



United States Department of the Interior

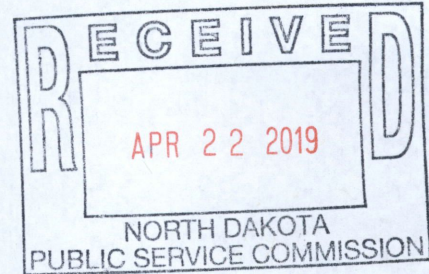


FISH AND WILDLIFE SERVICE North Dakota Ecological Services

IN REPLY REFER TO:
RUSO WIND
PROJECT

3425 Miriam Avenue
Bismarck, North Dakota 58501-7926

April 15, 20189



Ms. Katie Gase
Southern Power Company
3535 Colonnade Parkway
Birmingham, Alabama 35243

Dear Ms. Gase:

This letter is in regard to the proposed Ruso Wind Project in McHenry, McLean, and Ward Counties, North Dakota. Coordination on this project between Southern Power Company and our agency to date has included informal meetings, calls, and emails with both this office and the South Dakota Ecological Services office to exchange information, but has lacked written correspondence documenting those exchanges. We recognize much of the information provided herein has already been conveyed during our informal coordination, or had been acquired by other means. The purpose of this letter is to reiterate and clarify some of that prior information, as well as provide additional pertinent details to help ensure decisions regarding the Ruso Wind Project are well informed.

Below and in the attached information we provide recommendations 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 in the project area and vicinity. We have included guidelines and methods to apply to various components of a wind farm including turbines, meteorological towers, and power lines in order to avoid, minimize and/or compensate for impacts to trust resources and assist you in achieving compliance with Federal laws.

Our primary concern regarding the Ruso Wind Project is the project location. The site is within the Prairie Pothole Region, located on the Missouri Coteau. We echo sentiments previously relayed to you by the North Dakota Game and Fish Department (NDGFD) in their September 25, 2018, and December 20, 2018, letters regarding the value of this area. The grassland tracts and relatively high wetland density are habitat characteristics easily recognizable in aerial photos that serve as indicators of both relatively high wildlife use and anticipated greater impacts to wildlife should development occur there. Waterfowl and grassland birds in particular depend on these habitats, and both groups are known to be displaced from habitats in the vicinity of turbines. Tracts of native prairie and high densities of wetlands found on the Missouri Coteau are becoming increasingly critical to many declining native species in North Dakota. In their letters, NDGFD highlighted Species of Conservation Priority and drastic declines in populations of

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many species. Some of these are also identified by the Service as Birds of Conservation Concern, such as the upland sandpiper or grasshopper sparrow due to their declining numbers. Other important prairie species may be affected as well, including Species of Habitat Fragmentation Concern in North Dakota such as the northern harrier, or the sharp-tailed grouse which uses leks and relies on nesting habitat in the surrounding area. Our overarching recommendation is to avoid grassland and wetland habitats to the maximum extent possible by seeking out areas dominated by previously disturbed lands (e.g. cropland) for developments in order to reduce or eliminate impacts to these grassland and wetland dependent species. Previously disturbed areas do overlap with suitable wind energy resources as described in Fargione et al. 2012. We recommend developers seek out those areas to minimize the environmental impacts of wind energy.

We recognize that modifications to the Ruso Wind Project turbine layout have been made in an effort to reduce the footprint of the project on grasslands by moving turbines to croplands in the project area. We commend Southern Power Company for that effort. However, per the most recent layout of the project provided to us (December 2018), grassland and wetland impacts are still anticipated; thus any additional shifts of turbines away from wetlands and grasslands is recommended to minimize impacts to these resources. If complete avoidance is not possible, it is imperative to determine the anticipated direct and indirect impacts of the Ruso project and develop plans to adequately compensate for the expected lost value of this area for wildlife. To date, we are unaware of development of such a plan. Tools to quantify these impacts are described later in this letter and we are willing to assist you in this endeavor. Please see the attached information for additional guidance and recommendations for the Ruso Wind Project.

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 at (605) 224-8693, Extension 227.

Sincerely,



Natalie Gates
Field Supervisor
North and South Dakota Field Offices

Attachment
Enclosure

cc: USFWS Audubon WMD, Kathy Baer, Coleharbor, ND
USFWS J. Clark Salyer WMD, John Takala, Upham, ND
NDGF, Greg Link, Bismarck, ND
NDPSC, Steven Kahl, Bismarck, ND ✓

Attachment: U.S. Fish and Wildlife Service Guidance, Recommendations, and Additional Information related to the Ruso Wind Project, North Dakota.

April 15, 2019

2012 Land-Based Wind Energy Guidelines

Per coordination with the U.S. Fish and Wildlife Service (Service) regarding this project, Southern Power Company is aware of, and has been using, the voluntary 2012 *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines* (WEG) (available online at: <http://www.fws.gov/windenergy/>) which were developed in consultation with wind industry companies. We recommend close adherence to these guidelines, using the information gathered to first determine whether the project should be placed in the area of interest at all. The WEG invokes a tiered approach where information is collected with increasing levels of detail in order to evaluate risk posed to habitats and wildlife at potential wind energy sites. Tiers 1-3 each represent a preconstruction decision point to either move forward to development, gather more information and move to the next tier, or to abandon project plans at a given site thereby avoiding areas where development is precluded or where wildlife impacts are likely to be high and difficult or costly to remedy or mitigate at a later stage. If the project is to proceed at the chosen location, then the information gathered per the WEG is to be used to guide project specifics, such as turbine locations, and any needed mitigation measures. Wind energy facility effects to wildlife are both direct and indirect, typically including collision mortality, loss of habitat due to the footprint of the turbines/roads/other facilities, habitat fragmentation, displacement, encroachment of invasive weeds, and more. The best strategy to reduce impacts to wildlife in North Dakota is to develop wind energy facilities within areas dominated by cropland wherever possible to preclude direct effects and site turbines away from adjacent wildlife habitat as much as possible to reduce or eliminate indirect effects.

U.S. Fish and Wildlife Service Land Interests

The location of the proposed Ruso Wind Project falls within the jurisdiction of two Service Wetland Management Districts (WMD): the Audubon WMD (which includes Ward and McLean counties) and the J. Clark Salyer WMD (which includes McHenry County). Numerous Service grassland and wetland easements exist in the proposed project area, Waterfowl Production Areas are located both within and adjacent to the site, and Lake Otis National Wildlife Refuge is located near the site as well. Like the intact grasslands and high wetland density visible from aerial photos, the number of protected lands in and surrounding the Ruso Wind Project site is an indication of the area's high wildlife value and relatively greater environmental impacts that may be anticipated if the proposed project is constructed there. We recommend avoidance and minimization of impacts to these areas, followed by compensatory measures for any remaining unavoidable impacts, both direct and indirect. We are aware that you have been coordinating with Service staff regarding easements and recommend you continue to do so with each affected WMD.

Eagle Guidance

Golden eagles (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) may occur in the Ruso Project area. These birds are protected from a variety of harmful actions via take prohibitions in both the Migratory Bird Treaty Act¹ (MBTA; 16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668–668d). The BGEPA, enacted in 1940 and amended several times, prohibits take of bald eagles and golden eagles, including their parts, nests, young or eggs, except where otherwise permitted pursuant to federal regulations. Incidental take of eagles from actions such as electrocutions from power lines or wind turbine strikes are prohibited unless specifically authorized via an eagle incidental take permit from US Fish and Wildlife Service (Service). BGEPA provides penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." BGEPA defines take to include the following actions: "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Service expanded this definition by regulation to include the term "destroy" to ensure that "take" also encompasses destruction of eagle nests. Also the Service defined the term disturb which means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

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

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

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

may serve as the basis for applying for an eagle incidental take permit for wind energy facilities. Applications for such eagle incidental take permits must include an Eagle Conservation Plan.

<https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf>

The Service also has promulgated new permit regulations under BGEPA:

- New eagle permit regulations, as allowed under BGEPA, were promulgated by the Service in 2009 (74 FR 46836; Sept. 11, 2009) and revised in 2016 (81 FR 91494; Dec. 16, 2016). The regulations authorize the limited take of bald and golden eagles where the take to be authorized is associated with otherwise lawful activities. These regulations also establish permit provisions for intentional take of eagle nests where necessary to ensure public health and safety, in addition to other limited circumstances. The revisions in 2016 included changes to permit issuance criteria and duration, definitions, compensatory mitigation standards, criteria for eagle nest removal permits, permit application requirements, and fees in order to clarify, improve implementation and increase compliance while still protecting eagles.
<https://www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-29908.pdf>

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

Note that the Service has also developed recommendations for wind developers specific to the Mountain-Prairie Region (Region 6) which includes North Dakota:

- *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities* –The goal of these recommendations is to contribute to maintaining stable or increasing breeding populations of eagles by recommending conservation measures that will maintain breeding territories and minimize impacts to other important eagle use areas (e.g., eagle nests, foraging areas, and communal roosts).
https://www.fws.gov/coloradoes/documents/Final_GOEA_Buffer_Recommendations_AvoidanceMinimization_WindFacilities_April_10_2013.pdf.
- *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6* – In the event a project proponent intends to develop an ECP, this Region 6 document provides recommendations, in an outline format, for developing and organizing the content of an

ECP, and includes additional details on topics that should be addressed in the plan.
https://www.fws.gov/coloradoes/documents/Final_USFWS_R6_ECP_guidance.pdf.

Per raptor nest surveys conducted in the project area and surrounding 10-mile buffer, several bald eagle nests occur near the project area, and large bird surveys revealed eagles within the Ruso Wind Project area as well. We recommend close adherence to the guidelines above, including modeling of eagle data to determine the level of risk posed by the project and possible need for an eagle take permit.

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):

<u>Species</u>	<u>Status</u>	<u>Expected Occurrence</u>
Whooping Crane (<i>Grus Americana</i>)	Endangered	Spring and fall migration
Rufa Red Knot (<i>Calidris canutus rufa</i>)	Threatened	Rare seasonal migrant
Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	Threatened	Summer resident, seasonal migrant
Dakota Skipper (<i>Hesperia dacotae</i>)	Threatened	Resident in native prairie,
Least Tern (<i>Sterna antillarum</i>)	Endangered	Migration or nesting
Piping Plover (<i>Charadrius melodus</i>)	Threatened	Migration or nesting

Whooping Crane:

The proposed Ruso Wind Project location is within the documented migration corridor of the Aransas/Wood Buffalo population of whooping cranes, the only self-sustaining migratory population of whooping cranes in existence. Whooping cranes migrate through North Dakota twice annually on their way to northern breeding grounds and southern wintering areas, occupying numerous habitats such as cropland and pastures; wet meadows; shallow marshes; shallow portions of rivers, lakes, reservoirs, and stock ponds; and both freshwater and alkaline basins for feeding and loafing. Overnight roosting sites frequently require shallow water in which to stand and rest. Loss of stopover habitat in the migration corridor is a concern that may be realized if whooping cranes tend to avoid wind farms. Potential whooping crane habitat in North Dakota has been identified by the Service's Habitat and Population Evaluation Team in Bismarck. Per Niemuth et al. (2018) and associated model, the proposed project footprint

encompasses areas of high relative probability of landscape-level habitat use by migrating whooping cranes, and whooping crane sightings have been documented within and surrounding the Ruso Wind Project area. 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: *Region 6 Guidance for Minimizing Effects from Power Line Projects within the Whooping Crane Migration Corridor*, and Power Lines section below). Mortality via turbine strikes may also pose a risk if the birds utilize habitat at/near wind farm sites. Additionally, should construction occur during spring or fall migration, the potential for whooping crane disturbances (flushing the birds) exists. Disturbance stresses them at critical times of the year and should be avoided. These issues should be addressed prior to wind farm development. It is our understanding, per a December 14, 2018, meeting, that Southern Power Company intends to develop a contingency plan to shutdown turbines within two miles of any whooping cranes observed at or near the Ruso Wind Project. Please note that a system of reporting only incidental sightings (a contingency plan) is not equivalent to a monitoring plan. If staff are tasked to report incidental observations of cranes while performing their usual duties (contingency), as opposed to being dedicated to actively searching for whooping cranes (monitoring), the likelihood of making observations and accomplishing timely shutdown of turbines as birds approach is lowered. A biannual active monitoring plan with detailed protocols to shut down turbines near observed whooping cranes would reduce risks to the birds. Sightings of whooping cranes at any time should be reported to this office and the South Dakota Ecological Services office (420 S. Garfield Avenue, Suite 400, Pierre, South Dakota 57501; 605-224-8693).

Rufa Red Knot:

The rufa red knot is a robin-sized shorebird listed as threatened under the Endangered Species Act. The red knot 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 North Dakota. The species does not breed in this state.

Northern Long-eared Bat:

The northern long-eared bat is a medium-sized brown bat federally listed as threatened species. This is a forest-dwelling bat, roosting singly or in colonies underneath bark, in cavities or in crevices of both live and dead trees in the summer, and moving to hibernacula in the fall. Per a bat monitoring report for the Ruso Wind Project dated December 2017, northern long-eared bat calls were detected via acoustic studies at the site. At a December 14, 2018, meeting, Ecological Services staff indicated the summer survey guidelines established for the Indiana Bat can be applied to the northern long-eared bat to gain additional insight on the occurrence of this species in the project area (see:

<https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>).

Please submit any records of the northern long-eared bat to this office and the South Dakota Ecological Services office. 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 below cut-in speeds, curtailing turbines when bats are most likely to occur in the area (particularly late summer and fall when bats are migrating), and/or increasing cut-in speeds above those established by turbine manufacturers are some of the 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>.

Least Tern and Piping Plover

Least terns and piping plovers occur along the Missouri River and use alkaline wetlands/lakes in in North Dakota. Their habitats include sparsely vegetated interchannel sandbars, islands, and shorelines used for nesting, foraging and brood-rearing. They are sensitive to human disturbances which can limit reproduction. No construction should take place within 1/4 mile of any known piping plover or least tern nest. The specific migration habits of the least tern and piping plover in North Dakota are not known, but it may be possible for the birds to nest in the project area, or occur there as they move to/from nesting areas while foraging, dispersing from natal areas and migrating. Both species typically occur in North Dakota May through August.

Dakota Skipper

The Dakota skipper is a small prairie butterfly listed federally as a threatened species. Dakota skippers are obligate residents of high quality prairie ranging from wet-mesic tallgrass prairie to dry-mesic mixed grass prairie. Specific habitat characteristics are described in the final listing rule: <https://www.fws.gov/Midwest/endangered/insects/dask/pdf/FRButterflyFinalListing24Oct2014.pdf>. The Dakota skipper's dispersal ability is very limited due in part to their short adult life span and single annual flight. Extirpation from a site may be permanent unless it occurs within about 0.6 miles of an inhabited site that generates a sufficient number of emigrants. Avoidance of impacts to native prairie habitat is recommended to reduce the risk of adverse effects to this species. Survey protocols have recently been developed for North Dakota: The *2018 Dakota Skipper (Hesperia dacotae) North Dakota Survey Protocol*, available online at: https://www.fws.gov/mountain-prairie/es/protocols/2018_FINAL%20Dakota%20Skipper%20Survey%20Protocol_4202018.pdf. The species is difficult to detect and identify; only experienced, qualified personnel can accurately conduct surveys for this species. It is our understanding that the Ruso Wind Project area has been evaluated for Dakota skipper habitat, suitable habitat was found, and flight surveys were conducted with no detections of the species. Per a September 13, 2018, meeting, Service staff conveyed that Dakota skippers had been observed just east of the project area, and recommended additional surveys be conducted on the project site due to the difficulty in concluding this small cryptic species is absent. Southern Power Company indicated they would attempt to avoid blocks of suitable habitat rather than conduct additional surveys; we recommend doing so to ensure take of this species does not occur.

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 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>.

Wetlands

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

Birds of Conservation Concern

The Migratory Birds Division of the Service has published *Birds of Conservation Concern [BCC] 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. There are 27 species listed in the BCC document that occur within Bird Conservation Region 11 (Prairie Potholes), many of which inhabit the Ruso Wind Project. Direct and indirect effects to these species will occur with establishment of this wind facility. Primary threats impacting grassland species that occur in North Dakota are habitat loss and fragmentation. In accordance with Executive Order 13186 regarding migratory bird protection, we recommend avoidance, minimization, and finally compensation to reduce the impacts to species protected by the MBTA, including BCC species. Compliance with this law may be partially addressed in a Bird and Bat Conservation Strategy (BBCS) (identified within the WEG and explained further below).

Avian Avoidance of Wind Turbines

As indicated in the WEG, wind turbines are known to impact migratory birds directly, with post-construction mortality surveys typically recommended for 1-2 years (or more) in order to identify mortality levels. Importantly, the WEG also identifies the indirect effects of wind energy facilities such as fragmentation effects and avian avoidance of turbines resulting in

displacement to other habitats. While direct impacts can be readily observed and quantified, these indirect impacts are more difficult to assess, requiring more time and effort to do so. The Before-After-Control-Impact (BACI) method for avian studies is recommended in the WEG. This study design is particularly useful in determining indirect effects of wind projects on wildlife, but such studies are rarely conducted typically due to those time/effort constraints. In the absence of robust project-specific research at every wind farm, two relatively recent studies are of particular importance to this issue of quantifying avoidance/displacement: Loesch et al. (2013) and Shaffer and Buhl (2016). Both of these peer reviewed, published studies were conducted over multiple years, on multiple wind farms, involved large sample sizes, used reference sites for comparison, and were conducted on wind farms in North and South Dakota that harbored many or all of the same species likely to occur at the Ruso Wind Project.

Loesch et al. (2013) evaluated breeding waterfowl pairs on wetlands at existing wind farms and reference sites in the Prairie Pothole Region. Displacement within 805 meters (0.5 mile) of wind turbines was detected at an average rate of 21% by five waterfowl species. Per our prior coordination, Southern Power Company informed us of consultation with C. Loesch of the Service's HAPET office in Bismarck, North Dakota, (primary author of Loesch et al. 2013). Unless the turbine layout has changed since that coordination, the anticipated number of waterfowl pairs displaced by the Ruso Wind Project is 641 and the number of 2-acre sized wetlands that would be needed to compensate for that displacement is 166.

Shaffer and Buhl (2016) evaluated wind farms and reference sites in the Prairie Pothole Region, but their research was on grassland nesting birds and also included pre-construction data, thus this study applied the BACI method. Their results also detected avoidance of turbines by seven species. The average rate of displacement out to 300 meters (0.19 mile) from wind turbines was 53% by the 5th year post construction. This research also detected a trend: displacement of grassland nesting birds increased annually during that 5 years post-construction. While Southern Power Company coordinated with C. Loesch on waterfowl displacement, we are not aware of a similar effort to determine acreage of grassland habitat needed to offset displacement of grassland nesting birds at the Ruso Wind Project per Shaffer and Buhl (2016). As noted earlier, we are willing to assist with plans to accomplish this offset.

In addition to the above recent research, an older study of shorter duration was conducted at a wind facility in the Prairie Pothole region and also identified avoidance of wind turbines by birds, this time on Conservation Reserve Program (CRP) lands: Leddy et al. 1999. CRP grasslands are areas typically planted with grass species after being cropped. CRP grasslands without turbines and areas located 180 m from turbines supported higher densities (261.0-312.5 males/100 ha) of grassland birds than areas within 80 m of turbines (58.2-128.0 males/100 ha) (Leddy et al. 1999). While native prairie is of particular importance due to its decline and native species that depend on it, planted grassland tracts also hold value for wildlife, and birds using these tracts can be displaced.

If the Ruso Wind Project proceeds, we recommend using C. Loesch's quantification of wetlands needed to compensate for waterfowl displacement at the Ruso Wind Project site (or calculating appropriate new values if the turbine layout has since changed) and develop a plan to achieve those offsets. We also recommend quantifying grasslands within 300 m of turbines and applying

the 53% displacement percentage via Shaffer and Buhl (2016) to determine and disclose anticipated indirect impacts to grassland nesting birds, and adding this to the offset plan. Finally, if CRP or other non-native grassland habitats will be affected by the Ruso Wind Project, we recommend developing appropriate offsets for this impact in the plan as well. We encourage project developers to provide the plan as part of the project.

Mitigation

The Service's mitigation policy, available online at: https://www.fws.gov/policy/aInpi89_02.pdf, was established in 1981 to help assure consistent and effective mitigation recommendations that help Federal action agencies and developers plan for mitigation measures early, avoid delays, and assure equal consideration of fish and wildlife resources with other project features and purposes. Our policy adopts the definition of the term "mitigation" as stated in the NEPA regulations which includes: "(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments."

As noted above, direct and indirect effects to wildlife are known to occur at wind energy facilities. We encourage the analysis of both types of impact and quantification of those impacts whenever possible. The mitigation methods above can be applied to reduce direct and indirect effects at any point in the process of project development; however, we recommend early planning to help ensure full implementation of any necessary mitigation measures.

Bird and Bat Conservation Strategy

Bird and bat conservation strategies are recommended in the WEG. It is our understanding that Southern Power Company does intend to develop a BBCS for the Ruso Wind Project. Note that the Service has developed a document for Region 6 (which included North Dakota) to further assist companies in following our established national guidance on BBCSs: *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*. This document is available online at: <https://www.fws.gov/coloradoes/documents/Final%20R6%20BBCS%20Outline%20with%20anotation.pdf>. 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 the WEG, describing the analyses, studies, and reasoning implemented with the purpose of mitigating for potential avian and bat impacts. It also addresses post-construction monitoring and habitat impacts.

Meteorological Towers

Meteorological towers associated with wind energy projects are similar to other communication towers in that they are a known mortality hazard to wildlife, particularly birds. Of primary concern is the risk of avian collision mortality. Communication towers are currently estimated to kill 6.8 million birds per year in the United States and Canada (Longcore et al. 2012). To assist developers in establishing communication towers that are more compatible with wildlife, we have developed our 2018 *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*, available online at: <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php>. These recommendations incorporate the state of the science and the 2015 Federal Aviation Administration's *Obstruction Marking and Lighting Advisory Circular AC 70/7460-1L*, online at: https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_70_7460-1L_with_chg_1.pdf. Among the primary concerns addressed within our guidelines are the establishment of new towers on the landscape, the heights of these towers, their lighting scheme, and means of structural support. Collocation of new tower facilities on an existing structure is strongly recommended to avoid any additional impacts to migratory birds. If a new tower is necessary, placement of the new tower near other existing structures is recommended to concentrate the risk posed by the towers to relatively small areas. Minimization of tower height (below 200 feet to preclude the need for Federal Aviation Administration lighting requirements), use of only strobe or flashing lights (avoid steady-burning lights), and avoidance of guy wires (a great deal of avian mortality is a result of collisions with supporting guy wires) are important components intended to minimize potential impacts to migratory birds. The habitat at a tower location and surrounding area can also affect its level of risk to wildlife. Tower placement should occur in degraded sites avoiding ridgelines, coastal areas, wetlands or other bird concentration areas such as staging areas, rookeries, leks, and state or federal refuges. Please see the website provided above for additional information.

Overhead Power Lines

The construction of additional overhead power lines associated with wind farms creates the threat of avian electrocution, particularly for raptors. Thousands of these birds, including endangered species, are killed annually as they attempt to utilize overhead power lines as nesting, hunting, resting, feeding, and sunning sites. The Service recommends the installation of underground, rather than overhead, power lines whenever possible/appropriate to minimize environmental disturbances. For all new overhead lines or modernization of old overhead lines, we recommend incorporating measures to prevent avian electrocutions. The publication entitled *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* includes many measures to reduce risk to birds including pole extensions, modified positioning of live phase conductors and ground wires, placement of perch guards and elevated perches, elimination of cross arms, use of wood (not metal) braces, and installation of various insulating covers. You may obtain this publication by contacting the Edison Electric Institute via their website at: <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:
<https://www.edmlink.com/component/zoo/item/video-raptors-at-risk>.

In addition to electrocution, overhead power lines also present the threat of avian line strike mortality. Particularly in situations where these lines are adjacent to wetlands or where waters exist on opposite sides of the lines, we recommend marking them in order to make them more visible to birds. For more information on bird strikes, please see *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* which, again, may be obtained by contacting the Edison Electric Institute via their website at:
<http://www.eei.org/resourcesandmedia/products/Pages/products.aspx>, or by calling 202-508-5000.

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. Marking of existing lines elsewhere in the species' corridor is recommended.

Summary

Below we reiterate items above that are pertinent to the proposed project:

- Primary concerns: direct and indirect impacts to grassland and wetland habitats and their associated wildlife
- Primary recommendation: avoid these habitats, directing development toward previously disturbed areas (e.g. cropland).
- Wind energy guidelines:
 - *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines*
<http://www.fws.gov/windenergy/>
- Service land interests:
 - Contact Audubon and J.Clark Salyer WMDs - North Dakota directory:
<https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=38>
- Eagle guidance:
 - Bald and Golden Eagle Protection Act (BGEPA)
 - *National Bald Eagle Management Guidelines*
<https://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf>
 - *Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy Version 2*
<https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf>
 - Eagle take permit
<https://www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-29908.pdf>
 - *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities*
https://www.fws.gov/coloradoes/documents/Final_GOEA_Buffer_Recommendations_AvoidanceMinimization_WindFacilities_April_10_2013.pdf
 - *Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS Region 6*
https://www.fws.gov/coloradoes/documents/Final_USFWS_R6_ECP_guidance.pdf
- Threatened/endangered species - Endangered Species Act (ESA):
 - Dakota Skipper
 - Least Tern
 - Northern Long-eared Bat
 - Piping Plover
 - Rufa Red Knot
 - Whooping Crane
- Wetlands – avoid, minimize, compensate for unavoidable impacts:
<https://www.fws.gov/wetlands/>

- Birds of Conservation Concern - *Birds of Conservation Concern 2008*:
<https://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf>
- Avian Avoidance of Wind Turbines - indirect effects:
 - Loesch et al. (2013) – waterfowl
 - Shaffer and Buhl (2016) – grassland nesting birds
 - Leddy et al. 1999 – CRP nesting birds
- Mitigation - 1981 Service Mitigation Policy:
https://www.fws.gov/policy/a1npi89_02.pdf
- Bird and Bat Conservation Strategy – WEG and *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects*:
<https://www.fws.gov/coloradoes/documents/Final%20R6%20BBCS%20Outline%20with%20annotation.pdf>
- Meteorological Towers:
 - *2018 Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*
<https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php>
 - 2015 Federal Aviation Administration Obstruction Marking and Lighting Advisory Circular AC70/7460-1L
https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_70_7460-1L_with_chg_1.pdf
- Overhead Power Lines:
 - *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*
<http://www.eei.org/resourcesandmedia/products/Pages/products.aspx>
 - *Raptors at Risk* video
<https://www.edmlink.com/component/zoo/item/video-raptors-at-risk>
 - *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*
<http://www.eei.org/resourcesandmedia/products/Pages/products.aspx>

Literature Cited

Fargione J, Kiesecker J, Slaats MJ, Olimb S (2012) Wind and Wildlife in the Northern Great Plains: Identifying Low-Impact Areas for Wind Development. PLoS ONE 7(7): e41468. doi:10.1371/journal.pone.0041468.

Leddy, K. L, K. F. Higgins, D. E. Naugle. 1999. Effects of wind turbines on upland nesting birds in Conservation Reserve Program grasslands. *Wilson Bulletin* 111(1):100-104.

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.

Longcore, T., C. Rich, P. Mineau, B. MacDonald, D.G. Bert, L.M. Sullivan, E. Mutrie, S.A. Gauthreaux, M.L. Avery, R.L. Crawford, A.M. Manville, E.R. Travis, and D. Drake. 2012. An estimate of avian mortality at communication towers in the United States and Canada. *PLoS One* 7(4): 1-17.

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

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



United States Department of the Interior

FISH AND WILDLIFE SERVICE Mountain-Prairie Region



IN REPLY REFER TO:
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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 habitat¹.
- 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 mark² 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

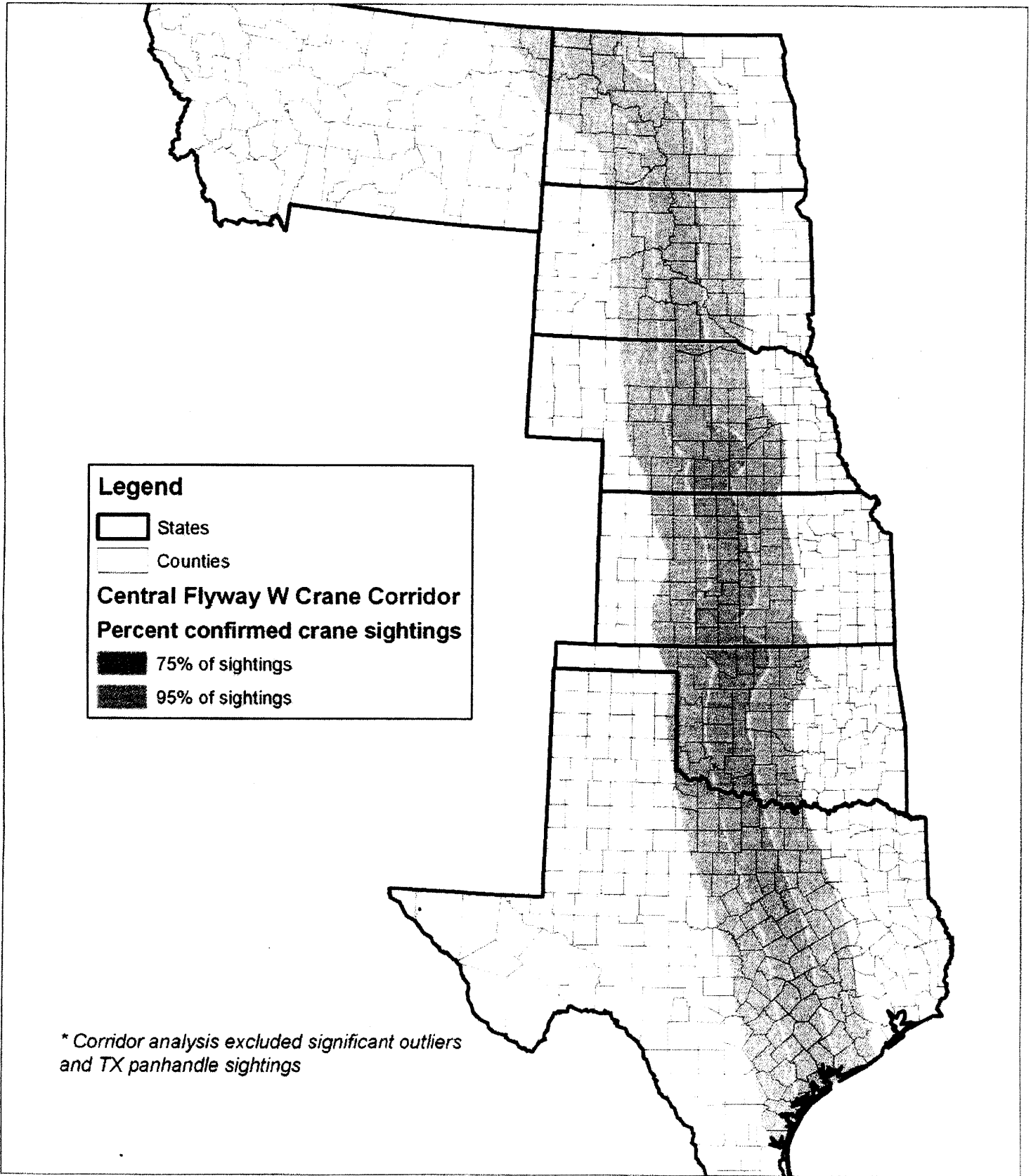
Project proponents should mark new lines within 1.0 mile of potentially suitable habitat at the discretion of the local ES field office, based on the biological needs of the whooping crane.

c) Develop compliance monitoring plans

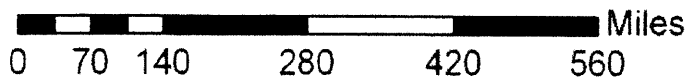
Field offices should request written confirmation from the project proponent that power lines have been or will be marked and maintained (i.e., did the lines recommended for marking actually get marked? Are the markers being maintained in working condition?)

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.



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



Literature Cited

- Armbruster, M.J. 1990. Characterization of habitat used by whooping cranes during migration. U.S. Fish and Wildlife Service. Biological Report 90(4). 16 pp.
- 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.
- Avian Power Line Interaction Committee. 1994. Mitigating bird collisions with power lines: the state of the art in 1994. Edison Electric Institute. Washington, D.C. 99 pp.
- Brown, W.M., and R.C. Drewien. 1995. Evaluation of two powerline markers to reduce crane and waterfowl collision mortality. *Wildlife Society Bulletin* 23(2):217-227.
- Howe, M.A. 1987. Habitat use by migrating whooping cranes in the Aransas-Wood Buffalo corridor. Pp 303-311, in J.C. Lewis and J.W. Ziewitz, eds. Proc. 1985 Crane Workshop. Platte River Whooping Crane Habitat Maintenance Trust and U.S. Fish and Wildlife Service, Grand Island, Nebraska.
- Johns, B.W., E.J. Woodsworth, and E.A. Driver. 1997. Habitat use by migrant whooping cranes in Saskatchewan. *Proc. N. Am. Crane Workshop* 7:123-131.
- Lingle, G.R., G.A. Wingfield, and J.W. Ziewitz. 1991. The migration ecology of whooping cranes in Nebraska, U.S.A. Pp 395-401 in J. Harris, ed. Proc. 1987 International Crane Workshop, International Crane Foundation, Baraboo, Wisconsin.
- Morkill, A.E., and S.H. Anderson. 1991. Effectiveness of marking powerlines to reduce sandhill crane collisions. *Wildlife Society Bulletin* 19:442-449.
- 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.