BEFORE THE STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

BOWMAN WIND, LLC
BOWMAN WIND PROJECT – BOWMAN COUNTY
SITING APPLICATION

CASE NO. PU-21-121

PRE-FILED TESTIMONY OF RYAN HENNING
ON BEHALF OF BOWMAN WIND, LLC

August 4, 2021

I. INTRODUCTION AND QUALIFICATIONS

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

A. My name is Ryan Henning and I am employed by Apex Clean Energy, Inc. ("Apex"). My business address is 310 4th Street Northeast, Suite 200, Charlottesville, Virginia 22902.

Q. What is your position with Apex?

A. I am a Vice President of Environmental Affairs for Apex.

Q. Briefly describe your work history and education.

A. I am responsible for project management and overseeing environmental compliance for assigned wind and solar projects across Apex's portfolio, including providing overall guidance on wetlands, wildlife including threatened and endangered species, cultural resources and required environmental permits to the development and project management (i.e., construction) teams. In that role, I proactively identify environmental regulations and address required permits to ensure that projects are developed, constructed, and operated in compliance with Local, State, and Federal regulations and laws. I have substantial experience with the National Environmental Policy Act ("NEPA"), Endangered Species Act, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, Clean Water Act, National Historic Preservation Act ("NHPA"), National Pollution Discharge Elimination System, and other relevant local, State, and Federal environmental regulations applicable to development, construction and operation of utility scale power generation and transmission line projects. Likewise, I have significant experience managing and working with diverse interdisciplinary teams (legal, financing, development, land, engineering, construction, biological, social, cultural, construction) to accomplish permitting, construction, and operational compliance objectives. I have a B.S. in Biological Sciences from the University of North Dakota and a M.S. in Biological Conservation from the California State University, Sacramento. A copy of my curriculum vitae is attached as proposed **BW Exhibit 23-A**.

Q. What is your role with respect to the Bowman Wind Project ("Project")?

A. I am responsible for the Project's compliance with local, State and Federal environmental regulations. My role includes overseeing coordination with governmental agencies such as the United States Fish and Wildlife Service ("USFWS"), the North Dakota Game and Fish ("NDGFD"), the State Historical Society of North Dakota ("SHSND"), and the United States Army Corps of Engineers ("USACE"). In addition, I oversee the selection and work of consultants completing environmental and wildlife studies and surveys for the Project that are used to ensure compliance with applicable requirements and inform siting of Project facilities to avoid or minimize risk to sensitive or protected resources.

Q. What proposed hearing exhibits are you sponsoring in your testimony?

A. I am sponsoring the following proposed hearing exhibits:

- BW Exhibit 1: Certificate of Site Compatibility Application (Sections 6.2, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17; Appendices D, G, I; Figures)
- BW Exhibit 15: Updated Cultural Resources Report, dated July 2021 [**CONFIDENTIAL**]
- BW Exhibit 16: Wetland Delineation Report (titled Jurisdictional Determination Report)
- BW Exhibit 17: Grassland Assessment
- BW Exhibit 18: Updated Bird and Bat Conservation Strategy
- BW Exhibit 19: Additional North Dakota Game and Fish Department Correspondence
- BW Exhibit 20: Summary of Avoidance, Minimization, and Mitigation Measures
- BW Exhibit 23-A: Henning Resume
- BW Exhibit 27: Additional U.S. Fish & Wildlife Service Correspondence

II. ENVIRONMENTAL SITE ANALYSIS OVERVIEW

Q. What was the overall approach to environmental analysis of the Project Area?

A. Bowman Wind followed the USFWS's Wind Energy Guidelines ("WEGs") (2012) and Eagle Conservation Plan Guidance ("ECPG") (2014). The WEGs are a tier-based approach that starts at Tier 1 and goes to Tier 5, if necessary. The ECPG calls for wind project developers to take a staged approach to siting new projects.

The five WEG Tiered reviews include:

- Tier 1 is Preliminary site evaluation. It is a landscape level assessment covering habitat for species of concern and identifying populated or protected areas.
- Tier 2 is Site Characterization. At this point, third-party contractors are brought on board to conduct a desktop review and discuss potential field work. A site visit by a biologist and coordination with wildlife agencies also occur at this time.
- Tier 3 is Field studies and impact prediction. In coordination with applicable agencies, field studies are conducted to document natural and cultural resources in and around the site, and to evaluate the risk to features, species and habitat.
- Tiers 4 and 5 involve Post-Construction studies, which are used to document actual Project impacts (Tier 4) and any ongoing research (Tier 5).

The four ECPG Stage reviews include:

- Stage 1 is the Site Assessment. This is conducted in parallel with Tiers 1 and 2 of the WEG.
- Stage 2 Site-specific Surveys and Assessments. This involves the collection of quantitative data through scientifically rigorous surveys designed to assess the potential risk of the proposed project to eagles.
- Stage 3 Predicting Eagle Fatalities. In coordination with the USFWS Migratory Bird Division, data collected from Stage 2 is used in models to predict eagle risk expressed as the average number of fatalities per year extrapolated to the tenure of the permit.

- Stage 4 Avoidance and Minimization of Risk and Compensatory Mitigation. In Stage 4, the information gathered through the previous stages is used to determine potential conservation measures and advanced conservation practices (if available) to avoid or minimize predicted risks at the Project.

In 2017, Bowman Wind initiated Tier 1 / 2 WEG and Stage 1 ECPG review and agency coordination with the USFWS and the NDGFD. Based on the recommendations provided, Bowman Wind initiated Tier 3 WEG and Stage 2 ECPG avian and wildlife studies in 2017 and that study work continued through 2018, 2019, and 2020. In addition, Bowman Wind has initiated Stage 3 ECPG reviews and will complete Stage 4 reviews in the coming months with the USFWS Region 6 Migratory Bird Division. Bowman Wind used the results of those studies to inform continued agency consultation, site selection and boundary refinement, avoidance, and minimization measures, and ultimately layout placement. Additionally, the environmental studies and assessments completed informed Bowman Wind's development of a draft Bird and Bat Conservation Strategy ("BBCS"), prepared in coordination with the USFWS, which outlines avoidance, minimization, and mitigation measures that have been or will be implemented by the Project. A copy of the current draft BBCS is provided as proposed **BW Exhibit 18**. The Project's avoidance, minimization, and mitigation measures are also summarized in proposed **BW Exhibit 20**.

Q. Please identify the environmental studies conducted and associated reports prepared for the Project.

A. The following table outlines the environmental studies conducted for the Project, when the studies were conducted, and the associated reports prepared by the various consultants who performed the studies.

Summary of Studies at Bowman Wind Project		
Survey Type	**Study Period**	**Reference**
Avian Use Surveys	August 2017 − July 2018	Western Ecosystems Technology, Inc. ("WEST"), LeBeau et al. 2020a
Avian Use Surveys	August 2018 − July 2019	LeBeau et al. 2020b
Raptor Nest Survey and Monitoring	March, June 2018	SWCA Environmental Consultants ("SWCA") 2018a
Prairie Grouse Lek Monitoring	April 2018	SWCA 2018b
Prairie Dog Colony Mapping	June 2018, March 2019	SWCA 2018c, EEI 2019a
Grassland Assessment	August 2018	SWCA 2018d
Raptor Nest Check Survey	October 2018	WEST, Chodachek 2019a
Raptor Nest Survey	March, May 2019	EEI 2019b
Prairie Grouse Lek Monitoring	April 2019	WEST, Chodachek 2019b
Northern Long-Eared Bat Habitat Assessment	September 2019	WEST, Chodachek and Bishop-Boros 2019
Grassland Assessment	May 2020 and October 2020	WEST, Chodachek and LeBeau 2020
Bat Acoustic Monitoring	July 2020 − October 2020	WEST, Bishop-Boros and Chodachek 2020
Class I Literature Search and Class III Cultural Resources Pedestrian Survey	April 2020 – November 2020	Quality Cultural Resource Services ("QCRS") February 2021, updated July 2021
Class II Architectural History Survey	May 2020	QCRS February 2021, updated July 2021
Wetland Delineations	September 2019; May, September and October 2020	Tetra Tech 2021 (with information from QSI)

The various assessment areas, Project boundaries, and results of each survey listed in this table are discussed in detail in the BBCS (Appendix I of the Application, proposed **BW Exhibit 1**).

III. CULTURAL RESOURCES

Q. Regarding cultural and architectural history resources, what recommendations were made by the SHSND for the Project?

A. The SHSND recommended that Bowman Wind conduct a Class I Literature Review and a Class III Intensive Cultural Resources Pedestrian Survey of all previously un-surveyed areas that may be affected by the Project. The SHSND recommended that the area of potential effect ("APE") subject to the Class III Pedestrian Survey be

defined as any ground surface area that has the potential to be disturbed by any construction or installed activities associated with the Project. Additionally, the SHSND recommended a Class II Architectural History Survey within a two-mile visual APE of the turbine array. The two-mile visual APE for the Class II Architectural History Survey includes documentation of all buildings, structures, and objects 45 years of age or older from the Project's anticipated in-service date.

Q. Please describe the cultural resource investigations conducted for the Project to-date.

A. Bowman Wind retained Quality Cultural Resource Services ("QCRS") to conduct the recommended investigations. QCRS completed the Class I Literature Review of a larger potential Project area plus a two-mile buffer from Project facilities in September 2019. The literature review identified 48 previous inventories and 75 previously recorded cultural resources within the area of review. Of the 75 previously recorded cultural resources,17 are within the current Project Area.

QCRS conducted a Class III Intensive Cultural Resources Pedestrian Inventory of 21,608 acres within the Project Area between April and November 2020. The Class III survey area was designed to cover the potential layouts under review for the Project at the time of survey. QCRS identified 287 previously undocumented cultural sites and conducted 14 site updates. Of the cultural sites identified, 25 are recommended unevaluated for listing in the NRHP and are planned for avoidance by construction activities.

Q. Have the Class I and Class III results been submitted to the SHSND?

A. Yes. QCRS prepared a report that was submitted to the SHSND in March 2021. After reviewing the report, the SHSND requested modifications to the report to include specific site avoidance recommendations, such as temporary fencing around sites. Based on that feedback, QCRS coordinated with the SHSND and modified the report to incorporate the SHSND's recommendations. *See* proposed **BW Exhibit 15**. The updated report was submitted to SHSND on July 27,

2021.Concurrence has not yet been received, but is anticipated based on QCRS's consultations with SHSND.

Q. Is Bowman Wind conducting additional Class III surveys?

A. Yes. As a result of recent layout adjustments, additional Class III field survey work in a few areas was needed. QCRS has been conducting the additional field survey work starting on July 29 and anticipates completing the work in early August. Results of that survey work will be provided at the public hearing. QCRS consulted with the SHSND regarding the additional survey work and an addendum report will be submitted to SHSND for review.

Q. Has Bowman Wind consulted with area tribes in connection with the cultural resource investigations being conducted?

A. Yes. During the cultural resource pedestrian surveys, tribal cultural specialists ("TCS") representing the Cheyenne River Sioux Tribe, Oglala Sioux Tribe, Three Affiliated Tribes, Turtle Mountain Band of Chippewa, and Rocky Boy Chippewa-Cree Tribe were present. The TCS representatives assisted with identifying potential Traditional Cultural Properties ("TCP").

Q. Will the Project avoid impacts to the cultural resource sites identified?

A. Yes. Bowman Wind has sited the Project facilities to avoid the cultural resource sites identified and will adhere to the SHSND's recommended mitigation measures to avoid impacts to those sites during Project construction.

Q. Will Bowman Wind have procedures in place to address previously unidentified cultural resources encountered during construction?

A. Yes. Bowman Wind prepared an Unanticipated Discoveries Plan ("UDP") for the Project (proposed **BW Exhibit 1**, Appendix G). The UDP details a process for prompt communication and action regarding the discovery of previously unknown archaeological resources or human remains, should they be encountered during

construction. The UDP was submitted to the SHSND for review in March 2021 with the Class I, II, and III report.

Q. Has a Class II Architectural History Survey been conducted for the Project?

A. Yes. QRCS conducted a Class II Architectural History Survey of the Project Area and a two-mile radius from Project facilities in May 2020. The survey methodology conformed to the North Dakota SHPO guidelines for considering indirect effects of wind turbine projects and included documentation of all buildings, structures, and objects 45 years of age or older from the Project's anticipated in-service date. The survey methodology and results are detailed in the report (*see* proposed **BW Exhibit 15**).

During the Class II survey, two previously recorded but unevaluated historic architectural sites were revisited and evaluated during the Class II survey; neither of these sites are recommended as eligible for listing in the National Register of Historic Preservation ("NRHP"). QRCS identified two historic architectural sites within two miles of the Project layout, both of which are recommended as potentially eligible for listing in the NRHP.

IV. WETLANDS AND WATERBODIES

Q. How has Bowman Wind identified wetlands and waterbodies within the Project Area?

A. Wetlands within the Project Area were initially identified using the National Wetlands Inventory ("NWI"). Field wetland delineations were then completed on September 14-16, 2019, May 11-15, 2020, September 22-28, 2020, and October 21, 2020 to delineate wetlands in the field and determine which wetlands and waterbodies fall under the jurisdiction of the Clean Water Act. Wetlands and waterbodies were delineated within a survey corridor that included any ground surface area that has the potential to be disturbed by any construction or installed activities associated with the Project. The field delineation identified 269 locations that met the definitive

criteria for a wetland and/or an ordinary high water mark for a stream: 13 were classified as perennial streams; 141 were classified as intermittent streams; 34 were classified as ephemeral streams; 81 were classified as wetlands, ponds, or impoundments. The vast majority of waterbodies within the survey corridor are primarily associated with intermittent drainages. The results are detailed in the Wetland Delineation Report (titled Jurisdictional Determination Report) (*see* proposed **BW Exhibit 16**).

Q. Are there many wetlands within the Project Area?

A. No. The proposed Project occurs in the Missouri Plateau Level IV Ecoregion within the Northwestern Great Plains Level III Ecoregion of North Dakota. The Missouri Plateau ecoregion was largely unaffected by glaciation, retaining its original soils and complex stream drainage patterns. The Bowman area receives an annual rainfall of approximately 15.5 inches and it is one of the more arid regions in North Dakota. Therefore, wetland basins are less likely to occur and there are significantly more ephemeral and intermittent drainages. As shown in updated Figure 4 (proposed **BW Exhibit 3**), there are few wetlands within the Project Area.

Q. Is Bowman Wind planning to conduct additional wetland surveys?

A. No. The current Project layout and potential areas of construction disturbance are within the area surveyed during wetland delineations, so no additional survey work is planned.

Q. How has Bowman Wind considered wetlands in the Project layout design?

A. The Project has been designed to avoid all permanent impacts to delineated wetlands and waterbodies. In the preliminary layout submitted with the Application, one access road crossed a wetland complex associated with a stream, resulting in 0.02 acres of permanent impacts to a delineated wetland. However, in the current Project layout, Bowman Wind redesigned this access road to avoid permanent wetland impacts.

Bowman Wind will minimize temporary wetland and waterbody impacts by using matting during construction, boring collection/communication lines beneath wetlands, and co-locating impacts where possible. Based on the current design (including all 86 potential turbine locations), there would be approximately 1.7 acres of temporary impacts to delineated wetlands (approximately 2.2 acres total to both wetlands and waterbodies). Since only up to 74 turbines will be constructed, actual temporary impacts will be less.

Q. Will the Project qualify for coverage under a USACE nationwide permit ("NWP")?

A. Yes, it is anticipated that the Project will be under the impact thresholds established for coverage under one or more USACE NWPs.

V. AVIAN AND BAT ANALSYSES

Q. Did Bowman Wind conduct the wildlife studies recommended by the USFWS and NDGFD in accordance with the agreed-upon protocols?

A. Yes.

Q. Please discuss each of the studies conducted for the Project, beginning with the avian use surveys.

A. In consultation with the USFWS and NDGFD, Bowman Wind completed two years of baseline general avian use surveys to evaluate potential impacts to MBTA-protected species. Fixed-point avian use surveys to quantify avian use of the Project Area were completed from August 2017 to July 2019. No federally-listed threatened or endangered species were observed during either year of surveys. In the first year of surveys, there were 15 observations of bald eagle and 72 observations of golden eagles; in year two, there were 15 observations of bald eagles, 47 observations of golden eagles, and two unidentified eagle observations. Five Species of Conservation Priority ("SPC") were identified in year one, and eight SPC were observed in year two. Eight Birds of Conservation Concern ("BCC") were observed

in year two. Overall, more species were observed in the second year of avian surveys: 37 large bird species and 38 small bird species in year two, compared to 13 large bird species and 29 small bird species in year one.

Q. What do the results of the avian use surveys indicate about avian use in the Project Area.

A. Overall, the species composition, seasonal abundance, and spatial use documented during avian surveys are considered typical for birds in this region. The majority of species observed are common and abundant within the region. It is not likely development of the Project will cause substantial impacts to small or large bird populations, including diurnal raptors and species of concern. Based on the data collected, use of the Project by eagles is consistent with geographical use in this region.

Q. Is the Project likely to impact waterfowl?

A. No. The likelihood of impacts to the shorebird and waterfowl species is low based on the relatively low number of observations and very limited amount of open water (approx. 0.2%) within the Project Area.

Q. Is there a potential for whooping cranes to occur in the Project Area?

A. Based on the USFWS's database of whooping crane sightings in North Dakota through spring 2016, only one whooping crane has been documented within 20 miles of the Project Area within the past 40 years. Thus, the likelihood of a whooping crane using the Project Area as stopover habitat during migration is low. Further, potential whooping crane habitat in North Dakota has been identified by the USFWS's Habitat and Population Evaluation Team in Bismarck. The Project Area does not encompass areas of high relative probability of landscape-level habitat use by migrating whooping crane.

Q. Did Bowman Wind conduct a whooping crane habitat assessment?

A. No. In correspondence dated April 29, 2019, the USFWS confirmed that the Project is located outside of the 95 percent migration corridor (i.e., the 220-mile band where 95 percent of all whooping crane sightings have occurred) and noted that species-specific studies were not required to further evaluate risk from Project construction on the whooping crane. The USFWS further noted, however, that whooping cranes are known to move through western North Dakota beyond the established migration corridor.

Q. What steps is Bowman Wind taking to avoid impacts to whooping cranes?

A. Although it is unlikely that a whooping crane will be near the Project Area due to the lack of suitable stopover habitat, if a whooping crane is sighted in the Project Area during construction, Bowman Wind will stop construction within one mile of the sighting until the whooping crane has left the area.

Q. Please discuss the raptor and eagle nest surveys conducted for the Project.

A. Bowman Wind conducted raptor and eagle nest aerial surveys in March 2018 and completed additional follow-up ground monitoring at specific nest locations in June and October 2018. Additional raptor nest survey work was completed in 2019.

In 2018, raptor nest surveys identified four occupied non-eagle raptor nests in the current Project Area. The occupied nests included one great horned owl and three unknown species. In 2019, six occupied non-eagle raptor nests were identified in the current Project Area; these nests were either great horned owl or ferruginous hawks. In both years, additional occupied and non-occupied raptor nests were identified west and south of the current Project Area.

With respect to eagle nests, Bowman Wind obtained known eagle nest data from the NDGFD and USFWS prior to surveys which identified 30 known eagle nest locations within the 10-mile survey buffer of the 2018 and 2019 Project boundaries. None of the 30 known eagle nests were located within the Project Area. Of those 30 known

eagle nest locations provided by the agencies within the 10-mile survey buffer, only nine were located during aerial surveys.

No bald or golden eagle nests were identified within the Project Area during aerial surveys in 2018 and 2019. In 2018, no bald eagle nests were recorded at all during aerial surveys. There were eleven golden eagle nests identified outside the Project Area, four occupied and seven unoccupied. The nearest occupied golden eagle nest is located 7.7 miles west of the 2020 Project boundary. In 2019, one occupied bald eagle nest was recorded along the Little Missouri River west of the Project Area, and two occupied golden eagle nests were recorded also west of the Project Area (different than the confirmed occupied golden eagle nests in 2018).

In addition to conducting surveys for eagle nests, per recommendations from the NDGFD and USFWS, Bowman Wind also conducted surveys for black-tailed prairie dogs, which are a known potential prey source for eagles. Based on aerial photography, ground-based surveys, and aerial surveys (concurrent with the 2019 raptor nest survey) between 2018 and 2019, there were two active black-tailed prairie dog colonies in the 2020 Project Area ranging in size of 4 to 28 acres. These colony locations were used as an avoidance siting measure.

Q. Please discuss the grouse lek monitoring surveys completed for the Project.

A. Bowman Wind completed ground-based grouse lek county surveys to document greater sage-grouse and sharp-tailed grouse lek activity at previously identified lek locations in 2018 and 2019. Prior to initiating surveys, Bowman Wind obtained lek location data within one mile of the original Project boundary. The NDGFD data indicated four greater sage-grouse leks located within approximately one mile of the current Project Area. Surveys at these leks in 2018 and 2019 by Bowman Wind indicated no sage-grouse were observed. The NDGFD data indicated one sharp-tailed grouse lek was located in the northeast corner of the current Project Area; however, no sharp-tailed grouse were observed in both survey years by Bowman Wind. As part of the larger survey effort, Bowman Wind observed sage-grouse and

sharp-tailed grouse attending leks near the South Dakota border approximately seven miles south of the Project Area.

In addition to Bowman Wind, NDGFD conducted greater sage-grouse lek surveys in April 2019 and April 2020 near the Project Area. Lekking activity was recorded by NDGFD in 2019 and 2020 at a sage-grouse lek approximately 0.8 mile west of the Project Area; Bowman Wind surveyed this lek in 2019 and did not observe any lekking activity. The closest turbine to a sharp-tailed grouse lek is 0.6 miles; however, this lek was inactive in both the 2018 and 2019 lek surveys.

Overall, the grouse lek surveys indicated that there are no known active greater sage-grouse or sharp-tailed grouse leks within the Project.

Q. Please discuss the acoustic bat monitoring conducted for the Project.

A. To characterize bat activity in the Project Area, Bowman Wind installed acoustic stations on two temporary met towers within the Project Area from July 8 through October 28, 2020. A total of 976 bat passes were recorded during 216 detector-nights. The majority (approximately 67 percent) of the bat passes were classified as high frequency bat passes, which is representative of species such as eastern red bat, little brown bat, and western small-footed bat. The remaining bat passes were low-frequency passes, which is representative of species such as big brown bat, hoary bat, and silver-haired bat. The detection software picked up potential calls from the northern long-eared bat ("NLEB") on three of the 216 detector-nights; however, qualitative identification of these calls, conducted by a qualified bat biologist, determined that the calls were not produced by the NLEB. The average bat activity rate was relatively low compared to other projects in the Midwest that have completed similar studies of bat activity. Overall, weekly bat activity increased from less activity at the beginning of the survey to a peak in late July and early August, with a secondary peak in late August. These peaks are correlated with bat migration periods.

Bowman Wind also conducted a NLEB Desktop Habitat Assessment to identify potentially suitable NLEB summer habitat (roosting and foraging) within the Project Area. The assessment found that no potentially suitable summer NLEB habitat exists within the Project Area, due to insufficient size of forested areas present. Based on the bat activity data and NLEB Desktop Habitat Assessment, bat species likely use the Project Area for foraging or during migration; potential hibernacula (usually a cave or mine that provides a constant temperature and protection for winter hibernation) and roosting sites are not known to occur in the Project Area or vicinity.

Q. How will the Project avoid and minimize avian and bat impacts?

A. Bowman Wind has designed the layout to minimize tree clearing and potential impacts to raptor nests. Additionally, Bowman Wind has sited turbines at least one-quarter of a mile from identified active, occupied raptor nests. Based on the eagle nest surveys, there are no bald or golden eagle nests in the Project Area. Additionally, the lack of major water features and preferred nesting habitat suggests that the Project is not likely to attract bald eagles in large numbers. Based on the presence of foraging habitat and availability of potential prey resources, golden eagle use within the Project is likely to occur year-round, which is typical for this region. There are two active black-tailed prairie dog colonies within the Project Area that may serve as a potential prey source. Bowman Wind has sited turbines at least 500 feet from active prairie dog colonies. Bowman Wind is currently preparing an Eagle Conservation Plan to address potential operational risks to bald and golden eagles. Bowman Wind plans to reinitiate consultation with the USFWS Region 6 Migratory Bird group to voluntarily pursue an eagle take permit for the Project.

The Project will avoid direct impacts on known and historical grouse leks. Bowman Wind has minimized siting turbines in unbroken grassland; 81 of 86 turbines are sited in broken grassland or other previously disturbed habitats to minimize impacts to sharptailed grouse. Bowman Wind has buffered the active NDGFD greater sage-

grouse lek 0.8-mile west of the Project Area by two miles to avoid and minimize potential impacts.

As discussed earlier in my testimony, Bowman Wind has also prepared a BBCS based on the results of surveys and agency recommendations, which outlines specific mitigation measures that Bowman Wind has implemented during Project layout and design, or plans to implement during construction and operation to avoid and minimize potential impacts on birds. Additionally, Bowman Wind will conduct post-construction fatality monitoring surveys, which will be developed in coordination with the USFWS and NDGFD.

VI. USFWS AND NDGFD COORDINATION

Q. Please provide an overview of Bowman Wind's consultation with the USFWS and NDGFD on the Project.

A. From 2017 through to the present, Bowman Wind has engaged in extensive coordination with the USFWFS and the NDGFD on survey protocols, Project site selection, turbine placement, avoidance and minimization measures, and voluntary offsets. That extensive history is outlined in detail in Bowman Wind's August 4, 2021 letter to the PSC (responding to the NDGFD's July 22, 2021 letter), which is provided in proposed **BW Exhibit 19**.

Q. The NDGFD asserts in its July 22, 2021 letter that Bowman Wind made "little effort" to communication with the NDGFD after May 28, 2020. Do you agree with this statement?

A. No. As discussed in detail in proposed **BW Exhibit 19**, Bowman Wind has engaged in extensive consultation with the USFWS and NDGFD since 2017, and a significant portion of that consultation occurred between May 28, 2020 and April 2021. Therefore, it is completely disingenuous for the NDGFD to assert that Bowman Wind made "little effort" to communicate with the NDGFD after May 28, 2020.

Q. Discuss the concerns raised by the USFWS and NDGFD regarding unbroken grasslands.

A. Unbroken grasslands provide habitat for grassland species. The agencies' concerns regarding unbroken grasslands have focused on direct turbine impacts and the potential for Project turbines to displace grassland breeding birds, such as greater-sage grouse and sharp-tailed grouse. Essentially, the concern is that turbines may result in grassland breeding birds moving away from areas where turbines are located. Displacement does not mean that the birds are physically harmed or that they do not breed, but rather that they may move away from turbines to conduct breeding activities.

Q. What are unbroken grasslands?

A. Unbroken grasslands are grasslands that have never been tilled or otherwise disturbed by mechanized equipment.

Q. Are unbroken grasslands protected areas?

A. No. There are no local, state, or federal requirements for or prohibitions against development on grasslands.

Q. With respect to unbroken grasslands and grassland breeding birds, please discuss Bowman Wind's efforts to address concerns raised by the USFWS and the NDGFD.

A. Over the progression of three plus years of agency coordination and consultations, Bowman Wind discussed with the USFWS and the NDGFD ways to address their concerns regarding potential impacts to unbroken native grasslands and grassland breeding birds. The agencies' recommendations factored significantly in the development of and modifications to the proposed Project site and final layout, as well as the development of the avoidance, minimization, and mitigation measures Bowman Wind has implemented or committed to implementing in the BBCS.

Bowman Wind approached addressing the agencies' concerns regarding unbroken grasslands and grassland birds in three ways. First, during site selection, Bowman Wind modified the proposed Project area to avoid large areas of unbroken grassland. Second, Bowman Wind conducted extensive localized wildlife and vegetation surveys to inform siting decisions and avoid or minimize potential Project impacts to unbroken grasslands and grassland birds. Third, Bowman Wind voluntarily committed to using the best-available science to calculate offsets for any remaining potential displacement of grassland birds.

Q. Please discuss how the Project site was modified to minimize potential impacts to unbroken grasslands and grassland birds.

A. As a result of early discussions with the USFWS and NDGFD, in 2018, Bowman Wind expanded the potential development area being studied to include more previously disturbed acreage and focused leasing efforts on more actively managed agricultural lands (cropland and hay/pasture). Then, in 2020 based on continued agency discussions in 2018-2020, Bowman Wind shifted the proposed Project to the north, thereby avoiding large, intact unbroken grasslands in the southern extent of the original proposed Project development area.

Q. Please discuss the site-specific assessments Bowman Wind conducted to inform Project siting.

A. In consultation with the USFWS and the NDGFD, Bowman Wind conducted site-specific unbroken grassland and grassland breeding bird surveys, and the results of those studies were used to inform placement of Project infrastructure. In addition to the grouse lek data and monitoring discussed previously in my testimony, Bowman Wind retained WEST to conduct an unbroken grassland desktop and field assessment for the Project. The purpose of the WEST grassland assessment was two-fold: obtain site-specific, verified unbroken grassland data to (1) inform turbine placement, and (2) incorporate into the Shaffer – Loesch GIS model for calculating potential offsets for grassland breeding bird displacement.

Q. What is the Shaffer – Loesch GIS model?

A. It is a model developed to calculate potential offsets for grassland breeding bird displacement. The model was informed by a Shaffer and Buhl 2016 study of breeding bird displacement at operating wind projects in eastern North Dakota and South Dakota. Additionally, the model incorporates C. Loesch USFWS grassland habitat data that includes suitable and unsuitable grassland breeding bird habitat designations.

Currently, the Shaffer et al. 2019 model is the best available scientific method for determining potential displacement impacts to grassland birds. However, the application of the Shaffer et al. 2019 model is not directly applicable to the Bowman Wind site. The primary reason is that the Shaffer and Buhl 2016, which was used to inform the Shaffer et al. 2019 model, occurs in (1) a different vegetation ecoregion of North Dakota and South Dakota, and (2) wholly within undisturbed native grassland tracts. Therefore, the bird composition and densities that inhabited the mixed grass prairie area analyzed for the Shaffer and Buhl 2016 study are different when compared to the Bowman Wind Project Area. The Project occurs in a drier region of North Dakota, within a mixed grassland scrub vegetation ecoregion, and turbine locations are primarily sited in actively managed agricultural lands. Thus, the observed bird densities and species composition at the Project site are different than those in the Shaffer and Buhl 2016 study. In addition, the C. Loesch USFWS grassland habitat data is a coarse scale raster layer, and not site-specific, field verified data. As a result, the model is likely to overstate potential displacement to grassland birds at the Project site as the basis for calculating potential displacement.

Q. Please discuss the grassland assessment and how it was used to inform Project siting.

A. WEST's unbroken grassland assessment included historical aerial photography review, input from landowners, and field surveys to identify unbroken grasslands within a 400-meter radius of 90 proposed primary and alternate turbine locations. Bowman Wind used the results of the WEST unbroken grassland assessment to

map unbroken grasslands within the suitable breeding habitats designated in the C. Loesch dataset used in the Shaffer et al. model. This approach, including utilizing the C. Loesch suitable breeding habitat dataset, was discussed with the USFWS and the NDGFD prior to WEST completing the assessment.

Based on WEST's unbroken grassland assessment, five (5) of the 90 turbine locations initially analyzed were located on unbroken grasslands within suitable habitat. As a result, Bowman Wind eliminated those five (5) turbine locations from further consideration, resulting in 85 proposed turbine locations.

When Bowman Wind presented these results to the USFWS and the NDGFD, the NDGFD informed Bowman Wind for the first time that the NDGFD does not distinguish the C. Loesch, USFWS, unsuitable grassland data from suitable grassland data in their internal analyses. As a result, Bowman Wind completed another micro-siting exercise to further revise its methodology and further avoid and minimize potential impacts to unbroken grasslands. In the current layout (Layout 067), only five turbine locations are on unbroken grasslands.

Q. How did Bowman Wind utilize the grassland assessment data to inform the Shaffer – Loesch GIS model?

A. Through discussions with C. Loesch, Bowman Wind confirmed that C. Loesch supports using the best-available unbroken grassland data to model potential offsets, as more accurate data provides more accurate voluntary offset calculations. As a result, Bowman Wind incorporated WEST's unbroken grassland desktop and field assessment data for the Project into the Shaffer – Loesch GIS model, along with C. Loesch's suitable habitat data, to identify suitable breeding habitat within unbroken grasslands.

Q. Please discuss Bowman Wind's voluntary offsets commitment for the Project.

A. Bowman Wind consulted extensively with the NDGFD about the voluntary use of the Shaffer – Loesch GIS model to predict impacts to displaced grassland breeding

birds and the corresponding model outputs. Following one of the key "averted-loss" tenets of Shaffer et al. 2019 peer reviewed publication (i.e., from which the Shaffer – Loesch GIS model was derived), which is to offset indirect displacement of grassland birds by protecting existing native landscapes or other valuable habitat through voluntary agreement, Bowman Wind plans to acquire voluntary unbroken native grassland conservation agreements for the modeled output acreage for the operational life of the Project. To implement this voluntary commitment, Bowman Wind has begun negotiations and is in the process of preparing an agreement to partner with a Non-Governmental Organization who will seek out willing landowners that will enter into voluntary agreements to preserve intact native grasslands for the operational life of the Project. These voluntary agreements will also provide a net benefit to the greater sage-grouse.

I. RESPONSE TO NDGFD RECOMMENDATIONS

Q. In its July 22, 2021 letter, the NDGFD makes four recommendations. What is Bowman Wind's response to NDGFD's first recommendation: All proposed turbines be removed from within the Greater sage-grouse PCA and at least 4 miles from known sage-grouse leks?

A. Bowman Wind outlines in detail its response to this recommendation in proposed **BW Exhibit 19**. In summary, the NDGFD "designated" greater sage-grouse Priority Conservation Areas ("PCA") are NDGFD-defined areas that were not approved or designated through a formal regulatory or other rulemaking process. Despite multiple requests by Bowman Wind, the NDGFD has not provided shapefiles identifying the boundaries of the PCA. Moreover, the two turbines at issue are located in areas that do not appear to meet the definition of a PCA. Per the North Dakota Sage-Grouse Conservation Plan, the PCA was defined as areas with high nesting potential (less proportion of agriculture and higher proportion of grass cover and sagebrush) and low oil and gas well density (<1.5 wells per square mile). However, the two turbines at issue are located in areas currently in agricultural production and with oil and gas development above the 1.5 wells per square mile

threshold. As such, the turbines are outside of the PCA and located in areas unlikely to be used by greater sage-grouse.

The other turbines referenced by the NDGFD (within four miles of a lek) are also located on previously disturbed lands in areas of high oil and gas density (89 active oil and gas wells are located within four miles of the referenced lek), which suggest these turbines are not in an area that currently supports sage-grouse seasonal habitat requirements. Furthermore, based on the best-available science, the addition of turbines two miles or more from an active lek is not likely to impact the sage-grouse population given the previous disturbances to the area and the current scientific understanding of effects of wind energy development on prairie grouse populations.

Q. What is Bowman Wind's response to NDGFD's second recommendation: If voluntary offsets are pursued, the primary strategy should be to re-create grasslands on broken land (e.g. cropland) rather than preserve existing grasslands?

A. One of the key "averted-loss" tenets of Shaffer et al. 2019 peer reviewed publication (i.e., from which the Shaffer – Loesch GIS model was derived) is to offset indirect displacement of grassland birds by protecting *existing* native landscapes or other valuable habitat through voluntary agreement. Bowman Wind's plans to acquire voluntary unbroken native grassland conservation agreements for the modeled output acreage for the operational life of the Project are consistent with the guidance in Shaffer et al. 2019.

Q. What is Bowman Wind's response to NDGFD's third recommendation: In the absence of two years preconstruction sharp-tailed grouse surveys, all turbines should be sited off unbroken grasslands to avoid disturbance to any leks which may be present?

A. In advance of conducting wildlife surveys, Bowman Wind met with the USFWS and the NDGFD to discuss the surveys to conduct and the protocols to be used. During

a meeting on January 20, 2018 meeting, the NDGFD agreed to a survey methodology whereby historical and known prairie grouse lek locations were to be surveyed over two spring breeding seasons. Bowman Wind implemented the agency-approved survey methodology, surveying all known and historical leks within the Project boundary and an adjacent one-mile buffer in 2018 and 2019. Furthermore, with respect to the four proposed turbine locations in unbroken grasslands, no known or historical lek locations are located at or near those proposed turbine locations.

Q. What is Bowman Wind's response to NDGFD's fourth recommendation: Acknowledge that PLOTS tracts agreements cannot be altered without landowner and Department consent?

A. The NDGFD's recommendation appears to be tied to its desire to prohibit use of PLOTS lands for Project purposes. As discussed in proposed **BW Exhibit 19**, although PLOTS lands are privately owned, the NDGFD has opposed placement of Project facilities on PLOTS lands, despite the fact that many of the parcels are previously disturbed agricultural land. For example, at the NDGFD's request, Bowman County implemented a turbine setback that prohibited turbine placement on not only PLOTS parcels, but also within one-quarter mile of PLOTS parcels (on adjacent, non-PLOTS parcels) – many of which are also previously disturbed agricultural lands. Since the PLOTS contracts are legal agreements between landowners and the NDGFD and interpreting the terms of the agreements is outside of the scope of the PSC's permitting process, Bowman Wind does not believe addressing those agreements in this proceeding is appropriate.

IV. CONCULSION

Q. Based on the analysis conducted by Bowman Wind, as set forth in the proposed hearing exhibits, will construction of the proposed Project produce minimal adverse human and environmental effects?

A. Yes.

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687 **Q. Does this conclude your Testimony?**

688 A. Yes.

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