United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Dakota Ecological Services
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IN REPLY REFER TO:
RED BUTTE WIND
ENERGY CENTER

October 17, 2019

Ms. Lindsey Churchill
AECOM
Environmental Project Manager
1000 East Calgary Avenue, Suite 1
Bismarck, North Dakota 58503

Dear Ms. Churchill:

This letter is in response to your request dated August 16, 2019, for environmental comments regarding the above referenced Red Butte Wind Energy Center (WEC). This proposed wind energy facility, purchased by NextEra in 2019, is a 200 MW wind energy facility with a 15-mile 230kV transmission line in Oliver and Mercer Counties, North Dakota. It is our understanding that the turbine layout is still undergoing modifications (per a September 19, 2019, email exchange with NextEra's Dustin Jones), and that additional wildlife surveys are occurring on this project (per a July 18, 2019, call/meeting on this project introducing NextEra as new owners). Staffing limitations in our agency's Ecological Services office in Bismarck, North Dakota, precluded significant U.S. Fish and Wildlife Service (Service) coordination on this project to date; our office appreciates the opportunity to provide input.

In this letter and attachment we provide information and recommendations regarding important wildlife habitats and 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 the developer in achieving compliance with Federal laws. Much of this information applies to most, if not all, wind energy facilities in North Dakota, but comments and considerations specific to this project based on information received to date, including study reports, are provided as well.

Our foremost concerns regarding the proposed Red Butte WEC and associated transmission line are:

- Grasslands/Avian Impacts. Per Red Butte WEC reports, the project area is comprised of about 68% grasslands. Unbroken prairie represents about 43% of the project area, and the transmission line corridor is comprised of 18% native prairie as well. The original

native prairie of North Dakota has been, and continues to be, lost to such an extent that it is considered the most endangered ecosystem in the state. Our primary recommendation on all wind energy facilities in North Dakota is to avoid impacting all grasslands, particularly native prairie, focusing instead on areas that are currently disturbed (e.g. cropland). This recommendation applies both at the large scale (choosing project areas dominated by disturbed lands), as well as turbine siting/micro-siting scale (placing structures within the project area on disturbed lands).

Projects in areas that are primarily grasslands are more likely to incur impacts to wildlife than those in disturbed areas due to the resulting loss and degradation of habitat. Grassland nesting birds in particular are known to be displaced by wind turbines. Population declines among this group of birds is greater than for any avian groups reliant on any other biomes in North America (Rosenberg et al. 2019). Population level impacts begin with, and are exacerbated by, local impacts to individuals. Development of the Red Butte WEC in this grassland dominated project site will impact local nesting grassland birds and contribute to their continued decline.

We recommend seeking an alternate area with less intact habitat for this project. Previously disturbed areas do overlap with suitable wind energy resources – see Fargione et al. 2012. If the Red Butte WEC is to proceed at this location, then we recommend avoidance to the maximum extent possible of grasslands, particularly native prairie. If such areas cannot be avoided, it is imperative to analyze the anticipated impacts of the 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 in the attachment.

- Whooping Crane. The project area is within the whooping crane migration corridor and whooping cranes have been reported near the proposed Red Butte WEC. Wind turbines may pose a collision risk to these birds, or cause displacement if the cranes avoid otherwise suitable habitat. Overhead transmission lines are a known source of mortality for this species. If the project cannot be moved from the whooping crane migration corridor, measures to reduce the collision mortality risks to this species (e.g. active monitoring, turbine shutdowns, line marking devices) should be applied to reduce the risk of unauthorized take of this species under section 9 of the Endangered Species Act (ESA). Without a federal nexus to this project, development of a Habitat Conservation Plan (HCP) is the means by which to ensure ESA compliance (see: https://www.fws.gov/endangered/what-we-do/hcp-overview.html).

- Northern long-eared bat. Preconstruction surveys at Red Butte WEC revealed the presence of northern long-eared bats both on-site and in adjacent habitats during summer The latter is currently pending genetic verification; we request the results of that testing when available. Proposed Red Butte WEC bat survey plans indicated telemetry studies would be performed to determine potential location of maternity roosts; we request results of that effort if/when those studies are conducted.

The current ESA 4(d) rule for this species does not prohibit incidental take of the northern long-eared bat at wind facilities that are not located near hibernacula or maternal roosts. However, since the bat has been detected in/near the proposed facility in the summer, roosts may exist nearby. At this point, we recommend proactive measures be taken to protect individual bats, i.e. feather blades below cut-in speeds and increase cut-in speeds to at least 5.0 m/s when bats may be present. This is in support of conservation of this federally listed species, as well as other bat species known to be susceptible to wind turbine collision mortality.

- Dakota skipper. Dakota skipper surveys were not conducted despite the presence of suitable reproductive habitat for the species within the Red Butte WEC project area and historic records of the species in Oliver County. The commitment by NextEra in current documents regarding the Dakota skipper is to avoid such areas to the extent "practicable". Since this is not a commitment of complete avoidance, it appears the potential exists for this suitable Dakota skipper habitat to be impacted by the project and without survey information to indicate otherwise, the species may be present. This small butterfly species spends the majority of its annual life cycle on the ground in the egg, larval, or pupal stage. Ground-disturbing activities in suitable habitat could harm individuals. We recommend complete avoidance of impacts to these areas to ensure Dakota skipper unauthorized take under section 9 of the ESA does not occur, or as noted above, development of a HCP to ensure ESA compliance.

- Eagles. Bald and golden eagles are protected via the Bald and Golden Eagle Protection Act (BGEPA). The Red Butte WEC is relatively near the Missouri River which is known to attract bald eagles for both nesting and roosting. At least 11 bald eagle nests have been identified in the project area per the *Spring, Summer & Fall Pre-Construction Avian Survey Report, Red Butte Wind Project, Oliver and Mercer Counties, North Dakota, November 18, 2016*. The presence of golden eagles, whether nesting or migratory, is also a concern as this species was also documented during preconstruction surveys. If prey base, such as prairie dogs, exist within/near the project area, placement of project infrastructure in/near these areas would increase risks to golden eagles; such areas should be avoided. We recommend adhering closely to the recommended eagle guidance herein.

The attachment provides additional information pertaining to the above concerns as well as other issues and species related to the Red Butte Wind Energy Center. 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 determinations herein 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
North and South Dakota Field Offices

Attachment/Enclosures

cc: NDGF, Greg Link, Bismarck, ND

Attachment: U.S. Fish and Wildlife Service Additional Information Regarding the Red Butte Wind Energy Center and Transmission Line, Oliver and Mercer Counties, North Dakota.
October 17, 2019

2012 Land-Based Wind Energy Guidelines

We recognize that NextEra 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 in which 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. Sites dominated by grasslands with a high component of native prairie, as is the case for the Red Butte WEC, may fit that description. If the project is to proceed at the chosen location, then the information gathered per the WEG is used to guide project specifics, such as turbine locations, and any needed mitigation measures. Wind energy facility impacts are incurred to both habitat and wildlife, typically including wildlife collision mortality, loss of habitat due to the footprint of the turbines/roads/other facilities, habitat fragmentation, wildlife displacement, encroachment of invasive weeds, and more. Currently, the best strategy to reduce impacts to wildlife is to develop wind energy facilities within areas dominated by cropland wherever possible to preclude direct impacts to valuable wildlife habitats, and siting turbines away from adjacent wildlife habitat as much as possible to reduce indirect effects.

Eagle Guidance

Golden eagles (*Aquila chrysaetos*) are year-round residents in western North Dakota and may be found throughout the state in winter or during migration. Bald eagles (*Haliaeetus leucocephalus*) occur throughout North Dakota in all seasons. These species are protected from a variety of harmful actions via take prohibitions in both the Migratory Bird Treaty Act[1] (MBTA;

[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.

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 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:

- 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):

- *Region 6 Recommendations for Avoidance and Minimization of Impacts to Golden Eagles at Wind Energy Facilities* –The goal of this document 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.

- *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* – finalized in July 2019, this guidance replaces an earlier outline version of ECP recommendations by the Service's Mountain-Prairie Region (Region 6) entitled "Final Outline and Components of an Eagle Conservation Plan (ECP) for Wind Development: Recommendations from USFWS, Region 6". The purpose of the new guidance is to eliminate unnecessary work and expense by permit applicants and shorten/streamline the process of applying for an eagle incidental take permit (EITP). The guidance will reduce the ECP process to only those items necessary for the USFWS to conclude that the ECP is sufficient to support the EITP application, and ensure that we have what we need both for our review of the application and our required NEPA compliance.

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. As noted earlier, we are aware that both species of eagle have been observed at the Red Butte WEC; we request results of all eagle data collected for this 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
Dakota Skipper (*Hesperia dacotae*)	Threatened	Resident in native prairie
Least Tern (*Sterna antillarum*)	Endangered	Migrant or nesting
Northern Long-eared Bat (*Myotis septentrionalis*)	Threatened	Summer resident, seasonal migrant
Piping Plover (*Charadrius melodus*)	Threatened	Migrant or nesting
Rufa Red Knot (*Calidris canutus rufa*)	Threatened	Rare migrant
Whooping Crane (*Grus Americana*)	Endangered	Spring and fall migrant

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. Their 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. Critical habitat has been designated for this species; for details and locations see: http://www.fws.gov/Midwest/endangered/insects/dask/index.html. Survey protocols have been developed for North Dakota; the *2018 Dakota Skipper (Hesperia dacotae) North Dakota Survey Protocol* is available online at: https://www.fws.gov/mountain-phttps//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. Our primary recommendation to avoid impacting this species when survey data is lacking is to avoid development in native prairie within the species' range.

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.

Northern Long-eared Bat:
The northern long-eared bat is a medium-sized brown bat that roosts singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees in the summer and migrates to hibernacula (often caves) in the winter. 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. As indicated earlier, a 4(d) rule has been published that exempts take of Northern long-eared bats at wind facilities that are not located near maternity roosts or hibernacula (see: https://www.fws.gov/Midwest/Endangered/mammals/nleb/index.html). At this time, we have not located maternity roosts or hibernacula in North Dakota. However, since bat acoustic surveys conducted within the Red Butte WEC project site and mist-net surveys conducted adjacent to the site have revealed the species' presence in the summer, maternity roosts may be nearby. The project site is not heavily forested, but riparian corridors within the project area may serve as habitat for the species, particularly since they are connected to the Missouri River corridor. We recommend proactive measures to protect individual bats that may be at risk from this development including feathering turbine blades and increasing cut-in speeds to 5 m/s or more to reduce the risk of bat mortality at wind generation facilities. Post-construction mortality studies per the WEG are recommended to determine impacts to bats and inform the need for additional adaptive management strategies.

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 North Dakota. The species does not breed in this state.

Whooping Crane:
The proposed Red Butte WEC 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. 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. Sightings of whooping cranes should be reported to this office. These are large birds with low maneuverability. Line strike mortality is the greatest known threat to fledged whooping cranes and the Red Butte WEC includes a new overhead transmission line perpendicular to the whooper corridor. 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 and loss of stopover habitat in the migration corridor is a concern that may be realized if whooping cranes tend to avoid wind farms. Additionally, should construction occur during spring or fall migration, the potential for 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. According to the *Whooping Crane Likelihood of Occurrence Report, Red Butte Project, Oliver and Mercer Counties, North Dakota, November 11, 2016,* the risk to whooping cranes at this project site is deemed low, despite the project location being within the 75% band of the corridor (encompassing 75% of documented sightings). As noted in the report, however, the nature of whooping crane stopovers is opportunistic, the birds use a variety of habitats, and only 4% of stopovers are estimated to be reported. Additionally the existence of a stopover report within 2 miles of the project is indicative that the birds can and do use the general area. Potential whooping crane habitat in North Dakota has been modeled by the Service's Habitat and Population Evaluation Team in Bismarck (Neimuth et al. 2018) and was recommended to NextEra during our July 18, 2019 call/meeting as an additional source of information helpful in assessing risks to whooping cranes. The most effective means to reduce the risks posed to this species is to locate the project outside the whooping crane migration corridor.

If a federal nexus exists for this project (i.e. a federal agency is funding, permitting or otherwise authorizing the project), and the federal action agency, or their designated representative determines that the project "may adversely affect" listed species in North Dakota, they should request formal consultation from this office. If a "may affect - not likely to adversely affect" determination is made for this project, they should submit it to us 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.

Wetlands

According to National Wetlands Inventory maps, available online at: https://www.fws.gov/wetlands/, 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 (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.

Native Grasslands and Grassland Dependent Birds

Native prairie is a particularly important and imperiled habitat in North Dakota. In addition to the intrinsic value of diverse native prairie plant communities, these areas represent a fraction of the prairie acres that once existed in the state and remaining tracts have become increasingly critical to many declining bird and pollinator species. These habitats harbor numerous native wildlife species, some of which cannot survive outside the native plant community. The North Dakota Game and Fish Department's September 12, 2019, letter regarding this project highlighted that native prairie supports more than 30 of the 115 Species of Conservation Priority (SCP) identified by the state, some of which have experienced population declines of 74% or more.

Some of the State's SCP species are also identified by the Service as Birds of Conservation Concern (BCC) (see below) due to their declining numbers. Further overlap occurs between the list of BCC species and Service-identified avian Species of Habitat Fragmentation Concern in North Dakota. The majority of North American bird species are known to be in decline, incurring a 29% reduction in abundance since 1970, equating to a loss of 2.9 billion birds across almost all biomes (Rosenberg et al. 2019). Among those, grassland birds have experienced the largest magnitude of total population loss: 53%, or more than 700 million breeding individuals across 31 species (Rosenberg et al. 2019). Population level declines begin with local impacts to individuals and/or habitats; development of the Red Butte WEC will impact local nesting grassland birds. Birds are important components of the prairie ecosystem and their loss has cascading effects. Our overarching recommendation to wind energy developers is to avoid grassland 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 dependent species.

Also note that while native prairie is considered a conservation priority in the state, lesser-quality grasslands (e.g. grasslands with a high non-native plant component, overgrazed grasslands) can still provide some habitat for wildlife, and we recommend avoidance of these plant communities whenever possible as well. Project impacts should instead be directed toward previously disturbed land (e.g. cropland).

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 28 species listed in the BCC

document that occur within Bird Conservation Region 17 (Badlands and Prairies) where the Red Butte WEC project area is proposed. 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 via collision with turbines, thus post-construction mortality surveys are typically recommended for 1-2 years (or more) to quantify that mortality and compare it with pre-construction risk assessments. Importantly, the WEG also identify other effects of wind energy facilities such as habitat fragmentation and wildlife avoidance of turbines. While direct mortality can readily be observed and quantified, displacement impacts are more difficult to document/quantify and require more time and effort. 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).

Loesch et al. (2013) evaluated breeding waterfowl pairs on wetlands at existing wind farms and reference sites in the Prairie Pothole Region. Displacement of 18% of pairs, among five waterfowl species was detected within 805 meters (0.5 mile) of wind turbines (C. Loesch, USFWS, pers. comm., 2019).

Similarly, Shaffer and Buhl (2016) evaluated wind farms and reference sites in the Prairie Pothole Region, but their research was on grassland nesting birds and also included pre-construction data, thus this study applied the BACI method. Their results 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 (J. Shaffer, USGS, pers. comm., 2019). This research also detected a trend: displacement rates of grassland nesting birds continued to increase over time during that 5 years post-construction (J. Shaffer, USGS, pers. comm. 2019).

Both of these peer-reviewed/published studies occurred in North and South Dakota over multiple years, on multiple wind farms, and involved large sample sizes and reference sites that were used for comparison with impacted sites. Many of the species found to be displaced during these studies occur at Red Butte WEC.

In addition to the above recent research, an older study of shorter duration was conducted at a wind facility in Minnesota and also documented 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).

If the Red Butte WEC proceeds, we recommend using C. Loesch's 18% displacement of waterfowl pairs within ½ mile of turbines to quantify the number of wetlands needed to compensate for waterfowl displacement at the site and develop a plan to achieve those offsets. We also recommend quantifying grasslands within 300 m of turbines and applying the 53% displacement value via Shaffer and Buhl (2016) to determine and disclose anticipated indirect impacts to grassland nesting birds, and adding this to the offset plan. Methods used to obtain appropriate grassland and wetland offsets are described in Shaffer et al. 2019. Finally, if CRP or other non-native grassland habitats will be affected by the Red Butte WEC, we recommend using the displacement information in Leddy et al. (1999) to develop appropriate offsets for this impact in the plan as well. This information is needed to adequately develop appropriate compensation for this form of habitat loss and its associated effect on grassland nesting birds and we encourage project developers to provide that plan as part of the project.

Mitigation

The Service's mitigation policy, available online at: https://www.fws.gov/policy/a1npi89_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, loss/degradation of habitats and mortality/displacement of wildlife are known to occur at wind energy facilities. We recommend analysis and quantification of these impacts, followed by application of the above mitigation methods during each step of project development - but particularly during early planning stages - 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. We have developed a regional document to further assist companies in following our established national guidance on BBCSs: *U.S. Fish and Wildlife Service, Region 6, Mountain-Prairie Region Outline for a Bird and Bat Conservation Strategy: Wind Energy Projects,* available online at: https://www.fws.gov/coloradoes/documents/Final%20R6%20BBCS%20Outline%20with%20annotation.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. We recommend completion of a BBCS for this proposed energy wind facility.

Meteorological Towers

Meteorological towers associated with Red Butte WEC 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 communications towers that are more compatible with wildlife, we have developed our 2018 *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*, 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: 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:

- Wind energy guidelines:
  - *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines* http://www.fws.gov/windenergy/

- 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
  - *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* (enclosed)

- 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,
  - National Wetlands Inventory: https://www.fws.gov/wetlands/

- Native Grasslands and Grassland Dependent Birds – identify, avoid, minimize:

- Birds of Conservation Concern:
  - *Birds of Conservation Concern 2008:* https://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf

- Avian Avoidance of Wind Turbines - compensate for unavoidable indirect impacts:
  - Loesch et al. (2013) – displacement of waterfowl
  - Shaffer and Buhl (2016) – displacement of grassland nesting birds
  - Shaffer et al. (2019) – methods to determine displacement compensation
  - Leddy et al. (1999) – displacement of grassland nesting birds in CRP

- Mitigation:
  - 1981 Service Mitigation Policy: https://www.fws.gov/policy/a1npi89_02.pdf

- Bird and Bat Conservation Strategy:
  - *U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines*
  - *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

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