Appendix I
Agency Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Dakota Ecological Services

IN REPLY REFER TO:
North Bend Wind Project,
Hughes/Hyde Co.

420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

January 5, 2017

Ms. Christina White
Project Developer
Infinity Renewables
3760 State Street; Ste. 200
Santa Barbara, California 93105

Dear Ms. White:

This letter is in response to your request dated December 2, 2016, for environmental comments regarding the North Bend Wind Project and your Tier 1 evaluation of the project conducted per our 2012 *Land-Based Wind Energy Guidelines*. The size of the facility and its interconnection point have not yet been established. Your letter indicates the project location is in Hyde County, however, per maps included with your letter it appears the current project boundary occurs in both Hyde and Hughes Counties, South Dakota. We appreciate the opportunity to provide information and recommendations early in project development.

Herein we provide 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 on the project area. We have included recommended measures to be applied to various components of a wind farm including meteorological towers, power lines, and the turbines themselves in order to minimize impacts to Service trust resources and to assist you in achieving compliance with Federal laws.

U.S. Fish and Wildlife Service Easements
Per previous contacts by phone and email, you are aware that the U.S. Fish and Wildlife Service's (Service) Huron Wetland Management District (WMD) holds easements on private lands in the proposed project area. The Huron WMD will provide exact locations of easements in the area if they have not already done so. These lands are part of the National Wildlife Refuge System of lands and are of high value for wildlife. Please continue coordination with Ms. Deborah Williams of the Huron WMD regarding impacts to Service easements as a result of your project.

Threatened/Endangered Species
In accordance with section 7(c) of the Endangered Species Act (ESA), as amended, 16 U.S.C. 1531 et seq., we have determined that the following federally listed species may occur in the project area (this list is considered valid for 90 days):

Species	Status	Expected Occurrence
Least Tern (*Sterna antillarum*)	Endangered	Migration
Piping Plover (*Charadrius melodus*)	Endangered	Migration
Whooping Crane (*Grus americana*)	Endangered	Migration
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	Rare seasonal migrant.
Northern Long-eared Bat (*Myotis septentrionalis)*	Threatened	Summer resident, seasonal migrant, known winter resident in Black Hills.

Least Terns and Piping Plovers

Least terns and piping plovers use sparsely vegetated interchannel sandbars, islands, and shorelines for nesting, foraging and brood-rearing. These birds are closely associated with the Missouri River in South Dakota, but overland movements are likely, particularly by piping plovers which may nest at isolated wetlands outside the Missouri River corridor. The extent of overland movements by these species is not known, however, the proximity of your project to the Missouri River likely increases the potential for their onsite occurrence during migration, breeding, or dispersal. Turbine collisions may be possible, and the birds are sensitive to human disturbances during breeding which can limit reproduction. These species do not winter in South Dakota; they typically occur in the state between May 1 and August 15.

Whooping Crane:

The proposed wind farm 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. A map of the portion of the migration corridor that exists in South Dakota and an associated "required reading" document for that corridor map are enclosed. These birds migrate through South Dakota twice annually on their way to northern breeding grounds and southern wintering areas. They occupy 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; more information on this topic is provided herein (see enclosure dated February 4, 2010, and Power Lines section below). Whooping crane mortality via turbine strikes may also pose a risk if the birds utilize habitat at/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 in this area. Additionally, should construction occur during spring or fall migration, the potential for disturbances to 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 farm development. Sightings of whooping cranes at any time should be reported to this office. 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.

Rufa Red Knot

The rufa red knot is a robin-sized shorebird that migrates annually between its breeding grounds in the Canadian Arctic and several wintering regions, including the Southeast United States, the Northeast Gulf of Mexico, northern Brazil, and Tierra del Fuego at the southern tip of South America. Although it is primarily a coastal species, small numbers of rufa red knots are reported annually across the interior United States (i.e., greater than 25 miles from the Gulf or Atlantic Coasts) during spring and fall migration. These reported sightings are concentrated along the Great Lakes, but multiple reports have been made from nearly every interior State, including South Dakota. The red knot likely uses South Dakota habitats similar to those of the least tern and piping plover. The species does not breed in this state, but moves through during spring and fall migrations.

Northern Long-eared Bat

The northern long-eared bat is a medium-sized brown bat listed as threatened under the Endangered Species Act. Northern long-eared bats are known to be present in South Dakota during the summer months, primarily roosting singly or in colonies underneath bark, in cavities or in crevices of both live and dead trees. Some hibernacula have been documented in caves/mines in the Black Hills, the species has been documented in other forested areas in the state during the summer months, and along the Missouri River during migration. White nose syndrome - a fungus affecting hibernating bats - is considered a significant threat to this species, but individuals may be harmed by other activities such as modifications to hibernacula, timber harvest, human disturbance, and collisions with wind turbines. Currently, feathering turbine blades and increasing cut-in speeds are recommended measures to reduce the risk of bat mortality at wind generation facilities. A 4(d) rule has been published that exempts take of Northern long-eared bats in certain circumstances. For more information, see: https://www.fws.gov/Midwest/Endangered/mammals/nleb/index.html.

It is unclear at this time whether a Federal nexus exists for this project (i.e. a Federal agency is funding, permitting or otherwise authorizing the project). If a Federal action agency, or their designated representative exists for this project and determines that the project "may adversely affect" listed species in South Dakota, it should request formal consultation from this office. If a "may affect - not likely to adversely affect" determination is made for this project, it should be submitted to this office for concurrence. If a "no effect" determination is made, further consultation may not be necessary. However, a copy of the determination should be sent to this office.

If no Federal agency is involved with the proposed project and take of federally listed species may occur, ESA compliance may be achieved by private entities via coordination with this office and development of a Habitat Conservation Plan (HCP). Our website provides more information on HCPs at: http://www.fws.gov/endangered/what-we-do/hcp-overview.html.

Eagles

Golden eagles (*Aquila chrysaetos*) are year-round residents in western South Dakota, and may be found throughout the state in winter or during migration. Bald eagles (*Haliaeetus leucocephalus*) occur throughout South Dakota in all seasons. Both species are protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). These laws protect eagles from a variety of harmful actions and impacts. Your letter included Tier 1 information for the proposed wind energy facility, based on our 2012 *Land-based Wind Energy Guidelines*. Note that additional guidance is available for your use regarding development impacts to eagles:

- Our 2007 *National Bald Eagle Management Guidelines* are available online: https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf. We recommend reviewing these guidelines as they advise of circumstances where these laws may apply and assist you in avoiding potential violations.

- In 2009, we published a final rule (50 C.F.R. §§ 22.26 and 22.27) authorizing issuance of permits to take bald and golden eagles, where the take is compatible with the preservation of the bald eagle and the golden eagle, is associated with and not the purpose of an otherwise lawful activity, has been avoided to the maximum degree practicable, and the remaining take is unavoidable. We recently amended the eagle permit regulations; see: https://www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-29908.pdf).

- In 2013, we released our *Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy Version 2* (ECPG) (https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf). This guidance supplements the 2012 *Land-based Wind Energy Guidelines* and explains and supports the requirements of the 2009 eagle permit rule as it applies to wind energy facilities. The ECPG provides specific in-depth guidance for development of an Eagle Conservation Plan to conserve bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. These plans are intended to assist companies with compliance regarding regulatory requirements for programmatic eagle take permits and the associated National Environmental Policy Act process by avoiding and minimizing the risk of taking eagles through evaluation of possible alternatives in siting, configuration, construction, and operation of wind projects.

- South Dakota is part of the Service's Region 6, therefore we have enclosed a document intended to further assist wind companies working in this region as they develop Eagle Conservation Plans: *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6.*

Wetlands

According to National Wetlands Inventory maps (available online at http://wetlands.fws.gov/), numerous wetlands exist within the proposed project area. If a project may impact wetlands or other important fish and wildlife habitats, the Service, in accordance with the National Environmental Policy Act 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 and Other Grassland Birds

The Migratory Birds Division of the Service has published *Birds of Conservation Concern 2008*, which may be found online at: https://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf. This document 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. Your project is located in Bird Conservation Region 11: Prairie Potholes. Primary threats impacting the birds of conservation concern in this area in South Dakota are habitat loss and fragmentation. In accordance with Executive Order 13186 regarding migratory bird protection, we recommend avoidance, minimization and finally, compensation of migratory bird habitats to reduce the impacts to species protected by the MBTA. Compliance with this law may be partially addressed in a Bird and Bat Conservation Strategy (BBCS) (identified within our 2012 *Land-Based Wind Energy Guidelines*). However, a separate mitigation plan that specifically addresses direct and indirect take of birds during and after construction is also recommended, particularly if placement must occur within intact native grasslands. Some species of grassland nesting birds are known to exhibit avoidance behavior relative to wind turbines on the prairie landscape, out to a distance of 300 m or more (which equates to an area approximately 70 acres in size around each turbine), and the level of avoidance increases over time (Shaffer and Buhl 2015). If prairie habitat impacts are unavoidable, we recommend implementing offsetting measures for this impact, such as prairie restoration, establishment of easements, or purchase of fee title lands. We can provide further guidance in this regard if the project progresses.

Meteorological Towers

Meteorological towers constructed in association with wind turbines are often similar in design to typical communication towers: tall, lighted, lattice structured, and guyed. Of primary concern are the collision mortality risks posed to migratory birds as towers are currently estimated to kill 6.8 million birds per year in the United States and Canada (Longcore et al. 2012). We have enclosed Service guidance on this issue, our *2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning*. 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

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 (no 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.

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* has many good suggestions 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: http://www.eei.org/resourcesandmedia/products/Pages/products.aspx, 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: http://www.edmlink.com/raptorvideo.htm.

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 via their website at http://www.eei.org/resourcesandmedia/products/Pages/products.aspx, or by calling 202-508-5000.

Please note that, 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 further offset the potential for 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. This region of the Service (Region 6) has developed *Guidance for Minimizing Effects From Power Line Projects Within the Whooping Crane Migration Corridor* (copy enclosed). Marking of existing lines elsewhere in the species' corridor is recommended. As indicated previously, a copy of the migration corridor of the Aransas-Wood Buffalo Population of whooping cranes is also enclosed for your information.

Bird and Bat Conservation Strategy

As with Eagle Conservation Plans for wind projects in this region, we have developed a document to further assist companies in following our established national guidance on BBCSs. We have enclosed our Region 6 *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. We recommend you develop a BBCS as this project progresses.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act prohibits the taking, killing, possession, and transportation,

(among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing unauthorized take, the Service realizes that some birds may be killed as a result of wind farm operations, even if all known reasonable and effective measures to protect birds are used. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to avoid take of migratory birds and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Companies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction, operation, or similar activities.

Summary

Below we reiterate the items discussed above that are pertinent to the proposed project, any associated recommended guidance or related information and suggested actions.

- Service easement properties exist onsite:
    - Coordinate with Huron WMD

- Wind farm guidance:
    - *Land-Based Wind Energy Guidelines*
        - *Bird and Bat Conservation Strategy*
            - USFWS Region 6 *Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*

- Address potential impacts to federally listed (ESA) species:
    - Least Tern
    - Piping Plover
    - Whooping Crane
    - Rufa Red Knot
    - Northern long-eared bat

- Address potential impacts to eagles:
    - MBTA and BGEPA
    - *National Bald Eagle Management Guidelines*

    - *Eagle Conservation Plan Guidance*
        - *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6*

- Address potential impacts to wetlands

- Address migratory bird impacts:
  - MBTA
  - *Birds of Conservation Concern 2008*
  - Mitigative/offsetting measures for habitat avoidance/loss
  - Meteorological Towers:
    - *2013 USFWS Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning*
  - Overhead Power Lines:
    - *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*
    - *Raptors at Risk* video
    - *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*

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.

The Service appreciates the opportunity to provide comments. If you have any questions on these comments, please contact Natalie Gates of this office at (605) 224-8693, Extension 227.

Sincerely,

Scott Larson

Field Supervisor
South Dakota Field Office

LITERATURE CITED

Shaffer, J. A. and D. A. Buhl. 2015. Effects of wind-energy facilities on breeding grassland bird distributions. Conservation Biology 30(1):59-71.

Enclosures

cc: FWSR6/HuronWMD, Deborah Williams

Required Reading for Users of the Whooping Crane Tracking Project Database

CWCTP-GIS data or derivatives thereof (e.g., shape files, jpegs) may not be distributed or posted on the Internet without inclusion of this explanatory document.

The Cooperative Whooping Crane Tracking Project (CWCTP) was initiated in 1975 to collect a variety of information on whooping crane migration through the U.S. portion of the Central Flyway. Since its inception in 1975, a network of Federal and State cooperating agencies has collected information on whooping crane stopovers and funneled it to the U.S. Fish and Wildlife Service (Service) Nebraska Field Office where a database of sighting information is maintained. The WCTP database includes a hardcopy file of whooping crane sighting reports and a digital database in various formats based on those sighting reports. A subset of the database along with sight evaluation (habitat) information collected between 1975 and 1999 was summarized by Austin and Richert (2001).*

In the Fall of 2007, the CWCTP database was converted to a GIS format (ArcGIS 9.2) to facilitate input, updates, and provide output options in a spatial context. During this process, inconsistencies between the digital database and sighting report forms were identified and corrected. Location information in various formats was derived from data in the corrected database, and new fields were added to the corrected database (e.g., latitude and longitude in decimal degrees, an accuracy field, and location comment field). The attached updated file contains observation data through the 2008 Spring migration and is referred to as the CWCTP-GIS (2008a).

The appropriate use of the CWCTP-GIS is constrained by limitations inherent in both the GIS technology and bias inherent in any database comprised of incidental observations. Without an understanding of the assumptions and limitations of the data, analyses and output from the spatial database can result in faulty conclusions. The following assumptions and characteristics of the database are crucial to interpreting output correctly. Other, unknown biases also may exist in the data.

- First and foremost, the database is comprised of incidental sightings of whooping cranes during migration. Whooping cranes are largely opportunistic in their use of stopover sites along the Central Flyway, and will use sites with available habitat when weather or diurnal conditions require a break in migration. Because much of the Central Flyway is sparsely populated, only a small percent of stopovers are observed, those observed may not be identified, those identified may not be reported, and those reported may not be confirmed (only confirmed sightings are included in the database). Based on the crane population and average flight distances, as little as 4 percent of crane stopovers are reported. *Therefore, absence of documented whooping crane use of a given area in the Central Flyway does NOT mean that whooping cranes do not use that area or that various projects in the vicinity will not potentially adversely affect the species.*

- In the database, the location of each sighting is based on the first observation of the crane group even though, in many cases, the group was observed at multiple locations in a local area. For this and other reasons described below, only broad-scale analyses of whooping crane occurrences are appropriate. GIS **cannot** be legitimately used with this database for measurements of distance of whooping crane groups from various habitat types or

geographic entities (i.e., using various available GIS data layers). In addition, point locations of whooping crane groups known to roost in various wetlands or rivers may not coincide with those wetlands. The user needs to refer to the attribute table or contact the Nebraska Field Office, USFWS, for more specific information on individual observations.

- Precision of the data: When a "Cadastral" location (Township, Range, Section, ¼-Section) was provided on the original sighting form, the geographic point representing that sighting was placed in the center of the indicated Section or ¼-Section and the latitude and longitude of that point were recorded in degrees, minutes, and seconds (DMS). These records are indicated by "Cadastral" in the accuracy field. When Cadastral information was lacking, DMS latitude and longitude were derived by adding seconds (00) to the degrees and minutes of latitude and longitude originally estimated and recorded on the observation form. These observations are identified by "Historic" in the accuracy field. GPS latitude and longitude were used when available, but when none of the above were reported, the point was placed based on text description of location (e.g., 3 miles N of Denton), and identified in the accuracy field with "Landmark". DMS latitude and longitude were converted to decimal degrees, which were used to populate the GIS data layer.

- Bias: Bias is an inherent characteristic of any data obtained through incidental sightings. That is, for the subset of crane use that is recorded, relatively more sightings are recorded in areas such as national wildlife refuges where knowledgeable observers are available to look for cranes and report their presence. Conversely, areas of high use may not be documented due to the absence of observers. However, use of areas such as national wildlife refuges is also determined to some extent by habitat management on the areas and availability of alternative habitat in the region. For these reasons, representations of the crane migration corridor based on percent of confirmed sightings should be interpreted conservatively, particularly in Oklahoma and Kansas where a high percent of sightings occur on a few national wildlife refuges. Whooping crane migration patterns and subsequent observations were also likely influenced by regional weather patterns such as wind and precipitation, as well as local farming practices which influence food availability. Factors such as these vary among regions and years and were not considered in this database.

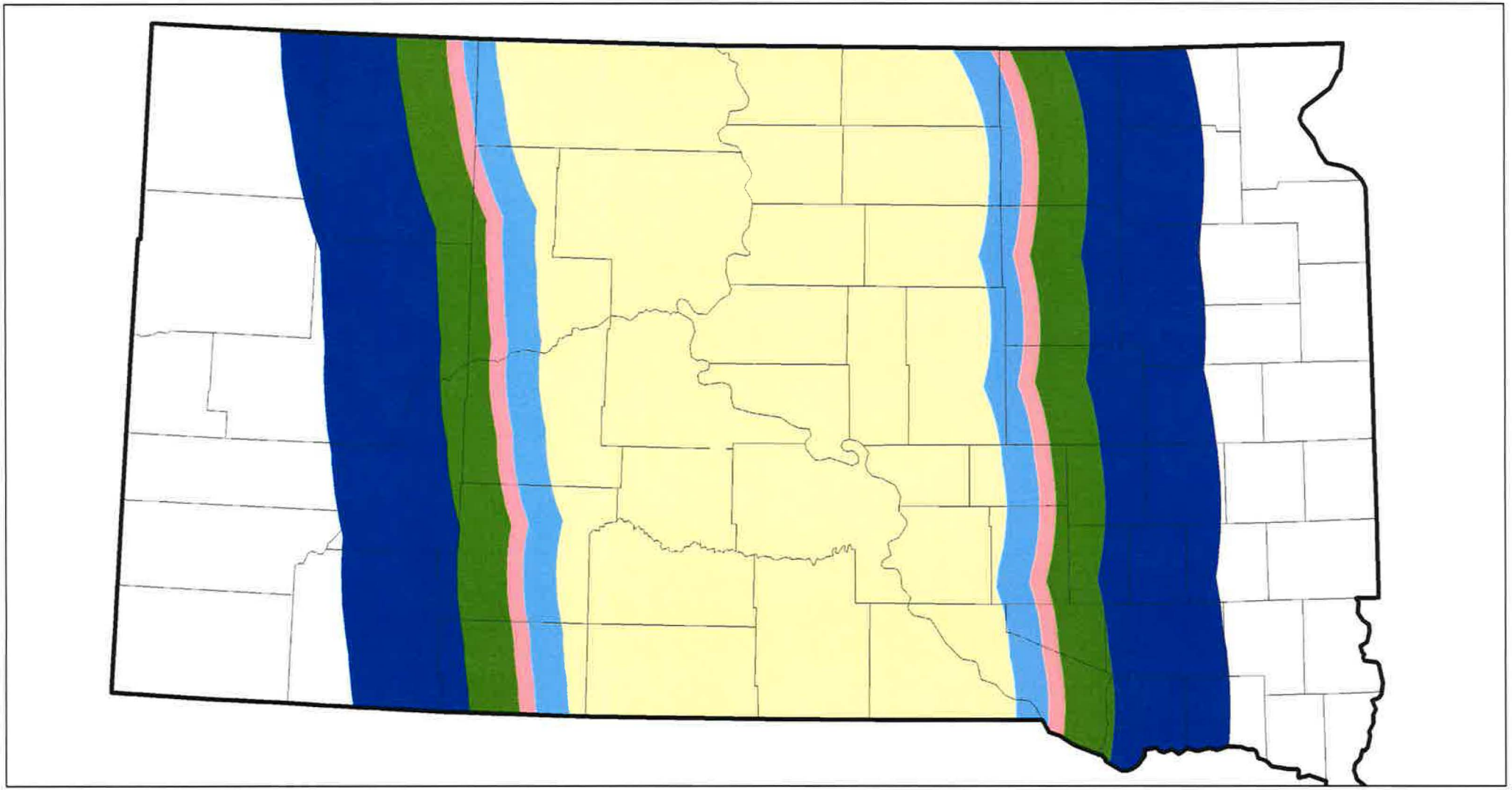
The CWCTP-GIS will be updated annually following the Fall migration and distributed to State cooperators and Fish and Wildlife Service Ecological Services Field Offices in the Central Flyway. Contact information for these offices can be found at http://www.fws.gov. Federal regulatory agencies and project proponents should contact the appropriate Fish and Wildlife Service for help in evaluating potential project impacts to the endangered whooping crane.

* Austin, E.A. and A.L. Richert. 2001. A comprehensive review of observational and site evaluation data of migrant whooping cranes in the United States, 1943-99. U.S. Geological Survey. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, and State Museum, University of Nebraska, Lincoln, Nebraska. 157 pp.

U.S. Fish & Wildlife Service

South Dakota Whooping Crane Migration Corridor Using State Sightings

Central Flyway of the United States



Produced for Ecological Services
Grand Island, NE
Current to: 2008
Basemap (Date): South Dakota Counties
Meridian:
File:

0 30 60 90 120 Miles
0 40 80 120 160 Kilometers

Legend

- 75% (130mi Corridor)
- 80% (150 mi Corridor)
- 85% (160 mi Corridor)
- 90% (190 mi Corridor)
- 95% (130 mi Corridor)

UTM NAD 83
Zone 14

U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region

Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6

Purpose and Expectations:

The U.S. Fish and Wildlife Service (USFWS) Eagle Conservation Plan Guidance, Module 1, Land-based Wind Energy , Version 2 (ECPG)[1] provides specific in-depth guidance for developing an Eagle Conservation Plan (ECP) for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. The ECP describes and documents how the project developer and/or operator intends to comply with the regulatory requirements for programmatic eagle take permits and the associated NEPA process by avoiding and minimizing the risk of taking eagles by evaluating possible alternatives in siting, configuration, construction, and operation of wind projects. The ECP should provide detailed information on siting, configuration, construction, and operational alternatives that avoid and minimize eagle take to the point where any remaining take is unavoidable and, if required, mitigates that remaining take to meet the statutory preservation standard. An ECP provides support for an application for a programmatic eagle take permit.

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 an ECP. This guidance applies equally to both bald and golden eagles. While developing an ECP and applying for a programmatic eagle take permit is voluntary, take of eagles under the Bald and Golden Eagle Protection Act is prohibited without a permit; therefore, we encourage developers/operators of wind projects that may take eagles to develop an ECP and apply for a programmatic eagle take permit. Throughout the process of developing an ECP there should be regular communication between the project developer and/or operator and USFWS personnel (Ecological Services and Migratory Bird Management Offices). This can include emails, conference calls, and meetings involving review of survey data, review and editing of draft documents, joint development of avoidance and minimization measures, review and discussion on model runs, joint work on calculations for compensatory mitigation when required, etc.

[1] Available at http://www.fws.gov/windenergy/PDF/Eagle%20Conservation%20Plan%20Guidance-Module%201.pdf

ECP Outline Recommendations:

I. Introduction and Purpose: Include an explanation of the relationship between the ECP and other related documents, such as NEPA reviews for the project (EA or EIS), Bird and Bat Conservation Strategy (BBCS), etc.

II. Regulatory Framework

A. Laws and Regulations- Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) – Use applicable default language taken from the USFWS Wind Energy Guidelines (WEG; USFWS 2012, pp. 2-3)

B. State or Tribal Wildlife laws and other Federal laws that apply

III. Project Description

A. Describe all project components, including structures and infrastructure (wind turbines, roads, buildings, met towers, distribution and transmission lines, substations, etc.).

B. Provide a map of project area with project area boundary delineated.

C. Provide a map of topographic relief for the project area.

D. Provide a map of proposed final wind turbine layout, roads, distribution and transmission lines, substations, buildings, met towers (permanent), etc.

E. Provide a map of vegetation classes and aquatic features for the project, including a summary table with information on the acreage or linear miles of each class or feature present and how many acres/miles will be lost or degraded by project development.

IV. Initial Site Assessment (ECPG Stage 1)

A. Brief summary of available sources reviewed for the project site relative to eagles, including reports, publications, GIS maps, agency files, species experts, on-line databases, and initial site visit(s).

B. Were alternate sites considered/evaluated, and if so what criteria were used to compare sites?

C. Address all questions in ECPG Appendix B on page 51. Clearly identify the process used to address these questions. Based on the responses to these questions develop a map that categorizes eagle risk for all sites initially considered for development.

D. Categorize Eagle Risk for Stage 1 (ECPG Appendix B) using ECPG criteria on pp. 25-26.

V. Site-specific Surveys and Assessment (ECPG Stage 2): This section should address the questions in ECPG Appendix C, page 53.

A. Eagle Use

1. Thoroughly describe what types of eagle-use surveys were conducted, the survey protocols used, the number of surveys completed, and when surveys were conducted (years, seasonal coverage, time of day, etc.). Survey types may include, but are not limited to, eagle point count surveys, flight paths, migration monitoring, behavioral studies, and telemetry. If any survey protocols changed during these surveys, explain the changes and provide a rationale for them. If survey types and protocols differed from Appendix C in the ECPG, describe what the differences were and provide a rationale.

2. Include a map of points used for eagle use surveys and an estimate of the percentage of the project area and project footprint they cover.

3. Provide results and thorough details on all pre-construction site-specific surveys that were conducted by year and/or season. Summarize survey results in the ECP. If annual monitoring reports are available for the project, they may be included in an Appendix.

4. Provide results from any other field work to identify migration corridors, roost sites, foraging areas, wintering areas, etc., not mentioned above.

B. Eagle Nests

1. Describe what is known about eagle nesting in the project area prior to any project-related surveys; include a map showing the locations of all historic eagle nests.

2. Thoroughly describe all raptor/eagle nest surveys conducted (i.e. aerial, ground searches, etc.), including methodology, timing and frequency of the surveys; provide a map of the area searched for nests (i.e., how far out from the project area and project footprint did you survey for nests); describe condition of all eagle nests, provide photographs of eagle nest sites, provide outcomes for each eagle nest by species (i.e., tending, occupancy, productivity, and nest success); and provide project-area mean inter-nest distance for eagles by species (if calculated, provide methods used for that calculation).

C. Eagle Prey Base Assessment

1. Thoroughly describe methodologies/protocols used to assess the eagle prey base (especially areas with concentrated prey resources).

2. Provide map(s) indicating areas with concentrated prey resources (e.g., prairie dog towns, leks, ungulate wintering/parturition areas, etc.) in relation to proposed final turbine layout. Map rivers, lakes and reservoirs where bald eagles forage on fish and waterfowl, and map areas of open water available during winter, if any.

3. Describe potential anthropogenic sources of eagle prey for the project area including cattle or sheep grazing operations, road kill carcasses on roads, gut piles from hunting seasons, etc.

D. Eagle Risk Categorization for Stage 2

1. Describe how the eagle use, eagle nest, and eagle prey base assessment data were used to assess the eagle risk category. Use ECPG criteria on pgs. 25-26.

VI. Avoidance and Minimization of Risks in Project Siting (ECPG Stage 4)

A. Project Planning/Design Phase: site selection

1. Were alternative sites considered for development and was there consideration for reducing eagle/raptor/migratory bird risk in this process?

2. Were wind turbines removed and/or relocated from the initial project design, and if so, why?

3. Were any project roads, power lines, or buildings removed or relocated from the initial project design, and if so, why?

4. Document all key adjustments made to the initial project design, why they were made, what information was used to make changes, and any subsequent draft designs. Thorough descriptions should accompany any maps.

5. Were the USFWS Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities (April, 2013) followed in the project design phase? If not, provide a rationale.

VII. Predicting Eagle Fatalities (ECPG Stage 3)

A. Describe the methods and assumptions used. If these differ from Appendix D in the ECPG, describe the differences and provide a rationale.

1. Provide all input data used.

2. Present results from Eagle Modeling by Eagle Species

a. USFWS eagle fatality model

b. Outcomes from other models (if any)

B. Other Eagle Risk Assessment

1. Disturbance/Displacement Assessment

2. Assessment of Project-level Take: Complete this analysis consistent with ECPG Appendix F.

3. Local Area Population (LAP) Analysis

4. Cumulative Impacts Analysis – Comprehensive assessment of known factors impacting eagles, eagle habitat, prey base, etc., within the sphere of the LAP. This includes known eagle mortality from all other factors within the LAP, including existing wind facilities, power lines, poisoning, etc. Proponent will need to work jointly with USFWS on this section. Refer to ECPG Appendix F.

C. Eagle Risk Categorization for Stage 3. Use ECPG criteria on pp. 25-26.

VIII. Additional Avoidance and Minimization of Risks, ACP's, and Compensatory Mitigation (ECPG Stage 4)

A. Construction Phase Best Management Practices (all that apply from USFWS 2012, WEG Chapter 7)

B. Operational Phase

1. Best Management Practices (Including, at a minimum, those from USFWS 2012, WEG Chapter 7 which apply to eagles)

2. Experimental Advanced Conservation Practices, per ECPG Appendix E.

C. Compensatory Mitigation

1. Calculations of needed mitigation for your project using Appendix G of ECPG; thoroughly describe calculations that were used to generate results.

2. Present a plan for the implementation of compensatory mitigation, including the type of compensatory mitigation that will be implemented. How was the type of compensatory mitigation being proposed actually selected? The plan should demonstrate the project developer's/operator's ability to complete it. Where will the compensatory mitigation be completed relative to relevant Local Area Population, Bird Conservation Regions (ECPG pg. 38), Eagle Management Units (ECPG pg. 39), etc.? What is the expected life of the compensatory mitigation action(s)?

3. Effectiveness monitoring: describe monitoring approach, duration, etc.

4. Adaptive Management, including commitments to change operations in response to monitoring outcomes as applicable. (See ECPG pg. 28 and ECPG Appendix A)

IX. Calibration and Updating of the Fatality Prediction and Continued Risk Assessment (ECPG Stage 5)

A. Post-construction monitoring (eagle/avian surveys)

1. Describe the methodology/protocols to be used for carcass surveys for eagles/migratory birds (including searcher efficiency trials and carcass persistence trials). These will be developed jointly by the developer/operator and the USFWS per ECPG Appendix H.

Note: General considerations for design of the fatality monitoring program include:

- Kunz et al. (2007). Assessing impacts of wind-energy development on nocturnally active birds and bats: a guidance document. Journal of Wildlife Management 71: 2449-2486.
- Strickland et al. (2011). Studying Wind Energy/Wildlife Interactions: a Guidance Document. Prepared for the National Wind Coordinating Collaborative, Washington, D.C., USA, and relevant points from USFWS WEG pp. 35-37.

2. Surveys of eagle/raptor nests (occupancy, productivity, and success)

- Describe methods to be used, number of years surveys will be conducted, area to be surveyed, etc.

3. Disturbance Monitoring: Document any post-construction monitoring of eagle nesting territories and communal roost sites to evaluate disturbance effects. (See ECPG Appendix H, pg. 98). Provide details of the protocols and methods to be used for such monitoring.

4. Describe eagle use/migratory bird surveys that will be conducted post-construction. Provide methodology, timing and frequency of survey effort, location of survey points,

percent of area that will be surveyed, number of surveys, etc. If such surveys will not be conducted, provide a rationale.

5. If there will be an incidental (i.e., informal) wildlife monitoring system established, describe the system, including personnel that will implement it, data forms to be used, how the reporting process will work, and how conflicts with informal monitoring and formal carcass surveys will be avoided.

X. Permits

A. For USFWS programmatic eagle take permits, conditions will be provided by USFWS.

B. Other USFWS Permit Types: Other Migratory Bird Treaty Act (MBTA) permits may be required for project management. These include, but are not limited to, nest relocation, temporary possession, depredation, salvage/disposal, and scientific collection.

1. Identify MBTA permit types the project is likely to apply for. Also describe the process which will be used to obtain and comply with all necessary MBTA take permits for the project.

2. Other State or Tribal wildlife permits

XI. References/Literature Cited

What not to include in your ECP:

-Literature review or summary of effects of wind turbines on eagles/migratory birds/wildlife

-Comparisons of predicted eagle take at your project with other on-line wind energy facilities

U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region

Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects

A Bird and Bat Conservation Strategy (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 wind project BBCS should be updated regularly as new information, including monitoring of project impacts and technical advancements, becomes available. A BBCS is a strategy for assessing impacts, avoiding/minimizing impacts, guiding current actions, and planning future impact assessments and actions to conserve birds and bats. It provides reference to project history and previous impact assessments and actions. A BBCS contains the studies, analyses, and reasoning leading to project-specific decisions and implementation of actions. The 2012 U.S. Fish and Wildlife Service (USFWS) Land-Based Wind Energy Guidelines (WEG) provides comprehensive guidance on the process for addressing bird and bat conservation at all stages of wind energy development.

Decisions made through the BBCS framework include determining if there is a need to develop other bird and bat conservation plans such as an Eagle Conservation Plan (2013 USFWS Eagle Conservation Plan Guidance) or Habitat Conservation Plan (Endangered Species Act, section 10(a)(1)(B). Specific surveys needed to support those plans may be most effectively conducted in tandem with surveys to develop the BBCS.

Wind energy projects currently in operation which have not been planned, developed, or operated following a BBCS framework, will, at a minimum, need to supplement assessments of impacts to birds and bats with Post-Construction Assessments and Adaptive Management Studies, working closely with the USFWS.

The following outline is provided by USFWS Region 6 as a guide for developing and organizing a BBCS.

Outline

I. Statement of Purpose
Identify how the BBCS functions as a strategy to address bird and bat conservation during all project phases.

II. Regulatory Framework

A. Fish and Wildlife Laws, Regulations, and Policies
Include the language provided and do not reference USFWS law enforcement or prosecutorial discretion in the BBCS.

1. Migratory Bird Treaty Act (MBTA)
The MBTA is the cornerstone of migratory bird conservation and protection in the United States. The MBTA implements four treaties that provide for international protection of migratory birds. It is a strict liability statute, meaning that proof of intent, knowledge, or negligence is not an element of an MBTA violation. The statute's language is clear that actions resulting in a "taking" or possession (permanent or temporary) of a protected species, in the absence of a USFWS permit or regulatory authorization, are a violation. The MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill ... possess, offer for sale, sell ... purchase ... ship, export, import ...transport or cause to be transported... any migratory bird, any part, nest, or eggs of any such bird ..." 16 U.S.C. 703. The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" 50 CFR 10.12. The USFWS maintains a list of all species protected by the MBTA at 50 CFR 10.13. This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

2. Bald and Golden Eagle Protection Act (Eagle Act)
Under authority of the Eagle Act, 16 U.S.C. 668–668d, bald eagles and golden eagles are afforded additional legal protection. The Eagle Act prohibits the take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof, 16 U.S.C. 668. The Eagle Act also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," 16 U.S.C. 668c, and includes criminal and civil penalties for violating the statute. See 16 U.S.C. 668. The term "disturb" is defined as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury to an eagle, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior, 50 CFR 22.3.

3. Endangered Species Act (ESA)
The ESA directs the USFWS to identify and protect endangered and threatened species and their critical habitat, and to provide a means to conserve their ecosystems. Among its other provisions, the ESA requires the USFWS to assess civil and criminal penalties for violations of the Act or its regulations. Section 9 of the ESA prohibits take of federally-listed species. Take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" 16 U.S.C. 1532. The term "harm" includes significant habitat alteration which kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering, 50 CFR 17.3. Projects involving Federal lands, funding or authorizations will require consultation between the Federal agency and the USFWS, pursuant to section 7 of the ESA. Projects without a

Federal nexus should work directly with USFWS to avoid adversely impacting listed species and their critical habitats.

B. Other Federal, State, County, Local and Tribal Laws, Regulations, and Policies

III. Project Description

Provide descriptions and maps of all project elements (e.g., roads, power lines, met towers) during all phases of pre-construction, construction, operation, maintenance, and decommissioning. Describe and provide maps of the project impact area (inside and outside project area boundary) where the project may potentially impact birds, bats and their habitats..

IV. Project History of Bird and Bat Presence, and Risk Assessments

A. Preliminary Site Evaluation (WEG Tier 1)

1. Site Description
   Describe proposed wind energy site(s) within the broader geographic landscape of bird and bat distribution, use, and habitats.

2. Decision to Abandon Site(s) or Select Site(s) for Additional Assessments in WEG Tier 2
   Describe evaluations of sites by answering questions in WEG Tier 1, Chapter 2: (1) Are species or habitats of concern present? (2) Does the landscape contain areas precluded by law or areas that are designated as sensitive? (3) Are there critical areas of wildlife congregation? (4) Is there potential to fragment large intact habitats for species that are sensitive to habitat fragmentation? Based on the answers to these questions, describe the decision to abandon sites or identify project modifications to effectively avoid and minimize potential adverse impacts.

B. Site-specific Characterization and Decisions (WEG Tier 2)
   Continue landscape-scale assessments and include site reconnaissance evaluations.

1. Site Description
   Provide additional site information obtained through more detailed Tier 2 assessment.

2. Evaluation and Decisions

   (a) Abandon Site or Advance to Field Surveys to Support a BBCS
   Describe evaluations of sites by answering the four questions from WEG Tier 1, plus questions from WEG Tier 2, Chapter 3: (5) Are plant communities or vegetation habitats of conservation concern present? (6) What species of birds and bats are likely to use the proposed site? (7) Is there potential for significant adverse impacts to those species? If there is a high probability of significant adverse impacts that cannot be avoided or minimized, the site should be abandoned.

   (b) Determine Need for Other Bird or Bat Conservation Plans
   Describe determination of need, and reference field surveys, for an Eagle Conservation Plan) or Habitat Conservation Plan.

C. Field Studies to Document Wildlife and Habitat, and Predict Project Impacts (WEG Tier 3)
   Describe the goals, methods, results, analyses and conclusions of field studies, and include maps to assess the presence of, and project risks to, birds and bats and their habitats. Describe potential project impacts by answering the seven questions from WEG Tier 1 and Tier 2, plus questions

from WEG Tier 3, Chapter 4: (8) What are the distributions, abundance, behaviors and site-use of birds and bats, and what project elements expose these species to risk? (9) What are the potential risks to individuals and local populations of birds and bats and their habitats? (10) How can impacts to birds and bats be avoided and minimized? (11) What studies should be initiated and continued post-construction to evaluate predictions of impacts to birds and bats? Describe the level of scientific rigor of studies, and coordination and sharing of data with USFWS field offices.

1. Bird and Bat Status Assessments
   Describe how assessment studies were of sufficient duration and intensity to ensure adequate data were collected to accurately characterize bird and bat use of the area.

   (a) Bird and Bat Species Presence
      (i) Species Presence by Season
      (ii) Species of Concern (WEG, p. 63)
      (iii) Species of Habitat Fragmentation Concern (WEG, p. 63)

   (b) Bird and Bat Habitats
      Describe, quantify, and map.

   (c) Bird and Bat Use Patterns
      Describe, quantify and map survey data (e.g., from point counts, acoustic surveys, and migration surveys).

   (d) Baseline (Pre-construction) Habitat Management
      Describe the management of habitat at the proposed site prior to construction.

2. Bird and Bat Risk Assessment and Decisions Based on Assessments
   Describe assessment methods and assumptions.

   (a) Project Risk Assessment

      (i) Direct Impacts:
         Describe direct project impacts on birds and bats (e.g., wind turbine collisions, powerline electrocutions and collisions, vehicle collisions, barotrauma, disturbance, displacement, behavioral changes, and habitat loss, degradation and fragmentation).

      (ii) Indirect Impacts
         Describe indirect project impacts on birds and bats (e.g., loss of population vigor, attraction to modified habitats, and increased exposure to predation).

      (iii) Cumulative Impacts

   (b) Risk Assessment Decisions

      (i) Decision Criteria to either Abandon Site or Advance Project

      (ii) Decision of Need for Other Bird and Bat Conservation Plans
         Describe decision to develop other plans such an Eagle Conservation Plan, Habitat Conservation Plan, Candidate Conservation Plan with Assurances, or a plan to address state-managed species.

V. Conservation Measures to Avoid and Minimize Adverse Impacts (during project construction, operation, maintenance, and decommissioning)
Describe conservation measures and when and how each measure will be applied. Some measures will apply to all project phases, but other measures will only apply to specific phases of the project (e.g., construction versus operation). See WEG Chapter 7 for examples. While the following topics in the outline should all be included, the organization of this section may be modified (e.g., conservation measures may be organized by project phase, project elements, or category of conservation action).

A. Measures to Avoid/Minimize Direct Impacts

1. Fatalities

2. Disturbance/Displacement/Behavioral Changes

(a) Nest/Roost/Hibernacula Management
Describe how impacts to nests and nesting attempts will be avoided or minimized during all phases of the project. For example, constructing outside the breeding season or using nest buffers may be appropriate during construction, but measures to discourage or prevent birds from nesting in a sub-station may be needed during operation.

(b) Management of Other Habitat-use Areas (e.g., Foraging Areas)

3. Habitat Loss/Degradation/Fragmentation

B. Measures to Avoid/Minimize Indirect Impacts
For example, address measures to avoid loss of population vigor and increased exposure to predation.

C. Measures to Offset and/or Compensate for Habitat-Related Impacts

D. Measures to Avoid and Minimize Other Identified Project-Specific Risks

VI. Post-construction Studies to Estimate Impacts (WEG Tier 4)
Provide assessments of ongoing project risks to birds and bats and the effectiveness of conservation measures. Describe study methods and the level of survey effort (i.e., how many of each survey type was conducted, over what time period and seasons, and location and geographic coverage).

A. Carcass Surveys

B. Nest/Roost/Hibernacula Surveys

C. Habitat Surveys

D. Other Surveys
A need for surveys, such as point counts, acoustic surveys, mist net surveys, may be identified through measuring project impacts.

VII. Other Post-construction Studies and Adaptive Management (WEG Tier 5)
Describe adaptive management studies which may (1) be planned during development of the BBCS via measuring impacts during post-construction and the discovery that conservation measures are not adequate to avoid and minimize impacts, or may (2) address unplanned or unforeseen impacts. Describe the actions taken during the following steps.

A. Evaluate need for action (1) based on assessing effectiveness of conservation measures through post-construction monitoring of impacts, or (2) as determined by unforeseen impacts or circumstances.

B. Identify potential technical/operational option(s) to avoid and minimize impacts (e.g., via scientific literature or industry innovation).

C. Present technical/operational option(s) to agency/authority for review to determine if it merits field testing or application. If, after review, field testing or application is not merited, go to step B. If field testing or application is merited, go to step D.

D. Field test or apply technical/operational option(s), with agency/authority concurrence of methods, in settings which will not increase adverse impacts to birds and bats nor will result in impacts exceeding those allowable in permits or other project-related plans.

E. Evaluate and report effectiveness of technical/operational option(s) with review by agency/authority. If ineffective, go to step B. If effective go to step F.

F. Apply effective avoidance and minimization measures.

G. Monitor effectiveness (update post-construction monitoring in BBCS, if necessary, with agency/authority review).

H. Update BBCS Section on Conservation Measures, return to step A to evaluate need for further action.

VIII. Project Permits Addressing Birds and Bats

Identify need for permits. For example, migratory bird permits would be required for active nest relocation, temporary possession, depredation, salvage/disposal, and scientific collection.

A. Bird and Bat Permits
Identify permits needed for project construction, operation, and/or maintenance.

B. Agency and Process for Permit Issuance
Identify the responsive agency and processes to apply for and comply with permits.

IX. Reporting Formats and Schedule

Describe formats and schedule for reporting data and study results to responsive agencies.

A. Preconstruction Survey Data

B. Operation/Post-construction Monitoring

C. Adaptive Management

D. Permits

X. Personnel Training

Describe process and curriculum for providing personnel and contractors with education about wildlife laws; processes to follow upon finding injured birds, bats or carcasses; and actions they can take to avoid impacts to birds and bats.

XI. Contacts/Key Resources

A. List of Contacts and Key Resources

B. Coordination Processes
Who/when/where a company should initiate contact and under what circumstances.

XII. References and Literature Cited

XIII. Appendices

A. Baseline Survey Reports

B. Post Construction Reports

1. Carcass Monitoring
2. Nest/Roost/Hibernacula Surveys
3. Habitat Surveys
4. Other Surveys: For example, point counts, acoustic surveys, mist net surveys

C. Adaptive Management Studies

D. Other Plans Guiding Bird and Bat Conservation (e.g., ECP)

E. Permits Related to Birds and Bats

2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning –

Suggestions Based on Previous USFWS Recommendations to FCC Regarding WT Docket No. 03-187, FCC 06-164, Notice of Proposed Rulemaking, "Effects of Communication Towers on Migratory Birds" (2007), Docket No. 08-61, FCC's Antenna Structure Registration Program (2011), Service 2012 Wind Energy Guidelines, and Service 2013 Eagle Conservation Plan Guidance

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[Comm Tower 2013 Revised Guidance-to FCC-AMM.docx]

1. Collocation of the communications equipment on an existing communication tower or other structure (e.g., billboard, water and transmission tower, distribution pole, or building mount) is strongly recommended. Depending on tower load factors and communication needs, from 6 to 10 providers should collocate on an existing tower or structure provided that frequencies do not overlap/"bleed" or where frequency length or broadcast distance requires higher towers. New towers should be designed structurally and electronically to accommodate the applicant's antenna, and antennas of at least 2 additional users – ideally 6 to 10 additional users, if possible – unless the design would require the addition of lights and/or guy wires to an otherwise unlit and/or unguyed tower. This recommendation is intended to reduce the number of towers needed in the future.

2. If collocation is not feasible and a new tower or towers are to be constructed, it is strongly recommended that the new tower(s) should be not more than 199 feet above ground level (AGL), and that construction techniques should not require guy wires. Such towers should be unlighted if Federal Aviation Administration (FAA) regulations and lighting standards (FAA 2007, Patterson 2012, FAA 2013 lighting circular anticipated update) permit. Additionally, the Federal Communications Commission (FCC) through recent rulemaking now requires that new towers ≥ 450 ft AGL contain no red-steady lights. FCC also recommends that new towers 350-450 ft AGL also contain no red-steady lights, and they will eventually recommend that new towers < 350 ft AGL convert non-flashing lights to flash with existing flashing lights. LED lights are being suggested as replacements for all new construction and for retrofits, with the intent of future synchronizing the flashes. Given these dynamics, the Service recommends using lattice tower or monopole structures for all towers < 200 ft AGL and for taller towers where feasible. The Service considers the less than 200 ft AGL option the "gold standard" and suggests that this

is the environmentally preferred industry standard for tower placement, construction and operation – i.e., towers that are unlit, unguyed, monopole or lattice, and less than 200 ft AGL.

3. If constructing multiple towers, the cumulative impacts of all the towers to migratory birds – especially to Birds of Conservation Concern (FWS 2008) and threatened and endangered species, as well as the impacts of each individual tower, should be considered during the development of a project.

4. The topography of the proposed tower site and surrounding habitat should be clearly noted, especially in regard to surrounding hills, mountains, mountain passes, ridge lines, rivers, lakes, wetlands, and other habitat types used by raptors, Birds of Conservation Concern, and state and federally listed species, and other birds of concern. Active raptor nests, especially those of Bald and Golden Eagles, should be noted, including known or suspected distances from proposed tower sites to nest locations. Nest site locations for Golden Eagles may vary between years, and unoccupied, inactive nests and nest sites may be re-occupied over multiple years. The Service's 2013 Eagle Conservation Plan Guidance, Module 1, Land-based Wind Energy, Version 2, available on our website, is a useful document (USFWS 2013).

5. If at all possible, new towers should be sited within existing "antenna farms" (i.e., clusters of towers), in degraded areas (e.g., strip mines or other heavily industrialized areas), in commercial agricultural lands, in Superfund sites, or other areas where bird habitat is poor or marginal. Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., state or federal refuges, staging areas, rookeries, and Important Bird Areas), in known migratory, daily movement flyways, areas of breeding concentration, in habitat of threatened or endangered species, or key habitats for Birds of Conservation Concern (FWS 2008). Disturbance can result in effects to bird populations which may cumulatively affect their survival. The Service has recommended some disturbance-free buffers, e.g., 0.5 mi around raptor nests during the nesting season, and 1-mi disturbance free buffers for Ferruginous Hawks and Bald Eagles during nesting season in Wyoming (FWS WY Ecological Services Field Office, referenced in Manville 2007:23). The effects of towers on "prairie grouse," "sage grouse," and grassland and shrub-steppe bird species should also be considered since tall structures have been shown to result in abandonment of nest site areas and leks, especially for "prairie grouse" (Manville 2004). The issue of buffers is currently under review, especially for Bald and Golden Eagles. Additionally, towers should not be sited in areas with a high incidence of fog, mist, and low cloud ceilings.

6. If taller (> 199 ft AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white strobe or red strobe lights (red preferable since it is generally less displeasing to the human eye at night), or red flashing incandescent lights should be used at night, and these should be the minimum number, minimum intensity (< 2,000 candela), and minimum number of flashes per minute (i.e., longest duration between flashes/"dark phase") allowable by the FAA. The use of solid (non-flashing) warning lights at night should be avoided (Patterson 2012, Gehring et al. 2009) – see recommendation #2 above. Current research indicates that solid red lights attract night-migrating birds at a much higher rate than flashing lights (Gehring et al. 2009, Manville 2007, 2009). Recent research

indicates that use of white strobe, red strobe, or red flashing lights alone provides significant reductions in bird fatalities (Patterson 2012, Gehring et al. 2009).

7. Tower designs using guy wires for support, which are proposed to be located in known raptor or waterbird concentrations areas, daily movement routes, major diurnal migratory bird movement routes, staging areas, or stopover sites, should have daytime visual markers or bird deterrent devices installed on the wires to prevent collisions by these diurnally moving species. The efficacy of bird deterrents on guy wires to alert night migrating species has yet to be scientifically validated. For guidance on markers, see Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines -- State of the Art in 2006.* Edison Electric Institute, APLIC, and the California Energy Commission. Washington, DC, and Sacramento, CA. 207 pp, and APLIC. 2012. *Reducing Avian Collisions with Power Lines -- the State of the Art in 2012.* Edison Electric Institute and APLIC. Washington, DC. 159 pp. Also see www.aplic.org, www.energy.ca.gov, or call 202-508-5000.

8. Towers and appendant facilities should be designed, sited, and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Several shorter, un-guyed towers are preferable to one, tall guyed, lighted tower. Road access and fencing should be minimized to reduce or prevent habitat fragmentation, disturbance, and the creation of barriers, and to reduce above ground obstacles to birds in flight.

9. If, prior to tower design, siting and construction, if it has been determined that a significant number of breeding, feeding and roosting birds, especially of Birds of Conservation Concern (FWS 2008), state or federally-listed bird species, and eagles are known to habitually use the proposed tower construction area, relocation to an alternate site is highly recommended. If this is not an option, seasonal restrictions on construction are advised in order to avoid disturbance, site and nest abandonment, especially during breeding, rearing and other periods of high bird activity.

10. Security lighting for on-ground facilities, equipment and infrastructure should be motion- or heat-sensitive, down-shielded, and of a minimum intensity to reduce nighttime bird attraction and eliminate constant nighttime illumination, but still allow safe nighttime access to the site (USFWS 2012, Manville 2011).

11. Representatives from the USFWS or researchers from the Research Subcommittee of the Communication Tower Working Group should be allowed access to the site to evaluate bird use; conduct dead-bird searches; place above ground net catchments below the towers (Manville 2002); and to perform studies using radar, Global Position System, infrared, thermal imagery, and acoustical monitoring, as necessary. This will allow for assessment and verification of bird movements, site use, avoidance, and mortality. The goal is to acquire information on the impacts of various tower types, sizes, configurations and lighting protocols.

12. Towers no longer in use, not re-licensed by the FCC for use, or determined to be obsolete should be removed from the site within 12 months of cessation of use, preferably sooner.

13. In order to obtain information on the usefulness of these guidelines in preventing bird strikes and better understanding impacts from habitat fragmentation, please advise USFWS personnel of the final location and specifications of the proposed tower, and which measures recommended in these guidelines were implemented. If any of these recommended measures cannot be implemented, please explain why they are not feasible. This will further advise USFWS in identifying any recurring problems with the implementation of the guidelines, which may necessitate future modifications.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region

IN REPLY REFER TO
FWS/R6
ES

MAILING ADDRESS:
P.O. Box 25486, DFC
Denver, Colorado 80225-0486

STREET LOCATION:
134 Union Boulevard
Lakewood, Colorado 80228-1807

FEB 04 2010

Memorandum

To: Field Office Project Leaders, Ecological Services, Region 6
Montana, North Dakota, South Dakota, Nebraska, Kansas

From: Assistant Regional Director, Ecological Services, Region 6

Subject: Region 6 Guidance for Minimizing Effects from Power Line Projects Within the Whooping Crane Migration Corridor

This document is intended to assist Region 6 Ecological Services (ES) biologists in power line (including generation lines, transmission lines, distribution lines, etc.) project evaluation within the whooping crane migration corridor. The guidance contained herein also may be useful in planning by Federal action agencies, consultants, companies, and organizations concerned with impacts to avian resources, such as the Avian Power Line Interaction Committee (APLIC). We encourage action agencies and project proponents to coordinate with their local ES field office early in project development to implement this guidance.

The guidance includes general considerations that may apply to most, but not every, situation within the whooping crane migratory corridor. Additional conservation measures may be considered and/or discretion may be applied by the appropriate ES field office, as applicable. We believe that in most cases the following measures, if implemented and maintained, could reduce the potential effects to the whooping crane to an insignificant and/or discountable level. Where a Federal nexus is lacking, we believe that following these recommendations would reduce the likelihood of a whooping crane being taken and resulting in a violation of Endangered Species Act (ESA) section 9. If non-Federal actions cannot avoid the potential for incidental take, the local ES field office should encourage project proponents to develop a Habitat Conservation Plan and apply for a permit pursuant to ESA section 10(a)(1)(B).

Finally, although this guidance is specific to impacts of power line projects to the whooping crane within the migration corridor, we acknowledge that these guidelines also may benefit other listed and migratory birds.

If you have any questions, please contact Sarena Selbo, Section 7 Coordinator, at (303) 236-4046.

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 habitat[1].

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 mark[2] 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).

   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?)

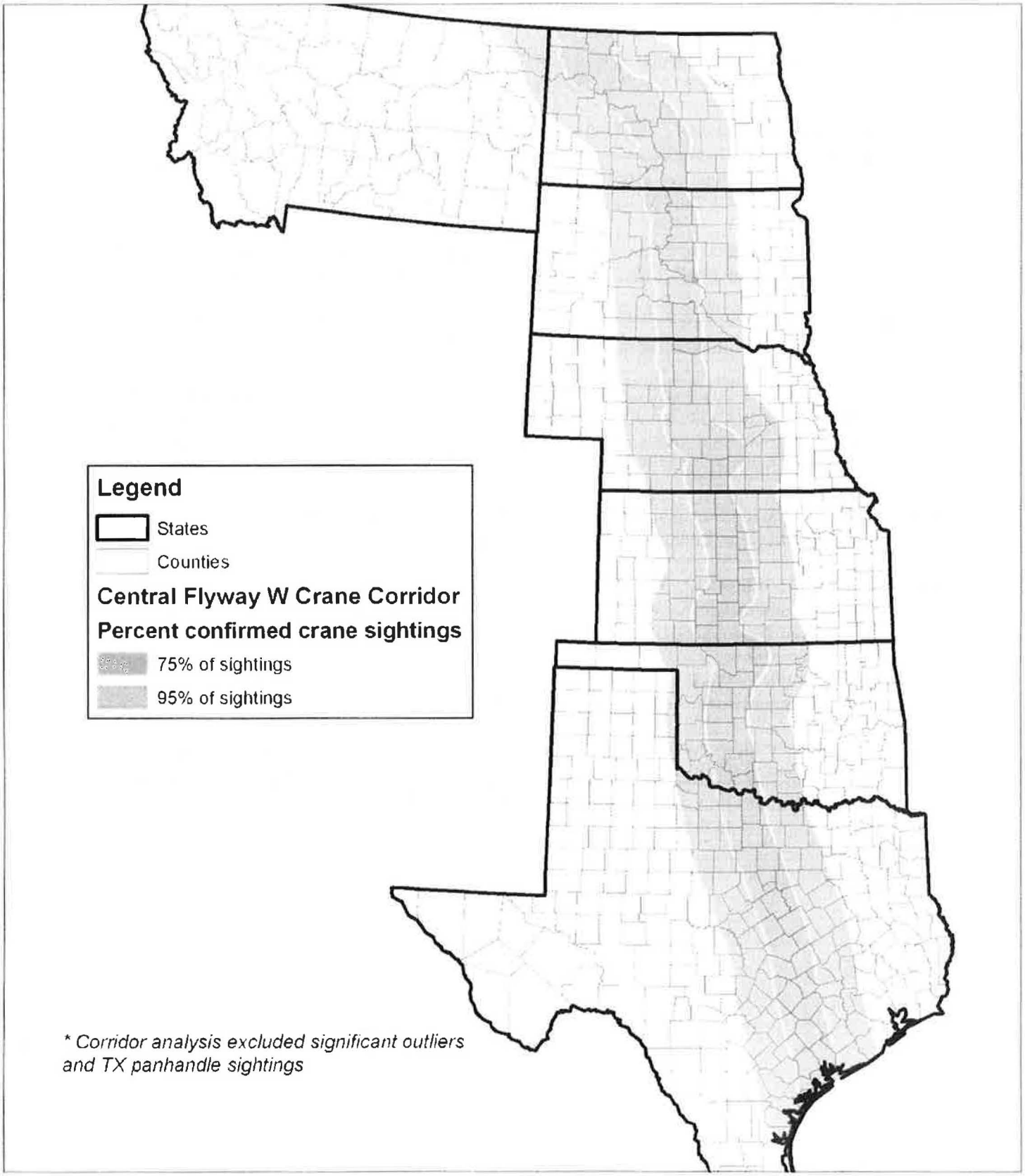
---

[1] 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.

[2] 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.

U.S. Fish & Wildlife Service

United States Central Flyway Whooping Crane Migration Corridor *



Produced for Ecological Services
Grand Island, NE
Current to: 2008
Basemap (Date): U.S. Counties
Meridian:
File:

0 70 140 280 420 560 Miles

N
W E
S

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BISON CONNECT

SouthDakotaFieldOffice, FW6 <southdakotafieldoffice@fws.gov>

North Bend Wind Project - Tier 1 Evaluation

1 message

Christina White <cwhite@infinitywind.com> Fri, Dec 2, 2016 at 5:15 PM
To: "southdakotafieldoffice@fws.gov" <southdakotafieldoffice@fws.gov>

To Whom It May Concern:

Attached, please find a Tier 1 Evaluation for the North Bend Wind Project that is being proposed in South Dakota, east of the City of Pierre, for your review and comment. Please let me know if you have any questions.

Thank you, in advance, for your time.

Christina White

Infinity Renewables

3760 State Street, Suite 200 | Santa Barbara, CA 93105

O 805-456-5158 | M 310-924-1451

INFINITY
RENEWABLES

North Bend Wind Project - Tier 1 Evaluation_2016-12-02.pdf
3322K

INFINITY
RENEWABLES

December 2, 2016

U.S. Fish and Wildlife Services
South Dakota Ecological Services Field Office
420 S. Garfield Avenue, Suite 400
Pierre, SD 57501-5408

Re: Tier 1 Evaluation for the North Bend Wind Project

To Whom It May Concern:

Infinity Renewables ("Infinity") recently completed a Tier 1 Evaluation pursuant to the United States Fish and Wildlife Service's ("USFWS") Land-Base Wind Energy Guidelines for the North Bend Wind Project located in Hyde County, South Dakota. The Project is in an early stage of development and is located east of the city of Pierre. The report is enclosed with this cover letter.

Infinity welcomes any comments that the USFWS may have on the project at this time. If you require additional information or have questions regarding the North Bend Wind project, please feel free to contact me by email at cwhite@infinityrenewables.com or by phone at (310) 924-1451.

We appreciate any input or information that you may have related to the location of the Project.

Sincerely,

Christina White
Project Developer

INFINITY
RENEWABLES

MEMORANDUM

To: North Bend Wind Project, LLC – Project Files
From: Christina White
Date: 12/2/16

RE: North Bend Wind Project – USFWS Tier 1 Evaluation

1. INTRODUCTION

North Bend Wind Project, LLC (North Bend) is currently in the early stages of evaluating an area located in Hyde County, South Dakota as a site for potential wind energy development. The general project area is located east of the city of Pierre. The exact size of the project and point of interconnection have not been determined given the early stage of development.

According to the United States Fish and Wildlife Service's Land-Based Wind Energy Guidelines ("USFWS Guidelines") the intent of the Tier 1 Preliminary Site Evaluation is to provide a landscape level assessment of habitat for species of concern over a broad geographic area based on existing information and literature.

2. METHODS

The USFWS Guidelines methods and metrics notes that "developers who choose to conduct Tier 1 investigations would generally be able to utilize existing public or other readily available landscape-level maps and databases from sources such as federal, state or tribal wildlife or natural heritage programs, the academic community, conservation organizations or the developers' or consultants' own information."

The American Wind Wildlife Institute ("AWWI") has produced the Landscape Assessment Tool ("LAT"). The LAT is designed as a landscape-level planning tool to identify sensitive wildlife habitat and areas that are likely to have low wildlife risk where wind energy development could be prioritized. The LAT is intended to provide stakeholders with information that facilitates the siting of wind energy in areas with minimal impacts to wildlife, as well as the development of conservation plans, monitoring plans and mitigation strategies.

The LAT is a general screening tool and may provide some guidance as to the environmental characteristics and important landscape-scale wildlife values of a geographic area. This initial screening can offer early guidance about possible sensitivity of a site within a larger landscape context and could be used by wind developers for preliminary landscape scale assessment. According to AWWI, the LAT is intended for use at the Tier 1 site evaluation point under the Land-Based Wind Energy Guidelines issued by the USFWS. The LAT report for North Bend is included in Attachment A.

3. DISCUSSION

The Guidelines include a series of questions that are intended to inform the developer of potential constraints related to the development of a project. This section includes responses to the Tier 1 questions as outlined in the Guidelines.

1. Are there species of concern present on the potential site(s), or is habitat (including designated critical habitat) present for these species?

Yes – Additional field data is required to adequately evaluate risk. The LAT report identified a number of sensitive species that could be present within the Project area. As identified in the LAT report for the Project, there are a number of species that are listed under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act that have the potential to be present within the Project area. The potential for these species to be present within and in proximity to the Project area would need to be further evaluated through on-site field studies.

According to the USFWS Critical Habitat Mapping Tool, there is no critical habitat within the Project area boundary that is being considered.

2. Does the landscape contain areas where development is precluded by law or areas designated as sensitive according to scientifically credible information? Examples of designated areas include, but are not limited to: federally-designated critical habitat; high-priority conservation areas for nongovernment organizations (NGOs); or other local, state, regional, federal, tribal, or international categorizations.

No. According to the maps produced in the LAT report for the Project, the Project area largely consists of private landholdings. The main land use within the area consists of agricultural uses and grazing lands. There are likely areas that are covered under easements with the Conservation Reserve Program ("CRP") that is administered by the United States Department of Agriculture, Farm Services Agency.

The National Audubon Society (Audubon) designates Important Bird Areas (IBAs) for areas that the organization identifies as providing essential habitats for one or more species of birds. IBAs have no regulatory barring and would not actually prevent a project from proceeding, but do serve as a good resource for evaluating avian risks that may be present in a particular area. There are no IBAs within 10 miles of the Project area.

The Nature Conservancy (TNC) manages a number of biological sensitive areas in the northern plains states. There are no TNC managed areas in proximity within 10 miles of the Project area.

3. Are there known critical areas of wildlife congregation, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?

Unknown – Insufficient Data. The analysis used in this Tier 1 evaluation was based on a review of AWWI's LAT report for sensitive species in proximity to the Project. As noted in the LAT report included in Attachment A, there are a number of sensitive species that could be present within the Project area. Further study of features both onsite and in proximity to the Project area need to be further evaluated.

4. Are there large areas of intact habitat with the potential for fragmentation, with respect to species of habitat fragmentation concern needing large contiguous blocks of habitat?

No – Field verification is still required. As noted in the maps from the LAT report, the aerial as well as habitat areas indicate that the project area is primarily used in agricultural operations that include crop land areas and pasture areas. The project area appears to be fragmented from historic and ongoing agricultural and grazing operations. There could be areas where intact native habitat may be present. This would need to be further evaluated through onsite habitat mapping investigations. Field investigations completed as a part of the Tier 2 evaluation will confirm the landscape and habitat quality found within the Project area.

4. RECOMMENDATIONS

Based on the proceeding Tier 1 analysis, it is recommended that the Tier 2 studies be completed to adequately analyze biological constraints that are outlined in the LAT report produced for the Project. The analysis completed to date identified the potential for constraints tied to 1) general avian use of the Project area, 2) various raptor species presence, and 3) bat species presence.

Attachment A – AWWI LAT Report

Wind and Wildlife Landscape Assessment Tool Project Area Report

The intention of the Landscape Assessment Tool (LAT) is to aid in landscape-scale planning by characterizing risk to wildlife relative to potential wind energy development. The resolution of the species data used in the LAT precludes decisions at scales finer than 50 square miles. The LAT is not intended for micro-siting or site-specific project design, or to replace on-site surveys. The providers of the data make no warranty as to its suitability for any particular use and users agree, by using the data, to accept any liability associated with such use.

The LAT uses numerous data layers generated from public sources. These sources are limited by a high degree of variation in their accuracy and in the scales at which they function. This LAT is a general screening tool and may provide some guidance as to the environmental characteristics and important landscape-scale wildlife values of a geographic area. This initial screening can offer early guidance about possible sensitivity of a site within a larger landscape context and could be used by wind developers for preliminary landscape scale assessment. The LAT, however, cannot be relied upon for actual and individual siting decisions. Those decisions must be made on the basis of locally-developed data and analyses, taking into consideration numerous factors, including factors unrelated to wildlife.

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Eastern Tiger Salamander (Ambystoma tigrinum)	Amphibian	Secure	Secure	None	No	FL, KS, MD, MS, NJ, NM, NY, SC, VA, WA, WY, DE, LA, MI, NC
Northern Cricket Frog (Acris crepitans)	Amphibian	Secure	Secure	None	No	CO, DC, IA, KS, MN, NY, PA, SC, SD, MI, WI, WV
Brazilian Free-tailed Bat (Tadarida brasiliensis)	Bat	Mortality Concern	Secure	None	No	AL, AZ, OK, TX
Eastern Red Bat (Lasiurus borealis)	Bat	Mortality Concern	Secure	None	No	CT, DC, DE, FL, IN, MA, MD, MI, NH, NJ, NY, PA, RI, VT, WI, WV
American Avocet (Recurvirostra americana)	Bird	Secure	Secure	None	Yes	AR, AZ, FL, IA, ID, KS, MN, ND, NE, NV, SC, TX, UT, WA
American Bittern (Botaurus lentiginosus)	Bird	Apparently Secure	Apparently Secure	None	Yes	AK, AR, AZ, CA, CO, CT, DC, DE, FL, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NM, NY, PA, RI, SC, TN, TX, VA, VT, WA, WI, WV, WY
American Coot (Fulica americana)	Bird	Secure	Secure	None	Yes	AK, DE, ME, MI, PA, SC, WA, WV
American Kestrel (Falco sparverius)	Bird	Secure	Secure	None	Yes	AL, CT, MA, NC, NJ, RI, VT, WA, TX
American Tree Sparrow (Spizella arborea)	Bird	Secure	Secure	None	Yes	AK, KS
American Wigeon (Anas americana)	Bird	Secure	Secure	None	Yes	AZ, HI, NE, WA
Baltimore Oriole (Icterus galbula)	Bird	Secure	Secure	None	Yes	CT, DE, KS, ME, NJ, RI
Barn Owl (Tyto alba)	Bird	Secure	Secure	None	Yes	AR, CT, DE, GA, IA, IL, IN, KS, KY, MA, MD, MI, MO, MS, NC, NE, NJ, NY, OK, PA, RI, SC, TN, TX, VA, VT, WI, WV
Barn Swallow (Hirundo rustica)	Bird	Secure	Secure	None	Yes	AK, KS, ME
Black-billed Magpie (Pica hudsonia)	Bird	Secure	Secure	None	Yes	AZ

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Black-crowned Night-heron (Nycticorax nycticorax)	Bird	Secure	Secure	None	Yes	CA, AR, CT, DC, DE, FL, IA, ID, IL, IN, KS, KY, MA, MD, ME, MI, MN, MO, MS, NE, NJ, NY, PA, RI, SC, VA, VT, WA, WV, WY
Blue-winged Teal (Anas discors)	Bird	Avoidance/Management concern	Secure	None	Yes	AZ, CT, MI, NY, RI, SC, VT, WI
Brewer's Blackbird (Euphagus cyanocephalus)	Bird	Secure	Secure	None	Yes	KS, NE
Brown Creeper (Certhia americana)	Bird	Secure	Secure	None	Yes	AK, CT, DC, DE, IA, IL, KY, MD, MO, NE, RI, TN, VA, WA, WV, NC
Brown Thrasher (Toxostoma rufum)	Bird	Secure	Secure	None	Yes	CT, DC, DE, KS, MA, MD, ME, MI, MN, NJ, NY, PA, RI, TX, VA, VT, WI
Bufflehead (Bucephala albeola)	Bird	Secure	Secure	None	Yes	DE, OR, WA
Burrowing Owl (Athene cunicularia)	Bird	Avoidance/Management concern	Secure	None	Yes	CA, IA, ID, KS, MN, MT, ND, NE, NM, OK, SD, TX, UT, WA, WY, CO
Canada Goose (Branta canadensis)	Bird	Secure	Secure	None	Yes	AZ, DE, WA, WA
Canvasback (Aythya valisineria)	Bird	Secure	Secure	None	Yes	CA, AZ, CT, DE, IA, IL, KS, LA, MD, ND, NE, NV, OK, SC, TX, WA, WI, WY
Cassin's Sparrow (Aimophila cassinii)	Bird	Secure	Secure	None	Yes	CO, KS, OK, TX
Cattle Egret (Bubulcus ibis)	Bird	Secure	Secure	None	Yes	AZ, DE, ID, ME, NJ, NY, RI
Chimney Swift (Chaetura pelagica)	Bird	Secure	Secure	None	Yes	AR, CT, DC, DE, ME, NC, NJ, PA, RI, TX, VA, VT
Cinnamon Teal (Anas cyanoptera)	Bird	Secure	Secure	None	Yes	NE, NV, WA
Cliff Swallow (Petrochelidon pyrrhonota)	Bird	Secure	Secure	None	Yes	AK, CT, DE, NJ, RI, WV
Common Nighthawk (Chordeiles minor)	Bird	Secure	Secure	None	Yes	CT, DE, IA, IN, KS, MD, ME, MI, MN, NC, NH, NJ, NY, OR, PA, RI, TX, VT, WA, WV
Common Yellowthroat (Geothlypis trichas)	Bird	Secure	Secure	None	Yes	RI, TX
Cooper's Hawk (Accipiter cooperii)	Bird	Secure	Secure	None	Yes	CA, CT, DE, MI, NC, NE, NH, NJ, NY, VT, WV
Dark-eyed Junco (Junco hyemalis)	Bird	Secure	Secure	None	Yes	AK, CT, MD, NE, SC
Dickcissel (Spiza americana)	Bird	Vulnerable	Secure	None	Yes	IA, IL, KS, KY, LA, MD, MI, MN, NC, ND, NJ, NY, PA, TN, TX, WI, WV, WY
Downy Woodpecker (Picoides pubescens)	Bird	Secure	Secure	None	Yes	AZ, WA
Eastern Kingbird (Tyrannus tyrannus)	Bird	Secure	Secure	None	Yes	AK, CT, DE, KS, ME, MI, NC, NJ, RI, TX, VA
Eastern Screech-owl (Megascops asio)	Bird	Secure	Secure	None	Yes	CT, ME, NJ

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Ferruginous Hawk (Buteo regalis)	Bird	Mortality Concern	Secure	None	Yes	CA, AZ, CO, ID, KS, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY
Field Sparrow (Spizella pusilla)	Bird	Secure	Secure	None	Yes	CT, DC, DE, IA, KS, LA, MA, MD, ME, MI, MN, NC, NJ, RI, SC, TX, VA, VT, WI, WV
Golden Eagle (Aquila chrysaetos)	Bird	Mortality Concern	Secure	None	Yes	CA, AK, CO, KS, MD, ME, ND, NE, NH, NM, NY, PA, TN, TX, WA
Golden-crowned Kinglet (Regulus satrapa)	Bird	Secure	Secure	None	Yes	AK, AZ, CT, MD, RI, SC, TN, WA
Grasshopper Sparrow (Ammodramus savannarum)	Bird	Secure	Secure	None	Yes	FL, AR, CA, CT, DC, DE, GA, IA, ID, IL, KS, KY, LA, MA, MD, ME, MI, MN, MS, NC, ND, NH, NJ, NM, NY, OR, PA, RI, SC, TN, TX, UT, VA, VT, WA, WI, WV, WY, AZ
Gray Catbird (Dumetella carolinensis)	Bird	Secure	Secure	None	Yes	AZ, CT, NJ, RI, VA
Great Blue Heron (Ardea herodias)	Bird	Secure	Secure	None	Yes	CA, CT, DE, MD, ME, MI, NH, NJ, PA, RI, SC, VT, WA, WV, WY
Great Horned Owl (Bubo virginianus)	Bird	Secure	Secure	None	Yes	AK, CT, DC
Greater Prairie-Chicken (Tympanuchus cupido)	Bird	Vulnerable	Apparently Secure	None	No	AR, CO, IA, IL, KS, KY, MN, MO, ND, NE, OK, SD, TN, WI
Green Heron (Butorides virescens)	Bird	Secure	Secure	None	Yes	CT, MA, MI, NJ, SC, VA, WA
Harris's Sparrow (Zonotrichia querula)	Bird	Vulnerable	Secure	None	Yes	AK, CO, KS, OK, TX
Horned Lark (Eremophila alpestris)	Bird	Vulnerable	Secure	None	Yes	CT, ME, NH, NJ, NY, RI, TX, WV, NC
Killdeer (Charadrius vociferus)	Bird	Secure	Secure	None	Yes	AK, MI, WA
Lark Bunting (Calamospiza melanocorys)	Bird	Vulnerable	Secure	None	Yes	CO, KS, ND, SD, WY
Lark Sparrow (Chondestes grammacus)	Bird	Secure	Secure	None	Yes	CA, AR, IA, KS, KY, NC, TN, TX, WI, WV
Loggerhead Shrike (Lanius ludovicianus)	Bird	Vulnerable	Apparently Secure	None	Yes	CA, CO, DE, FL, IA, IL, IN, KS, KY, LA, MD, ME, MN, MO, MS, NC, ND, NJ, NM, NV, NY, OK, OR, PA, SC, TN, TX, VA, WA, WI, NE
Long-eared Owl (Asio otus)	Bird	Secure	Secure	None	Yes	CA, CT, DE, IA, KY, MA, MD, ME, MI, MO, NE, NJ, NY, PA, RI, VT, WV
Mallard (Anas platyrhynchos)	Bird	Avoidance/Management concern	Secure	None	Yes	DE, SC, WA

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Marsh Wren (Cistothorus palustris)	Bird	Secure	Secure	None	Yes	AZ, CT, DC, DE, IL, IN, MD, ME, MI, MN, MO, NJ, OH, PA, RI, VA, WA, WV
Mourning Dove (Zenaida macroura)	Bird	Secure	Secure	None	Yes	NM, TX, WA
Northern Bobwhite (Colinus virginianus)	Bird	Secure	Secure	None	No	AR, CT, DC, DE, FL, GA, IA, IL, KS, KY, LA, MA, MD, MI, MS, NC, NE, NY, OH, OK, PA, RI, SC, TX, VA, WI, WV
Northern Cardinal (Cardinalis cardinalis)	Bird	Secure	Secure	None	Yes	CA
Northern Flicker (Colaptes auratus)	Bird	Secure	Secure	None	Yes	AK, CT, DE, IL, ME, MI, NC, NJ, RI, FL
Northern Goshawk (Accipiter gentilis)	Bird	Secure	Secure	None	Yes	CA, AK, CO, CT, MD, MI, MN, NH, NJ, NM, NV, NY, OR, PA, RI, SD, UT, VT, WA, WI, WV, WY, AK
Northern Harrier (Circus cyaneus)	Bird	Secure	Secure	None	Yes	CA, AK, AL, AR, AZ, CO, CT, DE, IA, IL, IN, KY, LA, MA, MD, MI, MN, MO, NC, ND, NE, NH, NJ, NM, NY, PA, RI, TN, TX, VA, VT, WI, WV
Northern Mockingbird (Mimus polyglottos)	Bird	Secure	Secure	None	Yes	IA, MI
Northern Pintail (Anas acuta)	Bird	Avoidance/Management concern	Secure	None	Yes	AR, AZ, CO, FL, HI, IA, ID, KS, KY, LA, MN, MS, ND, NM, NV, NY, OK, SC, TX, WA
Northern Rough-winged Swallow (Stelgidopteryx serripennis)	Bird	Secure	Secure	None	Yes	AK, CT, MN, VA, WA
Northern Saw-whet Owl (Aegolius acadicus)	Bird	Secure	Secure	None	Yes	AK, CT, MD, TN, VA, WV, NC
Northern Shoveler (Anas clypeata)	Bird	Avoidance/Management concern	Secure	None	Yes	AZ, DE, HI, WA
Northern Shrike (Lanius excubitor)	Bird	Secure	Secure	None	Yes	AK, MI
Pied-billed Grebe (Podilymbus podiceps)	Bird	Secure	Secure	None	Yes	AK, AR, CT, DE, IL, KY, MA, MD, ME, MI, NH, NJ, NY, PA, RI, SC, VT, WV
Pine Siskin (Carduelis pinus)	Bird	Secure	Secure	None	Yes	AK, NE, PA, WV, NC
Prairie Falcon (Falco mexicanus)	Bird	Secure	Secure	None	Yes	CA, CO, ND, NE, OK, TX, WA
Purple Martin (Progne subis)	Bird	Secure	Secure	None	Yes	CA, CT, ME, MI, NH, OR, RI, VT, WA, CO, AZ
Red Crossbill (Loxia curvirostra)	Bird	Secure	Secure	None	Yes	AK, CO, ME, MI, NE, PA, SC, VA, WI, ID, NC
Red-eyed Vireo (Vireo olivaceus)	Bird	Secure	Secure	None	Yes	AK, MD
Red-headed Woodpecker (Melanerpes erythrocephalus)	Bird	Vulnerable	Secure	None	Yes	AR, CT, DE, FL, IA, IL, KS, KY, MD, MI, MN, MS, NC, ND, NJ, NM, NY, OK, PA, TN, TX, WI, WV
Ring-necked Pheasant (Phasianus colchicus)	Bird	Secure	Secure	None	No	RI

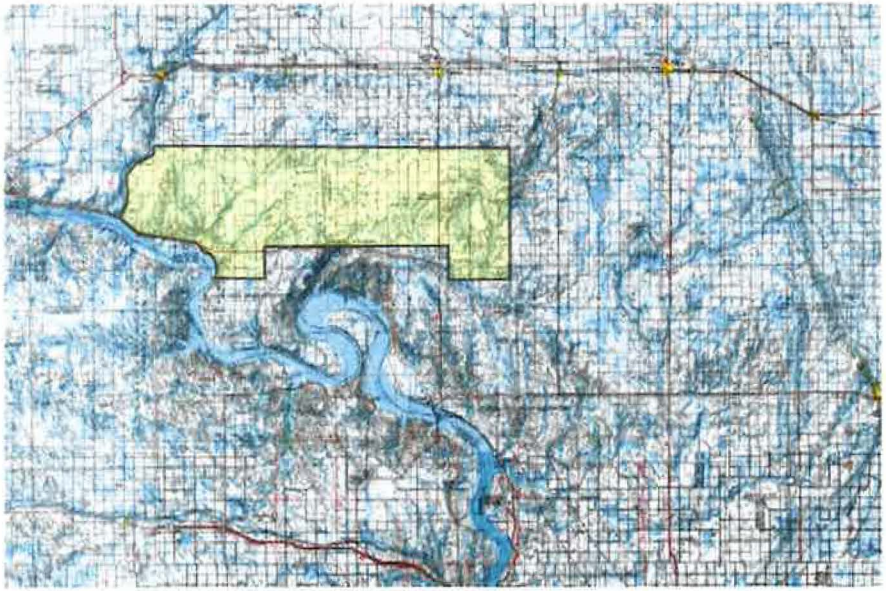
Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Rough-legged Hawk (Buteo lagopus)	Bird	Secure	Secure	None	Yes	AK, CT, TX
Ruddy Duck (Oxyura jamaicensis)	Bird	Secure	Secure	None	Yes	MD, ME, NY, PA, WA
Scissor-tailed Flycatcher (Tyrannus forficatus)	Bird	Secure	Secure	None	Yes	KS, LA, NE, TN, TX
Sharp-shinned Hawk (Accipiter striatus)	Bird	Secure	Secure	None	Yes	CA, AK, CT, DE, IN, KY, MA, MD, MO, NC, NE, NJ, NY, OH, PA, RI, TN, WV
Short-eared Owl (Asio flammeus)	Bird	Vulnerable	Secure	None	Yes	CA, AK, AL, AR, CO, CT, DE, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NE, NJ, NV, NY, OK, OR, PA, RI, TN, TX, UT, VT, WA, WI, WV, WY
Snowy Owl (Bubo scandiacus)	Bird	Secure	Secure	None	Yes	AK, CT, WA
Sora (Porzana carolina)	Bird	Secure	Secure	None	Yes	AK, CT, DC, DE, MA, MI, MO, NC, OH, PA, RI, VT, WV
Swainson's Hawk (Buteo swainsoni)	Bird	Vulnerable	Secure	None	Yes	CA, AK, CO, IA, ID, IL, KS, MN, MO, ND, NE, NV, OK, OR, TX, WA, WY
Turkey Vulture (Cathartes aura)	Bird	Secure	Secure	None	Yes	WA
Virginia Rail (Rallus limicola)	Bird	Secure	Secure	None	Yes	CT, DC, IN, MI, MN, MO, NC, NE, OH, PA, TX, VA, WV, WY
Warbling Vireo (Vireo gilvus)	Bird	Secure	Secure	None	Yes	CT, DE, TX
Western Burrowing Owl (Athene cunicularia hypugaea)	Bird	Apparently Secure	Apparently Secure	None	No	None
Western Meadowlark (Sturnella neglecta)	Bird	Secure	Secure	None	Yes	IN, MI, OR, TX, WI
Western Wood-pewee (Contopus sordidulus)	Bird	Secure	Secure	None	Yes	AK, WA
White-breasted Nuthatch (Sitta carolinensis)	Bird	Secure	Secure	None	Yes	FL
White-crowned Sparrow (Zonotrichia leucophrys)	Bird	Secure	Secure	None	Yes	AK, AZ
White-faced Ibis (Plegadis chihi)	Bird	Secure	Secure	None	Yes	CA, CO, ID, NE, NM, NV, TX, WY
White-winged Crossbill (Loxia leucoptera)	Bird	Secure	Secure	None	Yes	AK, ID, MI
Wilson's Snipe (Gallinago delicata)	Bird	Secure	Secure	None	Yes	AK, AZ, DC, IL, KY, MD, MI, NE, PA, RI, SC, TX, WA, WV
Wood Duck (Aix sponsa)	Bird	Secure	Secure	None	Yes	AZ, DC, SC, WA
Yellow Warbler (Dendroica petechia)	Bird	Secure	Secure	None	Yes	AR, NM, RI, VA, WA
Yellow-breasted Chat (Icteria virens)	Bird	Secure	Secure	None	Yes	CA, CT, DE, IA, IL, MI, NE, NJ, NY, OR, PA, RI, VA, WA
Yellow-headed Blackbird (Xanthocephalus xanthocephalus)	Bird	Secure	Secure	None	Yes	CA, IL, IN, MI, MO
American Badger (Taxidea taxus)	Mammal	Secure	Secure	None	No	AR, CA, IL, IN, MN, OH, TX, WA
American Beaver (Castor canadensis)	Mammal	Secure	Secure	None	No	AZ, NM, WA
Black-tailed Jackrabbit (Lepus californicus)	Mammal	Secure	Secure	None	No	AR, MO, NE, WA
Black-tailed Prairie Dog (Cynomys ludovicianus)	Mammal	Apparently Secure	Apparently Secure	None	No	AZ, CO, KS, MT, ND, NM, OK, TX, WY

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Eastern Spotted Skunk (Spilogale putorius)	Mammal	Secure	Secure	None	No	AL, AR, FL, IA, KS, KY, LA, MD, MN, MS, NC, ND, NE, OK, PA, SC, TN, TX, VA, WV
Hoary Bat (Lasiurus cinereus)	Mammal	Mortality Concern	Secure	None	No	CA, CT, DE, FL, IN, MA, MD, MI, MS, NC, NH, NJ, NV, NY, OR, PA, RI, VT, WA, WI, WV, WY
Long-tailed Weasel (Mustela frenata)	Mammal	Secure	Secure	None	No	AL, AR, CT, LA, MO, MS, NC, NE, OK, TX, VT, WA
Mule Deer (Odocoileus hemionus)	Mammal	Avoidance/Management concern	Secure	None	No	NM, NV, UT, WA, WA
Pinon Deermouse (Peromyscus truei)	Mammal	Secure	Secure	None	No	ID, WY
Pronghorn (Antilocapra americana)	Mammal	Avoidance/Management concern	Secure	None	No	TX, WA
Silver-haired Bat (Lasionycteris noctivagans)	Mammal	Mortality Concern	Secure	None	No	AK, CA, CT, DE, IN, LA, MA, MD, MI, MS, NC, NH, NJ, NY, OR, PA, RI, VT, WI, WV, WY
Spotted Ground Squirrel (Spermophilus spilosoma)	Mammal	Secure	Secure	None	No	AZ, KS, UT, WY
Swift Fox (Vulpes velox)	Mammal	Vulnerable	Vulnerable	None	No	CO, KS, ND, NE, OK, SD, TX, WY, NM
Coachwhip (Coluber flagellum)	Reptile	Secure	Secure	None	No	IL, MS, NC, NE, TN, UT
Common Kingsnake (Lampropeltis getula)	Reptile	Secure	Secure	None	No	CO, DE, FL, IA, NE, OR, UT
Common Lesser Earless Lizard (Holbrookia maculata)	Reptile	Secure	Secure	None	No	KS, OK, SD, UT, WY
Glossy Snake (Arizona elegans)	Reptile	Secure	Secure	None	No	KS, NE, UT
Milksnake (Lampropeltis triangulum)	Reptile	Secure	Secure	None	No	DE, KS, MN, MT, NM, SC, UT, LA, WY
Ornate Box Turtle (Terrapene ornata)	Reptile	Secure	Secure	None	No	IA, IL, IN, NM, SD, TX, WI, LA, WY
Plains Hog-nosed Snake (Heterodon nasicus)	Reptile	Secure	Secure	None	No	IA, IL, KS, MN, MT, ND, TX, WY
Prairie Rattlesnake (Crotalus viridis)	Reptile	Secure	Secure	None	No	IA, KS, TX

Location Map

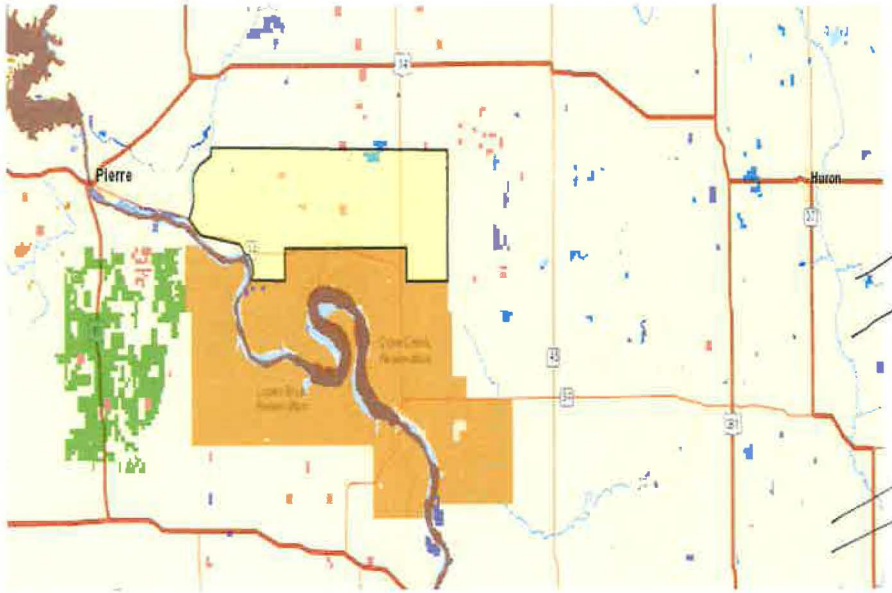
Vicinity Map

Topo Base Map



Aerial Base Map

Protected Areas Map

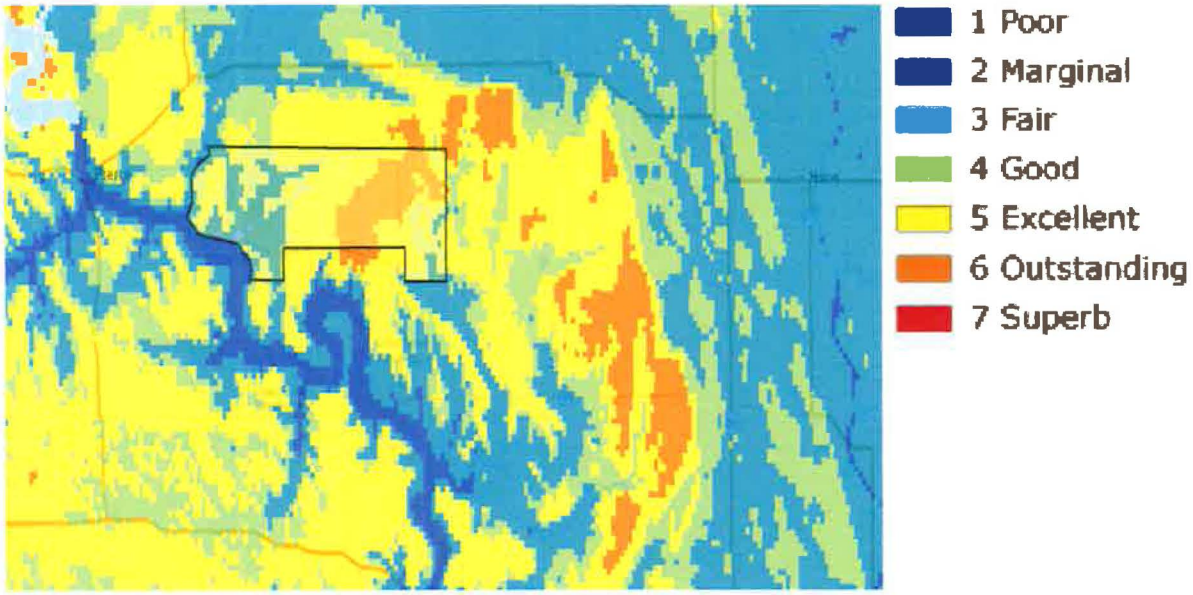


- Bureau of Land Management (BLM)
- Bureau of Reclamation (BOR)
- Department of Defense (DOD) & Department of Energy (DOE)
- Fish and Wildlife Service (FWS)
- Forest Service (USFS)
- Privavte Land
- National Park Service (NPS)
- Other Federal Land
- State Land
- Local Government Land
- Native American Land
- Non-Governmental Organization

Disturbance Layers Map

- Disturbed Areas
- Impervious Surfaces
- Development
- Crop
- Hay/Pasture
- Oil and Gas Wells
- Mines

Wind Power Class Map



United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Dakota Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

IN REPLY REFER TO:
NORTH BEND WIND
PROJECT, SD

February 24, 2021

Ms. Christina Gomer
Western Area Power Administration
Upper Great Plains Customer Service Region
2900 4th Avenue North
Billings, Montana 59101

Dear Ms. Gomer:

Thank you for your letter dated January 6, 2021, regarding the above referenced North Bend Wind Project involving construction of a 200 MW wind farm with associated facilities which will interconnect to Western Area Power Administration's (WAPA) Fort Thompson-Oahe 230 kV transmission line. In compliance with the National Environmental Policy Act, this project is proposed to tier to WAPA's *Upper Great Plains Wind Energy Programmatic Environmental Impact Statement* (PEIS) via an Environmental Assessment (EA). We submit the comments and recommendations herein that apply to the project and development of that EA. While your scoping letter indicates the farm may be composed of 90 wind turbines, per our recent agency meeting on January 28, 2021, a range of 30 to 70 turbines are currently being considered with the number dependent on which turbine size is selected. The proposed project is located approximately four miles south of the town of Harold, in Hughes and Hyde counties, South Dakota.

The North Bend Wind Project is also located immediately adjacent to the existing Triple H wind energy facility owned by the same developer as North Bend Wind (ENGIE). The EA analysis should include the cumulative impacts of these projects together, as well as the potential for others in this area.

Our office of the U.S. Fish and Wildlife Service (Service) provided earlier comments on North Bend Wind via a January 5, 2017, letter to the original project developer of this project, Infinity Renewables (since acquired by ENGIE). We have attached those comments in the email that transmits this letter; the majority are still applicable to this project. However, note that the least tern, as of January 2021, has been removed from the list of species protected under the Endangered Species Act.

Since our January 5, 2017, letter we have developed additional recommendations within our Service Region which can be applied to this project including:

- U.S. Fish and Wildlife Service, Region 6, Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities
- U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects
- U.S. Fish and Wildlife Service (USFWS), Region 6
- Wildlife Buffer Recommendations for Wind Energy Projects
- U.S. Fish and Wildlife Service, Region 6, Recommended Approach for Development and Submission of Eagle Conservation Plans submitted to Region 6, Migratory Management Office in support of an Eagle Incidental Take Permit Application for Wind Energy Projects.
- U.S. Fish and Wildlife Service (USFWS), Region 6, Recommended Protocol for Conducting Pre-construction Eagle Nest Surveys at Wind Energy Projects

The above guidance documents are available online at: https://www.fws.gov/mountain-prairie/migbirds/index.php under the tab "Wind Energy Guidance Documents".

Also, our *South Dakota Species of Habitat Fragmentation Concern: Grassland Birds* (Bakker 2020) report has recently been completed. That report is also attached to the email that conveys this letter, and available online at: https://www.fws.gov/mountain-prairie/es/southDakota/southDakota.php. Species of habitat fragmentation concern are emphasized in our USFWS Land-based Wind Energy Guidelines as important considerations when determining placement of wind facilities, as these species are sensitive to development on the landscape that fragments and degrades their habitats. In South Dakota, those species primarily occupy grasslands, and many are known to be displaced by turbines.

Based on our January 28, 2021, agency meeting, as well as ENGIE's December 15, 2020 report, *North Bend Wind Project Field Studies Summary 2016 – 2020 Hughes and Hyde Counties, South Dakota,* which was provided to this office just prior to that meeting, we submit the following additional observations/recommendations.

<u>Grassland Birds</u>

Population decline among grassland birds in recent decades is greater than for any avian groups reliant on any other biomes in North America (Rosenberg et al. 2019) primarily due to loss and degradation of prairie habitats. It is our understanding that more than half (41 of 72, 57%) of the turbine sites under consideration at the North Bend Wind Project area fall on herbaceous land cover/pasture, along with 18 miles of planned access roads and additional miles of collector lines. The entire project site is dominated (60%) by grasslands; the type of location in South Dakota that is likely to result in relatively higher environmental impacts than in cropland dominated sites. Much of the grassland cover – and the bulk of the impact area – appear to be concentrated in the center of project site, while locations within the project area that are dominated by cropground are left unimpacted. It is not clear whether, or to what extent, efforts have been made to avoid grassland habitats for this project; we recommend reevaluation of the placement of facilities at this wind farm to target previously disturbed lands. Clarification regarding efforts made to avoid grassland habitats, and reasons (if any) these areas are unavoidable should be provided in detail in the Environmental Assessment for this project.

Preconstruction surveys revealed at least 20 greater prairie chicken and sharptailed grouse leks in the North Bend Wind project area. Their presence is indicative of the extensive grassland habitat in the project area, and these species are sensitive to habitat fragmentation. South Dakota Game Fish and Parks has coordinated with wind energy developers on research to evaluate impacts of wind energy to prairie grouse; we recommend contacting that agency for further information and potential participation in such work.

The *North Bend Wind Project Field Studies Summary 2016 – 2020 Hughes and Hyde Counties, South Dakota* report emphasizes common species such as Canada goose and red-winged blackbird that were observed in high numbers at the site, however, the most common species at these sites are generally (but not always) not those of primary concern. A notable exception is the grasshopper sparrow which was singled out in 2020 as being one of the most frequently observed small bird species surveyed at North Bend Wind; grasshopper sparrows are known to be displaced by wind energy development (Shaffer and Buhl 2016). For the EA, we recommend specifically focusing analysis on those species that are most likely to be impacted by the project. The EA should list species observed in the project area that are also identified in our aforementioned species of habitat fragmentation concern report, and our Birds of Conservation Concern 2008 report (https://www.fws.gov/migratorybirds/pdf/grants/ BirdsofConservation Concern2008.pdf).

As mentioned in our 2017 letter and reiterated to ENGIE during their work on nearby projects (Triple H, Meridian) an offset plan to mitigate the grassland species impacts that will occur at the North Bend Project site is needed. Pertinent literature (Shaffer and Buhl 2016; Loesch et al. 2013) has documented displacement levels for grassland birds and waterfowl; Shaffer et al. (2019) provides guidance for determining compensation needed to offset those impacts at wind energy facilities. We recommend ENGIE adhere to that methodology, quantify direct loss of habitat and degradation due to displacement, and develop and implement a habitat compensation plan. Every effort should be made to avoid, minimize, and offset impacts to these species at the North Bend Wind site so this form of energy does not further contribute to the decline of North America's grassland birds. Although the PEIS was completed prior to finalization of the more recent research results, the PEIS recognizes these impacts to migratory bird and the need to offset them. The EA's inclusion of such a plan would align with, and allow tiering to, the PEIS.

Eagles

Surveys of eagles in and around the project area appear to have variable results in different years, but both bald and golden eagles have been observed onsite. With increasing eagle populations in South Dakota and proximity of this project to the Missouri River which harbors nesting and roosting habitat, eagle occurrence (and the existence of nests in/near the area) may increase over time at the North Bend Wind Project site. An avenue exists to obtain an eagle take permit and avoid violations under the Bald and Golden Eagle Protection Act; see our regional website above with the most recent Regional guidance and recommendations.

Whooping Cranes

The location of the North Bend Wind Project raises concerns for whooping crane. The project is near the center of the whooping crane migration corridor, near the Missouri River, modeling of whooping crane habitat (Niemuth et al. 2018) indicates areas of highest predicted use by the

cranes exists in the project area, and whooping crane sightings exist both in and adjacent to the project area. Monitoring for whooping cranes and a turbine shutdown plan for when birds are observed near turbines are required for this project if it is to tier to the PEIS. Note that monitoring involves actively searching for the birds. Plans that list prescribed actions only after cranes are sighted incidentally during the course of normal work, rather than as a result of active searches, are contingency plans and do not fit the definition of monitoring. As of our January 28, 2021, agency call, it is not apparent that a monitoring plan currently exists for the North Bend Wind Project. We recommend development of an active monitoring plan, to be implemented during spring and fall whooping crane migrations, be included in the EA in order to tier the project to the PEIS.

Northern Long-eared Bat

It is our understanding that monitoring for northern long-eared bats was conducted at two locations in the project area, acoustic monitoring devices were not placed in/near areas where the bats might occur (despite nine patches and 3000 acres of potentially suitable habitats identified in the project area), and bat calls recorded were not identified to species level. Two potential turbine sites at the North Bend Wind Project are within ½ mile of suitable northern long-eared bat habitat. Proximity of the project to the Missouri River where the northern long-eared bat has been documented may increase the potential occurrence of this species at the project site. The northern long-eared bat has been found at other wind energy sites in North and South Dakota along stream corridors that connect directly to the Missouri River. North Bend Wind may have a similar situation with Chapelle Creek and South Chappelle Creek. Summer survey guidelines are available for the Indiana Bat, and are applicable to the northern long-eared bat; these methods are recommended to determine presence of the northern long-eared bat at North Bend Wind: https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html.

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 Natalie Gates of this office at (605) 224-8693, Extension 227, or contact me at 701-355-8512.

Sincerely,

Drew Becker
Acting Field Supervisor
North and South Dakota Field Offices

cc: Hilary Morey, SDDGFP; Pierre, SD

Emailed attachments:

- January 11, 2017, USFWS letter, North Bend Wind Project
- *Species of Habitat Fragmentation Concern in South Dakota*

Literature Cited

Bakker, K .K. 2020. South Dakota Species of Habitat Fragmentation Concern: Grassland Birds. Report developed for: U.S. Fish and Wildlife Service, South Dakota Ecological Services Field Office, Pierre, SD, 38 pp.

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, J. E. Austin, and M. J. Carlisle. 2018. Opportunistically collected data reveal habitat selection by migrating Whooping Cranes in the U.S. Northern Plains. Condor 120: 343–356.

Rosenberg, K. V., A. M. Dokter, P. J. Blancher, J. R. Sauer, A. C. Smith, P. A. Smith, J. C. Stanton, A. Panjabi, L. Helft, M. Parr, P. P. Marra. 2019. Decline of the North American avifauna. Science 366:120–124.

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

Shaffer, J. A., C. R. Loesch, and D. A. Buhl. 2019. Estimating offsets for avian displacement effects of anthropogenic impacts. Ecological Applications 29(8):e01983. 10.1002/eap.1983.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Dakota Ecological Services

IN REPLY REFER TO:
North Bend Wind Project,
Hughes/Hyde Co.

420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

January 5, 2017

Ms. Christina White
Project Developer
Infinity Renewables
3760 State Street; Ste. 200
Santa Barbara, California 93105

Dear Ms. White:

This letter is in response to your request dated December 2, 2016, for environmental comments regarding the North Bend Wind Project and your Tier 1 evaluation of the project conducted per our 2012 *Land-Based Wind Energy Guidelines*. The size of the facility and its interconnection point have not yet been established. Your letter indicates the project location is in Hyde County, however, per maps included with your letter it appears the current project boundary occurs in both Hyde and Hughes Counties, South Dakota. We appreciate the opportunity to provide information and recommendations early in project development.

Herein we provide 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 on the project area. We have included recommended measures to be applied to various components of a wind farm including meteorological towers, power lines, and the turbines themselves in order to minimize impacts to Service trust resources and to assist you in achieving compliance with Federal laws.

U.S. Fish and Wildlife Service Easements
Per previous contacts by phone and email, you are aware that the U.S. Fish and Wildlife Service's (Service) Huron Wetland Management District (WMD) holds easements on private lands in the proposed project area. The Huron WMD will provide exact locations of easements in the area if they have not already done so. These lands are part of the National Wildlife Refuge System of lands and are of high value for wildlife. Please continue coordination with Ms. Deborah Williams of the Huron WMD regarding impacts to Service easements as a result of your project.

Threatened/Endangered Species
In accordance with section 7(c) of the Endangered Species Act (ESA), as amended, 16 U.S.C. 1531 et seq., we have determined that the following federally listed species may occur in the project area (this list is considered valid for 90 days):

Species	Status	Expected Occurrence
Least Tern (*Sterna antillarum*)	Endangered	Migration
Piping Plover (*Charadrius melodus*)	Endangered	Migration
Whooping Crane (*Grus americana*)	Endangered	Migration
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	Rare seasonal migrant.
Northern Long-eared Bat (*Myotis septentrionalis)*	Threatened	Summer resident, seasonal migrant, known winter resident in Black Hills.

Least Terns and Piping Plovers

Least terns and piping plovers use sparsely vegetated interchannel sandbars, islands, and shorelines for nesting, foraging and brood-rearing. These birds are closely associated with the Missouri River in South Dakota, but overland movements are likely, particularly by piping plovers which may nest at isolated wetlands outside the Missouri River corridor. The extent of overland movements by these species is not known, however, the proximity of your project to the Missouri River likely increases the potential for their onsite occurrence during migration, breeding, or dispersal. Turbine collisions may be possible, and the birds are sensitive to human disturbances during breeding which can limit reproduction. These species do not winter in South Dakota; they typically occur in the state between May 1 and August 15.

Whooping Crane:

The proposed wind farm 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. A map of the portion of the migration corridor that exists in South Dakota and an associated "required reading" document for that corridor map are enclosed. These birds migrate through South Dakota twice annually on their way to northern breeding grounds and southern wintering areas. They occupy 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; more information on this topic is provided herein (see enclosure dated February 4, 2010, and Power Lines section below). Whooping crane mortality via turbine strikes may also pose a risk if the birds utilize habitat at/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 in this area. Additionally, should construction occur during spring or fall migration, the potential for disturbances to 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 farm development. Sightings of whooping cranes at any time should be reported to this office. 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.

Rufa Red Knot

The rufa red knot is a robin-sized shorebird that migrates annually between its breeding grounds in the Canadian Arctic and several wintering regions, including the Southeast United States, the Northeast Gulf of Mexico, northern Brazil, and Tierra del Fuego at the southern tip of South America. Although it is primarily a coastal species, small numbers of rufa red knots are reported annually across the interior United States (i.e., greater than 25 miles from the Gulf or Atlantic Coasts) during spring and fall migration. These reported sightings are concentrated along the Great Lakes, but multiple reports have been made from nearly every interior State, including South Dakota. The red knot likely uses South Dakota habitats similar to those of the least tern and piping plover. The species does not breed in this state, but moves through during spring and fall migrations.

Northern Long-eared Bat

The northern long-eared bat is a medium-sized brown bat listed as threatened under the Endangered Species Act. Northern long-eared bats are known to be present in South Dakota during the summer months, primarily roosting singly or in colonies underneath bark, in cavities or in crevices of both live and dead trees. Some hibernacula have been documented in caves/mines in the Black Hills, the species has been documented in other forested areas in the state during the summer months, and along the Missouri River during migration. White nose syndrome - a fungus affecting hibernating bats - is considered a significant threat to this species, but individuals may be harmed by other activities such as modifications to hibernacula, timber harvest, human disturbance, and collisions with wind turbines. Currently, feathering turbine blades and increasing cut-in speeds are recommended measures to reduce the risk of bat mortality at wind generation facilities. A 4(d) rule has been published that exempts take of Northern long-eared bats in certain circumstances. For more information, see: https://www.fws.gov/Midwest/Endangered/mammals/nleb/index.html.

It is unclear at this time whether a Federal nexus exists for this project (i.e. a Federal agency is funding, permitting or otherwise authorizing the project). If a Federal action agency, or their designated representative exists for this project and determines that the project "may adversely affect" listed species in South Dakota, it should request formal consultation from this office. If a "may affect - not likely to adversely affect" determination is made for this project, it should be submitted to this office for concurrence. If a "no effect" determination is made, further consultation may not be necessary. However, a copy of the determination should be sent to this office.

If no Federal agency is involved with the proposed project and take of federally listed species may occur, ESA compliance may be achieved by private entities via coordination with this office and development of a Habitat Conservation Plan (HCP). Our website provides more information on HCPs at: http://www.fws.gov/endangered/what-we-do/hcp-overview.html.

Eagles

Golden eagles (*Aquila chrysaetos*) are year-round residents in western South Dakota, and may be found throughout the state in winter or during migration. Bald eagles (*Haliaeetus leucocephalus*) occur throughout South Dakota in all seasons. Both species are protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). These laws protect eagles from a variety of harmful actions and impacts. Your letter included Tier 1 information for the proposed wind energy facility, based on our 2012 *Land-based Wind Energy Guidelines*. Note that additional guidance is available for your use regarding development impacts to eagles:

- Our 2007 *National Bald Eagle Management Guidelines* are available online: https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf. We recommend reviewing these guidelines as they advise of circumstances where these laws may apply and assist you in avoiding potential violations.

- In 2009, we published a final rule (50 C.F.R. §§ 22.26 and 22.27) authorizing issuance of permits to take bald and golden eagles, where the take is compatible with the preservation of the bald eagle and the golden eagle, is associated with and not the purpose of an otherwise lawful activity, has been avoided to the maximum degree practicable, and the remaining take is unavoidable. We recently amended the eagle permit regulations; see: https://www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-29908.pdf).

- In 2013, we released our *Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy Version 2* (ECPG) (https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf). This guidance supplements the 2012 *Land-based Wind Energy Guidelines* and explains and supports the requirements of the 2009 eagle permit rule as it applies to wind energy facilities. The ECPG provides specific in-depth guidance for development of an Eagle Conservation Plan to conserve bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. These plans are intended to assist companies with compliance regarding regulatory requirements for programmatic eagle take permits and the associated National Environmental Policy Act process by avoiding and minimizing the risk of taking eagles through evaluation of possible alternatives in siting, configuration, construction, and operation of wind projects.

- South Dakota is part of the Service's Region 6, therefore we have enclosed a document intended to further assist wind companies working in this region as they develop Eagle Conservation Plans: *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6.*

Wetlands

According to National Wetlands Inventory maps (available online at http://wetlands.fws.gov/), numerous wetlands exist within the proposed project area. If a project may impact wetlands or other important fish and wildlife habitats, the Service, in accordance with the National Environmental Policy Act 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 and Other Grassland Birds

The Migratory Birds Division of the Service has published *Birds of Conservation Concern 2008*, which may be found online at: https://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf. This document 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. Your project is located in Bird Conservation Region 11: Prairie Potholes. Primary threats impacting the birds of conservation concern in this area in South Dakota are habitat loss and fragmentation. In accordance with Executive Order 13186 regarding migratory bird protection, we recommend avoidance, minimization and finally, compensation of migratory bird habitats to reduce the impacts to species protected by the MBTA. Compliance with this law may be partially addressed in a Bird and Bat Conservation Strategy (BBCS) (identified within our 2012 *Land-Based Wind Energy Guidelines*). However, a separate mitigation plan that specifically addresses direct and indirect take of birds during and after construction is also recommended, particularly if placement must occur within intact native grasslands. Some species of grassland nesting birds are known to exhibit avoidance behavior relative to wind turbines on the prairie landscape, out to a distance of 300 m or more (which equates to an area approximately 70 acres in size around each turbine), and the level of avoidance increases over time (Shaffer and Buhl 2015). If prairie habitat impacts are unavoidable, we recommend implementing offsetting measures for this impact, such as prairie restoration, establishment of easements, or purchase of fee title lands. We can provide further guidance in this regard if the project progresses.

Meteorological Towers

Meteorological towers constructed in association with wind turbines are often similar in design to typical communication towers: tall, lighted, lattice structured, and guyed. Of primary concern are the collision mortality risks posed to migratory birds as towers are currently estimated to kill 6.8 million birds per year in the United States and Canada (Longcore et al. 2012). We have enclosed Service guidance on this issue, our *2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning*. 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

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 (no 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.

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* has many good suggestions 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: http://www.eei.org/resourcesandmedia/products/Pages/products.aspx, 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: http://www.edmlink.com/raptorvideo.htm.

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 via their website at http://www.eei.org/resourcesandmedia/products/Pages/products.aspx, or by calling 202-508-5000.

Please note that, 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 further offset the potential for 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. This region of the Service (Region 6) has developed *Guidance for Minimizing Effects From Power Line Projects Within the Whooping Crane Migration Corridor* (copy enclosed). Marking of existing lines elsewhere in the species' corridor is recommended. As indicated previously, a copy of the migration corridor of the Aransas-Wood Buffalo Population of whooping cranes is also enclosed for your information.

Bird and Bat Conservation Strategy

As with Eagle Conservation Plans for wind projects in this region, we have developed a document to further assist companies in following our established national guidance on BBCSs. We have enclosed our Region 6 *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. We recommend you develop a BBCS as this project progresses.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act prohibits the taking, killing, possession, and transportation,

(among other actions) of migratory birds, their eggs, parts, and nests, except when specifically permitted by regulations. While the MBTA has no provision for allowing unauthorized take, the Service realizes that some birds may be killed as a result of wind farm operations, even if all known reasonable and effective measures to protect birds are used. The Service's Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries that have taken effective steps to avoid take of migratory birds and by encouraging others to implement measures to avoid take of migratory birds. It is not possible to absolve individuals, companies, or agencies from liability even if they implement bird mortality avoidance or other similar protective measures. However, the Office of Law Enforcement focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent and effective measures to avoid that take. Companies are encouraged to work closely with Service biologists to identify available protective measures when developing project plans and/or avian protection plans, and to implement those measures prior to/during construction, operation, or similar activities.

Summary

Below we reiterate the items discussed above that are pertinent to the proposed project, any associated recommended guidance or related information and suggested actions.

- Service easement properties exist onsite:
    - Coordinate with Huron WMD

- Wind farm guidance:
    - *Land-Based Wind Energy Guidelines*
        - *Bird and Bat Conservation Strategy*
            - USFWS Region 6 *Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*

- Address potential impacts to federally listed (ESA) species:
    - Least Tern
    - Piping Plover
    - Whooping Crane
    - Rufa Red Knot
    - Northern long-eared bat

- Address potential impacts to eagles:
    - MBTA and BGEPA
    - *National Bald Eagle Management Guidelines*

    - *Eagle Conservation Plan Guidance*
        - *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6*

- Address potential impacts to wetlands

- Address migratory bird impacts:
  - MBTA
  - *Birds of Conservation Concern 2008*
  - Mitigative/offsetting measures for habitat avoidance/loss
  - Meteorological Towers:
    - *2013 USFWS Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning*
  - Overhead Power Lines:
    - *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*
    - *Raptors at Risk* video
    - *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*

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.

The Service appreciates the opportunity to provide comments. If you have any questions on these comments, please contact Natalie Gates of this office at (605) 224-8693, Extension 227.

Sincerely,

Scott Larson

Field Supervisor
South Dakota Field Office

LITERATURE CITED

Shaffer, J. A. and D. A. Buhl. 2015. Effects of wind-energy facilities on breeding grassland bird distributions. Conservation Biology 30(1):59-71.

Enclosures

cc: FWSR6/HuronWMD, Deborah Williams

Required Reading for Users of the Whooping Crane Tracking Project Database

CWCTP-GIS data or derivatives thereof (e.g., shape files, jpegs) may not be distributed or posted on the Internet without inclusion of this explanatory document.

The Cooperative Whooping Crane Tracking Project (CWCTP) was initiated in 1975 to collect a variety of information on whooping crane migration through the U.S. portion of the Central Flyway. Since its inception in 1975, a network of Federal and State cooperating agencies has collected information on whooping crane stopovers and funneled it to the U.S. Fish and Wildlife Service (Service) Nebraska Field Office where a database of sighting information is maintained. The WCTP database includes a hardcopy file of whooping crane sighting reports and a digital database in various formats based on those sighting reports. A subset of the database along with sight evaluation (habitat) information collected between 1975 and 1999 was summarized by Austin and Richert (2001).*

In the Fall of 2007, the CWCTP database was converted to a GIS format (ArcGIS 9.2) to facilitate input, updates, and provide output options in a spatial context. During this process, inconsistencies between the digital database and sighting report forms were identified and corrected. Location information in various formats was derived from data in the corrected database, and new fields were added to the corrected database (e.g., latitude and longitude in decimal degrees, an accuracy field, and location comment field). The attached updated file contains observation data through the 2008 Spring migration and is referred to as the CWCTP-GIS (2008a).

The appropriate use of the CWCTP-GIS is constrained by limitations inherent in both the GIS technology and bias inherent in any database comprised of incidental observations. Without an understanding of the assumptions and limitations of the data, analyses and output from the spatial database can result in faulty conclusions. The following assumptions and characteristics of the database are crucial to interpreting output correctly. Other, unknown biases also may exist in the data.

- First and foremost, the database is comprised of incidental sightings of whooping cranes during migration. Whooping cranes are largely opportunistic in their use of stopover sites along the Central Flyway, and will use sites with available habitat when weather or diurnal conditions require a break in migration. Because much of the Central Flyway is sparsely populated, only a small percent of stopovers are observed, those observed may not be identified, those identified may not be reported, and those reported may not be confirmed (only confirmed sightings are included in the database). Based on the crane population and average flight distances, as little as 4 percent of crane stopovers are reported. *Therefore, absence of documented whooping crane use of a given area in the Central Flyway does NOT mean that whooping cranes do not use that area or that various projects in the vicinity will not potentially adversely affect the species.*

- In the database, the location of each sighting is based on the first observation of the crane group even though, in many cases, the group was observed at multiple locations in a local area. For this and other reasons described below, only broad-scale analyses of whooping crane occurrences are appropriate. GIS **cannot** be legitimately used with this database for measurements of distance of whooping crane groups from various habitat types or

geographic entities (i.e., using various available GIS data layers). In addition, point locations of whooping crane groups known to roost in various wetlands or rivers may not coincide with those wetlands. The user needs to refer to the attribute table or contact the Nebraska Field Office, USFWS, for more specific information on individual observations.

- Precision of the data: When a "Cadastral" location (Township, Range, Section, ¼-Section) was provided on the original sighting form, the geographic point representing that sighting was placed in the center of the indicated Section or ¼-Section and the latitude and longitude of that point were recorded in degrees, minutes, and seconds (DMS). These records are indicated by "Cadastral" in the accuracy field. When Cadastral information was lacking, DMS latitude and longitude were derived by adding seconds (00) to the degrees and minutes of latitude and longitude originally estimated and recorded on the observation form. These observations are identified by "Historic" in the accuracy field. GPS latitude and longitude were used when available, but when none of the above were reported, the point was placed based on text description of location (e.g., 3 miles N of Denton), and identified in the accuracy field with "Landmark". DMS latitude and longitude were converted to decimal degrees, which were used to populate the GIS data layer.

- Bias: Bias is an inherent characteristic of any data obtained through incidental sightings. That is, for the subset of crane use that is recorded, relatively more sightings are recorded in areas such as national wildlife refuges where knowledgeable observers are available to look for cranes and report their presence. Conversely, areas of high use may not be documented due to the absence of observers. However, use of areas such as national wildlife refuges is also determined to some extent by habitat management on the areas and availability of alternative habitat in the region. For these reasons, representations of the crane migration corridor based on percent of confirmed sightings should be interpreted conservatively, particularly in Oklahoma and Kansas where a high percent of sightings occur on a few national wildlife refuges. Whooping crane migration patterns and subsequent observations were also likely influenced by regional weather patterns such as wind and precipitation, as well as local farming practices which influence food availability. Factors such as these vary among regions and years and were not considered in this database.

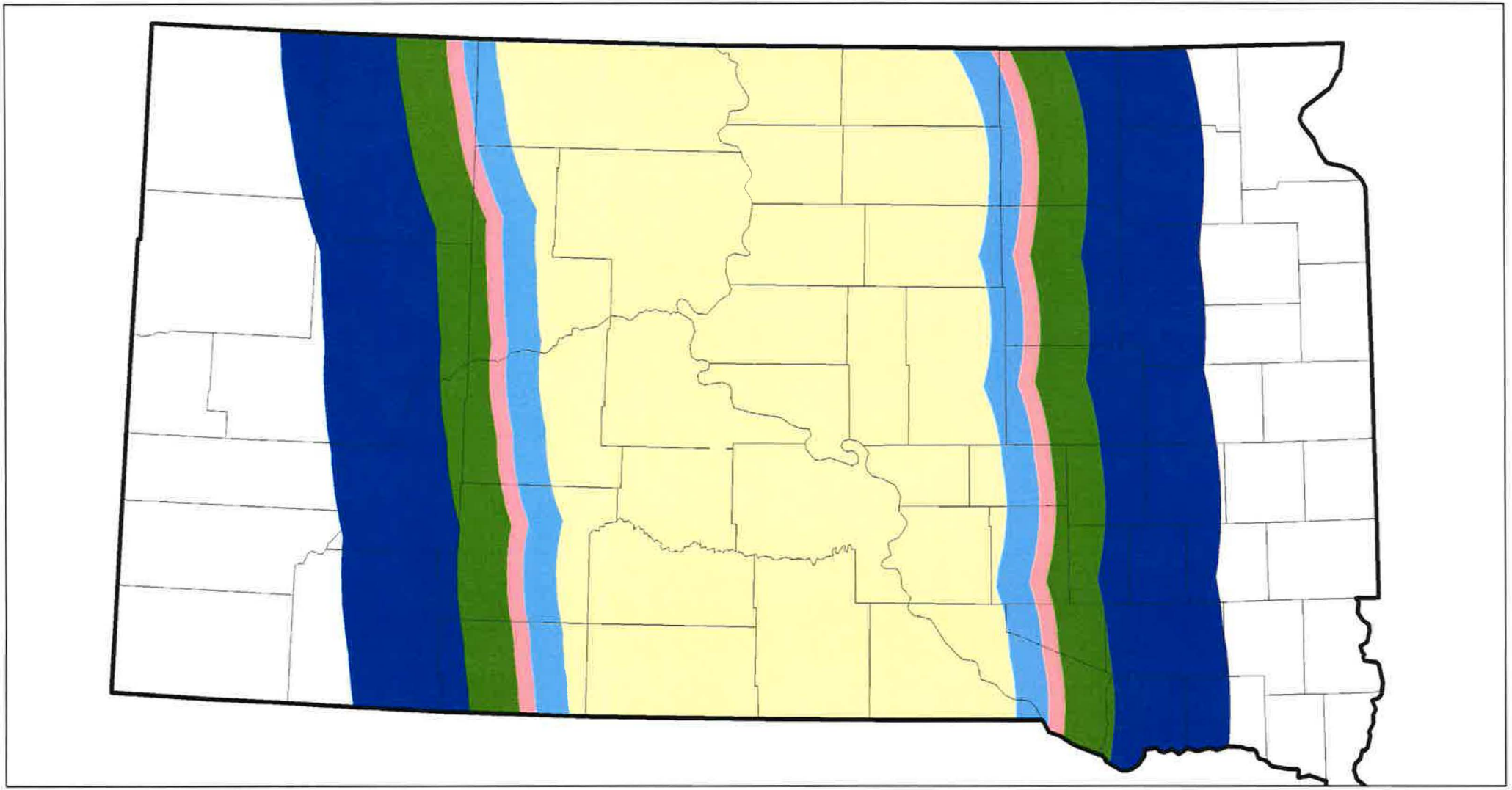
The CWCTP-GIS will be updated annually following the Fall migration and distributed to State cooperators and Fish and Wildlife Service Ecological Services Field Offices in the Central Flyway. Contact information for these offices can be found at http://www.fws.gov. Federal regulatory agencies and project proponents should contact the appropriate Fish and Wildlife Service for help in evaluating potential project impacts to the endangered whooping crane.

* Austin, E.A. and A.L. Richert. 2001. A comprehensive review of observational and site evaluation data of migrant whooping cranes in the United States, 1943-99. U.S. Geological Survey. Northern Prairie Wildlife Research Center, Jamestown, North Dakota, and State Museum, University of Nebraska, Lincoln, Nebraska. 157 pp.

U.S. Fish & Wildlife Service

South Dakota Whooping Crane Migration Corridor Using State Sightings

Central Flyway of the United States



Produced for Ecological Services
Grand Island, NE
Current to: 2008
Basemap (Date): South Dakota Counties
Meridian:
File:

0 30 60 90 120 Miles
0 40 80 120 160 Kilometers

Legend

- 75% (130mi Corridor)
- 80% (150 mi Corridor)
- 85% (160 mi Corridor)
- 90% (190 mi Corridor)
- 95% (130 mi Corridor)

UTM NAD 83
Zone 14

U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region

Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6

Purpose and Expectations:

The U.S. Fish and Wildlife Service (USFWS) Eagle Conservation Plan Guidance, Module 1, Land-based Wind Energy , Version 2 (ECPG)[1] provides specific in-depth guidance for developing an Eagle Conservation Plan (ECP) for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities. The ECP describes and documents how the project developer and/or operator intends to comply with the regulatory requirements for programmatic eagle take permits and the associated NEPA process by avoiding and minimizing the risk of taking eagles by evaluating possible alternatives in siting, configuration, construction, and operation of wind projects. The ECP should provide detailed information on siting, configuration, construction, and operational alternatives that avoid and minimize eagle take to the point where any remaining take is unavoidable and, if required, mitigates that remaining take to meet the statutory preservation standard. An ECP provides support for an application for a programmatic eagle take permit.

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 an ECP. This guidance applies equally to both bald and golden eagles. While developing an ECP and applying for a programmatic eagle take permit is voluntary, take of eagles under the Bald and Golden Eagle Protection Act is prohibited without a permit; therefore, we encourage developers/operators of wind projects that may take eagles to develop an ECP and apply for a programmatic eagle take permit. Throughout the process of developing an ECP there should be regular communication between the project developer and/or operator and USFWS personnel (Ecological Services and Migratory Bird Management Offices). This can include emails, conference calls, and meetings involving review of survey data, review and editing of draft documents, joint development of avoidance and minimization measures, review and discussion on model runs, joint work on calculations for compensatory mitigation when required, etc.

[1] Available at http://www.fws.gov/windenergy/PDF/Eagle%20Conservation%20Plan%20Guidance-Module%201.pdf

ECP Outline Recommendations:

I. Introduction and Purpose: Include an explanation of the relationship between the ECP and other related documents, such as NEPA reviews for the project (EA or EIS), Bird and Bat Conservation Strategy (BBCS), etc.

II. Regulatory Framework

A. Laws and Regulations- Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) – Use applicable default language taken from the USFWS Wind Energy Guidelines (WEG; USFWS 2012, pp. 2-3)

B. State or Tribal Wildlife laws and other Federal laws that apply

III. Project Description

A. Describe all project components, including structures and infrastructure (wind turbines, roads, buildings, met towers, distribution and transmission lines, substations, etc.).

B. Provide a map of project area with project area boundary delineated.

C. Provide a map of topographic relief for the project area.

D. Provide a map of proposed final wind turbine layout, roads, distribution and transmission lines, substations, buildings, met towers (permanent), etc.

E. Provide a map of vegetation classes and aquatic features for the project, including a summary table with information on the acreage or linear miles of each class or feature present and how many acres/miles will be lost or degraded by project development.

IV. Initial Site Assessment (ECPG Stage 1)

A. Brief summary of available sources reviewed for the project site relative to eagles, including reports, publications, GIS maps, agency files, species experts, on-line databases, and initial site visit(s).

B. Were alternate sites considered/evaluated, and if so what criteria were used to compare sites?

C. Address all questions in ECPG Appendix B on page 51. Clearly identify the process used to address these questions. Based on the responses to these questions develop a map that categorizes eagle risk for all sites initially considered for development.

D. Categorize Eagle Risk for Stage 1 (ECPG Appendix B) using ECPG criteria on pp. 25-26.

V. Site-specific Surveys and Assessment (ECPG Stage 2): This section should address the questions in ECPG Appendix C, page 53.

A. Eagle Use

1. Thoroughly describe what types of eagle-use surveys were conducted, the survey protocols used, the number of surveys completed, and when surveys were conducted (years, seasonal coverage, time of day, etc.). Survey types may include, but are not limited to, eagle point count surveys, flight paths, migration monitoring, behavioral studies, and telemetry. If any survey protocols changed during these surveys, explain the changes and provide a rationale for them. If survey types and protocols differed from Appendix C in the ECPG, describe what the differences were and provide a rationale.

2. Include a map of points used for eagle use surveys and an estimate of the percentage of the project area and project footprint they cover.

3. Provide results and thorough details on all pre-construction site-specific surveys that were conducted by year and/or season. Summarize survey results in the ECP. If annual monitoring reports are available for the project, they may be included in an Appendix.

4. Provide results from any other field work to identify migration corridors, roost sites, foraging areas, wintering areas, etc., not mentioned above.

B. Eagle Nests

1. Describe what is known about eagle nesting in the project area prior to any project-related surveys; include a map showing the locations of all historic eagle nests.

2. Thoroughly describe all raptor/eagle nest surveys conducted (i.e. aerial, ground searches, etc.), including methodology, timing and frequency of the surveys; provide a map of the area searched for nests (i.e., how far out from the project area and project footprint did you survey for nests); describe condition of all eagle nests, provide photographs of eagle nest sites, provide outcomes for each eagle nest by species (i.e., tending, occupancy, productivity, and nest success); and provide project-area mean inter-nest distance for eagles by species (if calculated, provide methods used for that calculation).

C. Eagle Prey Base Assessment

1. Thoroughly describe methodologies/protocols used to assess the eagle prey base (especially areas with concentrated prey resources).

2. Provide map(s) indicating areas with concentrated prey resources (e.g., prairie dog towns, leks, ungulate wintering/parturition areas, etc.) in relation to proposed final turbine layout. Map rivers, lakes and reservoirs where bald eagles forage on fish and waterfowl, and map areas of open water available during winter, if any.

3. Describe potential anthropogenic sources of eagle prey for the project area including cattle or sheep grazing operations, road kill carcasses on roads, gut piles from hunting seasons, etc.

D. Eagle Risk Categorization for Stage 2

1. Describe how the eagle use, eagle nest, and eagle prey base assessment data were used to assess the eagle risk category. Use ECPG criteria on pgs. 25-26.

VI. Avoidance and Minimization of Risks in Project Siting (ECPG Stage 4)

A. Project Planning/Design Phase: site selection

1. Were alternative sites considered for development and was there consideration for reducing eagle/raptor/migratory bird risk in this process?

2. Were wind turbines removed and/or relocated from the initial project design, and if so, why?

3. Were any project roads, power lines, or buildings removed or relocated from the initial project design, and if so, why?

4. Document all key adjustments made to the initial project design, why they were made, what information was used to make changes, and any subsequent draft designs. Thorough descriptions should accompany any maps.

5. Were the USFWS Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities (April, 2013) followed in the project design phase? If not, provide a rationale.

VII. Predicting Eagle Fatalities (ECPG Stage 3)

A. Describe the methods and assumptions used. If these differ from Appendix D in the ECPG, describe the differences and provide a rationale.

1. Provide all input data used.

2. Present results from Eagle Modeling by Eagle Species

a. USFWS eagle fatality model

b. Outcomes from other models (if any)

B. Other Eagle Risk Assessment

1. Disturbance/Displacement Assessment

2. Assessment of Project-level Take: Complete this analysis consistent with ECPG Appendix F.

3. Local Area Population (LAP) Analysis

4. Cumulative Impacts Analysis – Comprehensive assessment of known factors impacting eagles, eagle habitat, prey base, etc., within the sphere of the LAP. This includes known eagle mortality from all other factors within the LAP, including existing wind facilities, power lines, poisoning, etc. Proponent will need to work jointly with USFWS on this section. Refer to ECPG Appendix F.

C. Eagle Risk Categorization for Stage 3. Use ECPG criteria on pp. 25-26.

VIII. Additional Avoidance and Minimization of Risks, ACP's, and Compensatory Mitigation (ECPG Stage 4)

A. Construction Phase Best Management Practices (all that apply from USFWS 2012, WEG Chapter 7)

B. Operational Phase

1. Best Management Practices (Including, at a minimum, those from USFWS 2012, WEG Chapter 7 which apply to eagles)

2. Experimental Advanced Conservation Practices, per ECPG Appendix E.

C. Compensatory Mitigation

1. Calculations of needed mitigation for your project using Appendix G of ECPG; thoroughly describe calculations that were used to generate results.

2. Present a plan for the implementation of compensatory mitigation, including the type of compensatory mitigation that will be implemented. How was the type of compensatory mitigation being proposed actually selected? The plan should demonstrate the project developer's/operator's ability to complete it. Where will the compensatory mitigation be completed relative to relevant Local Area Population, Bird Conservation Regions (ECPG pg. 38), Eagle Management Units (ECPG pg. 39), etc.? What is the expected life of the compensatory mitigation action(s)?

3. Effectiveness monitoring: describe monitoring approach, duration, etc.

4. Adaptive Management, including commitments to change operations in response to monitoring outcomes as applicable. (See ECPG pg. 28 and ECPG Appendix A)

IX. Calibration and Updating of the Fatality Prediction and Continued Risk Assessment (ECPG Stage 5)

A. Post-construction monitoring (eagle/avian surveys)

1. Describe the methodology/protocols to be used for carcass surveys for eagles/migratory birds (including searcher efficiency trials and carcass persistence trials). These will be developed jointly by the developer/operator and the USFWS per ECPG Appendix H.

Note: General considerations for design of the fatality monitoring program include:

- Kunz et al. (2007). Assessing impacts of wind-energy development on nocturnally active birds and bats: a guidance document. Journal of Wildlife Management 71: 2449-2486.
- Strickland et al. (2011). Studying Wind Energy/Wildlife Interactions: a Guidance Document. Prepared for the National Wind Coordinating Collaborative, Washington, D.C., USA, and relevant points from USFWS WEG pp. 35-37.

2. Surveys of eagle/raptor nests (occupancy, productivity, and success)

- Describe methods to be used, number of years surveys will be conducted, area to be surveyed, etc.

3. Disturbance Monitoring: Document any post-construction monitoring of eagle nesting territories and communal roost sites to evaluate disturbance effects. (See ECPG Appendix H, pg. 98). Provide details of the protocols and methods to be used for such monitoring.

4. Describe eagle use/migratory bird surveys that will be conducted post-construction. Provide methodology, timing and frequency of survey effort, location of survey points,

percent of area that will be surveyed, number of surveys, etc. If such surveys will not be conducted, provide a rationale.

5. If there will be an incidental (i.e., informal) wildlife monitoring system established, describe the system, including personnel that will implement it, data forms to be used, how the reporting process will work, and how conflicts with informal monitoring and formal carcass surveys will be avoided.

X. Permits

A. For USFWS programmatic eagle take permits, conditions will be provided by USFWS.

B. Other USFWS Permit Types: Other Migratory Bird Treaty Act (MBTA) permits may be required for project management. These include, but are not limited to, nest relocation, temporary possession, depredation, salvage/disposal, and scientific collection.

1. Identify MBTA permit types the project is likely to apply for. Also describe the process which will be used to obtain and comply with all necessary MBTA take permits for the project.

2. Other State or Tribal wildlife permits

XI. References/Literature Cited

What not to include in your ECP:

-Literature review or summary of effects of wind turbines on eagles/migratory birds/wildlife

-Comparisons of predicted eagle take at your project with other on-line wind energy facilities

U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region

Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects

A Bird and Bat Conservation Strategy (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 wind project BBCS should be updated regularly as new information, including monitoring of project impacts and technical advancements, becomes available. A BBCS is a strategy for assessing impacts, avoiding/minimizing impacts, guiding current actions, and planning future impact assessments and actions to conserve birds and bats. It provides reference to project history and previous impact assessments and actions. A BBCS contains the studies, analyses, and reasoning leading to project-specific decisions and implementation of actions. The 2012 U.S. Fish and Wildlife Service (USFWS) Land-Based Wind Energy Guidelines (WEG) provides comprehensive guidance on the process for addressing bird and bat conservation at all stages of wind energy development.

Decisions made through the BBCS framework include determining if there is a need to develop other bird and bat conservation plans such as an Eagle Conservation Plan (2013 USFWS Eagle Conservation Plan Guidance) or Habitat Conservation Plan (Endangered Species Act, section 10(a)(1)(B). Specific surveys needed to support those plans may be most effectively conducted in tandem with surveys to develop the BBCS.

Wind energy projects currently in operation which have not been planned, developed, or operated following a BBCS framework, will, at a minimum, need to supplement assessments of impacts to birds and bats with Post-Construction Assessments and Adaptive Management Studies, working closely with the USFWS.

The following outline is provided by USFWS Region 6 as a guide for developing and organizing a BBCS.

Outline

I. Statement of Purpose
Identify how the BBCS functions as a strategy to address bird and bat conservation during all project phases.

II. Regulatory Framework

A. Fish and Wildlife Laws, Regulations, and Policies
Include the language provided and do not reference USFWS law enforcement or prosecutorial discretion in the BBCS.

1. Migratory Bird Treaty Act (MBTA)
The MBTA is the cornerstone of migratory bird conservation and protection in the United States. The MBTA implements four treaties that provide for international protection of migratory birds. It is a strict liability statute, meaning that proof of intent, knowledge, or negligence is not an element of an MBTA violation. The statute's language is clear that actions resulting in a "taking" or possession (permanent or temporary) of a protected species, in the absence of a USFWS permit or regulatory authorization, are a violation. The MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill ... possess, offer for sale, sell ... purchase ... ship, export, import ...transport or cause to be transported... any migratory bird, any part, nest, or eggs of any such bird ..." 16 U.S.C. 703. The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" 50 CFR 10.12. The USFWS maintains a list of all species protected by the MBTA at 50 CFR 10.13. This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

2. Bald and Golden Eagle Protection Act (Eagle Act)
Under authority of the Eagle Act, 16 U.S.C. 668–668d, bald eagles and golden eagles are afforded additional legal protection. The Eagle Act prohibits the take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof, 16 U.S.C. 668. The Eagle Act also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," 16 U.S.C. 668c, and includes criminal and civil penalties for violating the statute. See 16 U.S.C. 668. The term "disturb" is defined as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury to an eagle, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior, 50 CFR 22.3.

3. Endangered Species Act (ESA)
The ESA directs the USFWS to identify and protect endangered and threatened species and their critical habitat, and to provide a means to conserve their ecosystems. Among its other provisions, the ESA requires the USFWS to assess civil and criminal penalties for violations of the Act or its regulations. Section 9 of the ESA prohibits take of federally-listed species. Take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" 16 U.S.C. 1532. The term "harm" includes significant habitat alteration which kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering, 50 CFR 17.3. Projects involving Federal lands, funding or authorizations will require consultation between the Federal agency and the USFWS, pursuant to section 7 of the ESA. Projects without a

Federal nexus should work directly with USFWS to avoid adversely impacting listed species and their critical habitats.

B. Other Federal, State, County, Local and Tribal Laws, Regulations, and Policies

III. Project Description

Provide descriptions and maps of all project elements (e.g., roads, power lines, met towers) during all phases of pre-construction, construction, operation, maintenance, and decommissioning. Describe and provide maps of the project impact area (inside and outside project area boundary) where the project may potentially impact birds, bats and their habitats..

IV. Project History of Bird and Bat Presence, and Risk Assessments

A. Preliminary Site Evaluation (WEG Tier 1)

1. Site Description
   Describe proposed wind energy site(s) within the broader geographic landscape of bird and bat distribution, use, and habitats.

2. Decision to Abandon Site(s) or Select Site(s) for Additional Assessments in WEG Tier 2
   Describe evaluations of sites by answering questions in WEG Tier 1, Chapter 2: (1) Are species or habitats of concern present? (2) Does the landscape contain areas precluded by law or areas that are designated as sensitive? (3) Are there critical areas of wildlife congregation? (4) Is there potential to fragment large intact habitats for species that are sensitive to habitat fragmentation? Based on the answers to these questions, describe the decision to abandon sites or identify project modifications to effectively avoid and minimize potential adverse impacts.

B. Site-specific Characterization and Decisions (WEG Tier 2)
   Continue landscape-scale assessments and include site reconnaissance evaluations.

1. Site Description
   Provide additional site information obtained through more detailed Tier 2 assessment.

2. Evaluation and Decisions

   (a) Abandon Site or Advance to Field Surveys to Support a BBCS
   Describe evaluations of sites by answering the four questions from WEG Tier 1, plus questions from WEG Tier 2, Chapter 3: (5) Are plant communities or vegetation habitats of conservation concern present? (6) What species of birds and bats are likely to use the proposed site? (7) Is there potential for significant adverse impacts to those species? If there is a high probability of significant adverse impacts that cannot be avoided or minimized, the site should be abandoned.

   (b) Determine Need for Other Bird or Bat Conservation Plans
   Describe determination of need, and reference field surveys, for an Eagle Conservation Plan) or Habitat Conservation Plan.

C. Field Studies to Document Wildlife and Habitat, and Predict Project Impacts (WEG Tier 3)
   Describe the goals, methods, results, analyses and conclusions of field studies, and include maps to assess the presence of, and project risks to, birds and bats and their habitats. Describe potential project impacts by answering the seven questions from WEG Tier 1 and Tier 2, plus questions

from WEG Tier 3, Chapter 4: (8) What are the distributions, abundance, behaviors and site-use of birds and bats, and what project elements expose these species to risk? (9) What are the potential risks to individuals and local populations of birds and bats and their habitats? (10) How can impacts to birds and bats be avoided and minimized? (11) What studies should be initiated and continued post-construction to evaluate predictions of impacts to birds and bats? Describe the level of scientific rigor of studies, and coordination and sharing of data with USFWS field offices.

1. Bird and Bat Status Assessments
   Describe how assessment studies were of sufficient duration and intensity to ensure adequate data were collected to accurately characterize bird and bat use of the area.

   (a) Bird and Bat Species Presence
      (i) Species Presence by Season
      (ii) Species of Concern (WEG, p. 63)
      (iii) Species of Habitat Fragmentation Concern (WEG, p. 63)

   (b) Bird and Bat Habitats
      Describe, quantify, and map.

   (c) Bird and Bat Use Patterns
      Describe, quantify and map survey data (e.g., from point counts, acoustic surveys, and migration surveys).

   (d) Baseline (Pre-construction) Habitat Management
      Describe the management of habitat at the proposed site prior to construction.

2. Bird and Bat Risk Assessment and Decisions Based on Assessments
   Describe assessment methods and assumptions.

   (a) Project Risk Assessment

      (i) Direct Impacts:
         Describe direct project impacts on birds and bats (e.g., wind turbine collisions, powerline electrocutions and collisions, vehicle collisions, barotrauma, disturbance, displacement, behavioral changes, and habitat loss, degradation and fragmentation).

      (ii) Indirect Impacts
         Describe indirect project impacts on birds and bats (e.g., loss of population vigor, attraction to modified habitats, and increased exposure to predation).

      (iii) Cumulative Impacts

   (b) Risk Assessment Decisions

      (i) Decision Criteria to either Abandon Site or Advance Project

      (ii) Decision of Need for Other Bird and Bat Conservation Plans
         Describe decision to develop other plans such an Eagle Conservation Plan, Habitat Conservation Plan, Candidate Conservation Plan with Assurances, or a plan to address state-managed species.

V. Conservation Measures to Avoid and Minimize Adverse Impacts (during project construction, operation, maintenance, and decommissioning)
Describe conservation measures and when and how each measure will be applied. Some measures will apply to all project phases, but other measures will only apply to specific phases of the project (e.g., construction versus operation). See WEG Chapter 7 for examples. While the following topics in the outline should all be included, the organization of this section may be modified (e.g., conservation measures may be organized by project phase, project elements, or category of conservation action).

A. Measures to Avoid/Minimize Direct Impacts

1. Fatalities

2. Disturbance/Displacement/Behavioral Changes

(a) Nest/Roost/Hibernacula Management
Describe how impacts to nests and nesting attempts will be avoided or minimized during all phases of the project. For example, constructing outside the breeding season or using nest buffers may be appropriate during construction, but measures to discourage or prevent birds from nesting in a sub-station may be needed during operation.

(b) Management of Other Habitat-use Areas (e.g., Foraging Areas)

3. Habitat Loss/Degradation/Fragmentation

B. Measures to Avoid/Minimize Indirect Impacts
For example, address measures to avoid loss of population vigor and increased exposure to predation.

C. Measures to Offset and/or Compensate for Habitat-Related Impacts

D. Measures to Avoid and Minimize Other Identified Project-Specific Risks

VI. Post-construction Studies to Estimate Impacts (WEG Tier 4)
Provide assessments of ongoing project risks to birds and bats and the effectiveness of conservation measures. Describe study methods and the level of survey effort (i.e., how many of each survey type was conducted, over what time period and seasons, and location and geographic coverage).

A. Carcass Surveys

B. Nest/Roost/Hibernacula Surveys

C. Habitat Surveys

D. Other Surveys
A need for surveys, such as point counts, acoustic surveys, mist net surveys, may be identified through measuring project impacts.

VII. Other Post-construction Studies and Adaptive Management (WEG Tier 5)
Describe adaptive management studies which may (1) be planned during development of the BBCS via measuring impacts during post-construction and the discovery that conservation measures are not adequate to avoid and minimize impacts, or may (2) address unplanned or unforeseen impacts. Describe the actions taken during the following steps.

A. Evaluate need for action (1) based on assessing effectiveness of conservation measures through post-construction monitoring of impacts, or (2) as determined by unforeseen impacts or circumstances.

B. Identify potential technical/operational option(s) to avoid and minimize impacts (e.g., via scientific literature or industry innovation).

C. Present technical/operational option(s) to agency/authority for review to determine if it merits field testing or application. If, after review, field testing or application is not merited, go to step B. If field testing or application is merited, go to step D.

D. Field test or apply technical/operational option(s), with agency/authority concurrence of methods, in settings which will not increase adverse impacts to birds and bats nor will result in impacts exceeding those allowable in permits or other project-related plans.

E. Evaluate and report effectiveness of technical/operational option(s) with review by agency/authority. If ineffective, go to step B. If effective go to step F.

F. Apply effective avoidance and minimization measures.

G. Monitor effectiveness (update post-construction monitoring in BBCS, if necessary, with agency/authority review).

H. Update BBCS Section on Conservation Measures, return to step A to evaluate need for further action.

VIII. Project Permits Addressing Birds and Bats

Identify need for permits. For example, migratory bird permits would be required for active nest relocation, temporary possession, depredation, salvage/disposal, and scientific collection.

A. Bird and Bat Permits
Identify permits needed for project construction, operation, and/or maintenance.

B. Agency and Process for Permit Issuance
Identify the responsive agency and processes to apply for and comply with permits.

IX. Reporting Formats and Schedule

Describe formats and schedule for reporting data and study results to responsive agencies.

A. Preconstruction Survey Data

B. Operation/Post-construction Monitoring

C. Adaptive Management

D. Permits

X. Personnel Training

Describe process and curriculum for providing personnel and contractors with education about wildlife laws; processes to follow upon finding injured birds, bats or carcasses; and actions they can take to avoid impacts to birds and bats.

XI. Contacts/Key Resources

A. List of Contacts and Key Resources

B. Coordination Processes
Who/when/where a company should initiate contact and under what circumstances.

XII. References and Literature Cited

XIII. Appendices

A. Baseline Survey Reports

B. Post Construction Reports

1. Carcass Monitoring
2. Nest/Roost/Hibernacula Surveys
3. Habitat Surveys
4. Other Surveys: For example, point counts, acoustic surveys, mist net surveys

C. Adaptive Management Studies

D. Other Plans Guiding Bird and Bat Conservation (e.g., ECP)

E. Permits Related to Birds and Bats

2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning –

Suggestions Based on Previous USFWS Recommendations to FCC Regarding WT Docket No. 03-187, FCC 06-164, Notice of Proposed Rulemaking, "Effects of Communication Towers on Migratory Birds" (2007), Docket No. 08-61, FCC's Antenna Structure Registration Program (2011), Service 2012 Wind Energy Guidelines, and Service 2013 Eagle Conservation Plan Guidance

Submitted by:

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[Comm Tower 2013 Revised Guidance-to FCC-AMM.docx]

1. Collocation of the communications equipment on an existing communication tower or other structure (e.g., billboard, water and transmission tower, distribution pole, or building mount) is strongly recommended. Depending on tower load factors and communication needs, from 6 to 10 providers should collocate on an existing tower or structure provided that frequencies do not overlap/"bleed" or where frequency length or broadcast distance requires higher towers. New towers should be designed structurally and electronically to accommodate the applicant's antenna, and antennas of at least 2 additional users – ideally 6 to 10 additional users, if possible – unless the design would require the addition of lights and/or guy wires to an otherwise unlit and/or unguyed tower. This recommendation is intended to reduce the number of towers needed in the future.

2. If collocation is not feasible and a new tower or towers are to be constructed, it is strongly recommended that the new tower(s) should be not more than 199 feet above ground level (AGL), and that construction techniques should not require guy wires. Such towers should be unlighted if Federal Aviation Administration (FAA) regulations and lighting standards (FAA 2007, Patterson 2012, FAA 2013 lighting circular anticipated update) permit. Additionally, the Federal Communications Commission (FCC) through recent rulemaking now requires that new towers ≥ 450 ft AGL contain no red-steady lights. FCC also recommends that new towers 350-450 ft AGL also contain no red-steady lights, and they will eventually recommend that new towers < 350 ft AGL convert non-flashing lights to flash with existing flashing lights. LED lights are being suggested as replacements for all new construction and for retrofits, with the intent of future synchronizing the flashes. Given these dynamics, the Service recommends using lattice tower or monopole structures for all towers < 200 ft AGL and for taller towers where feasible. The Service considers the less than 200 ft AGL option the "gold standard" and suggests that this

is the environmentally preferred industry standard for tower placement, construction and operation – i.e., towers that are unlit, unguyed, monopole or lattice, and less than 200 ft AGL.

3. If constructing multiple towers, the cumulative impacts of all the towers to migratory birds – especially to Birds of Conservation Concern (FWS 2008) and threatened and endangered species, as well as the impacts of each individual tower, should be considered during the development of a project.

4. The topography of the proposed tower site and surrounding habitat should be clearly noted, especially in regard to surrounding hills, mountains, mountain passes, ridge lines, rivers, lakes, wetlands, and other habitat types used by raptors, Birds of Conservation Concern, and state and federally listed species, and other birds of concern. Active raptor nests, especially those of Bald and Golden Eagles, should be noted, including known or suspected distances from proposed tower sites to nest locations. Nest site locations for Golden Eagles may vary between years, and unoccupied, inactive nests and nest sites may be re-occupied over multiple years. The Service's 2013 Eagle Conservation Plan Guidance, Module 1, Land-based Wind Energy, Version 2, available on our website, is a useful document (USFWS 2013).

5. If at all possible, new towers should be sited within existing "antenna farms" (i.e., clusters of towers), in degraded areas (e.g., strip mines or other heavily industrialized areas), in commercial agricultural lands, in Superfund sites, or other areas where bird habitat is poor or marginal. Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., state or federal refuges, staging areas, rookeries, and Important Bird Areas), in known migratory, daily movement flyways, areas of breeding concentration, in habitat of threatened or endangered species, or key habitats for Birds of Conservation Concern (FWS 2008). Disturbance can result in effects to bird populations which may cumulatively affect their survival. The Service has recommended some disturbance-free buffers, e.g., 0.5 mi around raptor nests during the nesting season, and 1-mi disturbance free buffers for Ferruginous Hawks and Bald Eagles during nesting season in Wyoming (FWS WY Ecological Services Field Office, referenced in Manville 2007:23). The effects of towers on "prairie grouse," "sage grouse," and grassland and shrub-steppe bird species should also be considered since tall structures have been shown to result in abandonment of nest site areas and leks, especially for "prairie grouse" (Manville 2004). The issue of buffers is currently under review, especially for Bald and Golden Eagles. Additionally, towers should not be sited in areas with a high incidence of fog, mist, and low cloud ceilings.

6. If taller (> 199 ft AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white strobe or red strobe lights (red preferable since it is generally less displeasing to the human eye at night), or red flashing incandescent lights should be used at night, and these should be the minimum number, minimum intensity (< 2,000 candela), and minimum number of flashes per minute (i.e., longest duration between flashes/"dark phase") allowable by the FAA. The use of solid (non-flashing) warning lights at night should be avoided (Patterson 2012, Gehring et al. 2009) – see recommendation #2 above. Current research indicates that solid red lights attract night-migrating birds at a much higher rate than flashing lights (Gehring et al. 2009, Manville 2007, 2009). Recent research

indicates that use of white strobe, red strobe, or red flashing lights alone provides significant reductions in bird fatalities (Patterson 2012, Gehring et al. 2009).

7. Tower designs using guy wires for support, which are proposed to be located in known raptor or waterbird concentrations areas, daily movement routes, major diurnal migratory bird movement routes, staging areas, or stopover sites, should have daytime visual markers or bird deterrent devices installed on the wires to prevent collisions by these diurnally moving species. The efficacy of bird deterrents on guy wires to alert night migrating species has yet to be scientifically validated. For guidance on markers, see Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines -- State of the Art in 2006.* Edison Electric Institute, APLIC, and the California Energy Commission. Washington, DC, and Sacramento, CA. 207 pp, and APLIC. 2012. *Reducing Avian Collisions with Power Lines -- the State of the Art in 2012.* Edison Electric Institute and APLIC. Washington, DC. 159 pp. Also see www.aplic.org, www.energy.ca.gov, or call 202-508-5000.

8. Towers and appendant facilities should be designed, sited, and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Several shorter, un-guyed towers are preferable to one, tall guyed, lighted tower. Road access and fencing should be minimized to reduce or prevent habitat fragmentation, disturbance, and the creation of barriers, and to reduce above ground obstacles to birds in flight.

9. If, prior to tower design, siting and construction, if it has been determined that a significant number of breeding, feeding and roosting birds, especially of Birds of Conservation Concern (FWS 2008), state or federally-listed bird species, and eagles are known to habitually use the proposed tower construction area, relocation to an alternate site is highly recommended. If this is not an option, seasonal restrictions on construction are advised in order to avoid disturbance, site and nest abandonment, especially during breeding, rearing and other periods of high bird activity.

10. Security lighting for on-ground facilities, equipment and infrastructure should be motion- or heat-sensitive, down-shielded, and of a minimum intensity to reduce nighttime bird attraction and eliminate constant nighttime illumination, but still allow safe nighttime access to the site (USFWS 2012, Manville 2011).

11. Representatives from the USFWS or researchers from the Research Subcommittee of the Communication Tower Working Group should be allowed access to the site to evaluate bird use; conduct dead-bird searches; place above ground net catchments below the towers (Manville 2002); and to perform studies using radar, Global Position System, infrared, thermal imagery, and acoustical monitoring, as necessary. This will allow for assessment and verification of bird movements, site use, avoidance, and mortality. The goal is to acquire information on the impacts of various tower types, sizes, configurations and lighting protocols.

12. Towers no longer in use, not re-licensed by the FCC for use, or determined to be obsolete should be removed from the site within 12 months of cessation of use, preferably sooner.

13. In order to obtain information on the usefulness of these guidelines in preventing bird strikes and better understanding impacts from habitat fragmentation, please advise USFWS personnel of the final location and specifications of the proposed tower, and which measures recommended in these guidelines were implemented. If any of these recommended measures cannot be implemented, please explain why they are not feasible. This will further advise USFWS in identifying any recurring problems with the implementation of the guidelines, which may necessitate future modifications.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region

IN REPLY REFER TO
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FEB 04 2010

Memorandum

To: Field Office Project Leaders, Ecological Services, Region 6
Montana, North Dakota, South Dakota, Nebraska, Kansas

From: Assistant Regional Director, Ecological Services, Region 6

Subject: Region 6 Guidance for Minimizing Effects from Power Line Projects Within the Whooping Crane Migration Corridor

This document is intended to assist Region 6 Ecological Services (ES) biologists in power line (including generation lines, transmission lines, distribution lines, etc.) project evaluation within the whooping crane migration corridor. The guidance contained herein also may be useful in planning by Federal action agencies, consultants, companies, and organizations concerned with impacts to avian resources, such as the Avian Power Line Interaction Committee (APLIC). We encourage action agencies and project proponents to coordinate with their local ES field office early in project development to implement this guidance.

The guidance includes general considerations that may apply to most, but not every, situation within the whooping crane migratory corridor. Additional conservation measures may be considered and/or discretion may be applied by the appropriate ES field office, as applicable. We believe that in most cases the following measures, if implemented and maintained, could reduce the potential effects to the whooping crane to an insignificant and/or discountable level. Where a Federal nexus is lacking, we believe that following these recommendations would reduce the likelihood of a whooping crane being taken and resulting in a violation of Endangered Species Act (ESA) section 9. If non-Federal actions cannot avoid the potential for incidental take, the local ES field office should encourage project proponents to develop a Habitat Conservation Plan and apply for a permit pursuant to ESA section 10(a)(1)(B).

Finally, although this guidance is specific to impacts of power line projects to the whooping crane within the migration corridor, we acknowledge that these guidelines also may benefit other listed and migratory birds.

If you have any questions, please contact Sarena Selbo, Section 7 Coordinator, at (303) 236-4046.

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 habitat[1].

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 mark[2] 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).

   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?)

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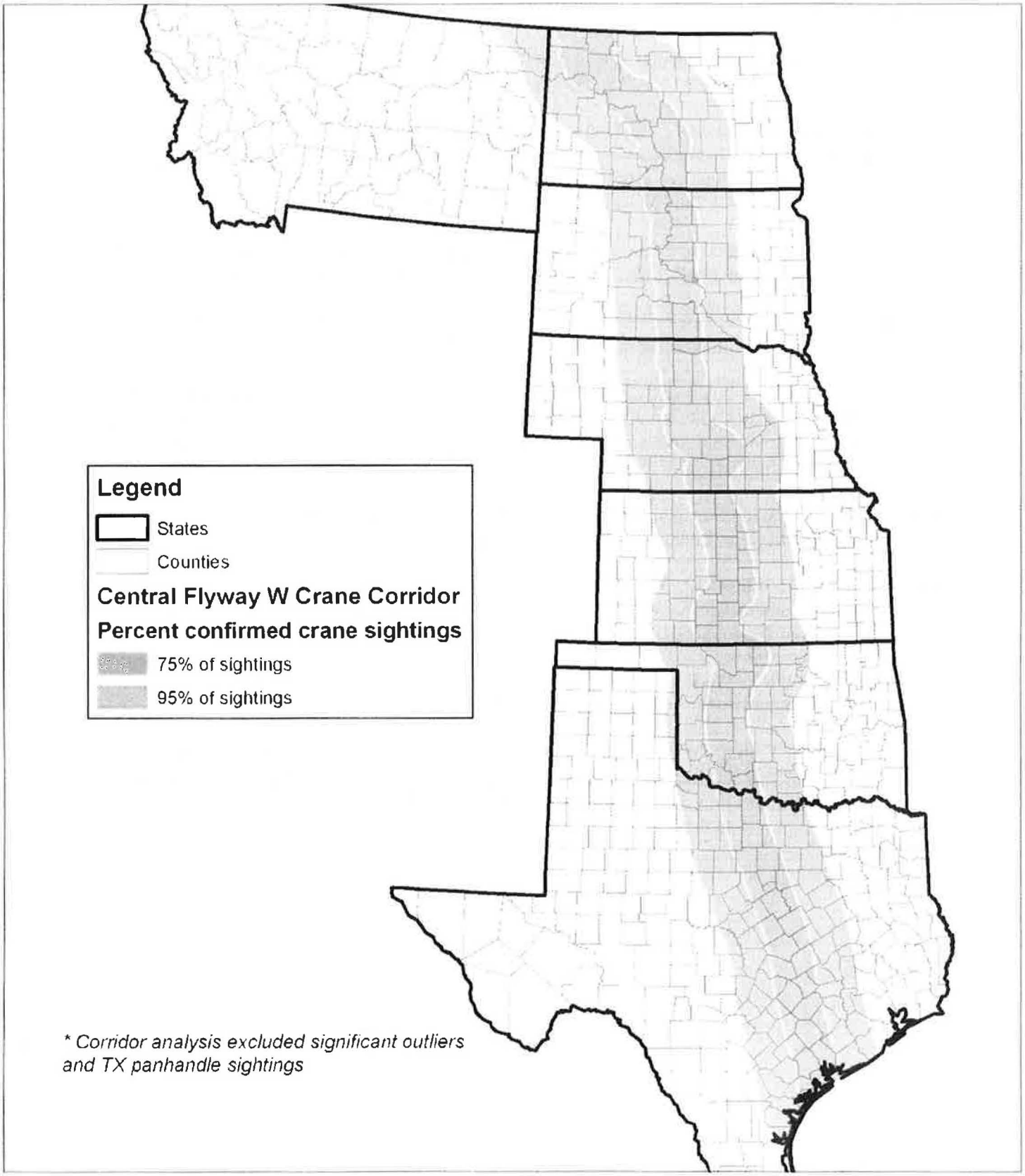
[1] Potentially suitable migratory stop over habitat for whooping cranes includes wetlands with areas of shallow water without visual obstructions (i.e., high or dense vegetation) (Austin & Richert 2001; Johns et al. 1997; Lingle et al. 1991; Howe 1987) and submerged sandbars in wide, unobstructed river 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.

[2] 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.

U.S. Fish & Wildlife Service

United States Central Flyway Whooping Crane Migration Corridor *



Produced for Ecological Services
Grand Island, NE
Current to: 2008
Basemap (Date): U.S. Counties
Meridian:
File:

0 70 140 280 420 560 Miles

N
W E
S

Literature Cited

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Yee, M.L. 2008. Testing the effectiveness of an avian flight diverter for reducing avian collisions with distribution power lines in the Sacramento Valley, California. California Energy Commission; Publication CEC-500-2007-122.

BISON CONNECT

SouthDakotaFieldOffice, FW6 <southdakotafieldoffice@fws.gov>

North Bend Wind Project - Tier 1 Evaluation

1 message

Christina White <cwhite@infinitywind.com> Fri, Dec 2, 2016 at 5:15 PM
To: "southdakotafieldoffice@fws.gov" <southdakotafieldoffice@fws.gov>

To Whom It May Concern:

Attached, please find a Tier 1 Evaluation for the North Bend Wind Project that is being proposed in South Dakota, east of the City of Pierre, for your review and comment. Please let me know if you have any questions.

Thank you, in advance, for your time.

Christina White

Infinity Renewables

3760 State Street, Suite 200 | Santa Barbara, CA 93105

O 805-456-5158 | M 310-924-1451

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North Bend Wind Project - Tier 1 Evaluation_2016-12-02.pdf
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December 2, 2016

U.S. Fish and Wildlife Services
South Dakota Ecological Services Field Office
420 S. Garfield Avenue, Suite 400
Pierre, SD 57501-5408

Re: Tier 1 Evaluation for the North Bend Wind Project

To Whom It May Concern:

Infinity Renewables ("Infinity") recently completed a Tier 1 Evaluation pursuant to the United States Fish and Wildlife Service's ("USFWS") Land-Base Wind Energy Guidelines for the North Bend Wind Project located in Hyde County, South Dakota. The Project is in an early stage of development and is located east of the city of Pierre. The report is enclosed with this cover letter.

Infinity welcomes any comments that the USFWS may have on the project at this time. If you require additional information or have questions regarding the North Bend Wind project, please feel free to contact me by email at cwhite@infinityrenewables.com or by phone at (310) 924-1451.

We appreciate any input or information that you may have related to the location of the Project.

Sincerely,

Christina White
Project Developer

INFINITY
RENEWABLES

MEMORANDUM

To: North Bend Wind Project, LLC – Project Files
From: Christina White
Date: 12/2/16

RE: North Bend Wind Project – USFWS Tier 1 Evaluation

1. INTRODUCTION

North Bend Wind Project, LLC (North Bend) is currently in the early stages of evaluating an area located in Hyde County, South Dakota as a site for potential wind energy development. The general project area is located east of the city of Pierre. The exact size of the project and point of interconnection have not been determined given the early stage of development.

According to the United States Fish and Wildlife Service's Land-Based Wind Energy Guidelines ("USFWS Guidelines") the intent of the Tier 1 Preliminary Site Evaluation is to provide a landscape level assessment of habitat for species of concern over a broad geographic area based on existing information and literature.

2. METHODS

The USFWS Guidelines methods and metrics notes that "developers who choose to conduct Tier 1 investigations would generally be able to utilize existing public or other readily available landscape-level maps and databases from sources such as federal, state or tribal wildlife or natural heritage programs, the academic community, conservation organizations or the developers' or consultants' own information."

The American Wind Wildlife Institute ("AWWI") has produced the Landscape Assessment Tool ("LAT"). The LAT is designed as a landscape-level planning tool to identify sensitive wildlife habitat and areas that are likely to have low wildlife risk where wind energy development could be prioritized. The LAT is intended to provide stakeholders with information that facilitates the siting of wind energy in areas with minimal impacts to wildlife, as well as the development of conservation plans, monitoring plans and mitigation strategies.

The LAT is a general screening tool and may provide some guidance as to the environmental characteristics and important landscape-scale wildlife values of a geographic area. This initial screening can offer early guidance about possible sensitivity of a site within a larger landscape context and could be used by wind developers for preliminary landscape scale assessment. According to AWWI, the LAT is intended for use at the Tier 1 site evaluation point under the Land-Based Wind Energy Guidelines issued by the USFWS. The LAT report for North Bend is included in Attachment A.

3. DISCUSSION

The Guidelines include a series of questions that are intended to inform the developer of potential constraints related to the development of a project. This section includes responses to the Tier 1 questions as outlined in the Guidelines.

1. Are there species of concern present on the potential site(s), or is habitat (including designated critical habitat) present for these species?

Yes – Additional field data is required to adequately evaluate risk. The LAT report identified a number of sensitive species that could be present within the Project area. As identified in the LAT report for the Project, there are a number of species that are listed under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act that have the potential to be present within the Project area. The potential for these species to be present within and in proximity to the Project area would need to be further evaluated through on-site field studies.

According to the USFWS Critical Habitat Mapping Tool, there is no critical habitat within the Project area boundary that is being considered.

2. Does the landscape contain areas where development is precluded by law or areas designated as sensitive according to scientifically credible information? Examples of designated areas include, but are not limited to: federally-designated critical habitat; high-priority conservation areas for nongovernment organizations (NGOs); or other local, state, regional, federal, tribal, or international categorizations.

No. According to the maps produced in the LAT report for the Project, the Project area largely consists of private landholdings. The main land use within the area consists of agricultural uses and grazing lands. There are likely areas that are covered under easements with the Conservation Reserve Program ("CRP") that is administered by the United States Department of Agriculture, Farm Services Agency.

The National Audubon Society (Audubon) designates Important Bird Areas (IBAs) for areas that the organization identifies as providing essential habitats for one or more species of birds. IBAs have no regulatory barring and would not actually prevent a project from proceeding, but do serve as a good resource for evaluating avian risks that may be present in a particular area. There are no IBAs within 10 miles of the Project area.

The Nature Conservancy (TNC) manages a number of biological sensitive areas in the northern plains states. There are no TNC managed areas in proximity within 10 miles of the Project area.

3. Are there known critical areas of wildlife congregation, including, but not limited to: maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?

Unknown – Insufficient Data. The analysis used in this Tier 1 evaluation was based on a review of AWWI's LAT report for sensitive species in proximity to the Project. As noted in the LAT report included in Attachment A, there are a number of sensitive species that could be present within the Project area. Further study of features both onsite and in proximity to the Project area need to be further evaluated.

4. Are there large areas of intact habitat with the potential for fragmentation, with respect to species of habitat fragmentation concern needing large contiguous blocks of habitat?

No – Field verification is still required. As noted in the maps from the LAT report, the aerial as well as habitat areas indicate that the project area is primarily used in agricultural operations that include crop land areas and pasture areas. The project area appears to be fragmented from historic and ongoing agricultural and grazing operations. There could be areas where intact native habitat may be present. This would need to be further evaluated through onsite habitat mapping investigations. Field investigations completed as a part of the Tier 2 evaluation will confirm the landscape and habitat quality found within the Project area.

4. RECOMMENDATIONS

Based on the proceeding Tier 1 analysis, it is recommended that the Tier 2 studies be completed to adequately analyze biological constraints that are outlined in the LAT report produced for the Project. The analysis completed to date identified the potential for constraints tied to 1) general avian use of the Project area, 2) various raptor species presence, and 3) bat species presence.

Attachment A – AWWI LAT Report

Wind and Wildlife Landscape Assessment Tool Project Area Report

The intention of the Landscape Assessment Tool (LAT) is to aid in landscape-scale planning by characterizing risk to wildlife relative to potential wind energy development. The resolution of the species data used in the LAT precludes decisions at scales finer than 50 square miles. The LAT is not intended for micro-siting or site-specific project design, or to replace on-site surveys. The providers of the data make no warranty as to its suitability for any particular use and users agree, by using the data, to accept any liability associated with such use.

The LAT uses numerous data layers generated from public sources. These sources are limited by a high degree of variation in their accuracy and in the scales at which they function. This LAT is a general screening tool and may provide some guidance as to the environmental characteristics and important landscape-scale wildlife values of a geographic area. This initial screening can offer early guidance about possible sensitivity of a site within a larger landscape context and could be used by wind developers for preliminary landscape scale assessment. The LAT, however, cannot be relied upon for actual and individual siting decisions. Those decisions must be made on the basis of locally-developed data and analyses, taking into consideration numerous factors, including factors unrelated to wildlife.

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Eastern Tiger Salamander (Ambystoma tigrinum)	Amphibian	Secure	Secure	None	No	FL, KS, MD, MS, NJ, NM, NY, SC, VA, WA, WY, DE, LA, MI, NC
Northern Cricket Frog (Acris crepitans)	Amphibian	Secure	Secure	None	No	CO, DC, IA, KS, MN, NY, PA, SC, SD, MI, WI, WV
Brazilian Free-tailed Bat (Tadarida brasiliensis)	Bat	Mortality Concern	Secure	None	No	AL, AZ, OK, TX
Eastern Red Bat (Lasiurus borealis)	Bat	Mortality Concern	Secure	None	No	CT, DC, DE, FL, IN, MA, MD, MI, NH, NJ, NY, PA, RI, VT, WI, WV
American Avocet (Recurvirostra americana)	Bird	Secure	Secure	None	Yes	AR, AZ, FL, IA, ID, KS, MN, ND, NE, NV, SC, TX, UT, WA
American Bittern (Botaurus lentiginosus)	Bird	Apparently Secure	Apparently Secure	None	Yes	AK, AR, AZ, CA, CO, CT, DC, DE, FL, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NM, NY, PA, RI, SC, TN, TX, VA, VT, WA, WI, WV, WY
American Coot (Fulica americana)	Bird	Secure	Secure	None	Yes	AK, DE, ME, MI, PA, SC, WA, WV
American Kestrel (Falco sparverius)	Bird	Secure	Secure	None	Yes	AL, CT, MA, NC, NJ, RI, VT, WA, TX
American Tree Sparrow (Spizella arborea)	Bird	Secure	Secure	None	Yes	AK, KS
American Wigeon (Anas americana)	Bird	Secure	Secure	None	Yes	AZ, HI, NE, WA
Baltimore Oriole (Icterus galbula)	Bird	Secure	Secure	None	Yes	CT, DE, KS, ME, NJ, RI
Barn Owl (Tyto alba)	Bird	Secure	Secure	None	Yes	AR, CT, DE, GA, IA, IL, IN, KS, KY, MA, MD, MI, MO, MS, NC, NE, NJ, NY, OK, PA, RI, SC, TN, TX, VA, VT, WI, WV
Barn Swallow (Hirundo rustica)	Bird	Secure	Secure	None	Yes	AK, KS, ME
Black-billed Magpie (Pica hudsonia)	Bird	Secure	Secure	None	Yes	AZ

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Black-crowned Night-heron (Nycticorax nycticorax)	Bird	Secure	Secure	None	Yes	CA, AR, CT, DC, DE, FL, IA, ID, IL, IN, KS, KY, MA, MD, ME, MI, MN, MO, MS, NE, NJ, NY, PA, RI, SC, VA, VT, WA, WV, WY
Blue-winged Teal (Anas discors)	Bird	Avoidance/Management concern	Secure	None	Yes	AZ, CT, MI, NY, RI, SC, VT, WI
Brewer's Blackbird (Euphagus cyanocephalus)	Bird	Secure	Secure	None	Yes	KS, NE
Brown Creeper (Certhia americana)	Bird	Secure	Secure	None	Yes	AK, CT, DC, DE, IA, IL, KY, MD, MO, NE, RI, TN, VA, WA, WV, NC
Brown Thrasher (Toxostoma rufum)	Bird	Secure	Secure	None	Yes	CT, DC, DE, KS, MA, MD, ME, MI, MN, NJ, NY, PA, RI, TX, VA, VT, WI
Bufflehead (Bucephala albeola)	Bird	Secure	Secure	None	Yes	DE, OR, WA
Burrowing Owl (Athene cunicularia)	Bird	Avoidance/Management concern	Secure	None	Yes	CA, IA, ID, KS, MN, MT, ND, NE, NM, OK, SD, TX, UT, WA, WY, CO
Canada Goose (Branta canadensis)	Bird	Secure	Secure	None	Yes	AZ, DE, WA, WA
Canvasback (Aythya valisineria)	Bird	Secure	Secure	None	Yes	CA, AZ, CT, DE, IA, IL, KS, LA, MD, ND, NE, NV, OK, SC, TX, WA, WI, WY
Cassin's Sparrow (Aimophila cassinii)	Bird	Secure	Secure	None	Yes	CO, KS, OK, TX
Cattle Egret (Bubulcus ibis)	Bird	Secure	Secure	None	Yes	AZ, DE, ID, ME, NJ, NY, RI
Chimney Swift (Chaetura pelagica)	Bird	Secure	Secure	None	Yes	AR, CT, DC, DE, ME, NC, NJ, PA, RI, TX, VA, VT
Cinnamon Teal (Anas cyanoptera)	Bird	Secure	Secure	None	Yes	NE, NV, WA
Cliff Swallow (Petrochelidon pyrrhonota)	Bird	Secure	Secure	None	Yes	AK, CT, DE, NJ, RI, WV
Common Nighthawk (Chordeiles minor)	Bird	Secure	Secure	None	Yes	CT, DE, IA, IN, KS, MD, ME, MI, MN, NC, NH, NJ, NY, OR, PA, RI, TX, VT, WA, WV
Common Yellowthroat (Geothlypis trichas)	Bird	Secure	Secure	None	Yes	RI, TX
Cooper's Hawk (Accipiter cooperii)	Bird	Secure	Secure	None	Yes	CA, CT, DE, MI, NC, NE, NH, NJ, NY, VT, WV
Dark-eyed Junco (Junco hyemalis)	Bird	Secure	Secure	None	Yes	AK, CT, MD, NE, SC
Dickcissel (Spiza americana)	Bird	Vulnerable	Secure	None	Yes	IA, IL, KS, KY, LA, MD, MI, MN, NC, ND, NJ, NY, PA, TN, TX, WI, WV, WY
Downy Woodpecker (Picoides pubescens)	Bird	Secure	Secure	None	Yes	AZ, WA
Eastern Kingbird (Tyrannus tyrannus)	Bird	Secure	Secure	None	Yes	AK, CT, DE, KS, ME, MI, NC, NJ, RI, TX, VA
Eastern Screech-owl (Megascops asio)	Bird	Secure	Secure	None	Yes	CT, ME, NJ

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Ferruginous Hawk (Buteo regalis)	Bird	Mortality Concern	Secure	None	Yes	CA, AZ, CO, ID, KS, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY
Field Sparrow (Spizella pusilla)	Bird	Secure	Secure	None	Yes	CT, DC, DE, IA, KS, LA, MA, MD, ME, MI, MN, NC, NJ, RI, SC, TX, VA, VT, WI, WV
Golden Eagle (Aquila chrysaetos)	Bird	Mortality Concern	Secure	None	Yes	CA, AK, CO, KS, MD, ME, ND, NE, NH, NM, NY, PA, TN, TX, WA
Golden-crowned Kinglet (Regulus satrapa)	Bird	Secure	Secure	None	Yes	AK, AZ, CT, MD, RI, SC, TN, WA
Grasshopper Sparrow (Ammodramus savannarum)	Bird	Secure	Secure	None	Yes	FL, AR, CA, CT, DC, DE, GA, IA, ID, IL, KS, KY, LA, MA, MD, ME, MI, MN, MS, NC, ND, NH, NJ, NM, NY, OR, PA, RI, SC, TN, TX, UT, VA, VT, WA, WI, WV, WY, AZ
Gray Catbird (Dumetella carolinensis)	Bird	Secure	Secure	None	Yes	AZ, CT, NJ, RI, VA
Great Blue Heron (Ardea herodias)	Bird	Secure	Secure	None	Yes	CA, CT, DE, MD, ME, MI, NH, NJ, PA, RI, SC, VT, WA, WV, WY
Great Horned Owl (Bubo virginianus)	Bird	Secure	Secure	None	Yes	AK, CT, DC
Greater Prairie-Chicken (Tympanuchus cupido)	Bird	Vulnerable	Apparently Secure	None	No	AR, CO, IA, IL, KS, KY, MN, MO, ND, NE, OK, SD, TN, WI
Green Heron (Butorides virescens)	Bird	Secure	Secure	None	Yes	CT, MA, MI, NJ, SC, VA, WA
Harris's Sparrow (Zonotrichia querula)	Bird	Vulnerable	Secure	None	Yes	AK, CO, KS, OK, TX
Horned Lark (Eremophila alpestris)	Bird	Vulnerable	Secure	None	Yes	CT, ME, NH, NJ, NY, RI, TX, WV, NC
Killdeer (Charadrius vociferus)	Bird	Secure	Secure	None	Yes	AK, MI, WA
Lark Bunting (Calamospiza melanocorys)	Bird	Vulnerable	Secure	None	Yes	CO, KS, ND, SD, WY
Lark Sparrow (Chondestes grammacus)	Bird	Secure	Secure	None	Yes	CA, AR, IA, KS, KY, NC, TN, TX, WI, WV
Loggerhead Shrike (Lanius ludovicianus)	Bird	Vulnerable	Apparently Secure	None	Yes	CA, CO, DE, FL, IA, IL, IN, KS, KY, LA, MD, ME, MN, MO, MS, NC, ND, NJ, NM, NV, NY, OK, OR, PA, SC, TN, TX, VA, WA, WI, NE
Long-eared Owl (Asio otus)	Bird	Secure	Secure	None	Yes	CA, CT, DE, IA, KY, MA, MD, ME, MI, MO, NE, NJ, NY, PA, RI, VT, WV
Mallard (Anas platyrhynchos)	Bird	Avoidance/Management concern	Secure	None	Yes	DE, SC, WA

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Marsh Wren (Cistothorus palustris)	Bird	Secure	Secure	None	Yes	AZ, CT, DC, DE, IL, IN, MD, ME, MI, MN, MO, NJ, OH, PA, RI, VA, WA, WV
Mourning Dove (Zenaida macroura)	Bird	Secure	Secure	None	Yes	NM, TX, WA
Northern Bobwhite (Colinus virginianus)	Bird	Secure	Secure	None	No	AR, CT, DC, DE, FL, GA, IA, IL, KS, KY, LA, MA, MD, MI, MS, NC, NE, NY, OH, OK, PA, RI, SC, TX, VA, WI, WV
Northern Cardinal (Cardinalis cardinalis)	Bird	Secure	Secure	None	Yes	CA
Northern Flicker (Colaptes auratus)	Bird	Secure	Secure	None	Yes	AK, CT, DE, IL, ME, MI, NC, NJ, RI, FL
Northern Goshawk (Accipiter gentilis)	Bird	Secure	Secure	None	Yes	CA, AK, CO, CT, MD, MI, MN, NH, NJ, NM, NV, NY, OR, PA, RI, SD, UT, VT, WA, WI, WV, WY, AK
Northern Harrier (Circus cyaneus)	Bird	Secure	Secure	None	Yes	CA, AK, AL, AR, AZ, CO, CT, DE, IA, IL, IN, KY, LA, MA, MD, MI, MN, MO, NC, ND, NE, NH, NJ, NM, NY, PA, RI, TN, TX, VA, VT, WI, WV
Northern Mockingbird (Mimus polyglottos)	Bird	Secure	Secure	None	Yes	IA, MI
Northern Pintail (Anas acuta)	Bird	Avoidance/Management concern	Secure	None	Yes	AR, AZ, CO, FL, HI, IA, ID, KS, KY, LA, MN, MS, ND, NM, NV, NY, OK, SC, TX, WA
Northern Rough-winged Swallow (Stelgidopteryx serripennis)	Bird	Secure	Secure	None	Yes	AK, CT, MN, VA, WA
Northern Saw-whet Owl (Aegolius acadicus)	Bird	Secure	Secure	None	Yes	AK, CT, MD, TN, VA, WV, NC
Northern Shoveler (Anas clypeata)	Bird	Avoidance/Management concern	Secure	None	Yes	AZ, DE, HI, WA
Northern Shrike (Lanius excubitor)	Bird	Secure	Secure	None	Yes	AK, MI
Pied-billed Grebe (Podilymbus podiceps)	Bird	Secure	Secure	None	Yes	AK, AR, CT, DE, IL, KY, MA, MD, ME, MI, NH, NJ, NY, PA, RI, SC, VT, WV
Pine Siskin (Carduelis pinus)	Bird	Secure	Secure	None	Yes	AK, NE, PA, WV, NC
Prairie Falcon (Falco mexicanus)	Bird	Secure	Secure	None	Yes	CA, CO, ND, NE, OK, TX, WA
Purple Martin (Progne subis)	Bird	Secure	Secure	None	Yes	CA, CT, ME, MI, NH, OR, RI, VT, WA, CO, AZ
Red Crossbill (Loxia curvirostra)	Bird	Secure	Secure	None	Yes	AK, CO, ME, MI, NE, PA, SC, VA, WI, ID, NC
Red-eyed Vireo (Vireo olivaceus)	Bird	Secure	Secure	None	Yes	AK, MD
Red-headed Woodpecker (Melanerpes erythrocephalus)	Bird	Vulnerable	Secure	None	Yes	AR, CT, DE, FL, IA, IL, KS, KY, MD, MI, MN, MS, NC, ND, NJ, NM, NY, OK, PA, TN, TX, WI, WV
Ring-necked Pheasant (Phasianus colchicus)	Bird	Secure	Secure	None	No	RI

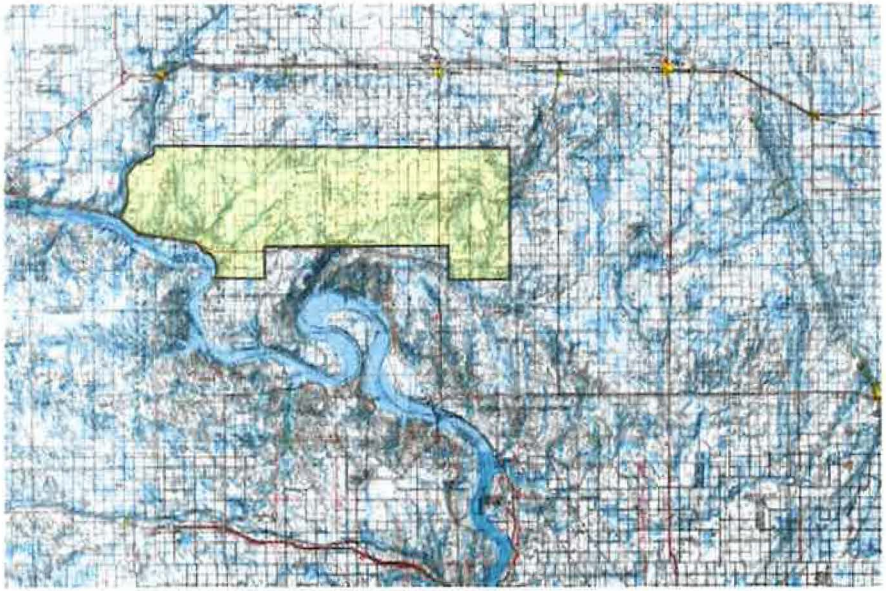
Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Rough-legged Hawk (Buteo lagopus)	Bird	Secure	Secure	None	Yes	AK, CT, TX
Ruddy Duck (Oxyura jamaicensis)	Bird	Secure	Secure	None	Yes	MD, ME, NY, PA, WA
Scissor-tailed Flycatcher (Tyrannus forficatus)	Bird	Secure	Secure	None	Yes	KS, LA, NE, TN, TX
Sharp-shinned Hawk (Accipiter striatus)	Bird	Secure	Secure	None	Yes	CA, AK, CT, DE, IN, KY, MA, MD, MO, NC, NE, NJ, NY, OH, PA, RI, TN, WV
Short-eared Owl (Asio flammeus)	Bird	Vulnerable	Secure	None	Yes	CA, AK, AL, AR, CO, CT, DE, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NE, NJ, NV, NY, OK, OR, PA, RI, TN, TX, UT, VT, WA, WI, WV, WY
Snowy Owl (Bubo scandiacus)	Bird	Secure	Secure	None	Yes	AK, CT, WA
Sora (Porzana carolina)	Bird	Secure	Secure	None	Yes	AK, CT, DC, DE, MA, MI, MO, NC, OH, PA, RI, VT, WV
Swainson's Hawk (Buteo swainsoni)	Bird	Vulnerable	Secure	None	Yes	CA, AK, CO, IA, ID, IL, KS, MN, MO, ND, NE, NV, OK, OR, TX, WA, WY
Turkey Vulture (Cathartes aura)	Bird	Secure	Secure	None	Yes	WA
Virginia Rail (Rallus limicola)	Bird	Secure	Secure	None	Yes	CT, DC, IN, MI, MN, MO, NC, NE, OH, PA, TX, VA, WV, WY
Warbling Vireo (Vireo gilvus)	Bird	Secure	Secure	None	Yes	CT, DE, TX
Western Burrowing Owl (Athene cunicularia hypugaea)	Bird	Apparently Secure	Apparently Secure	None	No	None
Western Meadowlark (Sturnella neglecta)	Bird	Secure	Secure	None	Yes	IN, MI, OR, TX, WI
Western Wood-pewee (Contopus sordidulus)	Bird	Secure	Secure	None	Yes	AK, WA
White-breasted Nuthatch (Sitta carolinensis)	Bird	Secure	Secure	None	Yes	FL
White-crowned Sparrow (Zonotrichia leucophrys)	Bird	Secure	Secure	None	Yes	AK, AZ
White-faced Ibis (Plegadis chihi)	Bird	Secure	Secure	None	Yes	CA, CO, ID, NE, NM, NV, TX, WY
White-winged Crossbill (Loxia leucoptera)	Bird	Secure	Secure	None	Yes	AK, ID, MI
Wilson's Snipe (Gallinago delicata)	Bird	Secure	Secure	None	Yes	AK, AZ, DC, IL, KY, MD, MI, NE, PA, RI, SC, TX, WA, WV
Wood Duck (Aix sponsa)	Bird	Secure	Secure	None	Yes	AZ, DC, SC, WA
Yellow Warbler (Dendroica petechia)	Bird	Secure	Secure	None	Yes	AR, NM, RI, VA, WA
Yellow-breasted Chat (Icteria virens)	Bird	Secure	Secure	None	Yes	CA, CT, DE, IA, IL, MI, NE, NJ, NY, OR, PA, RI, VA, WA
Yellow-headed Blackbird (Xanthocephalus xanthocephalus)	Bird	Secure	Secure	None	Yes	CA, IL, IN, MI, MO
American Badger (Taxidea taxus)	Mammal	Secure	Secure	None	No	AR, CA, IL, IN, MN, OH, TX, WA
American Beaver (Castor canadensis)	Mammal	Secure	Secure	None	No	AZ, NM, WA
Black-tailed Jackrabbit (Lepus californicus)	Mammal	Secure	Secure	None	No	AR, MO, NE, WA
Black-tailed Prairie Dog (Cynomys ludovicianus)	Mammal	Apparently Secure	Apparently Secure	None	No	AZ, CO, KS, MT, ND, NM, OK, TX, WY

Species Name	Informal Taxonomy	Issue	NatureServe Status	Endangered Species Act Status	Migratory Bird Treaty Act	Species of Greatest Conservation Need as listed in State Wildlife Action Plans
Eastern Spotted Skunk (Spilogale putorius)	Mammal	Secure	Secure	None	No	AL, AR, FL, IA, KS, KY, LA, MD, MN, MS, NC, ND, NE, OK, PA, SC, TN, TX, VA, WV
Hoary Bat (Lasiurus cinereus)	Mammal	Mortality Concern	Secure	None	No	CA, CT, DE, FL, IN, MA, MD, MI, MS, NC, NH, NJ, NV, NY, OR, PA, RI, VT, WA, WI, WV, WY
Long-tailed Weasel (Mustela frenata)	Mammal	Secure	Secure	None	No	AL, AR, CT, LA, MO, MS, NC, NE, OK, TX, VT, WA
Mule Deer (Odocoileus hemionus)	Mammal	Avoidance/Management concern	Secure	None	No	NM, NV, UT, WA, WA
Pinon Deermouse (Peromyscus truei)	Mammal	Secure	Secure	None	No	ID, WY
Pronghorn (Antilocapra americana)	Mammal	Avoidance/Management concern	Secure	None	No	TX, WA
Silver-haired Bat (Lasionycteris noctivagans)	Mammal	Mortality Concern	Secure	None	No	AK, CA, CT, DE, IN, LA, MA, MD, MI, MS, NC, NH, NJ, NY, OR, PA, RI, VT, WI, WV, WY
Spotted Ground Squirrel (Spermophilus spilosoma)	Mammal	Secure	Secure	None	No	AZ, KS, UT, WY
Swift Fox (Vulpes velox)	Mammal	Vulnerable	Vulnerable	None	No	CO, KS, ND, NE, OK, SD, TX, WY, NM
Coachwhip (Coluber flagellum)	Reptile	Secure	Secure	None	No	IL, MS, NC, NE, TN, UT
Common Kingsnake (Lampropeltis getula)	Reptile	Secure	Secure	None	No	CO, DE, FL, IA, NE, OR, UT
Common Lesser Earless Lizard (Holbrookia maculata)	Reptile	Secure	Secure	None	No	KS, OK, SD, UT, WY
Glossy Snake (Arizona elegans)	Reptile	Secure	Secure	None	No	KS, NE, UT
Milksnake (Lampropeltis triangulum)	Reptile	Secure	Secure	None	No	DE, KS, MN, MT, NM, SC, UT, LA, WY
Ornate Box Turtle (Terrapene ornata)	Reptile	Secure	Secure	None	No	IA, IL, IN, NM, SD, TX, WI, LA, WY
Plains Hog-nosed Snake (Heterodon nasicus)	Reptile	Secure	Secure	None	No	IA, IL, KS, MN, MT, ND, TX, WY
Prairie Rattlesnake (Crotalus viridis)	Reptile	Secure	Secure	None	No	IA, KS, TX

Location Map

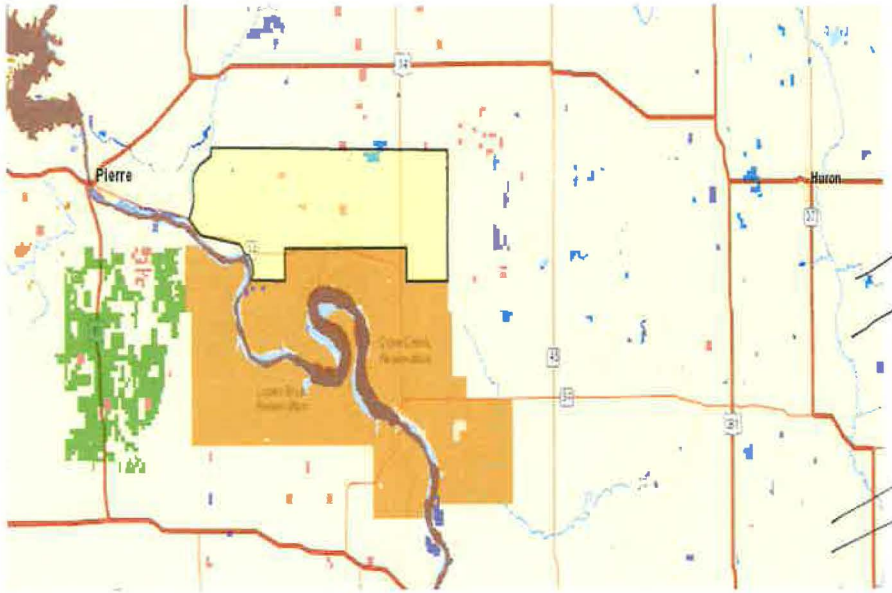
Vicinity Map

Topo Base Map



Aerial Base Map

Protected Areas Map

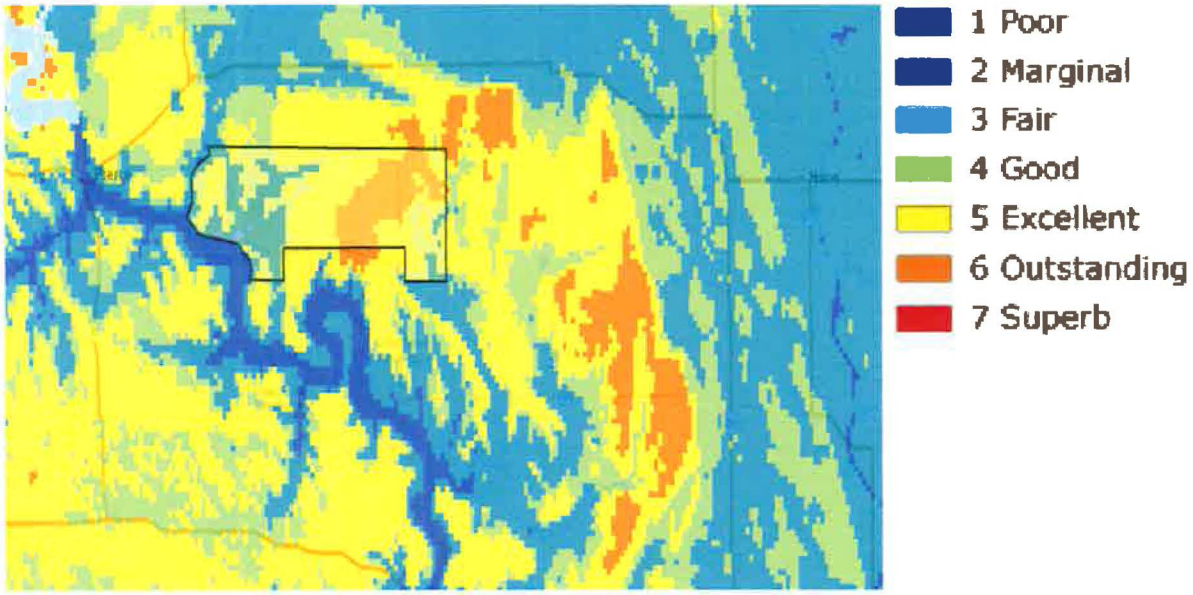


- Bureau of Land Management (BLM)
- Bureau of Reclamation (BOR)
- Department of Defense (DOD) & Department of Energy (DOE)
- Fish and Wildlife Service (FWS)
- Forest Service (USFS)
- Privavte Land
- National Park Service (NPS)
- Other Federal Land
- State Land
- Local Government Land
- Native American Land
- Non-Governmental Organization

Disturbance Layers Map

- Disturbed Areas
- Impervious Surfaces
- Development
- Crop
- Hay/Pasture
- Oil and Gas Wells
- Mines

Wind Power Class Map



3/3/2020

South Dakota Species of Habitat Fragmentation Concern: Grassland Birds

By: Kristel K. Bakker

For: U.S. Fish and Wildlife Service
South Dakota Ecological Services Field Office
Pierre, South Dakota

Suggested Citation:

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Cover photo credit: Kelly Preheim

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SOUTH DAKOTA SPECIES OF HABITAT FRAGMENTATION CONCERN: GRASSLAND BIRDS

INTRODUCTION

Background and Definition

In March of 2012, the U.S. Fish and Wildlife Service released its voluntary *Land-Based Wind Energy Guidelines* (WEG) (U.S. Fish and Wildlife Service 2012). The WEG were developed in coordination with wind industry representatives in order to provide a structured, scientific process for addressing wildlife conservation concerns at all stages of land-based wind energy development. The WEG present a tiered data collection system of increasing complexity to evaluate potential impacts of wind energy projects and inform decisions regarding siting, construction and operation of wind facilities. Each Tier emphasizes the potential occurrence of, and impacts to, species of habitat fragmentation concern which are defined in the WEG as follows:

> *Species of Habitat Fragmentation Concern: Species of concern for which a relevant federal, state, tribal, and/or local agency has found that separation of their habitats into smaller blocks reduces connectivity such that the individuals in the remaining habitat segments may suffer from effects such as decreased survival, reproduction, distribution, or use of the area. Habitat fragmentation from a wind energy project may create significant barriers for such species*.

Fragmentation results from loss of habitat and the creation of barriers (e.g. roads, wind turbines, trees in grasslands), leaving smaller, more isolated patches further divided by anthropogenic features. Historically, native grasslands dominated the South Dakota landscape, but much of the native prairie habitat has been lost to/degraded by development. Since 1970, birds that evolved within, and are dependent upon, intact grassland ecosystems have experienced steeper population declines in recent decades than birds of any other biome in North America with a loss of over 700 million breeding individuals (53% decline in abundance) across 31 species (Rosenburg et al. 2019). Research has indicated the grassland nesting bird species included in this report are negatively affected when their habitat becomes fragmented.

Fragmentation effects can also be found in species inhabiting other habitat types. For example, some grassland birds will use planted grasslands (Bakker and Higgins 2009), but research has indicated individuals using these habitats are displaced by wind energy facilities (Leddy et al. 1999). Grassland-nesting waterfowl [e.g. blue-winged teal (*Anas discors*), mallard (*Anas platyrhynchos*)] are negatively affected by habitat fragmentation (Stephens et al. 2005) and/or are known to suffer displacement effects from wetlands by turbines (Loesch et al. 2013). Additionally, some woodland birds [e.g. ovenbird (*Seiurus aurocapilla*), red-eyed vireo (*Vireo olivaceu)*] are

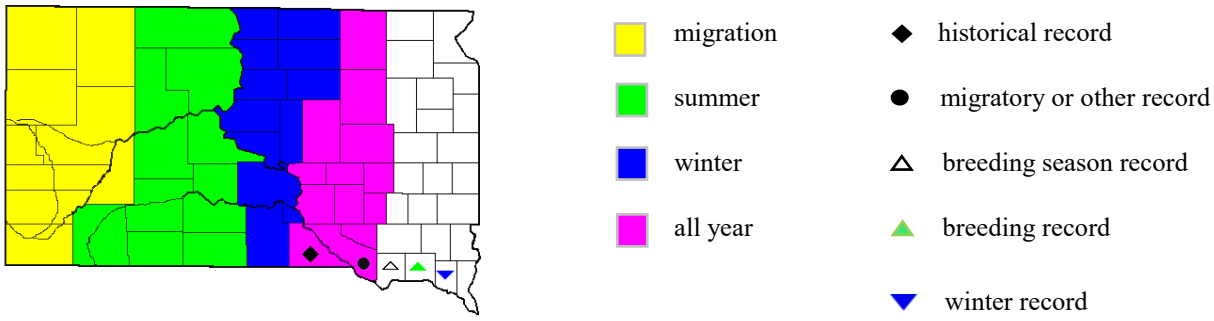
sensitive to habitat fragmentation and/or noise pollution associated with energy development (Bayne et al. 2008, Habib et al. 2007, Bayne et al. 2005). Wind-development impacts to such species should not be discounted; however, the focus of this South Dakota report is on the species declining most precipitously as a group: grassland birds.

The primary recommendation of the U.S. Fish and Wildlife Service regarding these species of habitat fragmentation concern in South Dakota is to avoid further loss and degradation of their habitat by avoiding development in grasslands, both native (first priority) and non-native, to the maximum extent possible.

Species profiles herein include range maps, state/federal status within South Dakota, preferred habitat(s), fragmentation concerns, and supporting literature.

Range Maps Key

South Dakota range maps in the species profiles are reproduced with permission from the South Dakota Ornithologists' Union (Tallman et al. 2002) with the following updated key to the colors and symbols:



Species Status Key

Species' status in terms of state and federal designations are provided in the species profiles. The descriptions and sources of those designations are as follows:

- BCC – Birds of Conservation Concern: 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 Endangered Species Act protections and promoting/conserving long-term avian diversity (U.S. Fish and Wildlife Service 2008).

- SGCN - Species of Greatest Conservation Need: species of fish or wildlife, as the State fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the State's wildlife and are identified in a state wildlife action plan. South Dakota's

Species of Greatest Conservation Need must meet at least one of the following criteria: species listed as state or federally threatened or endangered, with the exception of gray wolf; species for which South Dakota represents an important part of the species' range; and species with characteristics that may make them vulnerable to extirpation (South Dakota Department of Game, Fish and Parks 2014).

- PL - Priority Level: a species ranking system for South Dakota birds that utilizes metrics such as (but not limited to) species' abundance in South Dakota, whether the core of the species' breeding range includes South Dakota, and the species' population trends. PLs I-III are defined as follows (Bakker 2005):

    - PLI: species with the highest conservation priority due to high maximum abundance of the species within its range, or South Dakota constitutes the core of the species breeding range and the species is showing population declines either in South Dakota or range wide.

    - PLII: species with a moderate conservation priority due to medium abundance scores, or management plans are already in place (e.g., federally listed species, game species).

    - PLIII: species with a moderate conservation priority but low abundance scores in South Dakota; South Dakota is on the periphery of the species' range; the species is unique to some habitats (Black Hills) in South Dakota, which may not be declining nationally, but are important to the biodiversity in the state; and/or South Dakota wintering species.

Acknowledgements

Drs. Kent Jensen, Amy Lewis, Jeffrey Palmer, and David Swanson provided expertise in development and review of the species list.

The South Dakota Ornithologists' Union gave permission to use species' range maps.

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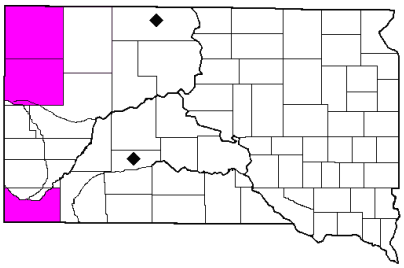
SPECIES PROFILES

Greater Sage-grouse

Centrocercus urophasianus



Species Status: BCC*, SGCN, PLI

*BCC in parts of the range outside of SD

Habitat Preference

Require areas with sagebrush habitat and herbaceous cover for year-round use (Drilling et al. 2018).

Habitat Fragmentation Concerns

Landscapes that were most likely to support large sage-grouse leks were located in highly connected, sagebrush dominated areas with limited energy development and unpaved roads in Wyoming. Areas predicted to have stable or increasing sage-grouse abundance occurred in landscapes that maintained these characteristics long-term (Burkhalter et al. 2018).

Within 2 years of the development of a wind energy facility, sage-grouse nest and brood survival were lower as distance to wind turbines decreased in Wyoming (LeBeau et al. 2014).

Female sage-grouse avoided habitats with higher percentages of surface disturbance due to wind energy infrastructure during brood rearing and the summer period during a 6-year study (LeBeau et al. 2017).

Lek persistence was positively related to the amount of sagebrush habitat within 6.4 km of the lek in Montana and Wyoming (Walker et al. 2007).

Wintering females avoided coniferous habitat at the 0.65 km^2 scale, riparian areas at the 4 km^2 scale, and areas with coal-bed natural gas development located in otherwise suitable winter habitat (Doherty et al. 2008).

Twenty-nine percent of a marked population of hens shifted nesting activity into cleared habitats during the 3 years following conifer removal in the northern Great Basin (Severson et al. 2017a). Hen survival and nest survival increased in areas where conifers were removed relative to the control area with no conifer removal (Severson et al. 2017b).

Literature

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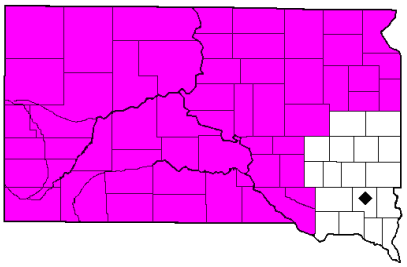
Sharp-tailed Grouse

Tympanuchus phasianellus



Species Status: PLI

Habitat Preference

Landscapes with large amounts of grassland habitat containing a variety of plant types (Drilling et al. 2018).

Habitat Fragmentation Concerns

Active prairie sharp-tailed grouse leks had significantly lower proportions of upland forest and brush cover types and higher percentages of native grasses within 500 and 1000 meters of the site than inactive leks (Hanowski et al. 2000).

Literature

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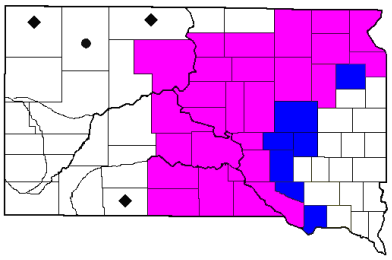
Greater Prairie-chicken

Tympanuchus cupido



Species Status: SGCN, PLI

Habitat Preference

Large heterogeneous grassland landscapes (Drilling et al. 2018) including areas with tall herbaceous growth (Norton et al. 2010).

Habitat Fragmentation Concerns

Female greater prairie-chicken mean home range size increased approximately two-fold in response to wind energy development, and female space use increased with distance from wind turbines (Winder et al. 2014).

Persistence of leks <8 km from turbines decreased with decreasing distance to turbines but was positively related to number of attending males and grassland cover surrounding leks (Winder et al. 2015) in Kansas.

Greater prairie-chickens avoided areas within 100 m of power lines and moved across power lines less often than would be expected by chance in Oklahoma (Pruett et al. 2009).

Greater prairie-chickens were absent from patches smaller than 140ha in southeastern North Dakota and northwestern Minnesota (Winter et al. 2006).

Females avoid nesting near roads in the Nebraska sandhills; 74% of nests were located >700 m from roads (Harrison et al. 2017).

Nest success declined with increasing woody cover and litter. Only 3 of 17 nests hatched when woody cover was >5%. Conversely, when woody cover was ≤5% 15 of 26 nests hatched (McKee et al. 1998).

Lek points had significantly less forest (1.6 vs11.0%) and residential land and more Conservation Reserve Program grasslands (20 vs. 15.9%) within 810 ha (2,002 ac) than did non-lek points (Merrill et al. 1999).

Forest cover was lower at active lek sites at the 400 (approx. 6 vs 20%) and 800 (approx. 15 vs 28%) m scales (Niemuth 2000).

Literature

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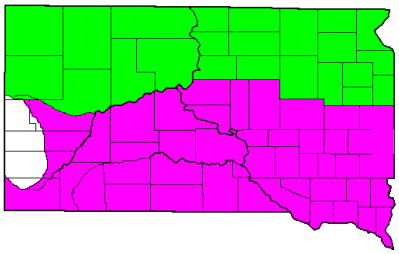
Northern Harrier

Circus cyaneus



Species Status: PLI

Habitat Preference

Open, treeless grasslands (Drilling et al. 2018).

Habitat Fragmentation Concerns

Significantly lower abundance and occurrence 4 years after construction of a wind facility than preconstruction in Wisconsin (Garvin et al. 2011). Norther harriers were still absent from the area 8 years later indicating they may not acclimate to wind facilities (Dohm et al. 2019).

Occupied habitat patches were >100 ha in size and density was positively correlated with patch size in North Dakota (Johnson and Igl, 2001).

Literature

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

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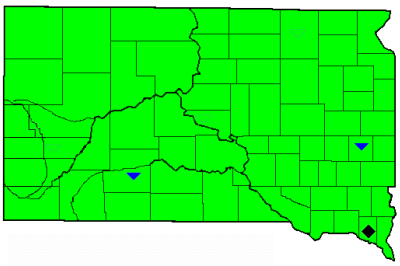
Burrowing Owl

Athene cunicularia



Species Status: BCC, SGCN, PLI

Habitat Preference

Prairie dog colonies and pastures where they nest in mammal burrows (Drilling et al. 2018); prairie dog colonies with low visual obstruction readings and relatively high percent coverage of forbs and bare ground (Thiele et al. 2013).

Habitat Fragmentation Concerns

Burrowing owls perched, flew near operating turbine blades, and collided disproportionately more at turbines with the most cattle dung within 20 m, with the highest densities of mammal burrow systems within 15 m, and with burrowing owl burrows located within 90 m of turbines (Smallwood et al. 2007).

Burrowing owl occurrence decreased with increased wooded habitat within 800 and 1200 m of prairie dog colonies (Thiele et al. 2019), and probability of nesting in colonies dropped from 80% with 0% tree cover within 800 m to below 50% when tree cover increased to 3.5% (Thiele et al. 2013).

Burrowing owls rarely occupied prairie dog colonies <10 ha in size (Griebel and Savage 2007).

Literature

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Griebel, R.L. and J.A. Savage. 2007. Factors influencing Burrowing Owl reproductive performance in contiguous shortgrass prairie. Journal of Raptor Research 41:212-221.

Smallwood, K.S., C.G. Thelander, M.L. Morrison, L.M. Rugge. 2007. Burrowing Owl mortality in the Altamont Pass Wind Resource Area. Journal of Wildlife Management 71:1513-1524.

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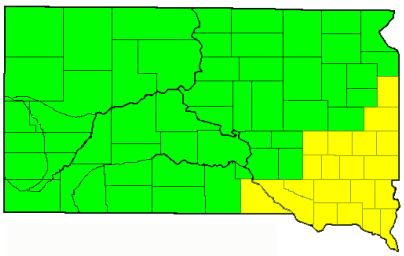
Willet

Tringa semipamata



Species Status: SGCN, PLI

Habitat Preference

Grasslands near shallow wetlands (Drilling et al. 2018) preferring pastures with short, native grasses (Ryan and Renken 1987, Kantrud and Higgins 1992).

Habitat Fragmentation Concerns

Estimate of abundance and occurrence has been shown to be greater in off-road versus on-road surveys in Alberta (Wellicome et al. 2014).

Literature

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

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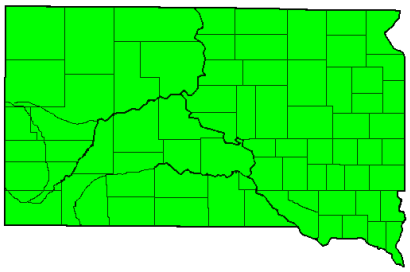
Wellicome, T.I, K.J. Kardynal, R.J. Franken and C. Gillies. 2014. Off-road sampling reveals a different grassland bird community than roadside sampling: implications for survey design and estimates to guide conservation. Avian Conservation and Ecology 9(1): 4.

Upland Sandpiper

Bartramia longicauda



Species Status: BCC*, SGCN, PLI

*BCC in parts of the range outside of SD

Habitat Preference

Large grasslands (>250 acres) with a mix of vegetation heights for nesting and brood rearing (Drilling et al. 2018).

Habitat Fragmentation Concerns

Displaced from grasslands within 100 m of wind turbines 1 year after construction and remained displaced beyond 300 m from turbines 2-5 years after construction in South Dakota (Shaffer and Buhl 2016).

Occurrence was negatively associated with tree cover within 400 m (Cunningham and Johnson 2006).

Found only on large grassland patches (>45 ha) and were absent from smaller patches (<10.5 ha) in Wisconsin (Vos and Ribic 2011).

Occurrence was positively correlated with patch area and inversely correlated with perimeter-area ratio in Nebraska (Helzer and Jelinski 1999).

Occupied grasslands had a lower percentage of aspen woodland within 100 m and 500 m than unoccupied grasslands in North Dakota (Grant et al. 2004).

Abundance was highest in an 800-ha landscape with high grassland coverage and low forest coverage in Wisconsin (Murray et al. 2008).

Literature

Cunningham, M.A. and D.H. Johnson. 2006. Proximate and landscape factors influence grassland bird distributions. Ecological Applications 16:1062-1075.

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Grant, T.A., Madden, E., and Berkey, G.B., 2004. Tree and shrub invasion in northern mixed-grass prairie—Implications for breeding grassland birds: Wildlife Society Bulletin 32(3):807–818.

Helzer, C.J., and Jelinski, D.E. 1999. The relative importance of patch area and perimeter-area ratio to grassland breeding birds: Ecological Applications 9(4):1448–1458.

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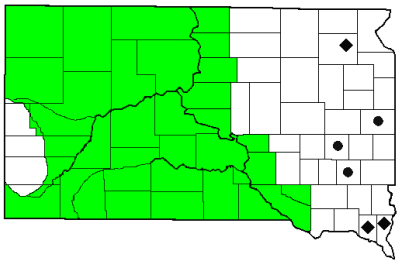
Shaffer, J.A. and D.A. Buhl. 2016. Effects of wind-energy facilities on breeding grassland bird distributions. Conservation Biology 30:59-71.

Long-billed Curlew

Numenius americanus



Species Status: BCC, SGCN, PLI

Habitat Preference

Native mixed-grass prairies (Drilling et al. 2018).

Habitat Fragmentation Concerns

The number of curlew detections was negatively associated with the percent evergreen forest and percent shrub coverage within 800 m of roadside surveys conducted throughout the United States (Sallfeld et al. 2010).

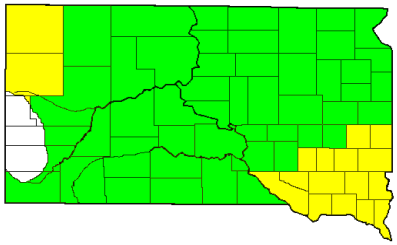
Literature

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Sallfeld, S.T., W.C. Conway, D.A. Haukos, M. Rice, S.L. Jones, and S.D. Fellows. 2010. Multiscale habitat selection by Long-billed Curlews (Numenius americanus) breeding in the United States. Waterbirds 33:148-161.

Marbled Godwit

Limosa fedoa



Species Status: BCC, SGCN, PLI

Habitat Preference

Large, contiguous grassland-wetland complexes (Drilling et al. 2018).

Habitat Fragmentation Concerns

Abundance estimates and occurrence were greater in off-road versus on-road surveys in Alberta (Wellicome et al. 2014).

Marbled godwit abundance decreased by 25 percent within 0.1 km of roads in Alberta (Sliwinski and Koper 2012).

Occurrence decreased with increased woodland cover at the 100-m scale and with increased tree cover at the 400 m and 800 m scales in North Dakota (Cunningham and Johnson 2006).

Literature

Cunningham, M.A. and D.H. Johnson. 2006. Proximate and landscape factors influence grassland bird distributions. Ecological Applications 16:1062-1075.

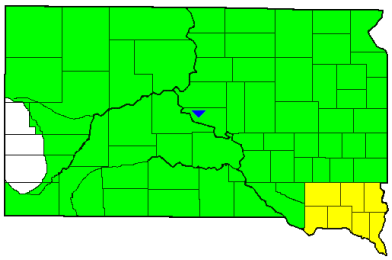
Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Sliwinski, M.S. and N. Koper. 2012. Grassland bird response to three edge types in a fragmented mixed-grass prairie. Avian Conservation and Ecology: 7(2): article 6.

Wellicome, T.I, K.J. Kardynal, R.J. Franken and C. Gillies. 2014. Off-road sampling reveals a different grassland bird community than roadside sampling: implications for survey design and estimates to guide conservation. Avian Conservation and Ecology 9(1): 4.

Wilson's Phalarope

Phalaropus tricolor



Species Status: SGCN, PLI

Habitat Preference

Shallow ponds, marshes, and wet meadows; nest on the ground near wetlands (Drilling et al. 2018).

Habitat Fragmentation Concerns

Occurrence was negatively associated with woodland cover at the 100 m scale and tree cover at the 1600 m scale (Cunningham and Johnson 2006).

Abundance in stock ponds was 3.5 times greater in 25.9 square kilometer (km^2) landscapes dominated by grasslands (≥95% grassland) than in landscapes dominated by cropland (>75% cropland) in western South Dakota (May et al. 2002).

Wilson's phalarope occurrence increased with increased area of wetland and grassland within 25.9 km^2 landscapes surrounding surveyed wetlands in eastern South Dakota (Naugle et al. 2001).

Literature

Cunningham, M.A. and D.H. Johnson. 2006. Proximate and landscape factors influence grassland bird distributions. Ecological Applications 16:1062-1075.

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

May, S.M., D.E. Naugle, and K.F. Higgins. 2002. Effects of land use on nongame wetland birds in western South Dakota stock ponds, U.S.A. Waterbirds 25:51–55.

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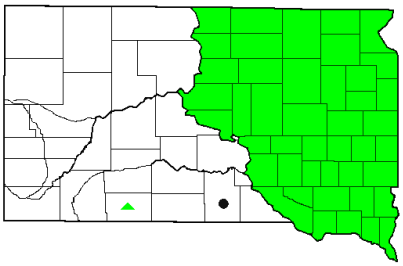
Sedge Wren

Cistothorus platensis



Species Status: NA

Habitat Preference

Wet meadows, hayfields, and idle grasslands (Drilling et al. 2018).

Habitat Fragmentation Concerns

Avoided planted shelterbelts out to at least 70 m and counts increased at sites after tree removal in North and South Dakota (Tack et al. 2017).

Abundance increased in grasslands where trees were removed but declined on control sites over the 6-year study in Minnesota (Thompson et al. 2015).

Occurrence was negatively associated with tree cover at the1600 m scale in North Dakota (Cunningham and Johnson 2006).

Increased occupancy of suitable patches when >60% of landscape is composed of grassland habitat and greater densities in large versus small grassland patches (Bakker et al. 2002).

Literature

Bakker, K. K., D.E. Naugle, and K.F. Higgins. 2002. Incorporating landscape attributes into models for migratory grassland bird conservation. Conservation Biology, 16:1638-1646.

Cunningham, M.A. and D.H. 2006. Proximate and landscape factors influence grassland bird distributions. Ecological Applications 16:1062-1075.

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Tack, J.D., F.R. Quamen, K. Kelsey, and D.E. Naugle. 2017. Doing more with less: removing trees in a prairie system improves value of grasslands for obligate bird species. Journal of Environmental Management 198:163-169.

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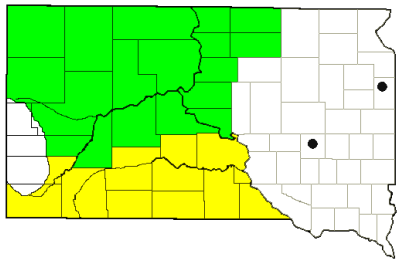
Sprague's Pipit

Anthus spragueii



Species Status: BCC, SGCN, PLIII

Habitat Preference

Grazed and undisturbed native mixed grass prairie in fair to excellent range condition (Drilling et al. 2018).

Habitat Fragmentation Concerns

Abundance increased steadily up to 149m from shallow gas wells and their abundance was lowest next to roads in southern Alberta (Daniel and Koper 2019).

Avoided nesting within 100 m of, and fledged fewer young from, successful nests near trails used for oil and gas industry employee access to wells in Alberta (Ludlow et al 2015).

Daily nest survival rate and the number of young surviving to day 8 increased with increasing distance from pipeline right of way in Saskatchewan (Sutter et al. 2016).

Abundance was 2.5 times greater at control versus oil infrastructure sites and density was 31% higher 400 m from infrastructure in Alberta (Nenninger and Koper 2018).

Avoided areas within 350 m of single bore oil well edges in northwestern North Dakota (Thompson et al. 2015).

Estimate of abundance and occurrence greater in off-road versus on-road surveys in Alberta (Wellicome et al. 2014).

Density increased with increased patch size in Saskatchewan (Davis et al. 2006).

Literature

Daniel, J. and N. Koper. 2019. Cumulative impacts of roads and energy infrastructure on grassland songbirds. Condor 121(2): 1-21.

Davis, S. K., R. M. Brigham, T. L. Shaffer, and P. C. James. 2006. Mixed-grass prairie passerines exhibit weak and variable responses to patch size. Auk 123:807-821.

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Ludlow, S.M., R.M. Brigham, and S.K. Davis. 2015. Oil and natural gas development has mixed effects on the density and reproductive success of grassland songbirds. The Condor 117: 64-75.

Nenninger, H.R. and N. Koper. 2018. Effects of conventional oil wells on grassland songbird abundance are caused by presence of infrastructure, not noise. Biological Conservation 218:124-133.

Thompson, S.J., D.H. Johnson, N.D. Niemuth, and C.A. Ribic. 2015. Avoidance of unconventional oil wells and roads exacerbate habitat loss for grassland birds in north American great plains. Biological Conservation 192: 82-90.

Sutter, G.C., S.K. Davis, J.C. Skiffington, L.M. Keating, and L.A. Pittaway. 2016. Nesting behaviour and reproductive success of Sprague's pipit (*Anthus spragueii*) and vesper sparrow (*Pooecetes gramineus*) during ipeline construction. Canadian Field Naturalist 130: 99-109.

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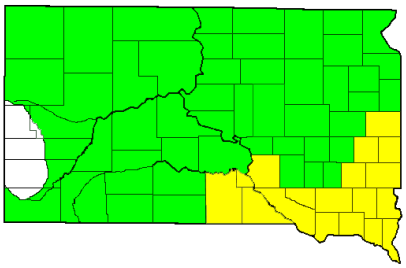
Chestnut-collared Longspur

Calcarius ornatus


Scott Somershoe


Scott Somershoe



Species Status: BCC, SGCN, PLI

Habitat Preference

Shorter areas of mixed grass prairies (Drilling et al. 2018); avoid grasslands with introduced forbs (Greer et al. 2016).

Habitat Fragmentation Concerns

Displaced overall and within 300 m from wind turbines 2-5 years after wind facility construction in South Dakota (Shaffer and Buhl 2016).

Abundance increased >45m from roads and up to 247 m from gas wells and declined as gas well density increased; clutch size and nest success were lowest next to gas wells and nest success decreased as gas well density increased in southern Alberta (Daniel and Koper 2019).

Reduced density within at least 550 m of single-bore oil well edges in North Dakota (Thompson et al. 2015).

An increase of wooded edge from 0 to 3.5% decreased chestnut-longspur occurrence by 50%, in areas with any amount of woody edge the probability of occurrence was less than 30%, density decreased with wooded edge (Greer et al. 2016).

Estimate of abundance and occurrence greater in off-road versus on-road surveys in Alberta (Wellicome et al. 2014).

Density increased with increased distance from roads in Alberta (Koper and Schmiegelow 2016).

Significantly higher abundance 800 m from roads than in on-road counts in western South Dakota (Hendricks 2017).

Literature

Daniel, J. and N. Koper. 2019. Cumulative impacts of roads and energy infrastructure on grassland songbirds. Condor 121(2): 1-2.

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Greer, M. J., K.K. Bakker, and C.D. Dieter. 2016. Grassland Bird Response to Recent Loss and Degradation of Native Prairie in Central and Western South Dakota. The Wilson Journal of Ornithology 128(2):272-283.

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Koper, N. and F.K.A. Schmiegelow. 2006. A multi-scaled analysis of avian response to habitat amount and fragmentation in the Canadian dry mixed-grass prairie. Landscape Ecology 21:1045-1059.

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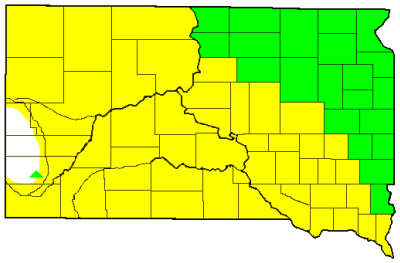
Thompson, S.J., D.H. Johnson, N.D. Niemuth, and C.A. Ribic. 2015. Avoidance of unconventional oil wells and roads exacerbate habitat loss for grassland birds in north American great plains. Biological Conservation 192: 82-90.

Wellicome, T.I, K.J. Kardynal, R.J. Franken and C. Gillies. 2014. Off-road sampling reveals a different grassland bird community than roadside sampling: implications for survey design and estimates to guide conservation. Avian Conservation and Ecology 9(1): 4.

Clay-colored Sparrow

Spizella pallida



Species Status: NA

Habitat Preference

Grasslands with some shrubby cover (Drilling et al. 2018).

Habitat Fragmentation Concerns

Displaced 200 to 300 m from wind turbines 2-5 years after wind facility construction (Shaffer and Buhl 2016).

Occupancy of suitable patches increased when >60% of landscape composed of grassland habitat (Bakker et al. 2002).

Literature

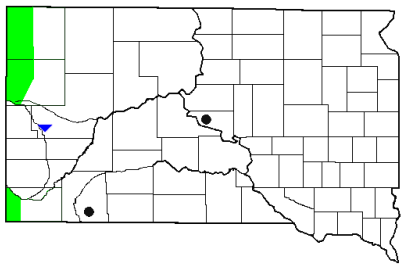
Bakker, K. K., D.E. Naugle, and K.F. Higgins. 2002. Incorporating landscape attributes into models for migratory grassland bird conservation. Conservation Biology 16:1638-1646.

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

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

Brewer's Sparrow

Spizella breweri



Species Status: BCC, PLIII

Habitat Preference

Require areas with sagebrush habitat and herbaceous cover (Drilling et al. 2018).

Habitat Fragmentation Concerns

Density was 39% lower within a 100 m buffer of low traffic, dirt roads compared to farther from roads in Wyoming (Ingelfinger and Anderson 2004).

Nest survival decreased significantly with habitat loss, decreasing 1.6% with every additional hectare of loss in Wyoming (Hethcoat and Chalfoun 2015).

Literature

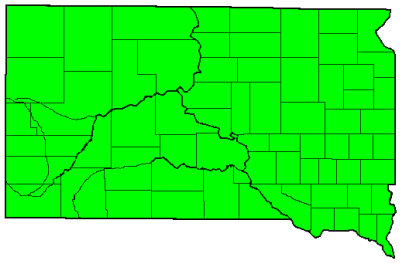
Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Hethcoat, M.G. and A.D. Chalfoun. 2015. Energy development and avian nest survival in Wyoming, USA: a test of a common disturbance index. Biological Conservation 184:327-334.

Ingelfinger, F. and S. Anderson. 2004. Passerine response to roads associated with natural gas extraction in a sagebrush steppe habitat. Western North American Naturalist 64:385-395.

Lark Bunting

Calamospiza melanocorys



Species Status: SGCN, PLI

Habitat Preference

Mixed grassland sage prairies (Drilling et al 2018).

Habitat Fragmentation Concerns

Probability of occurrence went from <10% to >50% when grassland habitat within 3200 m increased from <40 to >90% (Greer et al. 2016).

Occurrence was positively associated with percent coverage of grasslands and shrubland and was negatively associated with percent coverage of emergent wetlands, open water, forest, and developed land within 3,200 m of BBS points throughout the northern Great Plains (Niemuth et al. 2017). Occurrence was negatively related to a measure of habitat fragmentation which included the number of disjunct patches of grassland, wetlands, and forest in the landscape (Niemuth et al. 2017).

Literature

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

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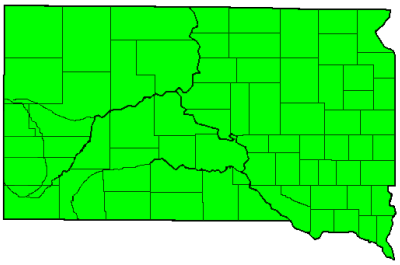
Niemuth, N.D., Estey, M.E., Fields, S.P., Wangler, B., Bishop, A.A., Moore, P.J., Grosse, R.C., and Ryba, A.J. 2017. Developing spatial models to guide conservation of grassland birds in the U.S. northern Great Plains. Condor 119 (3):506–525.

Savannah Sparrow

Passerculus sandwichensis



Species Status: PLI

Habitat Preference

Native tall and mixed grass prairies and planted grasslands (Drilling et al. 2018).

Habitat Fragmentation Concerns

Lower densities existed 100-300 m from wind turbines 1 year after construction and displacement occurred 100 to 300 m from turbines in study areas 2-5 years after construction in North and South Dakota (Shaffer and Buhl 2016).

Abundance declined within 1,120m from roads and with increasing gas well density but steadily increased >1,190 m from oil wells; clutch sizes decreased when >15 gas wells were located per section in southern Alberta (Daniel and Koper 2019).

Nesting success was significantly lower at gas and oil infrastructure sites compared to controls and at electric grid-powered versus generator powered sites in Alberta (Bernath-Plaisted and Koper 2016).

Decreased density within 228 m of single-bore oil well edges in North Dakota (Thompson et al. 2015).

Savannah sparrows had lower nest success near roads in Alberta (Yoo and Koper 2017).

Avoided shelterbelts out to at least 220 m, the largest distance measured, and counts increased at sites after tree removal in North and South Dakota (Tack et al. 2017).

Decreased occurrence in small versus large grasslands and as the extent of wooded vegetation bordering grasslands increased in eastern South Dakota (Bakker et al. 2002).

Probability of occurrence in grasslands doubled when the percent grassland habitat within 3200 m increased from 5 to 80% (Greer et al. 2016).

Nest survival increased with increased patch size in Saskatchewan (Davis et al. 2006).

Literature

Bakker, K. K., D.E. Naugle, and K.F. Higgins. 2002. Incorporating landscape attributes into models for migratory grassland bird conservation. Conservation Biology 16:1638-1646.

Bernath-Plaisted, J. and N. Koper. 2016. Physical footprint of oil and gas infrastructure, not anthropogenic noise, reduces nesting success of some grassland songbirds. Biological Conservation 204:434-441.

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

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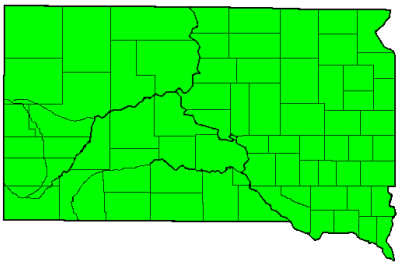
Thompson, S.J., D.H. Johnson, N.D. Niemuth, and C.A. Ribic. 2015. Avoidance of unconventional oil wells and roads exacerbate habitat loss for grassland birds in north American great plains. Biological Conservation 192:82-90.

Yoo, J. and N. Koper. 2017. Effects of shallow natural gas well structures and associated roads on grassland songbird reproductive success in Alberta, Canada. PLoS ONE 12(3): e0174243. [Online: https://doi.org/10.1371/journal.pone.0174243].

Grasshopper Sparrow

Ammodramus savannarum



Species Status: BCC, PLI

Habitat Preference

Grasslands with intermediate vegetation height and density; nests in relatively deep litter (Drilling et al. 2018).

Habitat Fragmentation Concerns

Displaced up to 300 m from turbines 2-5 years after wind facility construction in North and South Dakota (Shaffer and Buhl 2016).

Decreased density within 550 m of single-bore oil well edges and avoidance of multibore wells beyond 550 m in North Dakota (Thompson et al. 2015).

Greater abundance in point counts 800 m from gravel roads compared to 400 m or on-road counts (Hendricks 2017).

Decreased occurrence rate in small versus large grassland patches in the James River Lowland and Missouri Coteau regions of eastern South Dakota (Bakker et al. 2002).

Abundance nearly doubled as patch size increased from <40 ha to >259 ha in western South Dakota (DeJong et al. 2005).

Decreased occurrence and/or density with increased wooded edge surrounding grasslands (Bakker et al. 2002, Greer et al. 2016).

In landscapes with the same total grassland area, highest abundance was in those with more core area and fewer woody edges (Herse et al. 2018).

Occurrence was negatively associated with tree cover at the1600 m scale (Cunningham and Johnson 2006).

Literature

Bakker, K. K., D.E. Naugle, and K.F. Higgins. 2002. Incorporating landscape attributes into models for migratory grassland bird conservation. Conservation Biology, 16(6), 1638-1646.

Cunningham, M.A. and D.H. Johnson. 2006. Proximate and landscape factors influence grassland bird distributions. Ecological Applications 16:1062-1075.

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Herse, M.R., K.A. With, and W.A. Boyle. 2018. The importance of core habitat for a threatened species in change landscapes. Journal of Applied Ecology 55:2241-252.

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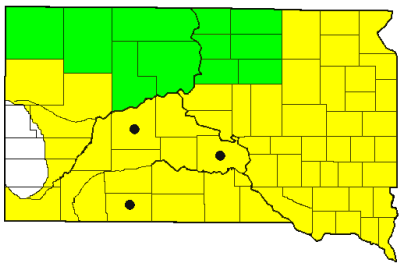
Baird's Sparrow

Centronyx bairdii



Species Status: BCC, SGCN, PLI

Habitat Preference

Relatively wet/tall mixed grass prairie pastures and undisturbed grasslands (Drilling et al. 2018).

Habitat Fragmentation Concerns

Decreased density within at least 550 m of single-bore oil well edges in North Dakota (Thompson et al. 2015).

Abundance was 3 times greater at control versus oil infrastructure sites and density doubled 400 m from infrastructure in Alberta (Nenninger and Koper 2018)

Baird's sparrows avoided nesting within 100 m of and fledged fewer young from successful nests near trails used for oil and gas industry employee access to wells in Alberta (Ludlow et al. 2015).

Estimate of abundance and occurrence greater in off-road versus on-road surveys in Alberta (Wellicome et al. 2014).

Literature

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Ludlow, S.M., R.M. Brigham, and S.K. Davis. 2015. Oil and natural gas development has mixed effects on the density and reproductive success of grassland songbirds. The Condor 117: 64-75.

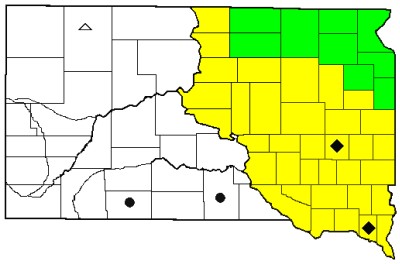
Nenninger, H.R. and N. Koper. 2018. Effects of conventional oil wells on grassland songbird abundance are caused by presence of infrastructure, not noise. Biological Conservation 218:124-133.

Thompson, S.J., D.H. Johnson, N.D. Niemuth, and C.A. Ribic. 2015. Avoidance of unconventional oil wells and roads exacerbate habitat loss for grassland birds in north American great plains. Biological Conservation 192:82-90.

Wellicome, T.I, K.J. Kardynal, R.J. Franken and C. Gillies. 2014. Off-road sampling reveals a different grassland bird community than roadside sampling: implications for survey design and estimates to guide conservation.Avian Conservation and Ecology 9(1):4.

Le Conte's Sparrow

Ammospiza leconteii



Species Status: SGCN, PLI

Habitat Preference

Tall, dense wet meadows and upland grasslands (Drilling et al. 2018).

Habitat Fragmentation Concerns

Mean occupancy of suitable plots by wintering Le Conte's sparrows was 4 times lower <200 m from the nearest wind turbine than it was >400 m from the nearest wind turbine in Texas (Stevens et al. 2013).

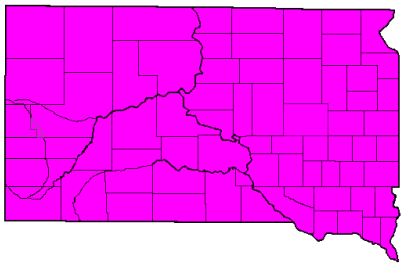
Literature

Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

Stevens, T.K., A.M. Hale, K.B. Karsten, and V.J. Bennett. 2013. An analysis of displacement from wind turbines in a wintering grassland bird community. Biodiversity and Conservation 22:1755-1767.

Western Meadowlark

Sturnella neglecta



Species Status: PLI

Habitat Preference

Pastures, haylands and undisturbed grasslands (Drilling et al. 2018).

Habitat Fragmentation Concerns

Displaced areas within 100 m of wind turbines 1 year after construction and remained displaced 100 m and beyond 200 m from turbines 2-5 years after construction in North and South Dakota (Shaffer and Buhl 2016).

Abundance declined with increasing gas well density and increased as distance up to 805 m from roads increased in southern Alberta (Daniel and Koper 2019).

Decreased occurrence in grasslands with increased amounts of wooded perimeter in eastern and western South Dakota (Bakker et al. 2002, Greer et al. 2016).

Occurrence was negatively associated with tree cover at the 200 m scale (Cunningham and Johnson 2006).

Higher densities in large versus small grasslands in eastern South Dakota (Bakker et al. 2002).

Greater nest success in landscapes with more than 50% grassland in northeastern South Dakota (Berman 2007).

Literature

Bakker, K. K., D.E. Naugle, and K.F. Higgins. 2002. Incorporating landscape attributes into models for migratory grassland bird conservation. Conservation Biology 16:1638-1646.

Berman, G. 2007. Nesting success of grassland birds in fragmented and unfragmented landscapes of north central South Dakota. M.S. Thesis, South Dakota State University, 64pp.

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Drilling, N.E., E. Dowd Stukel, R.A. Sparks, and B.J. Woiderski. 2018. The 2nd Atlas of Breeding Birds of South Dakota. SDGFP, Wildlife Division Report 2017-2. South Dakota Game, Fish and Parks, Pierre.

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

Contact the Author:

Kristel K. Bakker, Ph.D.
Dakota State University
College of Arts and Sciences
820 N. Washington Ave.
Madison, South Dakota 57042
Email: kristel.bakker@dsu.edu

Contact the U.S. Fish and Wildlife Service:

U.S. Fish and Wildlife Service
Ecological Services South Dakota Field Office
420 S. Garfield Ave., Suite 400
Pierre, South Dakota 57501
Phone: (605) 224-8693
Email: southdakotafieldoffice@fws.gov

From:	Shepherd, Frederick L III CIV NORAD-USNC NJ3 (US)
To:	Casey Willis
Cc:	Christina White; Sample, Steven J CIV OSD OUSD ATL (US); NORAD-USNC Peterson AFB NJ3 Mailbox NORAD J36R OMB
Subject:	RE: (U) DOD Clearinghouse Responses: Triple H and North Bend, SD
Date:	Friday, December 09, 2016 12:17:04 PM
Attachments:	IR Letter Triple H Wind, Hugh and Hyde Counties, SD 12022016.pdf IR Leter North Bend Wind, Hughes and Hyde Counties, SD 12022016.pdf IR Triple H Wind Hughes Hyde Counties SD due 15Nov16.xls IR North Bend Wind Hughes Hyde Counties SD due 15Nov16.xls

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Classification: UNCLASSIFIED

Casey

Upon further/detailed analysis, NORAD has determined that the attached projects would have a minor but acceptable impact on our missions.

As such, NORAD does not have concerns at this time.

For reference, the attached xcel spreadsheets are the project details we assessed.

As always, we will again assess these projects formally if/when they are filed with the FAA via OEAAA.

Thank you for your outreach in the early planning stages.

v/r
Stitch

Stitch Shepherd, DAFC
Chief, Radar Interference Branch (NJ36R)
HQ NORAD J3
250 Vandenberg St. Ste B016
Peterson AFB, CO 80914-3817
DSN 834-3260 comm 719-556-3260

From: Casey Willis [mailto:cwillis@infinitywind.com]
Sent: Thursday, December 08, 2016 12:28 PM
To: Shepherd, Frederick L III CIV NORAD-USNC NJ3 (US)
Cc: Christina White; Sample, Steven J CIV OSD OUSD ATL (US)
Subject: [Non-DoD Source] RE: (U) DOD Clearinghouse Responses

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Thanks Stitch. The exact height is still unclear as we have not selected turbine models yet, but it's probably safe to assume up to 498 feet.

Casey

Classification: UNCLASSIFIED

From: Shepherd, Frederick L III CIV NORAD-USNC NJ3 (US) [Caution-mailto:frederick.l.shepherd.civ@mail.mil]
Sent: Thursday, December 08, 2016 11:28 AM
To: Casey Willis <cwillis@infinitywind.com>
Cc: Christina White <cwhite@infinitywind.com>; Sample, Steven J CIV OSD OUSD ATL (US) <steven.j.sample4.civ@mail.mil>
Subject: RE: (U) DOD Clearinghouse Responses

Classification: UNCLASSIFIED

Casey

Thank you for the notification below….we will conduct additional (more detailed) analysis and advise of our results….hopefully by close of business this week, but for sure no later than 21 December.

To confirm, for Triple H we're showing 109 turbines (486') and North Bend is 80 turbines (486')…..is that still accurate?

Thanks, Stitch

Stitch Shepherd, DAFC
Chief, Radar Interference Branch (NJ36R)
HQ NORAD J3
250 Vandenberg St. Ste B016
Peterson AFB, CO 80914-3817
DSN 834-3260 comm 719-556-3260

Classification: UNCLASSIFIED

From: Casey Willis [Caution-mailto:cwillis@infinitywind.com < Caution-mailto:cwillis@infinitywind.com >]
Sent: Thursday, December 08, 2016 10:26 AM
To: Shepherd, Frederick L III CIV NORAD-USNC NJ3 (US)
Cc: Christina White
Subject: [Non-DoD Source] DOD Clearinghouse Responses

Stitch,

We received responses via the DOD Clearinghouse related to two projects that we have in South Dakota that NORAD may have some level of interest in. Both letters are attached. I've also attached rough boundary maps for the two locations. Our Triple H project is located just south of the town of Highmore in Hyde and Hughes Counties. Our North Bend Project is located just north of the Crow Creek Reservation in Hyde County. I'm aware of the fact that NORAD has some decommissioned and operational missile silos in the Dakotas from past experiences, but I'm not sure if they are located anywhere near these facilities.

In any event, I wanted to check in with you to see if you can provide any feedback related to the concerns that you may have with these locations.

Thanks,
Casey

Casey Willis
Senior Project Manager

Infinity Renewables
3760 State Street, Suite 200 | Santa Barbara, CA 93105
O 805.569.6185 | M 805.701.1979 | F 805.569.6190

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

January 10, 2020

Mr. Casey Willis
Project Manager
ENGIE NORTH AMERICA
3760 State Street, Suite 200
Santa Barbara, CA 93105

Re: North Bend Project: Hyde & Hughes Counties, SD

Dear Mr. Willis:

In response to your request on October 28, 2019, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartmental Radio Advisory Committee (IRAC) the plans for the North Bend Wind Project, located in Hyde and Hughes Counties, South Dakota.

After a 45+ day period of review, no reviewing federal agencies identified concerns regarding blockage of their radio frequency transmissions.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you, again, for the opportunity to review this proposal.

Sincerely,

John R. McFall
Deputy Chief, Spectrum Services Division
Office of Spectrum Management

From:	Schuck, Brian P (FAA)
To:	Gomer, Christina
Cc:	Anderson, David P (FAA)
Subject:	[EXTERNAL] North Bend Wind proposal
Date:	Wednesday, February 10, 2021 10:15:40 AM

Ms. Gomer,

We have reviewed the document dated January 6, 2021, proposing a wind farm near Harrold, SD, in the counties of Hughes and Hyde. The proposed wind farm at its closest point is approximately 2.5 miles from the Harrold Municipal Airport, and about 8 miles the Highmore Municipal Airport. Structures over 200' tall will need to have an aeronautical study done to determine the impact to the safe and efficient use of aircraft. The studies can be filed at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

If you have any questions, please feel free to contact me.

Brian P Schuck, Program Manager
Dakota – Minnesota Airports District Office, Bismarck Office
2301 University Drive, Bld 23B
Bismarck, ND, 58504
701-323-7382

DENR
SOUTH DAKOTA

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

February 10, 2021

Christina Gomer
Western Area Power Administration
2900 4th Avenue North
Billings, MT 59101

RE: Environmental Assessment – Request for Comments
North Bend Wind Project, Hughes and Hyde Counties, South Dakota

Dear Ms. Gomer:

The South Dakota Department of Environment and Natural Resources (DENR) Surface Water Quality Program has reviewed the proposed North Bend Wind Project, in Hyde and Hughes Counties, South Dakota. Based on the information provided, DENR has the following comments:

1. At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (1-800-737-8676) or http://denr.sd.gov/des/sw/stormwater.aspx.

2. A Surface Water Discharge permit may be required if any construction dewatering should occur as a result of this project. Please contact this office for more information.

3. Impacts to tributaries, creeks, wetlands, and lakes should be avoided by this project. These waterbodies are considered waters of the state and are protected under Administrative Rules of South Dakota Chapter 74:51. Special construction measures may have to be taken to ensure that water quality standards are not violated.

   This project may be in close proximity to Chapelle Creek and South Fork Medicine Knoll Creek. These waterbodies are classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (6) Warmwater marginal fish life propagation waters;
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters.

   This project may be in close proximity to Holabird and Mission (also known as Stephan) Lakes. These waterbodies are classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Lakes for the following beneficial uses:

(6) Warmwater marginal fish life propagation waters;
(7) Immersion recreation waters;
(8) Limited contact recreation waters; and
(9) Fish and wildlife propagation, recreation, and stock watering waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the daily maximum total suspended solids criterion of 263 mg/L and the 30-day average total suspended solids criterion of 150 mg/L are not violated.

This project may be in close proximity to Chapelle Lake. This waterbody is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Lakes for the following beneficial uses:

(5) Warmwater semipermanent fish life propagation waters;
(7) Immersion recreation waters;
(8) Limited contact recreation waters; and
(9) Fish and wildlife propagation, recreation, and stock watering waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the daily maximum total suspended solids criterion of 158 mg/L and the 30-day average total suspended solids criterion of 90 mg/L are not violated.

4. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Section 404 of the Federal Water Pollution Control Act. Please contact the United States Army Corps of Engineers for more information 605-224-8531.

If you have any questions concerning these comments, please contact me by email at Shannon.Minerich@state.sd.us. Thank you.

Sincerely,

Shannon Minerich

Shannon Minerich
Environmental Scientist
Surface Water Quality Program

USDA
United States Department of Agriculture

January 21, 2021

Ms. Christina Gomer
NEPA Coordinator
Department of Energy
Western Area Power Administration
Upper Great Plains Customer Service Region
PO Box 35800
Billings, Montana 59107-5800

RE: Environmental Review for:
North Bend Wind Project

Dear Ms. Gomer:

Thank you for the opportunity to provide a Farmland Protection Policy Act (FPPA) review on this project. The project as outlined will have **no impact** on prime or important farmland.

If you have any questions, please contact me at (605) 858-6670.

Sincerely,

Jessica Michalski

JESSICA MICHALSKI
State Resource Conservationist

cc:
Nathan Jones, State Soil Scientist, NRCS, Huron SO

Natural Resources Conservation Service
200 Fourth Street SW, Room 203, Huron, SD 57350
Voice: 605.352.1200 Fax: 855.256.2565

SOUTH DAKOTA DEPARTMENT OF
GAME, FISH AND PARKS
523 EAST CAPITOL AVENUE | PIERRE, SD 57501

March 1, 2021

Christina Gomer
Western Area Power Administration
2900 4th Avenue North
Billings, MT 59101

RE: North Bend Wind Project, Hughes and Hyde Counties, South Dakota
WAPA Public Scoping Comments

Dear Christina,

Thank you for contacting South Dakota Game, Fish and Parks (GFP) regarding the proposed 200 megawatt North Bend Wind Project located in Hyde County, South Dakota. The proposed project would include the construction of approximately 90 turbines, turbine pads, access roads, underground power collection system, a new substation and a new overhead transmission line. We strive to collaborate with developers of wind projects to balance wildlife conservation with wind energy development in our state. The purpose of this letter is to provide information and recommendations for the development and siting of the proposed wind facility. We have prepared the following comments to address environmental concerns regarding threatened, endangered and rare species, areas of high conservation value, and species of concern in South Dakota. We request that the following comments and recommendations are considered as part of the Environmental Assessment (EA) to be prepared by Western Area Power Administration.

The proposed siting and operation of a wind power project has the potential to affect area wildlife by altering wildlife habitat, behavior and increasing mortality through collisions with wind turbines. Impacts to wildlife and their associated habitats can be minimized by using responsible, wildlife friendly siting recommendations early in the project planning stage of development. Additional information and recommendations on wind facility siting can be found on our website at: https://gfp.sd.gov/userdocs/docs/SDSitingGuides_2018-10-17.pdf. Please note, the GFP does not have regulatory authority regarding the siting and operation of a wind facility.

SOUTH DAKOTA NATURAL HERITAGE DATABASE

The South Dakota Natural Heritage Program monitors 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 found at the periphery of their range, have isolated populations or are species which we simply do not have extensive information. A list of species monitored by the Heritage Program can be found at https://gfp.sd.gov/natural-heritage-program/.

We have completed a search of the project area and found a record of Whooping Cranes (*Grus americana;* federally endangered) within the project area. Two additional whooping crane records were

identified approximately 5 miles east of the project area. All three records of whooping cranes using the area were observations of multiple birds on the ground (e.g. stop-over sites) for multiple days (2-5).

Please note many places in South Dakota have not been surveyed for rare or protected species and the absence of a species from the database does not preclude its presence from your project area.

HABITATS IMPORTANT TO CONSERVATION IN SOUTH DAKOTA

Native Grasslands

Grasslands are of high conservation value in South Dakota. Approximately 70% of the native mixed-grass prairie has been lost in eastern South Dakota, and approximately 32% has been lost in western South Dakota (Wright and Wimberly 2013, Bauman et al. 2014, Bauman et al. 2016, Bauman et al. 2018). Untilled grasslands, large grassland blocks (160 acres or more) and grasslands with native plant species are of particular importance and special care should be taken to avoid placing turbines in these areas. Other grassland types such as native rangeland, grazed grasslands (with native plant species), pasture (grazed grasslands with non-native plant species), and Conservation Reserve Program lands (formerly tilled lands planted to vegetative cover for erosion control and wildlife habitat) serve as wildlife habitat. Placement of project infrastructure (turbines, roads, etc.) in contiguous blocks of grassland can fragment habitat and result in less suitable habitat for grassland dependent species. Additionally, disturbance and compaction of grassland soils by construction activities (temporary or permanent) can permanently alter soil structure (Bauman et al. 2014). Early identification of grassland areas provides the information needed to avoid further grassland loss, degradation and fragmentation. The best available information on the location of untilled grasslands for South Dakota can be found in: Bauman et al. 2014, Bauman et al. 2016, and Bauman et al. 2018. These reports and associated spatial layers are available at: https://openprairie.sdstate.edu/.

Grassland Birds

Grassland nesting bird populations have been declining faster than any other bird groups in North America (Peterjohn and Sauer 1999, Rosenberg et al. 2019). Many grassland nesting bird species require large tracts of open, contiguous grasslands. Placement of turbines in large, in-tact grassland parcels can fragment habitat and displace certain species of grassland nesting birds (Shaffer and Buhl 2015).

Based on the information listed above, GFP recommends avoiding siting turbines in grassland habitats, particularly untilled native grasslands.

Wetlands

In South Dakota, the prairie pothole region encompasses almost half of the state east of the Missouri River. This region is characterized by millions of depressional wetlands, or “prairie potholes”, left behind by retreating glaciers, and surrounded with expansive grassland habitat. The unique mixture of diverse wetland types and remaining grasslands provides important breeding habitat for many grassland and wetland dependent birds. The United States portion of the prairie pothole region is often referred to as the “duck factory”; approximately 1.43 million breeding ducks settle in South Dakota.

Wetland and Shore Birds

The prairie pothole region of South Dakota supports a wide diversity of bird species (~80 species; Johnson et al. 1997). Wetland birds (such as rails, ibis, herons, bitterns, ducks, whooping cranes, etc.) can be susceptible to direct strikes with wind turbines (Johnson et al. 2002). Wind turbines can also displace nesting waterfowl pairs up to 800 meters (Loesch et al. 2013). Displacement of breeding

waterfowl from high quality habitats could result in increased predation or reduced reproduction in and around wind energy facilities (Loesch et al. 2013).

Based on the information listed above, GFP recommends avoiding siting turbines in wetlands or within wetland complexes (multiple wetland basins adjacent to each other).

Invasive and Non-native Plant Species

During the construction and maintenance phase of a wind energy facility, existing roads often experience increased traffic and new turbine access roads are constructed. This increases the amount of area disturbed and increases opportunity for the introduction and establishment of invasive, non-native plant species.

Based on the information listed above, GFP recommends controlling noxious weeds at the project site, as well as revegetating with native, weed-free seed mixes.

SPECIES OF CONCERN

Prairie Grouse

Prairie grouse (sharp-tailed grouse and greater prairie chicken) inhabit large in-tact blocks of native grassland. Development (roads, power lines, wind turbines, buildings, etc.) in and around prairie grouse habitat and leks can fragment otherwise suitable habitat and displace birds (Pruett et al. 2009). Prairie grouse and some species of grassland nesting birds are indicators of high-quality grassland habitat and a robust ecological community due to their specific habitat needs. Lek survey reports indicate the presence of up to eight prairie grouse leks within the project boundary and 1-mile survey buffer during the most recent survey (2020).

Based on the information listed above, GFP recommends a 1-mile setback of project infrastructure from active prairie grouse leks. We also recommend a two mile no construction buffer during the lekking season, 1 March to 30 June. Prairie grouse are sensitive to noise disturbance, and construction near leks could cause birds to abandon leks.

Bats

South Dakota is home to 13 different bat species. Bats are long-lived (up to 30 years) and have low reproductive rates (1-2 pups/year). Because of this, direct mortality of bats has a disproportionately larger impact to populations. Bat mortality at wind energy facilities is one of the major concerns regarding wind energy impacts on wildlife (Arnett et al. 2016, O'Shea et al. 2016). Post-construction mortality surveys from existing wind energy facilities have shown that migratory tree-roosting bats such as the hoary bat, eastern red bat and silver-haired bat, have the highest rates of mortality during their fall migration at wind energy facilities.

GFP recommends siting turbines at least 1,000 feet away from suitable bat habitat (e.g. forested areas, woody draws, etc.)

Prairie Dog Colonies

The black-tailed prairie dog is a keystone species that has a significant and unique impact on grassland ecosystems. Burrows are used for shelter and places to raise young. Prairie dog colonies may concentrate foraging raptors both during the breeding season and during migration. Many other species, such as black-footed ferret (a federally endangered species), swift fox (a state threatened species) and burrowing owls (a species of greatest conservation need) will use abandoned prairie dog

burrows. In addition, the endangered black-footed ferret primarily preys on black-tailed prairie dogs. Our data indicates the possible presence of 2-3 small prairie dog colonies within the project area.

Based on the information listed above, GFP recommends not siting turbines within or immediately adjacent to prairie dog colonies to reduce disturbance to habitat, as well as to reduce the risk of collision for avian predators that may forage in prairie dog colonies.

Whooping Cranes

The whooping crane is a state and federal endangered species with only one naturally occurring population. Members of this population pass through South Dakota as they migrate to and from Aransas National Wildlife Refuge in Texas to Wood Buffalo National Park in Canada. Whooping Cranes can be spotted almost anywhere in South Dakota during migration. However, reported sittings are most frequent near central South Dakota. Whooping cranes are large (1.5 m) birds and can have difficulty maneuvering quickly to avoid collision with powerlines and other tall structures. Powerline strikes are the most common form of mortality for fledged whooping cranes. The proposed project is located within the whooping crane migratory corridor and has known sightings of whooping cranes within and near the project boundary.

GFP recommends preparing a detailed contingency plan if whooping cranes are spotted within 2 miles of the project. We also recommend creating a detailed phone/contact tree for operations staff in the event a whooping crane is spotted. These two documents should be included in any Bird and Bat/Wildlife Conservation Strategy documents.

OTHER CONSIDERATIONS

Powerlines

New power lines/transmission lines are often associated with a proposed wind energy project. Powerline strikes and electrocutions are a known cause of mortality to birds. GFP recommends implementing mitigation measures described in The Avian Power Line Interaction Committee guidelines (https://www.aplic.org/). Additionally, GFP recommends avoiding placement of over-head powerlines adjacent to or between bodies of water (wetlands and lakes), as this could increase the risk of bird strikes, particularly for waterfowl. We further recommend burying collection and transmission lines when possible.

Post-Construction Surveys

GFP typically recommends at least 2 years of post-construction wildlife mortality monitoring. Triple H Wind Project (also owned by Engie North America) is located approximately 1 mile east of the proposed North Bend Wind Project. As part of the facility permit granted to Triple H from the South Dakota Public Utilities Commission, the applicant is required to undertake a minimum of two years of independently conducted post-construction avian and bat mortality monitoring (Condition 33). Because of the close proximity, similar habitat conditions and existing post-construction mortality monitoring requirements at Triple H, GFP is agreeable to substituting a post-construction research project to assess impacts to nesting grassland birds at the North Bend Wind Project, in-lieu of mortality monitoring. Game, Fish and Parks would prefer a study design that incorporates the BACI (before-after-control-impact) study design and methods similar to Shaffer and Buhl (2015). North Bend Wind Project is located approximately 6 miles west of the South Dakota Wind Energy Center, which was a study site used by Shaffer and Buhl (2015). Because of this close proximity, GFP believes that grassland bird research at the North Bend Wind Project presents a unique and valuable opportunity to add to wind-wildlife research efforts in the Dakotas.

We also recommend the developer draft a Bird and Bat Conservation Strategy/Wildlife Conservation Plan to include with project plans after wildlife surveys and project siting is complete (or near complete).

SUMMARY

Thank you for the opportunity to provide comments on the proposed development of the North Bend Wind Project in Hughes and Hyde Counties in South Dakota. We strive to work with developers of wind projects to balance wildlife conservation with wind energy development in our state. In summary, GFP recommends the following to avoid or minimize impacts to wildlife and wildlife habitats:

- Avoid placing project infrastructure in grassland, especially undisturbed grasslands
- Place project infrastructure in previously disturbed areas as much as possible
- Avoid placing turbines in wetlands, as well as in wetland complexes
- Control noxious weeds at the project site, as well as revegetate disturbed areas with native, weed-free seed mixes
- Avoid planning project infrastructure within 1 mile of active grouse leks
- Avoid construction within 2 miles of active grouse leks during the lekking season (March 1-June1)
- Site turbines at least 1,000 feet away from suitable bat habitat
- Avoid siting turbines within or immediately adjacent to prairie dog colonies
- Prepare a whooping crane contingency plan
- Prepare a detailed contact tree to accompany whooping crane contingency plan
- Prepare a Bird and Bat Conservation Strategy/Wildlife Conservation Plan
- Follow APLIC guidelines for designing and marking powerlines
- Complete at least two years of post-construction mortality monitoring *or* complete a post-construction research project focusing on grassland nesting birds within the project area

Please keep GFP involved in all future correspondence. For any additional questions or information, please contact me at 605.773.6208.

Sincerely,

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