD 57201(42-9)   |
| 2. 2502 STADHEIM DRIVE, Watertown, SD 57201(24-6016)  | 6. 45581 175TH STREET, Watertown, SD 57201(98-91)   |
| 3. 16276 455TH AVENUE, Watertown, SD 57201(28-1048)   | 7. 17375 447TH AVENUE, Watertown, SD 57201(24-6249) |
| 4. 18215 SD 15 HIGHWAY, Clear Lake, SD 57226(24-6243) |                                                     |

### Market Sales Analysis

#### Conclusion:

Eight sales are from the market without the influence of a wind tower, project or turbine. All transactions have similar highest and best use as a rural acreage and located within the market area. Sales one, two, and five have stronger similarities to CD2. Sales two, five and six are inferior sales. Sale three has slightly superior site size and outbuildings. The market evidence suggests the bracketed market range for CD2 should fall within \$270,000 to \$370,000 as demonstrated by the uninfluenced market sale transactions. The selling price at \$275,000 is at the low end of the market range suggesting there could be an influence on the selling price of CD2 as a result of the wind project, the proximity of the wind tower near the property and/or disclosure of the wind project. A review of the sales data suggests there is some type of negative influence or motivating factor for the sale transaction for CD2 resulting in a sale price that is on the lower end of the market range.

### Overall Conclusion:

The details of the transaction suggest the purchase price was influenced by the disclosure of the location of the wind turbine within

the proximity to the residence. Buyer-1 submitted a written offer that was accepted by the seller for \$350,000 with general knowledge of wind development, but not the specific tower location southeast of the property. The offer was cancelled by Buyer-1 when Seller-1 disclosed new information about the material facts of the location of the wind turbine southeast of the property per the project location map. Buyer-2 submitted a written offer for \$275,000, with knowledge and consideration given about the material facts of the wind turbine location southeast of the residence. Verification of the sale details confirmed an arm's length transaction with both the buyer and seller acting prudently, knowledgeably and for self-interest, with the transaction managed by a real estate agent. The difference between Buyer-1 uninfluenced offer and Buyer-2 influenced offer is \$75,000 or 21% of the original offer/price. The transaction details show factors that suggest a negative influence on the selling price due to the disclosure of a wind project and proximity of a wind turbine. Although the evidence leads to support a change in price due to the wind tower influence, it is my overall opinion that liberally applying the results of one sale to all rural residences in proximity to a wind turbine, tower, or development in South Dakota would not have consistent or credible results. Any rural residence that shows some type of factors that might have negatively influenced the selling price, should be analyzed on a case-by-case basis with a consistent scope of work for the analysis. Nevertheless, the results of the CD2 sales analysis shows there is a segment of the market that is sensitive to living within the proximity of wind tower or turbine and there could be a situation that could influence the selling price of a rural residence located in close proximity to a wind tower or within a developing wind project.

DAL Appraisal & Land Services  
4820 E. 57<sup>th</sup> Street Sioux Falls, SD 57108  
david@dalappraisal.com

01/08/2020

RE: Docket EL19-027 Crowned Ridge Wind II, LLC

Mr. David Lawrence:

We have noted you have provided testimony and exhibits on behalf of the staff of the SD PUC located on Docket EL19-027 Crowned Ridge Wind II, LLC to be sited in Grant, Codington and Deuel counties. You have provided information on five homes in Deuel County as DE1, DE2, DE3, DE4 and DE5. As sellers, we have a different recollection than some of the Broker/Brokers.

Could these Comments from the Sellers additions/corrections be added as an addendum to your exhibit?

Our previous home is identified as DE1. In 2008 we built a new home with many conveniences and excesses. We planned to leave "Meadow Creek Valley" when our life ended, so we spent money others may not have chosen to spend. Deuel Harvest Wind Farm, by Invenergy submitted an application to build a wind project in Deuel County. They initially submitted three different project layouts. On these layouts, a wind turbine could be sited roughly one half to three fourths of a mile from our home. We decided we would not and could not live in a wind farm.

Later a fourth, and yet a different project layout was then submitted in the SD PUC Docket EL18-053 Deuel Harvest Wind, LLC. This fourth project layout has a wind turbine about 1.5 miles from our home. This is also too close to our home and we moved. We knew a loss would be realized when we forced our property on the market. We didn't know how much we would lose at the time, but in the final analysis, we lost roughly \$250k on a 30 acre parcel.

I've been told we received a very good price for our property. We believe the buyer should be as pleased as we were at a higher price. We also experienced the socio-economic effect the community had suffered since "Big Wind" arrived. We did not want to wait and endure what some of the sellers living among the turbines near Brookings and Toronto.

## **Exhibit DAL\_2**

### **Transaction Reference DE1**

**Page 44 "Interview Notes with Broker: The agent has listed a number of properties in the immediate neighborhood and the wind project was not a reason they were selling...The agent stated the property took about 6 months to sell which is typical of property in this price range at the higher end of the market."**

Our corrections to the above "Interview Notes with Broker":

The wind project was the only reason why we sold our home, DE1. At public meetings in Deuel County, as well as in other counties SD PUC wind energy dockets, we spoke against wind turbines being sited too close to wind non-participants homes.

012954

See SD PUC Docket EL18-053 Deuel Harvest Wind, LLC for our speeches:

<https://puc.sd.gov/commission/dockets/electric/2018/el18-053/holborn3.pdf>

<https://puc.sd.gov/commission/dockets/electric/2018/el18-053/holborn4.pdf>

Fall of 2017 we placed a For Sale by Owner sign on our property and called prospective buyers who had stated they would be interested in purchasing our home. We had many people who seemed interested although many also asked about the wind turbines. We doubt that they were asking because they wanted to purchase a home in or near a wind farm. We believe we conveyed that thought to you.

03/01/2018 we listed our property for sale with a Brokerage Firm & we closed on the sale of our home 02/2019. By our count, our home was on the market in excess of 15 months.

#### **Exhibit DAL\_2**

##### **Transaction Reference DE4**

**Page 62 “Interview Notes with Broker: The property was listed for sale because the owner was being relocated to Minnesota. The wind project was not a concern or a motivating factor to sell the property.”**

Please see Docket EL18-053 Deuel Harvest Wind, LLC

Section Public Input Meeting dated 01/24/2019

Comments of Dr. Jeff Collins, DVM has submitted a letter why he & his family have moved out of Deuel County. His comments are in direct conflict with the above “Interview Notes with Broker”.

<https://puc.sd.gov/commission/dockets/electric/2018/el18-053/collins.pdf>

#### **Exhibit DAL\_2**

##### **Transaction Reference DE5**

There are no DE5 “Interview Notes with Seller”. We recall visiting with these sellers then and more recently. If you were to interview them, we believe the turbines were a primary reason, if not the only reason, they sold their property.

Thank You.

Sincerely,

[REDACTED]  
[REDACTED]  
[REDACTED]

Cc. Arvid J. Swanson, PC  
27452 482<sup>nd</sup> Ave. Canton, SD 57013  
605-743-2070

aj@ajswanson.com

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

**IN THE MATTER OF THE APPLICATION BY )  
CROWNED RIDGE WIND II, LLC FOR A )  
PERMIT OF A WIND ENERGY FACILITY IN )  
DEUEL, GRANT AND CODINGTON COUNTIES )  
)**

**CERTIFICATE OF SERVICE**

**EL19-027**

I hereby certify that true and correct copies of the following:

- Staff's Witness and Exhibit Lists
- Exhibit S1
- Exhibit S2
- Exhibit S3
- Exhibit S4
- Exhibit S5
- Exhibit S6

and Certificate of Service were served electronically on the 29<sup>th</sup> day of January 2020, addressed to those parties listed on the service list.

Exhibit S1 (Confidential) was serviced electronically to the following on the 29<sup>th</sup> day of January 2020:

Mr. Miles Schumacher – representing Crowned Ridge Wind, LLC  
Lynn, Jackson, Shultz and Lebrun, PC  
101 N. Minnesota Ave., Ste. 400  
Sioux Falls, SD 57104  
[mschumacher@lynnjackson.com](mailto:mschumacher@lynnjackson.com)

Mr. Brian J. Murphy  
Managing Attorney  
NextEra Energy Resources, LLC  
700 Universe Blvd.  
Juno Beach, FL 33408  
[Brian.J.Murphy@nee.com](mailto:Brian.J.Murphy@nee.com)  
(561) 694-3814 - voice



Kristen N. Edwards  
Staff Attorney  
South Dakota Public Utilities Commission  
500 East Capitol Avenue  
Pierre, SD 57501  
Phone (605)773-3201  
[Kristen.edwards@state.sd.us](mailto:Kristen.edwards@state.sd.us)