BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. EL19-003

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

Direct Testimony of Tom Kirschenmann
On Behalf of the Staff of the South Dakota Public Utilities Commission
May 10, 2019

Q: State your name.

A: Tom Kirschenmann

Q: State your employer.

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

Q: State the program for which you work.

A: Division of Wildlife, Terrestrial Resource Section

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

A: The role of the Terrestrial Resources section is to study, evaluate, and assist in the management of all wildlife and associated habitats. Management includes game and non-game wildlife populations, habitat management on public lands and technical assistance and habitat development on private lands, population and habitat inventory, and environmental review of local and landscape projects. As the Deputy Director of the Wildlife Division and Chief of the Terrestrial Resources Section, I oversee and am involved with wildlife management and research, as well as habitat management consisting of the department's public lands and private lands programs.

Q: Explain the range of duties you perform.

A: Duties include leading the Terrestrial Resources section that includes three program administrators (Wildlife, Habitat, Wildlife Damage) and 23 wildlife biologists; coordinate and assist with the Division of Wildlife's Operations at four administrative regions; oversee wildlife research, management, and the establishment of hunting seasons for game species; oversee private lands and public lands habitat programs; coordinate environmental review evaluations and responses related to terrestrial issues with department staff; serve as the Department's liaison for several state and federal agencies; and represent the Department on state and national committees.

Q: On whose behalf was this testimony prepared?

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

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

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

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

A: Yes, relevant sections of the application and attachments and also discussed project details with GFP biologists who had more direct communications with the developer.

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

A: Game, Fish and Parks was initially contacted in October 2007 by TetraTech to request a search of GFP listed threatened or endangered species, and any additional environmental concerns for the project area. A response was sent in December of 2007 by Silka Kempema, wildlife biologist. During this initial contact, information about species of concern and important or sensitive wildlife habitats in the project area were shared with the applicant. Additionally, in November 2007, Doug Backland, wildlife biologist provided a shapefile of threatened, rare, or endangered species present within the project area (natural heritage database review). In December 2009, TetraTech contacted GFP to request an additional natural heritage database review. Game, Fish and Parks provided a list of species occurrences for the project area. In November of 2010, Western Area Power Administration (WAPA) contacted GFP with a scoping notice for the Crowned Ridge Wind Energy Center in Codington County, South

Dakota. GFP replied to the WAPA scoping notice in January 2011 with a letter describing important wildlife habitats (grasslands, wetlands, etc.), information about rare, endangered or threatened species that could occur in the project area as well as general wildlife survey guidelines. In March 2014, GFP provided historic grouse lek locations in and around the project boundary. Game, Fish and Parks was contacted by TetraTech in February 2015 requesting information regarding ecologically significant areas and listed endangered, threatened or special concern species at a potential wind energy development site in Codington and Grant Counties, South Dakota. Game, Fish and Parks staff replied to their request in March 2015 with a letter describing ecologically sensitive areas in the project area and advising an up-to-date Natural Heritage database request, based on the amount of time that passed since the previous request. Information was also included about important wildlife habitats, avoidance of turbine placement in and around public lands, recommendations on transmission line construction and general wildlife survey guidelines for pre and post construction surveys. In March 2017, GFP was first contacted by Nextera, and Ms. Kempema recommended an in-person meeting for the opportunity to review proposed turbine layout and wildlife surveys that had been conducted to-date. In April 2017, a conference call with GFP, USFWS and Nextera was conducted to share a project overview, as well as results from wildlife surveys. During this conference call, Ms. Kempema recommended Nextera avoid placing turbines in untilled grasslands and

wetlands, and recommended a 1 mile no-construction buffer around grouse leks. Ms. Kempema also requested a copy of any wildlife survey reports, and recommended a site-visit with GFP and USFWS. In July 2017, GFP received a request from SWCA Environmental Consultants to request information regarding ecologically sensitive areas and federally and state listed endangered, threatened or special concern species in the Crowned Ridge project area. Results from a natural heritage database search was provided to SWCA in August 2017. On April 3rd, 2019, SWCA Environmental Consultants requested information regarding ecologically sensitive areas and federally and state listed endangered, threatened or special concern species in the Crowned Ridge project area. Results from a natural heritage database search were provided to SWCA on April 26th 2019.

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

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

Q: Based on the information provided in the Application, in your opinion did Crowned Ridge utilize the proper studies and wildlife surveys

necessary to identify potential impacts to the terrestrial environment?

A: Pre-construction wildlife survey data usually incorporates a small snap-shot in time (ex. monthly large bird counts) but is used to assess risks for the life of a project (~30 years) therefore, it is important to perform surveys with a high degree of scientific rigor. The US Fish and Wildlife Service (USFWS) Land-Based Wind Energy Guidelines (hereafter referred to as USFWS guidelines) are intended to encourage scientifically rigorous survey, monitoring, assessment and research designs, produce potentially comparable data across the nation, and improve the ability to predict and resolve effects of wind energy development locally, regionally and nationally. These guidelines, along with GF&P siting guidelines (https://gfp.sd.gov/userdocs/docs/SDSitingGuides_2018-10-17.pdf) are voluntary suggestions (USFWS 2012).

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

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

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

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

A: Permanent loss; habitat is permanently converted to turbine pads, roads or buildings. This is often a small percent of the total project acreage (area define by wind easements or otherwise defined project boundary). Temporary loss; habitat is disturbed for a time during construction (e.g. widened roads, crane paths) but is restored. Fragmentation; habitat fragmentation is the division of a block of habitat into smaller, and at times into isolated patches. Habitat fragmentation can decrease the overall value of the remaining habitat.

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

A: Temporary impacts to habitat resulting from construction activities likely can be reclaimed by restoring impacted areas by grading and reseeding. Disturbed areas should be restored using native seed sources to reduce

the introduction of new or discourage encroachment of already present exotic and/or invasive species.

For those areas that are permanently changed, lost grassland or wetland acres could be addressed through consideration of mitigation options. Disturbed areas again should be restored using native seed sources to reduce the introduction of new or discourage encroachment of already present exotic and/or invasive species. It would also be recommended that if lost acres are replaced to carry out these replacement activities in the closest possible proximity of the project.

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

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

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

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

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

A: Yes. The primary recommendations were to site turbines and associated infrastructure in cropland, minimize fragmentation, utilize existing infrastructure and avoid siting turbines in grasslands, and completion of post-construction surveys for bat and bird mortality which could be used in assisting with operational adjustments in the future.

Q: Are there different types of grasslands?

A: Yes.

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

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

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

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

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

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

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

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

A: Yes.

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

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

Q: One of the GF&P's recommendations was that efforts should be made to avoid placement of turbines and new roads in grasslands, especially untilled native prairie. Based on the information in the Application and the proposed turbine layout, did Crowned Ridge demonstrate efforts to address this recommendation? Please explain.

A: Data from the application indicates that 17,889 acres of the 53,186 acre project area is native prairie habitat. From reviewing the available maps, resources, and other information available there were efforts to avoid placement of turbines on untilled native prairie as approximately 19 of the planned 130 turbines appear to be positioned in native prairie. A continued recommendation for wind development is to avoid untilled native prairie habitat to the greatest extent possible. It appears that multiple turbines are being planned in cultivated land (disturbed) which from a wildlife perspective is a positive siting approach. Some turbines will likely be placed on other types of grassland habitats (hay and pasture) within the project area. Avoidance of all grassland habitat will be challenging in this part of the state and in the project area as a high proportion of the total area is some type of grassland/herbaceous habitat as demonstrated by the application indicating that project construction easement is 26% grass/pasture (page 47).

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

A: Fragmentation results in the direct loss of habitat and diminishes the value of remaining habitat. Habitat fragmentation is the division of large contiguous blocks of habitat into smaller, and in some instances isolated patches. Identification of contiguous blocks of habitat, especially in predominantly non-habitat landscapes is an important component of grassland and wetland bird conservation.

Q: Are there any areas of contiguous grassland habitat in the proposed project?

A: Yes. The northeastern portion, central portion and northwestern portion of the proposed project area have the highest level of contiguous blocks of grassland habitat.

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

A: Based on reviewing available information, fragmentation of grassland habitats were avoided/minimized in some of the project area through the proposed layout of the infrastructure of the wind farm. This is a result of primarily utilizing tilled agricultural fields for turbine locations. There are

other locations of the project area which the placement of turbines will likely create some level of fragmentation of smaller grassland blocks (comprised of different grassland cover types: hay, pasture, etc.). Based on the location of the project area and the existing land-use, it will be challenging not to create some additional fragmentation of grassland habitat, and in some situations larger contiguous blocks comprised of different grassland cover types.

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

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

Q: What are potential mitigation considerations?

A: Mitigation can take multiple forms and accomplished in a multitude of ways. It could be an approach which implements an applied management activity/strategy on impacted lands which elevates these lands to a more productive state or higher ecological state (example – grazing management) to an approach which is more sophisticated and detailed

using tools developed to calculate acres of habitat to be restored or created based on impacted acres and other relevant research data (example – decision support tool). Two examples that are available specifically for wind energy projects is a decision support tool based off the research conducted by Loesch et al. (2013) that considers breeding waterfowl and another which focuses on breeding grassland songbirds resulting from research findings of Shaffer and Buhl (2016). As stated earlier South Dakota does not have a state mitigation policy nor does the state endorse either study and resulting products, however it is worthy of mentioning these tools demonstrating resources available to developers and managers.

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

A: The application mentions under mitigation measures for wildlife that wetlands will be avoided or minimize disturbance of individual wetlands during project construction. These are appropriate measures. No turbines are planned in wetland basins. Reviewing the turbine layout and using NWI wetland information for the project area, some turbines appear to be placed in areas of higher concentrations of wetland basins (specifically in the central and eastern portions of the project). It will be

challenging to avoid areas of wetland concentrations because of the number of wetland acres and basins found in this part of the state and project area. Recommendations to avoid areas of higher concentrations of wetlands is supported by findings from Loesch et al. (2013).

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

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

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

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

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

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

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

A: There are two records of the state threatened Northern River Otter adjacent to the project boundary. Filing a storm water pollution prevention plan and putting in place practices to reduce or eliminate sedimentation will help negate potential negative impacts to Northern River Otters that may be in or near the project area.

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

A: It does not appear any Game Production Areas within the project area will be impacted by the project. There are six walk-in-area parcels within the project area; three turbines are planned on these properties. These properties are privately owned and an agreement with GFP opens them to free public access for hunting. Should a Walk-In Area be temporarily disrupted for construction, GFP would ask we are involved with those

discussions to determine whether any action required from our agency to notify the public.

For clarification, Game Production Areas and Waterfowl Production Areas are not private land leased by GFP. Game Production Areas are owned by the State of South Dakota and managed by GFP. Waterfowl Production Areas are publicly owned and managed by the US Fish and Wildlife Service.

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

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

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

A: Yes.

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

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

This database houses and maintains data from a variety of sources including site-specific surveys, research projects and incidental reports of species that cover a time period from 1979 to the present. It is important to note that the absence of data from this database does not preclude a species presence in the proposed project area.

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

A: Game, Fish & Parks would suggest performing post-construction avian and bat mortality monitoring for at least two years; one year of post-construction surveys is currently proposed by the developer in the PUC application to confirm operational trends are consistent with previously observed trends for other projects in the region. That consistency would have more assurance with two years of data.

Additionally, GFP recommends post-construction grouse lek monitoring of confirmed leks less than 1 mile from proposed turbines. This data could be useful information for future discussions around cumulative effects of wind energy development on prairie grouse. We also recommend consultation between the developers, GFP and the US Fish and Wildlife Service on proposed survey methodology for post-construction lek monitoring. GFP would request a copy of any future report to be shared with the US Fish and Wildlife Service and GFP.

Q: Does this conclude your testimony?

A: Yes.

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

Loesch, C. R., J. A. Walker, R. E. Reynolds, J. S. Gleason, N. D. Niemuth, S. E. Stephens, and M. A. Erickson. 2013. Effect of wind energy development

on breeding duck densities in the Prairie Pothole Region. The Journal of Wildlife Management 77:587-598.

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