

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY CROCKER WIND FARM, LLC FOR A
PERMIT FOR A WIND ENERGY FACILITY AND A 345 KV TRANSMISSION LINE IN
CLARK COUNTY, SOUTH DAKOTA, FOR CROCKER WIND FARM

SD PUC DOCKET EL-17-____

PREFILED TESTIMONY OF BARRY FLADEBOE
ON BEHALF OF CROCKER WIND FARM, LLC

December 15, 2017

1 **I. INTRODUCTION AND QUALIFICATIONS**

2
3 **Q. Please state your name, employer, and business address.**

4 A. My name is Barry Fladeboe. I am the Director of Wind Development at Geronimo
5 Energy, LLC (“Geronimo”), located at 7650 Edinborough Way, Suite 725, Edina,
6 Minnesota.

7
8 **Q. Briefly describe your educational and professional background.**

9 A. I have a Bachelor of Arts from the University of St. Thomas in St. Paul, Minnesota.
10 Prior to joining Geronimo, I worked for approximately 11 years in wind and solar
11 development industries, working for Gamesa Energy, Invenergy LLC, and Element
12 Power. At Geronimo, I am responsible for managing Geronimo's wind development
13 effort and staff. A copy of my curriculum vitae is provided as Exhibit 1.

14
15 **Q. Could you explain the relationship between Geronimo and Crocker Wind Farm,
16 LLC (“Crocker”) with respect to the proposed Crocker Wind Farm (“Project”)?**

17 A. Crocker is a wholly-owned subsidiary of Geronimo, and Geronimo is assisting
18 Crocker in all aspects of Project development.

19
20 **Q. Could you please describe Geronimo’s experience in the renewable energy
21 industry?**

22 A. Geronimo is a leading full-service North American renewable energy company
23 based in Edina, Minnesota, with satellite offices in southwest Minnesota, North
24 Dakota, South Dakota, Illinois, Colorado, New York, and Michigan. Geronimo
25 provides renewable energy development solutions for utilities and corporations
26 looking to harness renewable energy for business growth. Geronimo has developed
27 several operating wind farms and solar projects throughout the United States. Over
28 1,600 MW of wind projects and solar projects developed by Geronimo are either
29 operational or currently under construction. Geronimo has a multi-gigawatt
30 development pipeline of wind and solar projects in various stages of development
31 throughout the United States.

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Q. What is your role with respect to the Project?

A. I manage/oversee development of the Project.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide an overview of the Project’s development history, including: site selection; site analysis; layout design; and local permitting.

Q. What exhibits are attached to your Direct Testimony?

A. The following exhibits are attached to my Direct Testimony:

- Exhibit 1: Curriculum Vitae

Q. Please identify the sections of the Energy Facility Permit Application (“Application”) that you are sponsoring for the record.

A. I am sponsoring the following portions of the Application:

- Section 1.0: Introduction
- Section 2.3: Additional Considerations
- Section 3.0: Estimated Cost of the Wind Energy Facility
- Section 4.1: Site Location and Overview
- Section 4.4: Land Requirements
- Section 6.1: Land Acquisition
- Section 6.2: Sale of Power
- Section 6.5: Construction Financing
- Section 6.6: Permanent Financing
- Section 6.7: Expected Commercial Operation Date
- Section 7.0: Alternative Sites and Siting Criteria (with the exception of subsections 7.1.1 and 7.2)
- Section 8.0: Local Land Use Controls

- 1 • Section 9.7: Community Impact (with the exception of those subsections
- 2 concerning transportation and cultural resources)
- 3 • Section 10.0: Future Additions and Modifications
- 4 • Section 12.3: Local Community Input
- 5 • Section 12.4: Applicant's Burden of Proof
- 6 • Section 13.0: Testimony and Exhibits

8 **III. PROJECT OVERVIEW**

10 **Q. Who will own and operate the Project?**

11 A. The Project will be owned and operated by Crocker Wind Farm, LLC.

13 **Q. Please provide a basic description of the Project, including where it is located.**

14 A. The proposed Project is an up to 400 megawatt ("MW") wind energy conversion
15 facility ("Wind Energy Facility") and an associated 345 kV transmission line
16 ("Transmission Line") located in Clark County, South Dakota. The Wind Energy
17 Facility would include:

- 18 • Up to 120 three-bladed, horizontal-axis wind turbines;
- 19 • Up to four permanent meteorological towers ("MET towers") and Sonic Detection
20 and Ranging ("SoDAR") or Light Range Detection and Ranging ("LiDAR") units;
- 21 • Access roads, improvements to existing public and private roads, and temporary
22 crane paths;
- 23 • Temporary laydown/staging areas, and temporary batch plant to mix concrete for
24 tower foundations;
- 25 • Operations and maintenance ("O&M") facility;
- 26 • Underground and/or aboveground electrical collector and communication
27 systems; and
- 28 • Project collection substation.

29 The Transmission Facility would include:

- 30 • Approximately 5.2 miles of 345 kV bundled conductors;
- 31 • Steel monopole structures;

- 1 • Temporary access roads;
- 2 • Temporary staging areas; and
- 3 • A switchyard with permanent access road.

4

5 **Q. Has Crocker secured all of the necessary property rights for the Project?**

6 A. Yes, Crocker has obtained the necessary easements, leases or purchase
7 agreements from landowners for the Project. Crocker has agreements in place to
8 either lease or purchase the necessary parcels for the substation, switchyard, and
9 O&M facilities. The temporary laydown and staging areas are secured with existing
10 wind lease agreements and Crocker will continue to coordinate with these
11 landowners as needed.

12

13 **Q. How and where will the Project interconnect to the electric grid?**

14 A. The Project will interconnect at the proposed switchyard, which is approximately two
15 miles north of the town of Crocker. Specifically, the Transmission Line will run from
16 the Project substation to the switchyard, where the power will transfer to the Basin
17 Electric Groton-to-Watertown 345 kV transmission line, which is part of the
18 SPP/WAPA Transmission line portfolio in Clark County.

19

20 **Q. Has the Project identified an off-taker for the energy it will produce?**

21 A. Crocker is currently in active discussions with three potential off-takers, but has not
22 yet executed an offtake agreement. See the Direct Testimony of Elizabeth
23 Engelking for further discussion of potential off-takers for the Project.

24

25 **Q. What is the proposed development schedule for the Project?**

26 A. It is anticipated that Project construction may begin as early as the Second Quarter
27 2018, and that the Project would be operational by the Fourth Quarter 2019.

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29 **IV. OVERVIEW OF SITE SELECTION**

30

1 **Q. Why did Crocker initially identify a site in Clark County for development of the**
2 **Project?**

3 A. Crocker started when a group of local landowners identified wind energy as the best
4 method for maximizing and diversifying use of their land. These landowners
5 contacted Geronimo regarding potentially developing a wind energy facility on their
6 land. Since wind developers need voluntary easements, and enter into a long-term
7 relationship with project landowners, Geronimo was interested in working with the
8 landowners to further analyze the potential for project development on their land.
9 The identification of the Project Area was primarily driven by: (1) the robustness of
10 the available wind energy resource; (2) ready access to transmission
11 interconnection; (3) land use and environmental compatibility with wind
12 development; and (4) landowner support for wind energy development.

13
14 **Q. Did Crocker explore different alternatives to the site?**

15 A. Since Geronimo was approached by specific landowners regarding development of
16 a specific site, no other broader site alternative to the proposed site were evaluated.
17 However, Crocker did evaluate alternatives for site expansion and refinement. Other
18 wind development was underway north of the Project Area, south of the Project Area
19 was eliminated due to uninterested landowners and proximity to the Clark airport,
20 and land to the east and west of the Project Area was not considered due to the
21 lower wind resource and existing leases with other companies. Thus, the site could
22 only extend west. Further, once the initial site location was selected, the Project
23 boundary was modified over time based on landowner interest, and to avoid
24 environmental concerns based on consultations with federal, state, and local
25 agencies.

26
27 **Q. Provide an overview of the analysis conducted by Crocker to determine that**
28 **the site is suitable for wind development.**

29 A. Once the site was selected and secured, Crocker conducted various analyses to
30 determine the suitability of the site for wind development, including the compatibility

1 of a wind energy facility with existing land uses and resources. The analyses
2 included the following:

- 3 • Communication Tower Study;
- 4 • Microwave Beam Path Study;
- 5 • Shadow Flicker Assessment;
- 6 • Acoustic Assessment;
- 7 • Raptor Nest Surveys;
- 8 • Eagle Nest Surveys;
- 9 • Eagle Monitoring;
- 10 • Sharp-tailed Grouse and Greater Prairie Chicken Lek Surveys;
- 11 • Dakota Skipper and Poweshiek Skipperling Habitat Assessment;
- 12 • Dakota Skipper and Poweshiek Presence/Absence Survey;
- 13 • Northern-Long Eared Bat Presence/Absence Acoustic Surveys;
- 14 • Avian Use Studies (April 2016 – March 2017);
- 15 • General Bat Acoustic Study;
- 16 • Grassland Avian Use Survey;
- 17 • Wetland and Waterbody Delineations;
- 18 • Natural Community Assessment; and
- 19 • Archaeological and Cultural Studies.

20 Each of the site-specific studies was preceded by desktop review of existing
21 resource data and coordination with local, state, and federal agencies and entities,
22 which helped to inform site-specific study selection and protocols.

23
24 **Q. Discuss further Crocker’s coordination and consultation with federal and state
25 agencies, local officials, and the surrounding community during Project
26 development.**

27 A. As discussed in Section 12.2 of the Application, Crocker coordinated with a number
28 of federal, state, and local agencies to identify agency concerns regarding the
29 proposed Project. Project notification letters were sent to these agencies on April 18,
30 2016 and October 24, 2016, and the responses received are provided in Appendix H

1 of the Application. In addition, Crocker has had numerous meetings and discussions
2 with the USFWS regarding avoidance, minimization, and mitigation of potential
3 impacts to USFWS easements, as well as wildlife and associated habitat. Crocker
4 has also had on-going discussions with the South Dakota Game Fish and Parks
5 Department regarding the Project.

6
7 Additionally, Crocker has been coordinating with Clark County and the townships
8 within the Project Area, including Ash Township, Cottonwood Township, Spring
9 Valley Township, Warrant Township, and Woodland Township. Crocker has also
10 listened to comments and concerns voiced by those in the community. Input was
11 received through regular attendance at Clark County Commission Meetings, the
12 Clark County Conditional Use Permit (“CUP”) Application Hearing, and at the public
13 input hearing held in conjunction with Crocker’s prior application – and has taken
14 steps to address those potential concerns.

15
16 **Q. Discuss further how Crocker has incorporated agency comments and**
17 **addressed potential concerns with the current Project.**

18 A. All of the input received was used to design the current Project configuration. For
19 example:

- 20 • Based on consultation with the United States Fish and Wildlife Service
21 (“USFWS”), the Project boundary shifted west to avoid Mallard Slough and other
22 large waterbodies to the east of the Project that provide habitat to waterfowl in
23 the area;
- 24 • The Project avoided nearly 10,000 acres of USFWS easement lands, including
25 2,404 acres of USFWS grassland easements and 7,482 acres of land with
26 wetland easements;
- 27 • The Project avoided Crocker airport runway approaches and restricted airspace;
- 28 • The Project avoided state Game Production Areas;
- 29 • The Project implemented a three-quarter mile setback from non-participating
30 residences; and
- 31 • The Project is designed to utilize minimal turbine shifts during final micro-siting.

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Q. Is the Project compatible with existing land uses and future development in and around the Project Area?

A. Yes. Wind energy facilities are particularly suited to agricultural areas because the existing agricultural uses can continue around the facilities. Crocker is not aware of any specific proposed future development plans for the area; however, the Project should not interfere with surrounding landowners' existing or planned uses of their land, particularly given the setbacks incorporated into the Project's design.

V. TURBINE MODEL SELECTION

Q. Has Crocker made a final turbine model selection for the Project?

A. Not at this time. Four representative turbine models ranging from 2.0 MW to 3.45 MW are discussed in the Application: Gamesa G126 2.625 MW; GE 2.5-116; Vestas V110 STE 2.0 MW; and Vestas V136 3.45 MW. However, Crocker requests the ability to select the turbine model prior to construction to ensure a viable, cost-effective and optimal turbine selection for the Project given the known conditions of the Project Area and the turbines that are commercially available when the Project is constructed.

Q. Why is it important for the Project to have flexibility with respect to the turbine model selected?

A. Turbine supply agreements reflect a large capital investment in the project, and are frequently entered into after most major permits are received. Specifying a single turbine option at this time would make it difficult for Crocker to negotiate the best price for wind turbines. Negotiating turbine supply agreements in a competitive process with a number of suppliers will reduce the overall cost of the Project and benefit the Project offtakers. Further, since turbine technology is continually evolving, flexibility in selecting a turbine model will enable the Project to take advantage of the latest technology advancements.

1 **VI. PROJECT CONFIGURATION**

2
3 **Q. Is the Project's proposed configuration depicted in Figure 2 of the**
4 **Application?**

5 A. Yes, Figure 2 shows the 120 turbine locations proposed for the Project.
6

7 **Q. Is this same configuration proposed for any turbine model selected?**

8 A. Yes, the same 120 turbine locations are proposed for any turbine model selected.
9 For example, the configuration will work for any of the four representative turbine
10 models discussed in the Application. More specifically, if any of those four turbine
11 models were selected, a subset of the 120 proposed turbine locations would be used
12 to reach a total output of up to 400 MW. Further, although only a subset of the
13 locations will be used, acoustic and shadow flicker modeling was conducted at all
14 120 proposed turbine locations for each of the four representative turbine models to
15 ensure that each proposed turbine location meets applicable requirements for each
16 model (see also the Direct Testimony of Michael Morris and the Direct Testimony of
17 Eddie Duncan). If a different turbine model is ultimately selected, Crocker will
18 update its acoustic and shadow flicker modeling to confirm compliance with
19 applicable noise requirements and its shadow flicker level commitment.
20

21 **Q. Is the configuration sited so as to minimize potential environmental impacts?**

22 A. Yes, as discussed in Section 9.0 of the Application, and in the Direct Testimony of
23 Brie Anderson, the Project's proposed configuration was sited so as to minimize
24 potential environmental impacts. For instance, as discussed above, the Project was
25 sited so as to avoid USFWS grassland easements and protected wetland basins to
26 the extent practicable, and has also been sited to avoid impacts to cultural
27 resources.
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29 **Q. Is the Project configuration designed to comply with all applicable County and**
30 **State turbine setback requirements?**

31 A. Yes.

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Q. Please identify the applicable setbacks for the Project.

A. The applicable setbacks are listed in the table below.

Project Setback Requirements		
Turbine Setback Requirement	Requirements	Proposed Setbacks
Clark County		
4.21.03 (2)(a) Off-site residences, businesses, churches, and buildings owned and/or maintained by governmental entity	3,960 feet	3,960 feet
4.21.03 (2)(a) Buildings on-site or lessor's residences	500 feet	1,000 feet plus any distance needed to meet noise requirement and shadow flicker commitment
4.21.03 (2)(b) Centerline of public roads	500 feet or 110 percent the height of the wind turbine	550 feet minimum and 110 percent of turbine height should the turbine be taller
4.21.03 (2)(c) Any property line	500 feet or 110 percent the height of the wind turbine, whichever is greater	County requirement for non-participants, setback has been waived for participants
Setback from cemeteries (condition of CUP)	1 mile	1 mile
Noise requirement	Distance from receptors must meet the noise standard of 50 A-weighted decibels ("dBA")	Crocker will site turbines at the distance required to meet the 50-dBA standard
South Dakota		
SDCL 43-13-24 Property lines	500 feet or 1.1 times the height of the tower, whichever is greater	Turbines are sited to meet this standard
Voluntary		
Shadow Flicker	Not regulated by State, Federal or local law	Distance required to meet voluntary commitment of 30 hours per year or less at any residence

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1 The setbacks are also visually depicted on the siting constraints map provided as
2 Figure 5 and Figure 5a-d in the Application.

3
4 **Q. In addition to the setbacks noted above, are there other siting constraints the
5 Project layout accounts for?**

6 A. As discussed in the Direct Testimony of Michael Morris, turbines have been sited to
7 meet a voluntary shadow flicker goal of 30 hours per year or less at existing
8 residences.

9
10 **Q. Did you coordinate with existing infrastructure owners in developing the
11 Project layout?**

12 A. Yes. Specific detail regarding that coordination is provided in the Direct Testimony
13 of Rob Copouls. In addition, Crocker's construction contractor will request One-Call
14 locates prior to beginning construction to ensure underground facilities are identified.

15
16 **VII. FINAL MICROSITING**

17
18 **Q. Where is the Project at with respect to micro-siting of the turbines?**

19 A. Completing wetland and waterbody delineations, cultural resource surveys and
20 geotechnical studies will be required to finalize micro-siting turbines. The wetland
21 and waterbody delineations are approximately 78% complete and the cultural
22 resource surveys are approximately 80% complete. These studies, in addition to
23 geotechnical will be completed in the Spring of 2018.

24
25 **Q. Could the remaining cultural resource survey, wetland and waterbody
26 delineations, and geotechnical work require changes to the turbine locations?**

27 A. Yes, the results of the geotechnical analysis and remaining survey work could
28 necessitate minor shifts to the proposed turbine locations.

29
30 **Q. What is Crocker's request with respect to flexibility for future minor shifts in
31 the turbine locations presented in Figure 2 of the Application?**

1 A. To accommodate final micro-siting, Crocker requests that the permit allow turbines
2 to be shifted within 1,000 feet of their current proposed location, so long as specified
3 noise and shadow flicker thresholds are not exceeded, cultural resources and
4 sensitive species habitat are avoided, and wetland impacts are avoided to the extent
5 practicable. If turbine shifts are greater than 1,000 feet, exceed the noted thresholds,
6 or do not meet the other limitations specified, Crocker would either use an alternate
7 turbine location or obtain Commission approval of the proposed turbine location
8 change. In all cases, the final turbine locations constructed would adhere to all
9 applicable local, state, and federal regulations and requirements.

10
11 **Q. With respect to other facilities, what is Crocker's request with respect to final**
12 **micro-siting?**

13 A. Shifts in the access roads and collector system, as well as temporary facilities (e.g.,
14 concrete batch plant and laydown/staging areas), may also be necessary to
15 accommodate turbine shifts, avoid identified resources, incorporate landowner input,
16 or to address other factors. Therefore, Crocker requests that the permit allow these
17 facilities to be shifted, as needed, so long as they are located on leased land,
18 cultural resources are avoided, sensitive species habitat is avoided, wetland impacts
19 are avoided to the extent practicable, and all other applicable regulations and
20 requirements are met.

21
22 **Q. Are any future modifications or expansions of the Project planned?**

23 A. Other than potential minor shifts during final micro-siting, no future modifications or
24 expansions of the Project are planned at this time.

25
26 **VIII. LOCAL PERMITTING**

27
28 **Q. Has the Project obtained conditional use permits for the Project from Clark**
29 **County?**

30 A. Yes, Clark County issued a CUP for the Project on April 4, 2017.

1 **Q. What is the status of Crocker’s legal proceeding involving the CUP in Circuit**
2 **Court?**

3 A. Crocker sought relief in Circuit Court from certain permit conditions, and is also
4 seeking clarification of certain permit terms. However, the configuration proposed by
5 Crocker in this Application has been designed to comply with county setbacks and
6 other applicable requirements. Crocker has informed Clark County’s counsel of this
7 fact, and is hopeful a resolution with respect to certain minor items (e.g., clarification
8 of permit terms) can be reached in the near future.
9

10 **Q. Is the siting flexibility requested by Crocker consistent with the siting**
11 **requirements imposed by Clark County?**

12 A. Yes. Clark County allows facilities to be sited anywhere within the Project Area
13 covered by the CUP so long the requirements of the CUP, including setbacks and
14 noise requirements, are satisfied. Crocker will submit its final layout to Clark County
15 for review as part of the building permit process.
16

17 **IX. PROJECT BENEFITS**
18

19 **Q. Please describe the local and state benefits the Project will provide.**

20 A. The Project will provide short-term and long-term benefits to the local economy. As
21 discussed in the Direct Testimony of Rob Copouls, construction of the Project is
22 anticipated to generate approximately 250 jobs during construction. In addition, local
23 contractors will be used for portions of construction, and local expenditures will be
24 made for equipment, fuel, operating supplies, and other products and services,
25 which will benefit area businesses.
26

27 Long-term beneficial impacts to the state and local tax base as a result of the
28 operation of the Project will contribute to improving the local economy in the area. In
29 addition to the creation of jobs and personal income, the Project will pay capacity
30 and production taxes which will benefit the State of South Dakota, School Districts,
31 Clark County, and the townships in the Project Area with wind turbines. Over 20

1 years of operation, direct economic benefits are estimated to include (based on 400
2 MW project):

- 3 • Landowners Payments: ~\$46 million over 20 years (~\$2.3 million average per
4 year)
- 5 • Capacity and Production Tax: ~ \$36 million over 20 years (~\$1.8 million per year)
- 6 • Community Fund: \$1.6 million over 20 years (\$80,000 per year)
- 7 • Full-Time Jobs: ~15-20 full time jobs totaling up to \$24 million over 20 years


8
9 Overall, the Project will provide significant economic benefits to Clark County and
10 the State of South Dakota, in addition to providing local landowners the opportunity
11 to diversify their agricultural operations.

12
13 **X. CONCLUSION**

14
15 **Q. Does this conclude your testimony?**

16 A. Yes.

17
18 Dated this 15th day of December, 2017.

19
20 
21 Barry Fladeboe