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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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



December 1, 2010

Karyn O'Brien, Environmental Planning Specialist
Geronimo Wind Energy, LLC
7650 Edinborough Way, Suite 725
Edina, Minnesota 55435

Re: Wind Project in Clark County, South
Dakota

Dear Ms. O'Brien:

This letter is in response to your request dated October 28, 2010, for environmental comments regarding the above referenced project involving a potential wind energy project. The proposed project area includes Sections 1, 2, and 12 in Township 118 North, Range 59 West; Sections 19-23 and 27-34 in Township 119 North, Range 58 West; Sections 25, 35, and 36 in Township 119 North, Range 59 West; and Sections 5-7 in Township 118 North, Range 58 West; all in Clark County South Dakota.

Herein we provide information regarding U.S. Fish and Wildlife Service (Service) trust resources including Service properties, federally listed species, eagles, birds of conservation concern, and other migratory birds that may occur on the project area. We have included recommended measures to be applied to various components of a wind farm including meteorological towers, power lines, and the turbines themselves in order to minimize impacts to Service trust resources and to assist the development company in achieving compliance with Federal laws. We have also provided contact details for U.S. Geological Survey (USGS) and South Dakota Department of Game, Fish and Parks (SDDGFP) personnel so that further pertinent information for this project may be obtained.

U.S. Fish and Wildlife Service Easements

The proposed project area is located immediately west and south of the town of Crocker, South Dakota. This location falls within an area under the jurisdiction of the Service's Waubay National Wildlife Refuge Complex. The Wetland Management District staff at the Waubay Complex administer easements and fee title properties in several counties in this area, including Clark County. Our records indicate that the Service holds numerous easements on properties in the vicinity of the proposed project; a testament to the high wildlife value of the area and relatively greater environmental impacts that may be anticipated if the proposed project is



constructed there. To determine the exact locations of these properties and any additional restrictions that may apply regarding these sites, please contact Mr. Larry Martin at the Service's Waubay Wetland Management District at 44401 134A Street, Waubay, South Dakota 57273, Telephone No. (605) 947-4521.

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	Migration.

The proposed wind farm location is within the documented migration corridor of the Aransas/Wood Buffalo population of whooping cranes - the only self-sustaining migratory population of whooping cranes in existence. A map of the migration corridor and an associated "required reading" document are enclosed. These birds migrate through South Dakota twice annually on their way to northern breeding grounds and southern wintering areas. They occupy numerous habitats such as cropland and pastures; wet meadows; shallow marshes; shallow portions of rivers, lakes, reservoirs, and stock ponds; and both freshwater and alkaline basins for feeding and loafing. Overnight roosting sites frequently require shallow water in which to stand and rest. Whooping cranes are large birds with low maneuverability. Line strike mortality is the greatest known threat to fledged whooping cranes; more information on this topic is provided herein (see enclosure dated February 4, 2010, and Power Lines section below). While whooping crane interactions with wind turbines are not currently known, mortality via turbine strikes may also pose a risk if the birds utilize habitat at/near wind farm sites. Also, loss of stopover habitat in the migration corridor is a concern that may be realized if whooping cranes tend to avoid wind farms in this area. Additionally, should construction occur during spring or fall migration, the potential for disturbances to whooping cranes exists. Disturbance (flushing the birds) stresses them at critical times of the year and should be avoided. These issues should be addressed prior to wind farm development. Sightings of whooping cranes at any time should be reported to this office. Please note that use of the proposed project area by sandhill cranes may be indicative of the potential presence of whooping cranes since the two species are often observed utilizing the same habitats and migrating together.

Your letter states that action may be required of the Western Area Power Administration relative to the proposed wind energy development. If a Federal nexus exists for this project and the Federal action agency (or their designated representative) determines that the project "may adversely affect" listed species in South Dakota, formal consultation with this office under section 7 of the ESA is required. 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 adverse impacts to 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>.

Bald Eagles

Bald eagles (*Haliaeetus leucocephalus*) occur throughout South Dakota in all seasons, and new nests are appearing each year. While ESA protection for the bald eagle has been removed, effective August 8, 2007, the species will continue to be protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). These laws protect eagles from a variety of harmful actions and impacts. Our agency has developed guidance for the public regarding means to avoid take of the eagle under these laws. The *National Bald Eagle Management Guidelines* are available online at:

<http://www.fws.gov/migratorybirds/baldeagle.htm>. We recommend reviewing these guidelines as they advise of circumstances where these laws may apply and assist in avoiding potential violations on future projects. Additionally, permit regulations have been published for eagles. These regulations may be found in the Federal Register (Volume 74, No. 175, Friday, September 11, 2009) online at: <http://www.gpoaccess.gov/fr/index.html>.

Wetlands

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

Birds of Conservation Concern

The Migratory Birds Division of the Service has published *Birds of Conservation Concern 2008*, which may be found online at:

<http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.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. A primary threat to many grassland species that occur in South Dakota is habitat loss and fragmentation. The area proposed for construction of this wind development appears to be in an area of intact grassland with associated wetland complex - i.e., a highly valuable area for prairie wildlife. 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. Compliance with this law may be partially addressed in an

Avian and Bat Protection Plan (see below); however, a separate mitigation plan that specifically addresses direct and indirect take of birds during and after construction is also recommended. Particularly if placement must occur within intact native grasslands (as appears to be probable if development occurs in the proposed project area), we strongly recommend development of mitigative/offsetting measures for this habitat and its associated wildlife. These measures may include, but not be limited to, purchase of easements or fee title lands.

Wind Turbine Guidelines

Among the Service's primary concerns regarding wind turbines are avian collision mortality and the loss of habitat/habitat avoidance behaviors by wildlife, including federally listed species as indicated above. While there is still much to be learned regarding wind turbine-wildlife interactions, we do know that wind turbines can have adverse impacts on some species. Turbine location, spacing, aspect, lighting, size, and design are all potential factors related to the risk posed to resident and migratory wildlife as are the types of surrounding habitats, their use by various species of wildlife, landscape features, prey base, migration corridors, and behavioral patterns. Direct collision mortality is a concern as is loss of habitat caused by the footprint of the turbines and associated roads and structures along with impacts that can occur with encroachment of invasive weeds as a result of these disturbances. Recent studies of grassland nesting birds have shown a tendency for avoidance of areas immediately surrounding turbines, causing indirect habitat loss as well. Currently, perhaps the best means of avoiding impacts to wildlife is to avoid placing wind farms within high wildlife use areas. Placement of turbines within existing cropland is recommended for this reason.

The Service has developed voluntary *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines* to assist energy companies in accomplishing the goal of reducing the risk posed by turbines to wildlife. These guidelines may be accessed on the internet at: <http://www.fws.gov/habitatconservation/Service%20Interim%20Guidelines.pdf>. The guidelines stress the importance of proper evaluation of potential wind turbine development sites (via development of a Potential Impact Index score for the proposed site and a reference area), appropriate location and design of turbines and related facilities, and pre- and post-construction research and monitoring. If the proposed project is to be constructed, we request the results of any pre-/post-construction wildlife monitoring, including any incidental mortality detected.

As you may know, a Wind Federal Advisory Committee spent considerable time and effort developing a recommended scientifically based approach to assessing potential risk to wildlife and their habitats from wind energy development. The tiered approach set forth in the committee's recommendations is a biologically sound risk assessment approach that includes: (1) formulating appropriate questions regarding potential wildlife impacts, (2) collecting data in ever increasing detail to answer those questions, (3) making risk assumptions based on sufficient data prior to construction of wind facilities, (4) using best management practices during construction, operation, and decommissioning, (5) testing assumptions after construction and during wind facility operations, and (6) adjusting operations and/or mitigation as needed. The tiered approach is complementary with strategic habitat conservation by looking first at landscapes and then focuses on the most appropriate sites for wind energy development, with a goal of avoiding and minimizing wildlife impacts. The committee's recommendations are

available at:

http://www.fws.gov/habitatconservation/windpower/wind_turbine_advisory_committee.html.

The Service is aware of industry embracing the recommendations developed by the Wind Turbine Guidelines Advisory Committee. It is very encouraging to have industry coming to us voluntarily as they plan future wind energy projects. We recognize that the committee's recommendations to the Secretary are, at this point, just recommendations. Despite the fact that the Service cannot advocate for the use of the recommendations for wind energy development at this point in time, we recognize that the recommendations represent a new and comprehensive effort to address the wildlife impacts of wind energy development. It is, of course, expected that a wind energy developer would want to consider using the recommendations in its assessment of a wind project on the potential impacts to wildlife. Once the Service receives a direction from the Secretary and develops its guidelines, developers will have an official document endorsed by the Service to follow while developing their projects.

Meteorological Towers

Meteorological towers constructed in association with wind turbines are often similar in design to typical communication towers: tall, lighted, lattice structured, and guyed. These types of towers can be problematic for birds, particularly during inclement weather, as they enter the lighted area, become reluctant to leave it, and suffer mortality as they circle the structure and collide with the guy wires or the lattice tower itself. We recommend following the guidance set forth in *U.S. Fish and Wildlife Service Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation and Decommissioning*, found online at: <http://www.fws.gov/habitatconservation/communicationtowers.html>, to minimize the threat of avian mortality at these towers. Monitoring at these towers would provide insight to the effectiveness of the minimization measures. We request the results of any wildlife monitoring and any data obtained regarding wildlife mortality at towers associated with this project.

In order to obtain information on the usefulness of the communications tower guidelines in preventing birds strikes and to identify any recurring problems with their implementation which may necessitate modifications, please advise us of the final location and specifications of any towers associated with the wind turbine project and which of the measures recommended for the protection of migratory birds were implemented. If any of the recommended measures cannot be implemented, please explain why they were not feasible. A Tower Site Evaluation Form is also available via the above communication tower website (<http://www.fws.gov/habitatconservation/communicationtowers.html>). If meteorological towers are to be constructed, please complete this form and forward it to our office.

Power Lines

The construction of additional overhead power lines associated with wind farms creates the threat of avian electrocution, particularly for raptors. Thousands of these birds, including endangered species, are killed annually as they attempt to utilize overhead power lines as nesting, hunting, resting, feeding, and sunning sites. The Service recommends the installation of underground, rather than overhead, power lines whenever possible/appropriate to minimize environmental disturbances. For all new overhead lines or modernization of old overhead lines,

we recommend incorporating measures to prevent avian electrocutions. The publication entitled *Suggested Practices for Avian Protection on Power Lines - The State of the Art in 2006* has many good suggestions including pole extensions, modified positioning of live phase conductors and ground wires, placement of perch guards and elevated perches, elimination of cross arms, use of wood (not metal) braces, and installation of various insulating covers. You may obtain this publication by contacting the Edison Electric Institute via their website at www.eei.org or by calling 1-800-334-5453.

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. Unfortunately, wet feathers in contact with conductors and/or grounding connections can result in a lethal electrical surge. Thus, the focus of the above precautionary measures should be to a) provide more than 96 inches of spacing between conductors or grounding features, b) insulate exposed conducting features so that contact will not cause raptor electrocution, and/or c) prevent raptors from perching on the poles in the first place.

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

In addition to electrocution, overhead power lines also present the threat of avian line strike mortality. Particularly in situations where these lines are adjacent to wetlands or where waters exist on opposite sides of the lines, we recommend marking them in order to make them more visible to birds. For more information on bird strikes, please see *Mitigating Bird Collisions With Power Lines: The State of the Art in 1994* which may be obtained by contacting the Edison Electric Institute at the same website and telephone number listed above. Please note that, while marking of power lines reduces line strike mortality, it does not preclude it entirely. Thus, marking of additional, existing, overhead lines is recommended to further offset the potential for avian line strike mortality. As noted above, the whooping crane is particularly susceptible to this

type of mortality, and your project occurs within the whooping crane migratory corridor. This region of the Service (Region 6) has developed *Guidance for Minimizing Effects From Power Line Projects Within the Whooping Crane Migration Corridor* (copy enclosed). Marking of existing lines elsewhere in the species' corridor is recommended. As indicated previously, a copy of the migration corridor of the Aransas-Wood Buffalo Population of whooping cranes is also enclosed for your information.

Avian Protection Plans

As a means to address some of the above issues, the Service has coordinated with the Avian Power Line Interaction Committee (APLIC) to develop guidelines to assist companies in formulating Avian (and Bat) Protection Plans (APP). APPs are utility-specific and designed to reduce avian and operational risks that result from avian interactions with electric utility facilities, but they may be adapted to wind energy facilities as well and include consideration of bat species which are known to suffer mortality at wind farms. We encourage project developers to investigate the formulation of an APP for specific projects and perhaps generate APPs at the company level. The APP guidelines may be accessed at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/BirdHazards.html>.

The Service has developed an online reporting system for mortalities. Instructions for our *Bird Fatality/Injury Reporting Program* may be found online at:

http://www.aplic.org/USFWS_BirdFatality_FilerInstructions.pdf, and the reporting site itself is located online at: <https://birdreport.fws.gov/>. Migratory bird mortalities or injuries located by your company, by contractors, or other individuals should be recorded to this online site within 30 days of discovery. Use of this reporting program will benefit migratory birds by increasing our tracking capability of activities impacting migratory birds. This program may be used to complement an APP.

Migratory Bird Treaty Act

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

and/or APPs and to implement those measures prior to/during construction, operation, or similar activities.

U.S. Geological Survey Research

The USGS's Northern Prairie Wildlife Research Center in Jamestown, North Dakota, has initiated studies of avian responses to wind turbines in both North Dakota and South Dakota. Their research may be relevant to your project, depending on habitat within the project area. We recommend that you contact Ms. Jill Shaffer of the USGS's Northern Prairie Wildlife Research Center at (701) 253-5547 for more information and the possibility of participation in that research.

South Dakota Department of Game, Fish and Parks

Wind Power Guidelines. Please note that the SDDGFP has coordinated with the South Dakota Public Utilities Commission (SDPUC) regarding distribution of SDDGFP's *Siting Guidelines for Wind Power Projects in South Dakota* to wind developers intending to construct projects within the state of South Dakota. You may wish to contact the SDPUC and/or the Wildlife Diversity Division of the SDDGFP in Pierre for more information. Contact information may be found on their respective websites: <http://puc.sd.gov/> and <http://www.sdgifp.info/Wildlife/Diversity/index.htm>. The guidelines themselves may be found online at: <http://www.sdgifp.info/wildlife/diversity/windpower.htm>.

Bats. Bats are known to suffer mortality due to direct collisions with wind turbines, and it has been recently determined that many also die as a result of air pressure changes at the turbine blades that cause internal injuries. The SDDGFP has completed a State Management Plan for bats (see: <http://gifp.sd.gov/wildlife/management/plans/bat-management-plan.aspx>) and may be able to provide additional information and/or recommendations on bats relative to this project.

State Game Production Area. The SDDGFP also owns properties immediately adjacent to the proposed project area that serve as wildlife habitat and may be impacted indirectly by the proposed project.

If you have not already done so, please contact Silka Kempema at the SDDGFP-Wildlife Division, Joe Foss Building, 523 East Capitol Avenue, Pierre, South Dakota 57501, Telephone No. (605) 773-2742, for more information regarding the above SDDGFP related issues and other concerns that fall under that agency's purview.

Summary

The following items are pertinent to the proposed project, and we recommend addressing these issues if/when the project progresses:

- Service easement properties and high value grassland/wetland habitats.
- Impacts to the whooping crane.

- Bald eagle impacts (MBTA and BGEPA).
- Migratory bird impacts (MBTA), including Birds of Conservation Concern, with application of pre-/post-construction monitoring and mortality data and mitigative/offsetting measures to be coordinated with and reported to the Service.
- Existing guidelines for various project components:
 - a) Wind Farm Siting: Service's *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines*.
 - b) Meteorological Towers: Service's *Interim Guidelines for Recommendations on Communications Tower Siting, Constructions, Operation and Decommissioning* and the associated *Tower Site Evaluation Form*.
 - c) Overhead Power Lines: APLIC's *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Mitigating Bird Collisions With Power Lines: The State of the Art in 1994* and the Service's *Bird Fatality/Injury Reporting Program*.
 - d) Overall Development: Service's *National Bald Eagle Management Guidelines* and APLIC's *Avian Protection Plan Guidelines*.
- USGS's avian/wind information and potential participation in their ongoing research.
- SDDGFP wind siting guidelines, bat issues, and adjacent property ownership.

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

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

Sincerely,



Scott Larson
Field Supervisor
South Dakota Field Office

Enclosures