

BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. EL17-055

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

Direct Testimony of Tom Kirschenmann
On Behalf of the Staff of the South Dakota Public Utilities Commission
March 28, 2018

1 **Q: State your name.**

2 A: Tom Kirschenmann

3

4 **Q: State your employer.**

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

6

7 **Q: State the program for which you work.**

8 A: Division of Wildlife, Terrestrial Resource Section

9

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

11 A: The role of the Terrestrial Resources section is to study, evaluate, and
12 assist in the management of all wildlife and associated habitats.

13 Management includes game and non-game wildlife populations, habitat

14 management on public lands and technical assistance and habitat

15 development on private lands, population and habitat inventory, and

16 environmental review of local and landscape projects. As the Deputy

17 Director of the Wildlife Division and Chief of the Terrestrial Resources

18 Section, I oversee and am involved with wildlife management and

19 research, as well as habitat management consisting of the department's

20 public lands and private lands programs.

21

22 **Q: Explain the range of duties you perform.**

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

11

12 **Q: On whose behalf was this testimony prepared?**

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

15

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

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

1 **Q: Have you reviewed the Application, attachments, and Crocker's**
2 **responses to PUC Staff data requests?**

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

5
6 **Q: Did the GF&P provide comments and recommendations to Crocker**
7 **about the project area? Please identify who provided those**
8 **comments and provide a brief summary of them.**

9 A: Yes, Silka Kempema, Wildlife Biologist, provided comments initially in
10 March of 2016. Comments were in response to a request for Natural
11 Heritage data and review of potential concerns under one of the earlier
12 proposed project boundaries. During this initial consultation, information
13 and concerns were shared with the applicant. This consultation continued
14 with conference calls, emails, a site visit, and review of reports and draft
15 documents associated with the proposed project.

16
17 A summary of those comments include suggestions on the types, timing
18 and number of surveys for grassland birds (songbirds and grouse), survey
19 recommendations for raptors, placement of turbines and associated
20 infrastructure considering the avoidance of untilled native prairie and large
21 contiguous blocks of grasslands and to focus on disturbed lands such as
22 fields currently cultivated, avoidance of activities that will fragment
23 contiguous blocks of grasslands, avoidance of wetland basins or areas of

1 high concentrations of wetlands, pre-construction surveys for bat use and
2 habitats plus post-construction mortality surveys, and recommendations
3 on transmission line placement.

4

5 **Q: Do you agree with the comments and recommendations provided to**
6 **Crocker by Ms. Kempema? If not, please explain.**

7 A: Yes. These are typical recommendations our Department would provide
8 to wind power companies to identify, minimize, or reduce impacts to
9 wildlife and wildlife habitats, especially those projects that are proposed in
10 grassland and wetland habitats.

11

12 **Q: Based on the information provided in the Application, in your opinion**
13 **did Crocker utilize the proper studies and wildlife surveys necessary**
14 **to identify potential impacts to the terrestrial environment?**

15 A: Consultation with wildlife agencies early in the application process
16 included the recommendation of several types of wildlife surveys to
17 understand the potential impacts and issues that may occur in the project
18 area. The pre-construction surveys were implemented and carried out by
19 the applicant or are in progress. It would have been advantageous to
20 have all surveys completed and final reports available at the time of
21 application for review purposes. It is also recommended to carry out post-
22 construction mortality monitoring for at least two years; one year minimum
23 is currently documented in the application.

1 **Q: Are there different types of grasslands?**

2 A: Yes.

3

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

6 A: Grasslands are areas that contain plants species such as graminoids and
7 commonly used for grazing or set aside for conservation purposes. They
8 can also be areas which are planted to a mixture of grasses and legumes
9 for livestock grazing or feed. Native prairie is grassland upon which the
10 soil has not undergone a mechanical disturbance associated with
11 agriculture or any other type of development. Hayland is grassland that is
12 managed by frequent mowing and often contains non-native plant species
13 either intentionally or by encroachment. Pasture is grassland that may
14 contain non-native plant species either intentionally or by encroachment
15 and is managed by through grazing. Rangeland is similar to pasture
16 however; these areas are often larger and less invaded by exotic plant
17 species. In some instances, hayland, pasture, and rangeland could be
18 native prairie; in other situations hayland and pasture in particular could be
19 land once cultivated and restored to grassland habitat. CRP is grassland
20 that occurs on land that was once tilled and used for crop production.
21 These lands are often not as productive as other cropland and grassland
22 restoration is intentional.

23

1 **Q: What are remnant prairie tracts?**

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

10

11 **Q: Do remnant prairie tracts have high conservation value?**

12 A: Yes.

13

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

15 A: North American prairies (tallgrass, mixed-grass and shortgrass),
16 especially those with higher precipitation levels have had a long history of
17 being converted to cropland. Once tilled, this system cannot be fully
18 restored. North American prairie, especially tallgrass prairie, is still being
19 lost at rates that make it one of the world's most endangered ecosystems.
20 In the Prairie Coteau ecoregion, 1 million acres of potentially undisturbed
21 lands (e.g. prairie) remain (Bauman et al. 2014) and represent some of the
22 last remaining areas of native prairie habitat. There are several endemic
23 grassland bird species that require native prairie. Many of these

1 populations are rare or declining and one of the main reasons for their
2 decline is habitat loss.

3

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

5 A: Yes.

6

7 **Q: Do grazed grasslands have any conservation value?**

8 A: All grasslands have a conservation value when considering both wildlife
9 and livestock. While most attention and concern typically focuses on
10 native prairie remnants, grassland habitat that has been restored from
11 being previously cultivated has high value to a multitude of wildlife
12 species. All grasslands (native prairie, restored/replanted grasslands,
13 pastures, hayland, etc.) provide habitat that can and will be used by
14 grassland birds and waterfowl. Management activities, in particular
15 managed grazing, can help maintain healthy grassland habitats or
16 enhance its current state. Grazing strategies applied will also determine
17 which bird species and other wildlife will use individual tracts.

18

19 **Q: Briefly explain the role of grazing on grasslands.**

20 A: Grazing provides different plant heights that result in different types of
21 wildlife cover, allows for nutrient recycling, and helps to maintain
22 grassland especially in areas with higher levels of precipitations. Grazing

1 can be used as a management activity to either manage for a specific
2 diversity or to manage unwanted plant species.

3

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

10 A: From reviewing the available maps, resources, and other information
11 available there were efforts to avoid placement of turbines on untilled
12 native prairie. It appears that in some instances the placement of the
13 turbine is on the edge of native prairie and other land use types which is
14 also a positive approach. Some turbines were placed on other types of
15 grassland habitats that are classified as agricultural land (hay and pasture)
16 within the application; none-the-less these are still important grassland
17 habitats to many wildlife species. Avoidance of all grassland habitat will
18 be challenging in this part of the state and in the project area as a high
19 proportion of the total area is some type of grassland/herbaceous habitat.
20 Placement of turbines in cultivated land (disturbed) is a positive siting
21 approach.

22

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

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

9

10 **Q: Beyond avoidance, the initial consultation letter provided by GF&P**
11 **recommended that impacts to native prairie and wetlands should be**
12 **mitigated. What does mitigation mean?**

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

18

19 **Q: What are potential mitigation considerations?**

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

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

13

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

16 A: There will be temporary and permanent losses of grassland and
17 potentially wetland habitats resulting from the construction of turbine pads,
18 roads, and other associated infrastructure. Construction of a wind farm
19 often requires wider roads, crane paths, laydown yards, etc., to erect
20 turbines. These construction activities will have temporary impacts that
21 likely can be reclaimed by restoring impacted areas by grading and
22 reseeding. Disturbed areas should be restored using native seed sources

1 to reduce the introduction of new or discourage encroachment of already
2 present exotic and/or invasive species.

3

4 For those areas that are permanently changed, the lost grassland or
5 wetland acres are typically replaced. Disturbed areas again should be
6 restored using native seed sources to reduce the introduction of new or
7 discourage encroachment of already present exotic and/or invasive
8 species. It would also be recommended to replace lost acres within the
9 Prairie Coteau ecoregion.

10

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

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

20

21 **Q: One of GF&P's concerns involved the fragmentation of contiguous**
22 **blocks of grasslands. Why is fragmentation a concern?**

1 A: Fragmentation results in the direct loss of habitat and diminishes the value
2 of remaining habitat. Habitat fragmentation is the division of large
3 contiguous blocks of habitat into smaller, and in some instances isolated
4 patches.

5
6 **Q: The GF&P recommended avoiding the placement of turbines and**
7 **roads in contiguous blocks of grassland. Based on the information**
8 **provided in the Application, did Crocker address this**
9 **recommendation?**

10 A: Based on reviewing available information, fragmentation of grassland
11 habitats were avoided/minimized in some of the project area through the
12 proposed layout of the infrastructure of the wind farm. This is a result of
13 using existing roads, placing new roads along edges or through cultivated
14 lands, and following existing corridors (roads) for power lines. There are
15 other locations of the project area which currently are void of roads and
16 the placement of service roads to turbines will create some level of
17 fragmentation of larger grassland blocks (comprised of different grassland
18 cover types: hay, pasture, etc.). Based on the location of the project area
19 and the existing land-use, it will be challenging not to create some
20 additional fragmentation of grassland habitat, and in some situations
21 larger contiguous blocks comprised of different grassland cover types.

22

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

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

9
10 **Q: The GF&P recommended that turbines should not be placed in or**
11 **near wetland basins and special care should be made to avoid areas**
12 **with high concentrations of wetlands. Do you believe that Crocker's**
13 **proposed turbine layout incorporates this recommendation?**

14 A: The application mentions under mitigation measures for wildlife that
15 wetlands will be avoided or minimize disturbance of individual wetlands
16 during project construction as well as identifying wetland boundaries by
17 delineating them prior to construction. These are appropriate measures.
18 No turbines are planned in wetland basins. Reviewing the turbine layout
19 and using NWI wetland information for the project area, several turbines
20 appear to be placed in areas of higher concentrations of wetland basins.
21 It will be challenging to avoid areas of high wetland concentrations
22 because of the high number of wetland acres and basins found in this part
23 of state and project area.

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

A: Yes.

Q: Given that the Day County wind farm is north of the Project and Oak Tree wind farm is southeast of the project, does the GF&P have any thoughts regarding the potential for cumulative impacts the Project may have?

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. 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 (surrounded by grasslands or surrounded by cropland and other development or disturbance).

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

1 native prairie remnants, avoidance of high wetland complex areas,
2 maximize the use of existing corridors for infrastructure, and pre and post
3 construction surveys to assess the proposed project area.

4

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

7 A: There are records of the state and federal endangered Whooping Crane in
8 Clark County. A chance exists where one may be struck by a wind turbine
9 blade. The other state listed species present is the Northern River Otter
10 and there are not likely to be impacts to this species from the proposed
11 wind farm.

12

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

15 A: There are two Game Production Areas within the project area boundary
16 and three outside but adjacent to the boundary; and one School and
17 Public Lands property within the project area and two immediately
18 adjacent but outside.

19

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

22 A: The state does not have an established set-back policy or
23 recommendation for wind turbine placement in proximity to state

1 properties such as Game Production Areas. Set-back policies have been
2 established at local levels by local government entities and in some
3 instances have been suggested as the potential set-back distance from
4 state properties. At this time it is the state's belief that these types of
5 policies be established at the local level and at the discretion of the PUC
6 Commission to impose such set-backs when considering wind energy
7 permits.

8

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

12 A: Yes.

13

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

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

22

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

6

7 **Q: Does this conclude your testimony?**

8 A: Yes.

9

10

11 Bauman, P., J. Blastick, C. Grewing, and A. J. Smart. 2014. Quantifying
12 undisturbed land on South Dakota's prairie coteau. SDSU Extension.

13 Loesch, C. R., J. A. Walker, R. E. Reynolds, J. S. Gleason, N. D. Niemuth, S. E.
14 Stephens, and M. A. Erickson. 2013. Effect of wind energy development
15 on breeding duck densities in the Prairie Pothole Region. *The Journal of*
16 *Wildlife Management* 77:587-598.

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

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