



United States Department of the Interior



FISH AND WILDLIFE SERVICE North Dakota Ecological Services

IN REPLY REFER TO:
2018-CPA-0017

3425 Miriam Avenue
Bismarck, North Dakota 58501

October 12, 2018

Ms. Jennifer Bell
Senior Environmental Scientist
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

Dear Ms. Bell:

Thank you for your letter of December 21, 2017, requesting U.S. Fish & Wildlife Service (Service) comment on several aspects of the Aurora Wind Energy Project and Transmission Line (Project) in Williams and Mountrail Counties, North Dakota. The Project consists of 300 megawatts (MW) and approximately 25 miles of 345-kv overhead transmission line. The Project would interconnect to the electrical grid via the existing Basin Electric Power Cooperative Tande 345-kilovolt Substation (Tande Substation, located in the Northeast Quarter of Section 29, Township 157 North, Range 94 West, Mountrail County, North Dakota. Once the location of the infrastructure has been finalized the Service can conduct further review of the Project.

This letter provides information regarding important wildlife habitats and U.S. Fish and Wildlife Service (Service) trust resources including federally listed species, eagles, birds of conservation concern and other migratory birds that may occur within the project area and vicinity. We have included guidelines, recommendations, and methods to be applied to various components of wind energy development including meteorological towers, power lines, and turbines in order to avoid, minimize, and/or compensate for impacts to Service trust resources and to assist you in achieving compliance with Federal laws.

Grasslands

The North Dakota Game and Fish Department (NDGFD) indicated the importance of grasslands in their January 8, 2018, letter regarding this project. We also stress the value of these habitats. Native prairie, and prairie that may have been tilled briefly then left to return to grass (“go-back prairie”), are particularly important habitats. In addition to the intrinsic value of diverse native prairie plant communities, these areas represent a fraction of the prairie acres that once existed and harbored numerous native wildlife species, some of which cannot survive outside the native plant community. Note, that while native prairie is a conservation priority in the state, lesser-

quality areas (e.g. grasslands with a high non-native plant component, overgrazed grasslands) are also valuable habitat for wildlife.

In addition to the existence of native prairie at the proposed Project site and the presence of species at risk that rely on those habitats, other factors indicate risk of direct and indirect impacts to wildlife at this location. The number of prairie pothole wetlands in the project area, and proximity of the site to areas which harbor federally listed species including, whooping cranes and Dakota skippers are indicators of the wildlife value of this area. The information collected to date, obtained via the tiered approach outlined in our wind energy guidelines (see below), is intended to guide developers regarding whether development plans should continue or not at a given site. During telephone calls on the proposed Project between Burns & McDonnell and the Service, we relayed to you concerns with placing wind development in this area.

2012 Land-Based Wind Energy Guidelines

Per ongoing coordination regarding this project, Trade Wind Energy Inc. is aware of our voluntary 2012 *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines* (WEG) which were developed in consultation with wind industry companies. We recommend close adherence to these guidelines, using the information gathered to first determine whether the project should be placed in the area of interest at all. The WEG invokes a tiered approach intended to evaluate and quantify the risk posed to habitats and wildlife at potential wind energy sites. The tiered system involves collecting site information with increasing levels of detail.

Tiers 1-3 each represent a preconstruction decision point to either move forward to development, gather more information (i.e. move to the next tier), or to abandon project plans at a site, thereby avoiding areas where development is precluded or where wildlife impacts are likely to be high and difficult or costly to remedy or mitigate at a later stage. Wind energy facility effects to wildlife may be direct and indirect, including collision mortality, loss of habitat due to the footprint of the turbines/roads/other facilities, habitat fragmentation impacts, wildlife avoidance of turbines on the landscape, encroachment of invasive plants, and more. Currently, the best strategy to avoid impacts to wildlife is to place wind energy facilities within existing cropland wherever possible, precluding direct impacts to valuable wildlife. We request the results of any pre- or post-construction wildlife monitoring for this project.

Eagle Guidance

Golden eagles (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) may occur throughout North Dakota and both species are protected from a variety of harmful actions via take prohibitions in both the Migratory Bird Treaty Act¹ (MBTA; 16 U.S.C. 703-712) and the

¹ On December 22, 2017, the Department of the Interior's (DOI) Office of the Solicitor Memorandum M-37050 titled *The Migratory Bird Treaty Act Does Not Prohibit Incidental Take* concludes that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs. The MBTA list of protected species includes bald and golden eagles and the law has been an effective tool to pursue incidental take cases involving eagles. However, the primary law protecting eagles is the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S. Code § 668), since the bald eagle was delisted under the Endangered Species Act in 2007.

Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668–668d). The BGEPA, enacted in 1940 and amended several times, prohibits take of bald eagles and golden eagles, including their parts, nests, young or eggs, except where otherwise permitted pursuant to federal regulations. Incidental take of eagles from actions such as electrocutions from power lines or wind turbine strikes are prohibited unless specifically authorized via an eagle incidental take permit from US Fish and Wildlife Service (Service). BGEPA provides penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." BGEPA defines take to include the following actions: "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Service expanded this definition by regulation to include the term "destroy" to ensure that "take" also encompasses destruction of eagle nests. Also the Service defined the term disturb which means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

The Service has developed guidance for the public regarding means to avoid take of bald and golden eagles:

- The 2007 *National Bald Eagle Management Guidelines* serve to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of BGEPA may apply. They provide conservation recommendations to help people avoid and/or minimize such impacts to bald eagles, particularly where they may constitute "disturbance," which is prohibited by the BGEPA.
- The 2013 *Eagle Conservation Plan Guidance, Module 1- Land-based Wind Energy, Version 2* is specific to wind energy development and provides in-depth guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. Development of an Eagle Conservation Plan per these guidelines may serve as the basis for applying for an eagle incidental take permit for wind energy facilities. Applications for such eagle incidental take permits must include an Eagle Conservation Plan.

Finally, the Service has promulgated new permit regulations under BGEPA:

- New eagle permit regulations, as allowed under BGEPA, were promulgated by the Service in 2009 (74 FR 46836; Sept. 11, 2009) and revised in 2016 (81 FR 91494; Dec. 16, 2016). The regulations authorize the limited take of bald and golden eagles where the take to be authorized is associated with otherwise lawful activities. These regulations also establish permit provisions for intentional take of eagle nests where necessary to ensure public health and safety, in addition to other limited circumstances. The revisions in 2016 included changes to permit issuance criteria and duration, definitions,

compensatory mitigation standards, criteria for eagle nest removal permits, permit application requirements, and fees in order to clarify, improve implementation and increase compliance while still protecting eagles.

The Service's Office of Law Enforcement carries out its mission to protect eagles through investigations and enforcement, as well as by fostering relationships with individuals, companies, industries and agencies that have taken effective steps to avoid take, including incidental take of these species, and encouraging others to implement measures to avoid take. The Office of Law Enforcement focuses its resources on investigating individuals and entities that take eagles without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Those individuals and entities are encouraged to work closely with Service biologists to identify available protective measures, and to implement those measures during all activities or situations where their action or inaction may result in the "take" of an eagle(s).

The Service has also developed recommendations for wind developers specific to the Mountain-Prairie Region (Region 6):

- *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities* –The goal of these recommendations is to contribute to maintaining stable or increasing breeding populations of eagles by recommending conservation measures that will maintain breeding territories and minimize impacts to other important eagle use areas (e.g., eagle nests, foraging areas, and communal roosts).
- *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6* – In the event a project proponent intends to develop an ECP, this Region 6 document provides recommendations, in an outline format, for developing and organizing the content of an ECP, and includes additional details on topics that should be addressed in the plan.

Threatened/Endangered Species

We have determined that the following federally listed species may occur in the project area:

<u>Species</u>	<u>Status</u>	<u>Expected Occurrence</u>
Dakota Skipper <i>Herperia dacotae</i>	Threatened	Summer flight, June-July

Northern Long-eared bat (<i>Myotis septentrionalis</i>)	Threatened	Summer resident, seasonal migrant
Piping Plover (<i>Charadrius melodus</i>)	Threatened	Summer resident, seasonal migrant
Whooping Crane (<i>Grus americana</i>)	Endangered	Spring and fall migration
Rufa Red Knot (<i>Calidris canutus rufa</i>)	Threatened	Rare seasonal migrant

Whooping Crane:

The BCWEC is an important area for migrating whooping cranes. Potential whooping crane habitat in North Dakota has been identified by the Service's Habitat and Population Evaluation Team (HAPET) in Bismarck. Per Niemuth et al (2018) and associated model, the proposed Project footprint encompasses areas of high relative probability of landscape-level habitat use by migrating whooping crane. The proposed Project location is within the documented migration corridor of the Aransas/Wood Buffalo population of whooping cranes - the only self-sustaining migratory population of whooping cranes in existence. Whooping cranes migrate through North Dakota twice annually on their way to northern breeding grounds and southern wintering areas, occupying numerous habitats such as cropland and pastures; wet meadows; shallow marshes; shallow portions of rivers, lakes, reservoirs, and stock ponds; and both freshwater and alkaline basins for feeding and loafing. Overnight roosting sites frequently require shallow water in which to stand and rest. Whooping cranes are large birds with low maneuverability. Line strike mortality is the greatest known threat to fledged whooping cranes. Mortality via turbine strikes may also pose a risk if the birds utilize habitat near wind farm sites. Loss of stopover habitat in the migration corridor is a concern that may be realized if whooping cranes tend to avoid wind farms. Additionally, should construction occur during spring or fall migration, the potential for disturbance of whooping cranes exists. Disturbance (flushing the birds) stresses them at critical times of the year and should be avoided. These issues should be addressed prior to wind development. Sightings of whooping cranes at any time should be reported to this office. Please note that use of the proposed project area by sandhill cranes may be indicative of the potential presence of whooping cranes since the two species are often observed utilizing the same habitats and migrating together.

The Dakota skipper (*Hesperia dacotae*), a federally threatened species, is a small to medium-sized hesperiine butterfly associated with high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. The first type of habitat is relatively flat and moist native bluestem prairie. Three species of wildflowers are usually present: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*), and smooth camas (*Zygadenus elegans*). The second habitat type is upland (dry) prairie that is often on ridges and hillsides. Bluestem grasses and needle grasses dominate these habitats. On this habitat type, three wildflowers are typically present in high quality sites that are suitable for Dakota skipper: pale purple (*Echinacea pallida*) and upright (*E. angustifolia*) coneflowers and blanketflower (*Gaillardia sp.*). Dakota skipper are known to occupy suitable habitats within your proposed project area. Because of the

difficulty of surveying for Dakota skippers and a short survey window, we recommend that the project avoid any impacts to potential Dakota skipper habitat, in particular high quality native prairie. If there is wind infrastructure planned for these areas we encourage further discussion with the natural resource agencies to try and minimize impacts to Dakota skippers.

Wetlands

According to the National Wetlands Inventory numerous wetlands exist within the proposed project area, including several relatively large water bodies which may attract high numbers of migratory birds and perhaps whooping cranes, as mentioned above. If a project may impact wetlands or other important fish and wildlife habitats, the Service, in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347) and other environmental laws and rules, recommends complete avoidance of these areas, if possible; then minimization of any adverse impacts; and finally, replacement of any lost acres; in that order. Alternatives should be examined and the least damaging practical alternative selected. If wetland impacts are unavoidable, a mitigation plan addressing the number and types of wetland acres to be impacted and the methods of replacement should be prepared and submitted to the resource agencies for review.

Birds of Conservation Concern

The Migratory Birds Division of the Service has published *Birds of Conservation Concern 2008*. This information is intended to identify species in need of coordinated and proactive conservation efforts among State, Federal, and private entities, with the goals of precluding future evaluation of these species for ESA protections and promoting/conserving long-term avian diversity. Primary threats impacting grassland species that occur in North Dakota are habitat loss and fragmentation. In accordance with Executive Order 13186 regarding migratory bird protection, we recommend avoidance, minimization, and finally compensation to reduce the impacts to species protected by the MBTA, including BCC species. Compliance with this law may be partially addressed in a Bird and Bat Conservation Strategy (BBCS) (identified within our WEG – and explained further below).

Avian Avoidance of Wind Turbines

As indicated in our WEG, wind turbines are known to impact migratory birds directly, with post-construction mortality surveys typically recommended for 1-2 years (or more) in order to identify mortality levels. Importantly, the WEG also identifies the indirect effects of wind energy facilities such as fragmentation effects and avian avoidance of turbines resulting in displacement to other habitats. While direct impacts can readily be observed and quantified, these indirect impacts are more difficult to quantify and require more time and effort. The Before-After-Control-Impact (BACI) method for avian studies is recommended in our WEG. This study design is particularly useful in determining indirect effects of wind projects on wildlife, but such studies are rarely conducted typically due to those time/effort constraints. In the absence of robust project-specific research at every wind farm, two relatively recent publications are of particular importance to this issue of quantifying avoidance/displacement: Loesch et al. 2013 and Shaffer and Buhl 2016. Loesch et al. 2013 evaluated breeding waterfowl

pairs on wetlands at existing wind farms and reference sites in the Prairie Pothole Region. Displacement within 805 meters (0.5 mile) of wind turbines was detected at an average rate of 21% by five waterfowl species.

Similarly, Shaffer and Buhl 2016 evaluated wind farms and reference sites in the Prairie Pothole Region, but their research was on grassland nesting birds and also included pre-construction data, thus this study applied the BACI method. Their results also detected avoidance of turbines by seven species of which 1 is also listed as grassland birds of conservation concern by the Service and four are also listed as Priority I & II under the NDGFD Wildlife Action Plan. The average rate of displacement out to 300 meters (0.19 mile) from wind turbines was 55% by the 5th year post construction. This research also detected a trend: displacement rates of grassland nesting birds continued to increase over time (2-5 years).

Both of these scientifically rigorous, peer reviewed, published studies were conducted over multiple years, on multiple wind farms, involved large sample sizes, used reference sites for comparison, and were conducted on wind farms in North and South Dakota where many of the same species likely to occur at BCWEC were observed to avoid wind turbines. If the BCWEC project proceeds, we recommend quantification of wetlands within ½ mile of turbines, of grasslands within 300 m of turbines, and then application of the displacement rates from the Loesch et al. 2013 and Shaffer and Buhl 2016 studies to determine and disclose anticipated indirect impacts. This information is needed to adequately develop an appropriate mitigation plan to offset this indirect wildlife impact and we encourage the project sponsors to develop that plan and provide it to the natural resource agencies for review.

Note that the authors (C. Loesch and J. Shaffer) are currently working together to publish a manuscript on methods to quantify these effects to waterfowl and grassland nesting birds using data from their peer-reviewed published studies; thus additional information will be available in the future.

Mitigation

The Service's mitigation policy was established in 1981 to help assure consistent and effective mitigation recommendations that help Federal action agencies and developers plan for mitigation measures early, avoid delays, and assure equal consideration of fish and wildlife resources with other project features and purposes. Our policy adopts the definition of the term "mitigation" as stated in the NEPA regulations which includes: "(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments." As noted above, direct and indirect effects to wildlife are known to occur at wind energy facilities. We encourage the analysis of both types of impact and quantification of those impacts whenever possible. The mitigation methods above can be applied to reduce direct and indirect effects at any point in the process of project development; however, we recommend early planning to help ensure full implementation of any necessary mitigation measures.

Bird and Bat Conservation Strategy

Bird and bat conservation strategies are recommended in our WEG. We have developed a regional document to further assist companies in following our established national guidance on BBCSs, *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*. As stated in the introduction of that document: a BBCS "...is a life-of-a-project framework for identifying and implementing actions to conserve birds and bats during wind energy project planning, construction, operation, maintenance, and decommissioning. It is the responsibility of wind energy project developers and operators to effectively assess project-related impacts to birds, bats and their habitats, and to work to avoid and minimize those impacts." A BBCS explains the actions taken by developers as they progress through the tiers of our Land-Based Wind Energy Guidelines, describing the analyses, studies, and reasoning implemented with the purpose of mitigating for potential avian and bat impacts. It also addresses post-construction monitoring and habitat impacts.

Meteorological Towers

Communication towers are a known mortality hazard to wildlife, particularly birds. To assist developers in establishing communications towers that are more compatible with wildlife, we have developed our "2018 Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning". These recommendations incorporate the state of the science and the 2015 Federal Aviation Administration's *Obstruction Marking and Lighting Advisory Circular AC 70/7460-1L*, online at:

www.faa.gov/documentLibrary/media/Advisory_Circular/AC_70_7460-1L_with_chg_1.pdf

Among the primary concerns addressed within our guidelines are the establishment of new towers on the landscape, the heights of these towers, their lighting scheme, and means of structural support. Collocation of communications tower facilities on an existing structure is strongly recommended to avoid any additional impacts to migratory birds. If a new tower is necessary, placement of the new tower near other existing structures is recommended to concentrate the risk posed by the towers to relatively small areas. Minimization of tower height (below 200 feet to preclude the need for Federal Aviation Administration lighting requirements), use of only strobe or flashing lights (avoid steady-burning lights), and avoidance of guy wires (a great deal of avian mortality is a result of collisions with supporting guy wires) are important components intended to minimize potential impacts to migratory birds. The habitat at a tower location and surrounding area can also affect its level of risk to wildlife. Tower placement should occur in degraded sites avoiding ridgelines, coastal areas, wetlands or other bird concentration areas such as staging areas, rookeries, leks, and state or federal refuges. Please see the website provided above for additional information.

Overhead Power Lines

The construction of additional overhead power lines associated with wind farms creates the threat of avian electrocution, particularly for raptors. Thousands of these birds, including endangered species, are killed annually as they attempt to utilize overhead power lines as nesting, hunting, resting, feeding, and sunning sites. The Service recommends the installation of

underground, rather than overhead, power lines whenever possible/appropriate to minimize environmental disturbances. For all new overhead lines or modernization of old overhead lines, we recommend incorporating measures to prevent avian electrocutions. The publication entitled *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* includes many measures to reduce risk to birds including pole extensions, modified positioning of live phase conductors and ground wires, placement of perch guards and elevated perches, elimination of cross arms, use of wood (not metal) braces, and installation of various insulating covers. You may obtain this publication by contacting the Edison Electric Institute via their website at www.eei.org, or by calling 202-508-5000.

Please note that utilizing just one of the "*Suggested Practices . . .*" methods may not entirely remove the threat of electrocution to raptors. In fact, improper use of some methods may increase electrocution mortality. Perch guards, for example, may be only partially effective as some birds may still attempt to perch on structures with misplaced or small-sized guards and suffer electrocution as they approach too close to conducting materials. Among the most dangerous structures to raptors are poles that are located at a crossing of two or more lines, exposed above-ground transformers, or dead end poles. Numerous hot and neutral lines at these sites, combined with inadequate spacing between conductors, increase the threat of raptor electrocutions. Perch guards placed on other poles has, in some cases, served to actually shift birds to these more dangerous sites, increasing the number of mortalities. Thus, it may be necessary to utilize other methods or combine methods to achieve the best results. The same principles may be applied to substation structures.

Please also note that the spacing recommendation within the "*Suggested Practices . . .*" publication of at least 60 inches between conductors or features that cause grounding may not be protective of larger raptors such as eagles. This measure was based on the fact that the skin-to-skin contact distance on these birds (i.e., talon to beak, wrist to wrist, etc.) is less than 60 inches. However, an adult eagle's wingspan (distance between feather tips) may vary from 66 to 96 inches depending on the species (golden or bald) and gender of the bird, and unfortunately, wet feathers in contact with conductors and/or grounding connections can result in a lethal electrical surge. Thus, the focus of the above precautionary measures should be to a) provide more than 96 inches of spacing between conductors or grounding features, b) insulate exposed conducting features so that contact will not cause raptor electrocution, and/or c) prevent raptors from perching on the poles in the first place.

Additional information regarding simple, effective ways to prevent raptor electrocutions on power lines is available in video form. *Raptors at Risk* may be obtained by contacting EDM International, Inc. at 4001 Automation Way, Fort Collins, Colorado 80525-3479, Telephone No. (970) 204-4001, or by visiting their website at: www.edmlink.com/component/zoo/item/video-raptors-at-risk

In addition to electrocution, overhead power lines also present the threat of avian line strike mortality. Particularly in situations where these lines are adjacent to wetlands or where waters exist on opposite sides of the lines, we recommend marking them in order to make them more visible to birds. For more information on bird strikes, please see *Reducing Avian Collisions with*

Power Lines: The State of the Art in 2012 which, again, may be obtained by contacting the Edison Electric Institute.

While marking of power lines reduces line strike mortality, it does not preclude it entirely. Thus, marking of additional, existing, overhead lines is recommended to reduce the impacts from avian line strike mortality. As noted above, the whooping crane is particularly susceptible to this type of mortality, and your project occurs within the whooping crane migratory corridor. Marking of additional existing lines elsewhere in the species' corridor is recommended per the *Region 6 Guidance for Minimizing Effects from Power Line Projects within the Whooping Crane Migration Corridor*.

- 1) Project proponents should avoid construction of overhead power lines within 5.0 miles of designated critical habitat and documented high use areas (these locations can be obtained from the local ES field office).
- 2) To the greatest extent possible, project proponents should bury all new power lines, especially those within 1.0 mile of potentially suitable habitat².
- 3) If it is not economically or technically feasible to bury lines, then we recommend the following conservation measures be implemented:
 - a) Within the 95-percent sighting corridor (see attached map)
 - i) Project proponents should mark³ new lines within 1.0 mile of potentially suitable habitat and an equal amount of existing line within 1.0 mile of potentially suitable habitat (preferably within the 75-percent corridor, but at a minimum within the 95-percent corridor) according to the U.S. Fish and Wildlife Service (USFWS) recommendations described in APLIC 1994 (or newer version as updated).
 - ii) Project proponents should mark replacement or upgraded lines within 1.0 mile of potentially suitable habitat according to the USFWS recommendations described in APLIC 1994 (or newer version as updated).

² Potentially suitable migratory stop over habitat for whooping cranes includes wetlands with areas of shallow water without visual obstructions (i.e., high or dense vegetation) (Austin & Richert 2001; Johns et al. 1997; Lingle et al. 1991; Howe 1987) and submerged sandbars in wide, unobstructed river channels that are isolated from human disturbance (Armbruster 1990). Roosting wetlands are often located within 1 mile of grain fields. As this is a broad definition, ES field office biologists should assist action agencies/applicants/companies in determining what constitutes potentially suitable habitat at the local level.

³ Power lines are cited as the single greatest threat of mortality to fledged whooping cranes. Studies have shown that marking power lines reduces the risk of a line strike by 50 to 80 percent (Yee 2008; Brown & Drewien 1995; Morkill & Anderson 1991). Marking new lines and an equal length of existing line in the migration corridor maintains the baseline condition from this threat.

- b) Outside the 95-percent sighting corridor within a State's borders

Project proponents should mark new lines within 1.0 mile of potentially suitable habitat at the discretion of the local ES field office, based on the biological needs of the whooping crane.

- c) Develop compliance monitoring plans

Field offices should request written confirmation from the project proponent that power lines have been or will be marked and maintained (i.e., did the lines recommended for marking actually get marked? Are the markers being maintained in working condition?)

U.S. Fish and Wildlife Service Easements

Per ongoing coordination with the Service, you are aware that the location of the proposed wind facility is within the jurisdictional area of the Service's Crosby and Lostwood Wetland Management Districts (WMD). Note that Service easement concentration in a given area typically indicates a corresponding high wildlife value and relatively significant environmental impacts that may be anticipated if the proposed project is constructed there. We recommend continued coordination with the Crosby WMD and Lostwood WMD regarding easement concerns.

Summary

Below we reiterate items above that are pertinent to the proposed project and links to further resources:

- Consider alternate project sites to avoid impacts to high value habitat and wildlife or develop plans to compensate for impacts
- Wind energy guidelines
 - *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines*
www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf
- Eagle guidance:
 - Bald and Golden Eagle Protection Act (BGEPA)
www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-29908.pdf
 - *National Bald Eagle Management Guidelines*
www.fws.gov/southdakotafielddoffice/NationalBaldEagleManagementGuidelines.pdf
 - Eagle take permit
 - *Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy Version 2*
www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf
 - *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities*
www.fws.gov/coloradoes/documents/Final_GOEA_Buffer_Recommendations_AvoidanceMinimization_WindFacilities_April_10_2013.pdf

- *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6*
www.fws.gov/coloradoes/documents/Final_USFWS_R6_ECP_guidance.pdf
- Threatened/Endangered species - Endangered Species Act (ESA) – species list available at:
ecos.fws.gov/ipac/
- Wetlands – avoid, minimize, mitigate – wetland data is available at:
ecos.fws.gov/ipac/
- Birds of Conservation Concern - *Birds of Conservation Concern 2008* – available at:
ecos.fws.gov/ipac/
- Avian Avoidance of Wind Turbines - Indirect effects:
 - Loesch et al. 2013 – waterfowl avoidance
 - Shaffer and Buhl 2016 – grassland nesting bird avoidance
- Mitigation - 1981 Service Mitigation Policy
www.fws.gov/policy/a1npi89_02.pdf
- Bird and Bat Conservation Strategy – WEG and U.S. Fish and Wildlife Service, Region 6, *Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*
www.fws.gov/coloradoes/documents/Final%20R6%20BBCS%20Outline%20with%20annotation.pdf
- Meteorological Towers - *2018 Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*
www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php
- Overhead Power Lines:
 - *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*; www.eei.org
 - *Raptors at Risk* video; www.edmlink.com/component/zoo/item/video-raptors-at-risk
 - *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*; www.eei.org
 - *Minimizing Effects From Power Line Projects within the Whooping Crane Migration Corridor*
 - *Region 6 Guidance for Minimizing Effects from Power Line Projects within the Whooping Crane Migration Corridor*
- Service easements: Contact: U.S. Fish and Wildlife Service, Crosby Wetland Management District, 10100 HWY 42 NW, Crosby, ND 58730; telephone: (701) 965-6488 (Williams County), USFWS, Lostwood Wetland Management District,

42000 520th St. NW, Kenmare, ND 58746: telephone: (701) 385-4046 ext. 225
(Mountrail County)

If changes are made in the project plans or operating criteria, or if additional information becomes available, the Service should be informed so that the above determinations can be reconsidered.

We appreciate the opportunity to provide comments. If you have any questions on these comments, please contact Jerry Reinisch of my Staff at (701) 333-0267 or myself at (605) 224-8693 ext. 224.

Sincerely,



Scott Larson
Field Supervisor
North Dakota Field Office

Enclosure(s)

cc: FWSR6/ES, Maria Boroja
Terry Steinwand, North Dakota State Game and Fish
Greg Link, North Dakota Game and Fish
North Dakota Public Service Commission
FWS Crosby WMD
FWS Lostwood WMD

Literature Cited:

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. *Journal of Wildlife Management* 77(3):587-598.

Niemuth, N. D., A. J. Ryba, A. T. Pearse, S. M. Kvas, D. A. Brandt, B. Wangler. 2018. Opportunistically collected data reveal habitat selection by migrating whooping cranes in the U.S. Northern Plains. *Condor* 120:343-356.

Shaffer, J. A. and D. A. Buhl. 2016. Effects of wind-energy facilities on breeding grassland bird distributions. *Conservation Biology* 30(1):59-71.