BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. EL18-053

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

Direct Testimony of Tom Kirschenmann
On Behalf of the Staff of the South Dakota Public Utilities Commission
March 13, 2019

Q: State your name.

A: Tom Kirschenmann.

Q: State your employer.

A: State of South Dakota, Department of Game, Fish, and Parks (GF&P).

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 their 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 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 avoid, minimize or mitigate impacts of wind energy development

to wildlife and associated habitats and provide available information to make informed decisions as related to natural resources.

Q: Have you reviewed the Application, attachments, and Deuel Harvest's responses to PUC Staff data requests?

A: Yes, relevant sections of the application and attachments and also received briefings provided by GFP biologists.

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

A: Yes, Casey Heimerl, Wildlife Biologist responded to a June 20, 2016 inquiry from WEST Inc., (on behalf of the developers of Deuel Harvest) to provide information on listed, proposed, and candidate threatened or endangered species, or sensitive environmental areas in or near the project area. Mrs. Heimerl conducted a search of the South Dakota Natural Heritage database within the proposed project boundary. Mrs. Heimerl's response included locations of three bald eagle nests, records of Northern redbelly dace, a state threatened fish species and historic records of two rare butterfly species, the threatened Dakota Skipper and the endangered Poweshiek Skipperling in the project area. Silka Kempema, Wildlife Biologist, provided comments to developers initially in August of 2016. During this initial consultation, information about the

project area and concerns over sensitive species and sensitive environmental areas were shared with the applicant. This consultation continued with conference calls, emails, and review of reports and draft documents associated with the proposed project. Leslie Murphy, prior Environmental Review Coordinator for GF&P also provided comments at meetings and during conference calls beginning in spring 2017 through August 2018.

A summary of those comments include suggestions on the types, timing and number of surveys for grassland birds (songbirds and grouse), survey recommendations for raptors, placement of turbines and associated infrastructure considering the avoidance of untilled native prairie and large contiguous blocks of grasslands and to focus on disturbed lands such as fields currently cultivated. Game, Fish & Parks also suggested avoidance of activities that will fragment contiguous blocks of grasslands, avoidance of wetland basins or areas of high concentrations of wetlands, pre-construction surveys for bat use and habitats plus post-construction mortality surveys, and recommendations on transmission line placement. Prairie grouse (greater prairie chicken and sharp-tailed grouse) lek surveys were suggested by GF&P during the initial August 2016 consultation; however no pre-construction grouse lek surveys were completed.

Q: Do you agree with the comments and recommendations provided to Deuel Harvest by Mrs. Heimerl, Mrs. Kempema and Mrs. Murphy? If not, please explain.

A: Yes. These are standard recommendations and comments our Department would provide to 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 Deuel Harvest utilize the proper studies and wildlife surveys necessary to identify potential impacts to the terrestrial environment?

A: 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).

While survey methods were reasonable and appropriate approaches, pre-construction survey methodology and timing differed between years, making comparisons of data across years difficult. For example, the raptor nest survey timing in 2016 was earlier in spring (March 28-April 1) than in 2017 (May 27-30). The increase in vegetative growth between March-April and late May could influence the results of the survey (e.g. raptor observations would be much more difficult after leaf-out).

The USFWS states that it is appropriate to follow the Range Wide Indiana Bat Survey Guidelines to survey for the presence of the Northern Long Eared Bat. Bat acoustics studies were completed using different equipment across years, as well as during different times of the year. Specifically, the second year of bat acoustic monitoring was shorter (July 20-October 17 2017) than the first year of monitoring (April 13-November 3 2016). Tree-roosting bats in South Dakota are generally active from April-November, and the Indiana Bat Survey Guidelines define the optimal sampling period as 15 May through 15 August. The study site used was located adjacent to a woodlot, wetland and travel corridor (generally considered typical bat habitat), however little information was gathered for bat activity levels in grassland and wetland areas. Only one site was monitored of the 72,737 acres in the project area. Although GF&P did not recommend a specific number of survey sites, the number of survey sites should consider the proposed project size and diversity of bat habitat.

Ideally, detectors should be distributed throughout the proposed project area and adequately represent the habitats available and the areas for which turbines are to be placed (National Research Council 2007, Collins and Jones 2009, Weller and Baldwin 2012).

The USFWS guidelines include recommendations for prairie grouse lek surveys. Additionally, GF&P biologists typically offer suggestions on grouse lek avoidance during turbine siting (1 mile buffer) and construction (2 mile no-construction buffer during breeding season 1 March - 30 June). SDGFP would have preferred grouse lek surveys to be conducted prior to construction to assist in the developer's ability to avoid or minimize adverse impacts to prairie grouse species.

Wetland delineation surveys were completed in August-September of 2018, and follow-up surveys were completed November 14 2018. The developer indicated in their application to the PUC, that the US Army Corps of Engineers Wetland Delineation Manual was used to complete these surveys (Environmental Laboratory 1987). Game, Fish & Parks would prefer that the developers conduct wetland delineation surveys during spring (May-June), so surveys would encompass the wet portion of the growing season. Wetland indicators (hydrology, soil, vegetation) can be masked if they are observed outside the growing season.

Different approaches in survey methods across years make it difficult to effectively evaluate impacts and risk to wildlife species in a scientifically rigorous manner. Pre-construction surveys 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.

Game, Fish & Parks would prefer performing post-construction mortality monitoring for at least two years; one year of post-construction surveys is currently proposed by the developer in the PUC application with a second year to be considered if year one results show a high level of uncertainty (Appendix O: Bird and Bat Conservation Strategy). That uncertainty could be determined with more assurance with two years of data.

Q: Are there different types of grasslands?

A: Yes.

Q: Please define the following: native prairie, hayland, pasture, CRP, grassland, cropland and agriculture.

A: Grasslands are areas that contain plant 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. Rangeland is similar to pasture however; these areas are often larger and less invaded by exotic plant species. In some instances, hayland, pasture, and rangeland could be native prairie; in other situations hayland and pasture in particular could be land once cultivated and restored to grassland habitat. CRP is grassland that occurs on land that was once tilled and used for crop production. These lands are often not as productive as other cropland and grassland restoration is intentional.

Q: What are remnant prairie tracts?

A: Remnant prairie tracts are pieces of native prairie remaining in a landscape that is dominated by tillage agriculture that have never been tilled or have never undergone other mechanical disturbances for agriculture or other purposes. Prairie is a naturally occurring ecosystem in central North America characterized by certain precipitation levels, grazing pressure and fire. Dominant plant forms characteristic of and adapted to these environmental conditions include native grass, forb and sedge species.

Q: Do remnant prairie tracts have high conservation value?

A: Yes.

Q: Why do remnant prairie tracts have high conservation value?

A: North American prairies (tallgrass, mixed-grass and shortgrass), especially those with higher precipitation levels have had a long history of being converted to cropland. Once tilled, this system cannot be fully restored. In the Prairie Coteau ecoregion, 1 million acres of potentially undisturbed lands (e.g. prairie) remain (Bauman et al. 2014) and represent some of the last remaining areas of native prairie habitat. There are several endemic grassland bird species that require native prairie. Many of these populations are rare or declining and one of the main reasons for their decline is habitat loss.

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

A: Yes.

Q: Do grazed grasslands have any conservation value?

A: All grasslands have a conservation value when considering both wildlife and livestock. Grasslands (native prairie, restored/replanted grasslands, pastures, hayland, etc.) provide habitat that can and will be used by grassland birds and waterfowl. Management activities, in particular managed grazing, can help maintain healthy grassland habitats or

enhance its current state. Various grazing strategies can also determine which bird species and other wildlife will use individual tracts.

Q: Briefly explain the role of grazing on grasslands.

A: Grazing provides different plant heights that result in different types of wildlife cover, allows for nutrient recycling, and helps to maintain grassland especially in areas with higher levels of precipitations. Grazing can be used as a management activity to either manage for a specific diversity or to manage unwanted plant species.

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 Deuel Harvest demonstrate efforts to address this recommendation?

A: From reviewing the maps, resources, and other information available there were efforts to avoid placement of turbines on untilled native prairie. It appears that in some instances the placement of the turbine is on the edge of native prairie and other land use types which is also a positive approach. Some turbines were placed on other types of grassland habitats that are classified as herbaceous cover (hay and pasture) within the project area; these too are important grassland habitats to many wildlife species. 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 (~50%). Placement of turbines in cultivated land (disturbed) is a positive siting approach.

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 this 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 impacts to wildlife and wildlife habitat.

Q: Beyond avoidance, initial consultation with GF&P recommended that impacts to native prairie and wetlands should be mitigated. What does mitigation mean?

A: In its broader context, mitigation can be an enhancement, restoration, creation and/or a preservation project or activity that serves to offset unavoidable impacts to a resource. It can also be measures taken in the design, materials, timing, layout/siting locations and all associated infrastructure during construction and operation.

Q: What are potential mitigation considerations?

A: Mitigation can take multiple forms and can be accomplished in a number 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 scientific information 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 research study 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 studies that demonstrate available options to developers and land managers.

Q: Can you explain the difference between temporary and permanent habitat impacts and suggested methods to address these changes?

A: There will be temporary and permanent losses of grassland and potentially wetland habitats resulting from the construction of turbine pads, roads, and other associated infrastructure. Construction of a wind farm often requires wider roads, crane paths, laydown yards, etc., to erect

turbines. These construction activities will have temporary impacts that 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, it is a typical recommendation for lost grassland or wetland acres to be replaced. 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 to replace lost acreage within the Prairie Coteau ecoregion.

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. Indirect impacts caused 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 use grassland or wetland habitats to a lesser extent within a certain distance of a wind turbine (Loesch et al. 2013, Exhibit _TK-2; Shaffer and Buhl 2016, Exhibit_TK-3).

Q: One of GF&P's concerns involved 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.

Q: The GF&P recommended avoiding the placement of turbines and roads in contiguous blocks of grassland. Based on the information provided in the Application, did Deuel Harvest address this recommendation?

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. Particularly, Deuel Harvest avoided placing wind turbines in large tracts of native prairie and herbaceous cover sites in the east/southeast and southwest portions of the project area (map A-3 in appendix A). This is a result of using existing roads, placing new roads along edges or through cultivated lands, and following existing corridors (roads) for power lines. There are other locations of the project area which currently are void of roads and the placement of service roads to turbines will 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.

Q: If fragmentation of contiguous blocks of grasslands couldn't be avoided, the GF&P recommended the impacts should then be mitigated. Does the GF&P have any recommendations on adequate types of mitigation measures Deuel Harvest should undertake to offset any adverse impacts due to fragmentation? Please explain.

A: As stated earlier, the state does not have a mitigation policy, however other resources and approaches exist that could be considered to help minimize the impacts of additional fragmentation.

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 Deuel Harvest'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 as well as identifying wetland boundaries by delineating them prior to 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, several turbines

appear to be placed in areas of higher concentrations of wetland basins (specifically in the southern portion of the project; see Figure A-6 in Appendix A). It will be challenging to avoid areas of high wetland concentrations because of the number of wetland acres and basins found in this part of state and project area.

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 in relation to other projects?

A: Native prairie grasslands continue to decline in eastern South Dakota. Knowing the importance of these native prairie tracts to several grassland dependent species, continued development on these types of lands could result in reduced or limited habitat value, and possibly reduced densities of these species. 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. Species sensitive to habitat fragmentation may show different

responses based on the landscape context (e.g. areas surrounded by grasslands or areas surrounded by cropland or other development).

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 be limited to, recommendations on avoiding grassland habitats, in particular native prairie remnants, avoidance of high density wetland complexes, maximize the use of existing corridors for infrastructure, and pre and post construction surveys to assess the proposed project area.

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

A: Large bird surveys conducted in 2017 identified two Osprey in the project area (Appendix K). Osprey is considered threatened in South Dakota. Although the project area does not have suitable nesting habitat for Osprey, a chance exists that one may be struck by a wind turbine blade if this species forages in or migrates through the project area. The other state listed species that may be present are the Northern River Otter and the Northern Redbelly Dace. Filing a storm water pollution prevention plan and putting in place practices to reduce or eliminate sedimentation will help negate potential negative impacts to these species.

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

A: There is one Game Production Areas within the project area boundary and six outside but adjacent to the boundary. There are three walk-in-area parcels within the project area. These properties are privately owned and an agreement with GFP opens them to free public access for hunting. There is one Waterfowl Production Area (owned by USFWS) within the project area boundary and seven other Waterfowl Production Areas within a five-mile radius of the project.

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/conditions should the permit be granted?

A: The GF&P recommends two years of post-construction avian and bat mortality monitoring. A similar condition has been ordered by the Commission in past wind farm dockets and if applied for this project would be consistent and addresses our recommendation stated earlier in the testimony. If such a condition is included we would recommend a copy of the report to be shared with the US Fish and Wildlife Service, SD Game, Fish and Parks, and the Commission.

Q: Does this conclude your testimony?

A: Yes.

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