

BEFORE THE
PUBLIC UTILITIES COMMISSION
STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DAKOTA RANGE I, LLC AND DAKOTA
RANGE II, LLC FOR AN ENERGY FACILITY PERMIT TO CONSTRUCT
A WIND ENERGY FACILITY

SD PUC DOCKET EL 18-____

PREFILED TESTIMONY OF MARK MAUERSBERGER
ON BEHALF OF DAKOTA RANGE I, LLC AND DAKOTA RANGE II, LLC

January 24, 2018

1 **I. INTRODUCTION AND QUALIFICATIONS**

2

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

4 A. My name is Mark Mauersberger and I am employed by Apex Clean Energy, Inc. (“Apex”).
5 My business address is 8665 Hudson Boulevard North, Suite 110, Lake Elmo, Minnesota
6 55402.

7

8 **Q. What is your position with Apex?**

9 A. I am a Senior Development Manager with Apex.

10

11 **Q. Briefly describe your educational and professional background.**

12 A. I have ten years of experience as a renewable energy project developer in multiple Midwest
13 states, including South Dakota, North Dakota, Nebraska, Minnesota, and Wisconsin. In my
14 current role with Apex, I oversee lease negotiation and acquisition, permitting strategy, and
15 community and local government outreach, and engage in utility power buyer negotiations
16 for wind projects in South Dakota and North Dakota. I have a Bachelor of Science degree in
17 Business from Ohio University. A copy of my curriculum vitae is provided as Exhibit 1.

18

19 **Q. In the event you are not available to testify at a public hearing, is there another
20 individual qualified to discuss the information in your testimony?**

21 A. Yes, Ms. Brenna Gunderson, Director of Project Development for Apex. Ms. Gunderson is
22 an experienced wind project developer, and has assisted with all aspects of Project
23 development. A copy of Ms. Gunderson’s curriculum vitae is provided as Exhibit 2.

24

25 **Q. Could you explain the relationship between Apex and Dakota Range I, LLC and
26 Dakota Range II, LLC (“Dakota Range”) with respect to the proposed Dakota Range
27 Wind Project (“Project”)?**

28 A. Dakota Range I, LLC and Dakota Range II, LLC are wholly-owned subsidiaries of Apex
29 Clean Energy Holdings, LLC, and Apex is assisting Dakota Range with Project development.
30 The two Dakota Range entities will jointly own, manage, and operate the Project.

31

1 **Q. Could you please describe Apex’s experience in the renewable energy industry,**
2 **particularly its experience developing wind projects?**

3 A. Apex is an independent renewable energy company based in Charlottesville, Virginia. Apex
4 has diversified portfolios of renewable energy resources capable of producing more than
5 14,000 MW of clean energy. Apex has brought 2,200 MW online since 2012, and operating
6 assets under management are nearly 1 gigawatt (“GW”) as of the first quarter of 2018. Apex
7 is has one of the nation’s largest, most diversified portfolios of renewable energy resources
8 and has the experience, skills, personnel, and proven capability to successfully manage
9 Project development. Apex offers comprehensive in-house capabilities, including site
10 origination, financing, construction, and long-term asset management services, and works
11 with corporations, utilities, and government entities, including Northern States Power
12 Company d/b/a Xcel Energy, AEP, Southern Power, IKEA, the U.S. Army, and Steelcase.

13
14 **Q. What is your role with respect to the Project?**

15 A. I am the Project Manager.

16
17 **Q. What is the purpose of your testimony?**

18 A. The purpose of my testimony is to provide an overview of the Project’s development history,
19 including: site selection; site analysis; layout and facility design; land use compatibility; and
20 permitting. I also provide testimony regarding Project construction, operation, and
21 decommissioning.

22
23 **Q. Please identify the sections of the Energy Facility Permit Application (“Application”)**
24 **that you are sponsoring for the record.**

25 A. I am sponsoring the following sections of the Application:

- 26 • Section 1.0: Introduction
- 27 • Section 2.0: Project Development Summary
- 28 • Section 3.0: Facility Permit Application
- 29 • Section 4.0: Completeness Checklist
- 30 • Section 5.0: Names of Participants
- 31 • Section 6.0: Name of Owner and Manager

- 1 • Section 7.0: Purpose of, and Demand for, the Wind Energy Facility
- 2 • Section 8.0: Estimated Cost of the Wind Energy Facility
- 3 • Section 9.0: General Site and Project Component Description
- 4 • Section 10.0: Alternate Sites and Siting Criteria
- 5 • Section 17.0: Local Land Use Controls
- 6 • Section 20.0: Time Schedule
- 7 • Section 21.0: Community Impact
- 8 • Section 22.0: Employment Estimates
- 9 • Section 23.0: Future Additions and Modifications
- 10 • Section 24.0: Decommissioning of Wind Energy Facilities
- 11 • Section 25.0: Reliability and Safety
- 12 • Section 26.0: Information Concerning Wind Energy Facilities
- 13 • Section 27.0: Additional Information in Application
- 14 • Appendix A: Figures
- 15 • Appendix B: Agency Coordination
- 16 • Appendix K: County Conditional Use Permits
- 17 • Appendix L: Property Value Effects Studies
- 18 • Appendix P: Decommissioning Plan

19

20 **II. PROJECT OVERVIEW**

21

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

23 A. Dakota Range I, LLC and Dakota Range II, LLC will jointly own and operate the Project.

24

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

26 A. The Project is an up to 302.4-megawatt (“MW”) wind energy conversion facility to be
27 located in Grant County and Codington County, South Dakota. The Project components
28 include:

- 29 • Up to 72 wind turbine generators;
- 30 • Access roads to turbines and associated facilities;
- 31 • Underground 34.5 kilovolt (“kV”) electrical collector lines connecting the turbines to the
32 collector substation;

- 1 • Underground fiber-optic cable for turbine communications co-located with the collector
- 2 lines;
- 3 • A 34.5 to 345 kV collector substation;
- 4 • An operations and maintenance (“O&M”) facility;
- 5 • Up to 5 permanent meteorological (“met”) towers; and
- 6 • Additional temporary construction areas, including laydown and batch plant areas.

7

8 **Q. Has Dakota Range secured all of the necessary property rights for the Project?**

9 A. Yes. Dakota Range has entered into voluntary agreements with landowners to secure the

10 property rights necessary to construct, operate, and maintain the Project.

11

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

13 A. The Project will interconnect to the high-voltage transmission grid via the Big Stone South to

14 Ellendale 345-kV transmission line, which crosses the Project site.

15

16 **Q. Will a transmission line be constructed between the Project substation and the**

17 **interconnection switching station?**

18 A. A 345 kV line will be constructed between the Project substation and a proposed

19 interconnection switching station to be located at the point of interconnection. However,

20 since the line will be less than 2,640-feet long, will not cross any public highways, and will

21 not require the use of eminent domain, it is not a “transmission line” for purposes of the

22 Commission’s siting jurisdiction. The 345 kV line and associated interconnection switching

23 station were permitted locally.

24

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

26 A. Yes. In September 2017, Northern States Energy, d/b/a/ Xcel Energy (“Xcel”), entered into a

27 Purchase and Sale Agreement (“PSA”) with Apex Clean Energy Holdings, LLC to acquire

28 the Dakota Range I, LLC and Dakota Range II, LLC entities, which own the Project.

29

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

31 A. The PSA with Xcel is scheduled to close in late 2018. Before the closing date, certain

32 development milestones must be met, including securing an Energy Facility Permit for the

1 Project. Once the sale has closed, Xcel will assume responsibility for assisting Dakota Range
2 with completing Project development, including the construction and operation of the
3 Project. At this point, it is anticipated that pre-construction engineering will be conducted
4 between August 2018 and February 2019, the layout will be finalized in February 2019,
5 construction will occur between May 2020 and December 2021, and the Project will be
6 commercially operational in December 2021.

7 8 **III. OVERVIEW OF SITE SELECTION**

9 10 **Q. Why did Dakota Range initially identify a site in Codington County and Grant County** 11 **for development of the Project?**

12 A. In March 2015, Apex acquired the Project from a small local developer, Wahpeton Wind. At
13 the time of acquisition, approximately 10,000 acres were under lease. Because the Dakota
14 Range Project was acquired after initial site selection, and a specific area was offered for
15 sale, Apex was not involved in considering alternative locations outside of Codington and
16 Grant Counties.

17 18 **Q. Did Dakota Range explore different alternatives for expanding the site?**

19 A. Yes, once Apex acquired Dakota Range, Dakota Range evaluated how best to expand the
20 site. Due to existing constraints, Dakota Range determined that expansion needed to occur
21 within approximately 5-7 miles of the initial site. Expansion beyond that immediate area was
22 inhibited by: competing wind farm leases to the south, east, and north; U.S. Fish and
23 Wildlife Service Grassland Easements to the north and east; and diminishing wind speeds to
24 the west.

25 26 **Q. Please provide an overview of the development work conducted by Dakota Range to** 27 **determine that the site was suitable for wind development.**

28 A. Since March 2015, Dakota Range has undertaken extensive development activities,
29 including: landowner outreach and easement acquisition; local, state, and federal agency and
30 entity coordination; desktop and field environmental studies and surveys of the Project Area;
31 county permitting; entering into a PSA with Xcel for the Project; and Project design and

1 refinement of the configuration. See Section 2.0 of the Application for further discussion of
2 these development activities. In addition, further information regarding the specific
3 environmental studies and surveys conducted and Dakota Range's coordination with
4 agencies is provided in the Direct Testimony of David Phillips.

5
6 **Q. Please discuss in more detail the coordination you had with local officials and the local
7 community.**

8 A. Dakota Range had pre-applications meetings with Grant County and Codington County in
9 February and March 2017. Dakota Range also applied for and received a conditional use
10 permit ("CUP") for the Project from Grant County on June 12, 2017 and from Codington
11 County on June 19, 2017. In addition, Apex has had meetings and discussions with the
12 townships in the Project area: Lelo Township and Germantown Township in Codington
13 County; and Lura Township and Mazeppa Township in Grant County.

14
15 With respect to the local community, Dakota Range conducted outreach meetings to get input
16 on and address concerns regarding the Project on January 19, 2016; August 2, 2016;
17 February 1, 2017; February 15, 2017; and February 21, 2017. In addition, Dakota Range met
18 with the Punished Woman's Lake Association to discuss the Project and address concerns
19 related to potential viewshed impacts at Punished Woman's Lake. To address the concern
20 raised, as well as avoid areas of potential tribal resources near the lake and be a good
21 neighbor to the nearby town of South Shore, Dakota Range agreed to a turbine setback of
22 two miles from the shoreline of Punished Woman's Lake.

23
24 **Q. Is the Project compatible with existing land uses and future development in and around
25 the Project Area?**

26 A. Yes. The existing land uses are primarily agricultural (i.e., crop production, pasture land, hay
27 production). Wind development is particularly compatible with agricultural land because the
28 existing uses can continue around the wind energy facility. As a result, wind development
29 allows landowners to diversify their operations with minimal disruption to existing
30 agricultural uses. The Project is also compatible with local zoning requirements in
31 Codington and Grant Counties, as evidenced by the Counties' issuance of CUPs for the

1 Project. Dakota Range is not aware of any specific development proposed in the vicinity of
2 the Project, but the Project should not interfere with landowner's existing or planned uses of
3 their land, given the setbacks incorporated into the Project's design.
4

5 **IV. PROJECT CONFIGURATION**

6

7 **Q. Has Dakota Range made a final turbine model selection for the Project?**

8 A. Yes, Dakota Range proposes to use a Vestas V136-4.2 MW turbine model at an 82-meter
9 hub height for the Project.
10

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

12 A. Yes.
13

14 **Q. Please describe the configuration shown in Figure 2.**

15 A. The configuration consists of 72 primary wind turbine locations (shown in blue) and 25
16 alternate locations (shown in orange). Figure 2 also shows the proposed access roads,
17 underground collection system locations, and potential locations for the O&M facility and
18 Project collector substation.
19

20 **Q. Figure 2 of the Application shows four potential locations for the Project substation. 21 Why are multiple potential locations being shown?**

22 A. The final location of the collector substation depends on the location of the interconnection
23 switching station, which will be determined by Otter Tail Power Company in Q1 2018.
24 Thus, Figure 2 shows locations currently under consideration for the substation, but the
25 location ultimately selected may be different than those shown on Figure 2. The collector
26 substation, will be sited so that the transmission facility between the collector substation and
27 the interconnection switching station is less than a 0.5-mile in length and so that it does not
28 cross any public roads. The final substation location will be on land leased for the Project,
29 cultural resource impacts will be avoided or minimized per the CRMMP, environmental
30 setbacks are retained, wetland impacts will be avoided to the extent practicable, and all other
31 applicable regulations and requirements will be met.

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

A. Yes. As discussed in the Direct Testimony of David Phillips and in Sections 10.0 through 19.0 and Section 21.0 of the Application, the Project was sited to minimize potential environmental impacts. For example, no Project facilities will be placed on United States Fish and Wildlife Service (“USFWS”) Wetland or Grassland Easements, no sensitive species habitat will be impacted, previously identified cultural resources have been avoided, and permanent wetland impacts have been limited to five areas of minor impacts associated with access road crossings.

Q. Has Dakota Range incorporated input from landowners into the design of the Project?

A. Dakota Range provided an initial layout to participating landowners and incorporated their feedback into the preliminary layout contained in the Application.

Q. Is the Project layout designed to comply with all applicable County and State turbine setback requirements?

A. Yes.

Q. Could you identify the applicable turbine setbacks?

A. Yes, the applicable setbacks are listed in the table below (see also Table 10-1 in the Application).

Category	Requirements/Commitments
State Requirements	
Setbacks	Turbines shall be set back at least 500 feet or 1.1 times the height of the tower, whichever is greater, from any surrounding property line (SDCL 43-13-24).
Codington County	
Setbacks	<ul style="list-style-type: none">- 1,000 feet from existing off-site residences, businesses, churches, and buildings owned and/or maintained by a government entity.- 500 feet from on-site or lessor’s residence.- 110% the height of the wind turbines from the centerline of public roads.- 110% the height of the wind turbines from any property line unless a wind easement has been obtained from adjoining property owner.
Noise	Noise level shall not exceed 50 dBA average A-weighted sound pressure including constructive interference effects at the property line of existing off-site residences, businesses, and buildings owned and/or maintained by a

Category	Requirements/Commitments
	governmental entity.
Turbine Spacing	The turbines shall be spaced no closer than three rotor diameters (RD) within a string. If required during final micro siting of the turbines to account for topographic conditions, up to 10 percent of the towers may be sited closer than the above spacing, but the permittees shall minimize the need to site the turbines closer.
Grant County	
Setbacks	<ul style="list-style-type: none"> - 1,000 feet from existing off-site residences, businesses, churches, and buildings owned and/or maintained by a government entity. - 500 feet from on-site or lessor's residence. - 110% the height of the wind turbines from the centerline of public roads. - 110% the height of the wind turbines from any property line unless a wind easement has been obtained from adjoining property owner.
Noise	Noise level shall not exceed 50 dBA average A-weighted sound pressure including constructive interference effects at the perimeter of the principal and accessory structures of existing off-site residences, businesses, and buildings owned and/or maintained by a governmental entity.
Turbine Spacing	The turbines shall be spaced no closer than three RD within a string. If required during final micro siting of the turbines to account for topographic conditions, up to 10 percent of the towers may be sited closer than the above spacing but the permittees shall minimize the need to site the turbines closer.
Voluntary	
Shadow Flicker	Facility will not exceed a maximum of 30 hours of shadow flicker per year at any existing non-participating residence, business, or building owned and/or maintained by a governmental entity, unless otherwise agreed to by the landowner.
Punished Woman's Lake	The turbines will be set back two miles from the shoreline of Punished Woman's Lake.

1
2 The buildable area for turbines, after taking into account the above setbacks as well as further
3 environmental setbacks, is visually depicted on the siting constraints map provided as Figure
4 5 in Appendix A of the Application.

5
6 **V. FINAL MICROSITING**

7
8 **Q. Where is the Project at with respect to micrositing of the turbines?**

9 A. As discussed previously in my testimony, significant analysis has been completed to identify
10 the Project configuration shown in Figure 2 of the Application. Final micrositing of Project
11 facilities will occur in 2018, based on the survey for sensitive tribal resources, the

1 geotechnical analysis, unanticipated cultural resources, final engineering design, and other
2 factors.

3
4 **Q. Could the remaining work results require changes to the turbine locations?**

5 A. Yes, the remaining work could necessitate minor shifts to the proposed turbine locations.
6

7 **Q. What is Dakota Range’s request with respect to flexibility for future minor shifts in the
8 turbine locations presented in Figure 2 of the Application?**

9 A. Dakota Range requests that the permit allow turbines to be shifted within 500 feet of their
10 current proposed location, so long as specified noise and shadow flicker thresholds are not
11 exceeded, cultural resource impacts are avoided or minimized per the Cultural Resources
12 Monitoring and Management Plan (“CRMMP”) developed in coordination with the South
13 Dakota State Historic Preservation Office, environmental setbacks are adhered to as agreed
14 upon with USFWS and the South Dakota Game, Fish, and Parks, and wetland impacts are
15 avoided to the extent practicable. If turbine shifts are greater than 500 feet, exceed the noted
16 thresholds, or do not meet the other limitations specified, the Applicant would either use one
17 of the 25 alternate turbine locations identified in Figure 2, or obtain Commission approval of
18 the proposed turbine location change. In all cases, the final turbine locations constructed will
19 adhere to all applicable local, State, and Federal regulations and requirements.
20

21 **Q. Why is the Project proposing 25 alternate locations?**

22 A. Twenty-five alternate turbine locations are proposed to hedge against additional turbine
23 locations becoming necessary during final micrositing. Furthermore, these additional
24 locations provide layout flexibility to hedge against potential capacity factor reductions in
25 cases where a necessary turbine shift within 500 feet of its original location lowers the
26 capacity factor greater than activating an alternate location. This number of alternate turbine
27 locations also helps prevent unforeseen findings from reducing the size of the project or from
28 significantly injuring the productivity of the project. In all cases, the final turbine locations
29 constructed will adhere to all applicable local, State, and Federal regulations and
30 requirements.
31

1 **Q. With respect to other facilities, what is Dakota Range’s request with respect to final**
2 **micrositing?**

3 A. As a result of final micrositing and the utility coordination needed to facilitate Project
4 interconnection, shifts in the access roads and collector system, as well as changes in the
5 locations of the O&M facility, Project substation, concrete batch plant, and laydown/staging
6 areas, may be necessary. Therefore, the Dakota Range requests that the permit allow those
7 facilities to be modified, as needed, so long as the new locations are on land leased for the
8 Project, cultural resource impacts are avoided or minimized per the CRMMP, environmental
9 setbacks are retained, wetland impacts are avoided to the extent practicable, and all other
10 applicable regulations and requirements are met.

11
12 **Q. Is the siting flexibility requested by Dakota Range consistent with the siting**
13 **requirements imposed by Codington and Grant counties?**

14 A. Yes. Both Grant County and Codington County allow facilities to be sited anywhere within
15 the Project Area covered by the respective CUPs so long as the requirements of the CUP,
16 including setbacks and noise requirements, are satisfied. Dakota Range will submit its final
17 layout to each county for review as part of the building permit process.

18
19 **Q. Are any future modifications or expansions of the Project planned?**

20 A. With the exception of the final micrositing flexibility discussed above, Dakota Range does
21 not have any current plans for future additions to or modifications of the Project. Apex does
22 hold interconnection queue positions for an additional 400 MW of capacity at the same point
23 of interconnection and is exploring the potential for future projects depending on available
24 transmission capacity.

25
26 **VI. PROJECT DESIGN AND CONSTRUCTION**

27
28 **Q. Please describe the foundations that will be constructed for the turbines.**

29 A. The foundation provides structural support to the assembled turbine. The wind turbine towers
30 will be connected by anchor bolts to a concrete foundation, consisting of high-strength
31 concrete and reinforcing steel bar (rebar). Geotechnical surveys, turbine tower load

1 specifications, and cost considerations, among other factors, will dictate final design
2 parameters of the foundations.

3
4 **Q. Will the collection system be installed underground?**

5 A. The collector lines would be installed in a trench at least 30 inches below the ground to avoid
6 potential impact from the existing land uses.

7
8 **Q. Could you describe the Project substation?**

9 A. The principal function of the substation is to increase the voltage from the collector system
10 (34.5 kV) to the voltage of the transmission line (345 kV), which will transport the electricity
11 produced by the Project to the switching station and, from there, to the grid. The collector
12 substation will be located generally in the center of the Project footprint, but the final
13 location of the collector substation depends on the location of the interconnection switching
14 station, which will be determined by Otter Tail Power Company in Q1 2018. Up to 10 acres
15 of land would be purchased to facilitate construction and operation of the collector
16 substation.

17
18 The collector substation will consist of two substation transformers, circuit breakers,
19 switching devices, auxiliary equipment, a control enclosure containing equipment for proper
20 control, protection, monitoring, and communications, and associated equipment and
21 facilities. The collector substation would be located within a fenced area and designed in
22 accordance with industry standards to provide safety and security.

23
24 **Q. Please describe the O&M facility that will be constructed for the Project.**

25 A. The O&M facility would comprise a single- or two-story, 7,000 to 10,000 square-foot
26 building, which would house operating personnel, offices, operations and communication
27 equipment, parts storage and maintenance activities, and a vehicle parking area. An area for
28 outdoor storage of larger equipment and materials would also be included within a fenced
29 area for safety and security. Dakota Range plans to purchase up to 5 acres to facilitate
30 construction and use of the O&M facility.

1 **Q. Please discuss the design and installation of the permanent met towers.**

2 A. Up to five permanent met towers would be installed as part of the Project. These met towers
3 are used to obtain wind data for performance management once the Project is operational.
4 The met towers will be self-supporting with heights not to exceed the hub height of the wind
5 turbines, and will be marked and lighted as specified by the FAA. Each met tower will
6 occupy an area of approximately 42 feet by 42 feet (0.3 acre).

7
8 **Q. With respect to the Project access roads, how will the access road requirements differ
9 during and after construction?**

10 A. Where necessary, new access roads would be constructed between existing roadways and
11 Project components. The new and improved access roads would be all-weather, gravel
12 surfaced, and generally 16 feet in width. During construction, some of the access roads
13 would be widened to accommodate movement of the turbine erection crane, with temporary
14 widths generally not exceeding 50 feet. The final access road design will be dependent on
15 geotechnical information obtained during the engineering phase. It is anticipated that the
16 access road network for the Project will include approximately 19 to 23 miles of new private
17 roads, but final turbine placement will determine the amount of roadway required for the
18 Project.

19
20 **Q. Discuss the personnel that will be involved in construction of the Project.**

21 A. During construction, the Project is anticipated to result in up to 300 temporary construction
22 jobs over 9 months.

23
24 **VII. PROJECT OPERATION AND MAINTENANCE**

25
26 **Q. Discuss the personnel that will be involved in operation and maintenance of the Project.**

27 A. During operation, the Project will employ approximately 10 full-time personnel as facility
28 managers, site managers, and turbine technicians.

29
30 **Q. Discuss the inspections that will be conducted and when they will occur.**

1 A. Turbine inspections are conducted and recorded twice a year. Once a year, maintenance is
2 conducted on the turbine for 10 hours with a crew of 3 technicians. The other annual
3 maintenance is a 36 hour inspection with a crew of 3 technicians. During these inspections,
4 the entire turbine is inspected, including bolt torque checks, lubrication and filter changes,
5 electrical inspections, pitch calibrations, amongst other tasks. The on-site operations team
6 drives throughout the project on a daily basis conducting unrecorded visual inspections on
7 the project.

8

9 **Q. How will the Project be monitored between inspections?**

10 A. Each turbine is connected to a Supervisory Control and Data Acquisition (“SCADA”) system
11 via fiber-optic cable, which allows the turbines to be monitored in real time by the O&M
12 staff. The SCADA system also allows the Project to be remotely monitored, thus increasing
13 Project oversight, as well as the performance and reliability of the turbines. Not only would
14 the local O&M office have full control of the wind turbines, but a 24/7 remote operations
15 facility would also have control of the individual turbines. These two teams coordinate to
16 ensure that the wind turbines operate safely and efficiently.

17

18 **Q. How reliable will the Project be?**

19 A. With respect to a wind energy facility, reliability (or availability) is defined as the ability of
20 the turbines to generate electricity when sufficient wind is available. Based on a Vaisala
21 Wind Energy Due Diligence Report prepared for the Project, the average annual reliability is
22 anticipated to be 96 percent or higher. Additionally, availability guarantees in turbine supply
23 agreements will require the turbine manufacturer and O&M service providers to maintain the
24 turbines at 96 percent availability or higher. For further details, see Section 25.1 of the
25 Application.

26

27 **VIII. DESIGN, CONSTRUCTION, AND OPERATIONAL CONSIDERATIONS**

28

29 **Q. What safety features will be incorporated into the Project?**

30 A. As discussed in Section 25.2 of the Application, the Project Area is located in an area of low
31 population density; therefore, construction and operation of the Project would have minimal

1 impacts on the security and safety of the local population. In addition, the following safety
2 measures will be taken to reduce the chance of physical and property damage, as well as
3 personal injury, at the site:

- 4 • The towers will be placed at distances away from existing roadways and
5 residences per the applicable setback requirements described in Section 10.2 of
6 the Application;
- 7 • Security measures will be implemented during the construction and operation of
8 the Project, including temporary (safety) and permanent fencing, warning signs,
9 and locks on equipment and wind power facilities;
- 10 • Turbines will sit on solid steel enclosed tubular towers; access to each tower
11 would be only through a solid steel door that would be locked and accessed only
12 by authorized personnel;
- 13 • Tower exteriors will be designed to be unclimbable;
- 14 • A professional engineer will certify that the foundation and tower design of the
15 turbines is within accepted professional standards, given local soil and climate
16 conditions.
- 17 • Prior to construction, the Project contractor will request utility locates through the
18 One-Call program to avoid impacting existing underground infrastructure.
- 19 • Prior to construction, the Project contractor will work with local and county
20 emergency management to develop procedures for response to emergencies,
21 natural hazards, hazardous materials incidents, manmade problems, and potential
22 incidents concerning Project construction. The contractor will also provide
23 requested Project information to local and county emergency management.
- 24 • During Project operations, the Project operator will coordinate with local and
25 county emergency management to develop an emergency management plan to be
26 implemented in the event of an emergency at the Project site. The Project will
27 register each turbine location and the O&M building with the rural
28 identification/addressing (fire number) system and 911 systems.
- 29 • Following construction, the Project will register Project underground facilities
30 with the One-Call program.

31
32 **Q. Will the Project participate in the South Dakota One-Call program?**

1 A. Yes. As noted above, the Project will utilize the One-Call program to locate underground
2 infrastructure prior to construction. In addition, once construction is completed, the Project
3 will register its facilities with the One-Call program.
4

5 **Q. With respect to use of existing local and state roads as haul roads, will Dakota Range**
6 **coordinate with the applicable road authorities regarding the use and restoration of**
7 **those roads?**

8 A. In accordance with the requirements of the CUPs issued for the Project, the Project will enter
9 into road use agreements with each road authority to identify haul roads, define use and
10 authorized upgrades, and specify restoration of roads utilized during construction of the
11 Project.
12

13 **Q. What steps will the Project take to prepare for a potential emergency situation at the**
14 **Project site during construction and when the Project is operational?**

15 A. During Project construction, the Project's contractor will coordinate with local and county
16 emergency management to develop procedures for response to emergencies, natural hazards,
17 hazardous materials incidents, and other potential incidents concerning Project construction.
18 As requested, the Project's contractor will provide training, as well as site maps, haul routes,
19 schedules, contact numbers, and other Project information, to local and county emergency
20 management.
21

22 During Project operations, the Project's operator would coordinate with local and county
23 emergency management to protect the public and Project facilities in the event of natural,
24 manmade, or other incidents. The Project will register each turbine location and the O&M
25 facility with the rural identification/addressing (fire number) and 911 systems.
26

27 **Q. Will the Project be designed, constructed and operated in compliance with all**
28 **applicable federal, state, and local regulations?**

29 A. Yes.
30

31 **IX. PERMITS AND APPROVALS**

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Q. In addition to an Energy Facility Siting Permit and CUPs from the Counties, what other permits are required for the Project?

A. The permits needed for the Project are outlined in Table 27-1 of the Application, and include Federal Aviation Administration Determinations of No Hazard for the final layout, qualification for coverage under United States Army Corps of Engineers Nationwide Permit 12, water use-related permits from the South Dakota Department of Environment and Natural Resources, an Aeronautical Hazard Permit from the South Dakota Department of Transportation (“SDDOT”) Aeronautics Commission, roadway and right-of-way use permits from the SDDOT and Codington and Grant Counties, and building permits from Codington and Grant Counties.

Q. Will the Project obtain all local, state and federal permits required for the Project?

A. Yes.

X. DECOMMISSIONING AND SITE RESTORATION

Q. What is the estimated life of the Project?

A. The anticipated life of the Project is approximately 25 years, but could be extended through retrofitting or other upgrades to the existing components.

Q. Will the Project be decommissioned at the end of its useful life?

A. Once the facilities constructed have reached the end of their useful life, it may be determined that it is appropriate to retrofit or otherwise upgrade the Project facilities and continue operations. If retrofitting or upgrading is not done, then the Project will be decommissioned.

Q. If the Project is decommissioned, will the Project comply with all applicable County and State requirements for structure removal and site restoration?

A. Yes, as discussed in the Decommissioning Plan for the Project (Appendix P to the Application), the Project will be decommissioned in accordance with all applicable local and State requirements, as well as requirements set forth in the Project’s easement agreements.

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Q. Has Dakota Range analyzed the cost of decommissioning of the Project?

A. The net decommissioning cost (in 2017 U.S. dollars) is estimated to be \$2,906,000, assuming no resale of Project components, or a gain of \$1,883,500, assuming resale of some of the Project’s major components. The second scenario (partial resale) is considered to be the more likely option. These estimates are based on the decommissioning approach outlined in the Decommissioning Plan. For further discussion, see Chapter 6 of the Decommissioning Plan in Appendix P to the Application.

Q. Who will be responsible for covering all anticipated decommissioning costs?

A. Dakota Range will be responsible for covering all anticipated decommissioning costs.

XI. PROJECT BENEFITS

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

A. As discussed in Section 7.0 of the Application, the Project will provide system-wide benefits to Xcel, which serves customers in South Dakota and surrounding states. In support of an Application for Advance Determination of Prudence submitted to the North Dakota Public Service Commission, Xcel conducted Strategist modeling runs that demonstrate the Project will provide at least \$182 million in system-wide present value of revenue requirement savings over the 25-year life of the Project compared to not adding the Project to the Xcel Energy system, and the savings could reach as high as \$274 million under high gas price assumptions.

As discussed in Section 21.1.2.1 of the Application, the Project will also provide a variety of local economic benefits. During construction, the Project is anticipated to result in approximately 300 temporary construction jobs over 9 months. Construction and operation are also anticipated to inject millions of dollars into the local economy as a result of the purchase of good and services.

1 In addition, the Project represents an approximately \$400 million investment in Grant and
 2 Codington Counties. Dakota Range would pay taxes on the Project, which would
 3 significantly increase the revenue available for a variety of local needs. A breakdown of the
 4 projected tax revenue distribution is provided below (see also Table 21-3 in the Application):

Projected Tax Revenue for the Dakota Range Project		
Recipient	Annual Tax Revenue (Approximate)	Total Tax Revenue (Approximate)
Codington County	\$80,000	\$2,000,000
Leola Township	\$6,000	\$150,000
Germantown Township	\$30,000	\$700,000
Grant County	\$280,000	\$6,900,000
Lura Township	\$25,000	\$600,000
Mazeppa Township	\$90,000	\$2,300,000
Waverly School District	\$225,000	\$5,600,000
Summit School District	\$280,000	\$7,000,000
South Dakota	\$420,000	\$10,600,000

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 6 Additionally, over the expected 25-year life of the Project, the Project would generate
 7 approximately \$39 million in lease payment to Project landowners, and approximately \$17
 8 million in wages paid to approximately 10 full-time operations and maintenance employees.
 9 Thus, the Project is anticipated to provide significant economic benefits locally, as well as
 10 within the State.

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 12 **XII. CONCLUSION**

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 14 **Q. Based on the analysis Dakota Range has conducted of the Project Area, has the Project
 15 been sited so as to minimize human and land use impacts?**

16 A. Yes. By incorporating the applicable setbacks, noise limitation requirements, and Dakota
 17 Range’s shadow flicker commitment into Project design, the Project has minimized potential
 18 impacts to inhabitants in and around the Project. In addition, the existing agricultural land
 19 uses can continue in and around the Project. Dakota Range will comply with all applicable
 20 local, State, and Federal permitting requirements, and will implement the best management
 21 practices and other measures discussed above and in the Application during construction and

1 operation of the Project. Therefore, the Project is not anticipated to have any long-term
2 negative impacts on inhabitants or land use in or around the Project Area.

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

5 A. Yes.

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7 Dated this 24th day of January, 2018.

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10 Mark Mauersberger

Mark Mauersberger
Apex Clean Energy, Inc.
8665 Hudson Blvd. (Suite 110)
Lake Elmo, MN
55402

Education

Bachelor of Science, Business, Ohio University, 1992.

Current Responsibilities

Lead Apex's daily wind development team's activities in South Dakota and North Dakota. Duties include: working with Landowners to endorse lease terms, directing the team regarding permitting strategy (County & State), informing area groups (i.e., individual landowners, local organizations, towns, policy makers, native tribes, etc.) regarding project progress, interface with local government on the potential impacts of evolving wind regulations, and consulting with utility power buyers (both contracted and prospective) as to the best course of action to achieve their desired outcomes.

Recent/Relevant Energy Employment

- **Apex Clean Energy**, February 2016-present. Title: Senior Development Manager/Midwest.
- **Clean Energy Fuels**, October 2012-February 2016. Title: Real Estate Development & Business Development Manager/Central U.S.
- **RES Americas**, December 2008-September 2012. Title: Development Manager II/Midwest, Plains & Eastern U.S.

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612-260-6611
brenna.gunderson@apexcleanenergy.com

EXPERIENCE

Director of Project Development, Apex Clean Energy

Lake Elmo, Minnesota

2018 - Present

- Oversee the development of wind energy projects in Minnesota, Iowa, North Dakota, and South Dakota.

Senior Development Manager, Apex Clean Energy

Lake Elmo, Minnesota

2014 – 2017

- Developed and delivered the 100MW Hoopeston Wind, LLC project to IKEA Energy US, LLC.
- Managed the local, state, and federal permitting of wind energy projects in the MISO and PJM regions (Minnesota, Wisconsin, Iowa, Michigan, Illinois, and Indiana).
- Identified an Iowa greenfield project, Upland Prairie Wind, LLC, spring 2015, managed the development process, and sold a fully developed site to an off-taker in the fall of 2017. Expected NTP spring 2018.
- Experienced in negotiating Purchase and Sale Agreements for wind energy projects.
- Development activities included: working closely with other team members to obtain site control (i.e. from legal documents to a title policy), environmental studies and surveys, meteorological data collection, public relations (political and social media), transmission and interconnection, engineering & design, GIS map creation, turbine siting (setbacks, sound & shadow flicker obligations), budgets and schedules, and project closing activities.

Development Manager, Apex Clean Energy

Charlottesville, Virginia

2012 - 2014

- Worked on the development of wind farms located in Minnesota, Wisconsin, Indiana, and Illinois by securing leases from farm-land owners, applying for permits (federal, state, and local), tracking the MISO interconnection process, facilitating project team meetings, and updating and reviewing project budgets and schedules.
- Prepared bids to utilities in response to their requests to purchase power from wind energy projects.
- Managed consultants that were hired to complete environmental and engineering services during the development process.
- Worked closely with public relations firms to educate and drive support for wind energy projects within the communities.

Project Manager, EDP Renewables North America LLC

Minneapolis, Minnesota

2008 - 2011

- Managed the development of the Lost Lakes Wind Farm LLC (IA, '08-09), including but not limited to: site control, permits, environmental studies, and support of the interconnection process. Construction of the wind farm began less than 15 months (certain transmission exceptions excluded) from the initiation of the development process. Lost Lakes Wind Farm was commissioned December 2009.
- Provided development support throughout the construction of the Lost Lakes Wind Farm by establishing relationships with the construction team and their consultants. A firm understanding of the construction process was established.
- Coordinated with local officials, construction, civil engineering, electrical engineering, wind assessment, operations, and various consultants who performed a variety of studies for the project (i.e. sound, shadow flicker, electrical, and environmental).
- Supervised Project Developers and Land Specialists (i.e. approved expense reports, assisted with goal setting, and completed employee reviews).
- Managed the development of two other wind energy projects during this same period.

Project Coordinator, Horizon Wind Energy,
2006 - 2008

Grand Meadow, Minnesota

- Assisted in the development of the Prairie Star Wind Farm (MN, '06- '07) and the Pioneer Prairie Wind Farm (IA, '07- '08).
- Designed and implemented an Access database utilized by developers and operations personnel to organize landowners by parcel, signed agreements, and payments.
- Hired and trained administrative support positions and other Project Coordinators.
- Assisted with the Legal Department in the preparation of land documents and processed all executed agreements.
- Supervised various office activities: office maintenance, handled difficult situations, formed relationships with other departments within Horizon, and encouraged the understanding of and compliance with policies and procedures.

EDUCATION

Project Management Institute

Achieved all requirements and received the approval to take the PMP Certification Exam 2011

Mini MBA

University of St. Thomas 2010

Minneapolis, Minnesota

Master of Art in Counseling and Psychological Services

St. Mary's University 2002-2005

Minneapolis, Minnesota

Bachelor of Art in Psychology and Family Resources

St. Olaf College 1992-1996

Northfield, Minnesota