

## Draft Environmental Assessment

Proposed Issuance of a Bald Eagle  
Incidental Take Permit for the Osage  
Wind Project, Osage County,  
Oklahoma



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May 9, 2018

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### **OSAGE WIND PROJECT**

Summary

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## **Summary**

**Title of Proposed Action:** Draft Environmental Assessment for Proposed Issuance of a Bald Eagle Incidental Take Permit under the Bald and Golden Eagle Protection Act for the Osage Wind Project, Osage County, Oklahoma.

**Unit of United States Fish and Wildlife Service Proposing Action:** Regional Director – Southwest Region, United States Fish and Wildlife Service (the Service, we), Albuquerque, New Mexico.

**Legal Mandate for Proposed Action:** Bald and Golden Eagle Protection Act (16 United States Code 668a-d) and pursuant to federal regulations set forth in the 2016 revisions to the Eagle Permit Rule (81 Federal Register [FR] 91494-91554, Dec. 16, 2016) and 50 Code of Federal Regulations (CFR) §22.26, as amended.

**Permit Applicant:** Osage Wind, LLC (Applicant)

Permit Duration: 30 years.

**Conservation/Funding Plan:** We are proposing to issue a Bald Eagle Incidental Take Permit (ITP) and accept the Eagle Conservation Plan (ECP) pursuant to 81 FR 91494-91554 and 50 CFR §22.26 for the take that is incidental to the operation of the Osage Wind Project in Osage County, Oklahoma. The permit would authorize non-purposeful (incidental) take of up to 15 Bald Eagles every 5 years during the 30-year life of the permit. Consistent with the requirements of 50 CFR §22.26, as amended, the Service will monitor the Project's eagle take, coordinate with the Applicant every 5 years to reassess the ITP (eagle mortality rates, measures to reduce take, compensatory mitigation, and eagle population status, as needed), and adjust the ITP as necessary to maintain compliance with the preservation standards of the Bald and Golden Eagle Protection Act. The Applicant's ECP will be incorporated into the ITP.

**List of Preparers:** Stantec Consulting Services Inc., Overland Park, Kansas; Ecology and Environment, Inc., Overland Park, Kansas; the Service, Albuquerque, New Mexico.

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Abbreviations

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## Abbreviations

APLIC	Avian Power Line Interaction Committee
Applicant	Osage Wind, LLC
BBCS	Bird and Bat Conservation Strategy
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
CBC	Christmas Bird Count
CEQ	Council on Environmental Quality
CFR	United States Code of Federal Regulations
CRM	collision risk model
DDT	dichloro-diphenyl-trichloroethane
DEA	Draft Environmental Assessment
DOI	Department of the Interior
ECP	Eagle Conservation Plan
ECPG	Eagle Conservation Plan Guidance, Module 1 – Land-based Wind Energy - Version 2
EGPNA	Enel Green Power North America, Inc.
EMU	Eagle Management Unit
ENR	(Osage Nation) Environmental and Natural Resource Department
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act of 1973
FR	Federal Register
ITP	incidental take permit
LAP	local area population
MBTA	Migratory Bird Treaty Act
MW	megawatts
NEPA	National Environmental Policy Act of 1970
NHPA	National Historic Preservation Act of 1966
Normandeau	Normandeau Associates, Inc.
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
ODWC	Oklahoma Department of Wildlife Conservation
PEIS	Programmatic Environmental Impact Statement
Project	Osage Wind Project
Service	United States Fish and Wildlife Service
Status Report	Bald and Golden Eagles: Population Demographics and Estimation of Sustainable Take in the United States, 2016 Update
T/E	threatened and endangered
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
U.S.C.	United States Code
USGS	United States Geological Survey
WEST	Western EcoSystems Technology, Inc.

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Introduction

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## 1.0 INTRODUCTION

The U.S. Fish and Wildlife Service (we, Service, or USFWS) has prepared this Draft Environmental Assessment (DEA) pursuant to the National Environmental Policy Act (NEPA; 42 United States Code [U.S.C.] §4321 et seq). This DEA evaluates the environmental effects of issuing a Bald Eagle (*Haliaeetus leucocephalus*) incidental take permit (ITP) under the Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668a-d) and the Eagle Permit Rule (50 Code of Federal Regulations [CFR] §22.26, as amended) for the take that is incidental to otherwise lawful activities associated with the operation of the Osage Wind Project (Project) in Osage County, Oklahoma. We are not authorizing construction or operation of the Project. Our authority is limited to potentially authorizing incidental take of eagles by the Project. Osage Wind, LLC (Applicant) does not require a Bald Eagle ITP from us to build or operate the Project. However, if the Project operator takes eagles without an ITP, they would violate the Bald and Golden Eagle Protection Act and thus be subject to prosecution.

The Applicant originally submitted an ITP application in 2012 under the 2009 Eagle Permit Rule (74 Federal Register [FR] 46836, Sep. 11, 2009), which has since been revised in the 2016 Eagle Rule Revisions (81 FR 91494-91554, Dec. 16, 2016). The ITP issuance process was temporarily put on hold pending the outcome of litigation brought by the United States against Osage Wind, LLC, contending that Osage Wind, LLC, was required to obtain a lease from the Osage Minerals Council approved by the Bureau of Indian Affairs. In October 2015, the United States District Court for the North District of Oklahoma ruled that Osage Wind, LLC, was not required to obtain a Bureau of Indian Affairs lease. After the court ruling, the ITP application process began again. On September 19, 2017, the Tenth Circuit Court of Appeals reversed the district court's decision. In this DEA, we are evaluating the Applicant's resubmitted application under the final 2016 Eagle Rule Revisions. The application includes a Project-specific Eagle Conservation Plan (ECP; Normandeau 2012a) that describes actions adopted and proposed future actions to avoid, minimize, and mitigate adverse effects on Bald Eagles. The Applicant prepared their project-specific ECP using the Draft Eagle Conservation Plan Guidance (US Fish and Wildlife Service 2011) in collaboration with us. Since the development of the Project's ECP, we issued the final Eagle Conservation Plan Guidance (ECPG; US Fish and Wildlife Service 2013a).

The Bald and Golden Eagle Protection Act prohibits the "take" of eagles which includes killing, harassing, or disturbing the birds or their nests, unless permitted, and is the legal foundation of the ECPG and 50 CFR §22.26. The potential for unintentional take of Bald Eagles in the course of otherwise lawful activity is the principal reason for the Applicant's request for an ITP. Our proposed issuance of an ITP is a federal action requiring review under NEPA. To fulfill this requirement, this DEA describes the regulatory authorities we are acting under with regard to the application (Section 1.1); describes the Project and the application for an ITP (Section 1.2); details the federal action and reasonable alternatives (Sections 2.0 and 3.0); and analyzes the potential direct, indirect, and cumulative effects of the action and alternatives on the human environment (Sections 4.0 and 5.0).

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## 1.1 FEDERAL REGULATORY FRAMEWORK

### 1.1.1 National Environmental Policy Act (NEPA)

The NEPA is the United States environmental law that established national policies to ensure that the programs of the federal government promote the enhancement of the environment. The NEPA established the Council on Environmental Quality (CEQ) in the Executive Office of the President to formulate and recommend such policies. The CEQ has set forth regulations (40 CFR §1500-1508) to assist federal agencies in implementing NEPA and to ensure environmental impacts of any proposed federal actions are fully considered and appropriate mitigation is contemplated for anticipated environmental impacts. The Department of Interior (DOI) also set forth complementary NEPA implementing regulations (43 CFR Part 46). This DEA has been prepared in accordance with the requirements of NEPA, the CEQ regulations, and the DOI's NEPA implementing regulations.

Agencies must complete environmental documentation pursuant to NEPA before implementing federal actions. The NEPA requires careful evaluation of the need for action and that federal actions are considered alongside reasonable alternatives, including the "No Action Alternative." The NEPA requires the action agency (here the Service) to consider the potential impacts on the human environment of each alternative. We must consider the alternatives and impacts prior to implementation, and must inform the public of these deliberations. The purpose of an DEA is to determine if significant environmental impacts are associated with a proposed federal action that would require the preparation of an Environmental Impact Statement.

This DEA examines the environmental effects of the proposed issuance of a Bald Eagle ITP under the Bald and Golden Eagle Protection Act. We can authorize limited take of eagles under 50 CFR §22.26, as amended, with the stipulation that the take is "compatible with preservation of the Bald Eagle and Golden Eagle (*Aquila chrysaetos*); is necessary to protect an interest in a particular locality; is associated with, but not the purpose of, the activity; and cannot practicably be avoided" (50 CFR §22.26a). Accordingly, because take of Bald Eagles could occur as a result of operation of the Project, the Applicant has applied for an ITP and has prepared an ECP in support of that application. The NEPA applies to the requested issuance of an ITP because issuing a permit is a federal action. Therefore, the federal action under consideration in this DEA is the proposed issuance of the requested Bald Eagle ITP. Should any conditions change beyond what is analyzed in this EA, additional analyses would be required.

### 1.1.2 Bald and Golden Eagle Protection Act (BGEPA)

The Bald and Golden Eagle Protection Act protects the Bald Eagle and the Golden Eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds (16 U.S.C. §668a; 50 CFR §22), and is the primary federal authority applicable to the action analyzed in this EA. Bald and Golden Eagle Protection Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking eagles, including their parts, nests, or eggs. In Bald and Golden Eagle Protection Act, "take" means to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb" (50 CFR §22.3). Bald and Golden Eagle Protection Act provides civil and criminal penalties for persons who violate these regulations without a permit from the Service and expands protection beyond the Migratory Bird Treaty Act (Section 1.1.3; MBTA) to define "take" to include harassment and disturbance.

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Under 50 CFR §22.3, “disturb” is defined as “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 regulatory definition of disturb also addresses effects associated with human-induced alterations at the site of a previously used nest during a time when eagles are not present. Upon an eagle’s return, if such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment, then this would constitute disturbance.

In September 2009, we established rules (50 CFR §22.26 and §22.27) authorizing limited legal take of Bald Eagles and Golden Eagles and their nests through ITPs. As part of the 2009 Eagle Permit Rule (US Fish and Wildlife Service 2009), thresholds of take were established under which a regional population of Bald Eagles, or an Eagle Management Unit (EMU), would maintain stable or increasing breeding populations. In December 2016, we revised the 2009 Eagle Permit Rule to allow for eagle ITPs of longer duration (up to 30 years) and other associated modifications to 50 CFR Parts 13 and 22. The 2016 Eagle Rule Revisions took effect January 17, 2017 and include new take thresholds, changes to how sustainable take is calculated on a project by project basis, new EMUs, survey requirements, and other modifications (81 FR 91494-91554, Dec. 16, 2016). The Applicant has applied for a Bald Eagle ITP under the 2016 Eagle Rule Revisions due to the potential of the Project to result in Bald Eagle take caused by its ongoing operation over the life of the Project (up to 30 years).

As part of the NEPA review for the 2016 Eagle Rule Revisions, we evaluated five alternative actions in a Programmatic Environmental Impact Statement (PEIS; US Fish and Wildlife Service 2016c). The PEIS analyzed the potential impacts that may result from updating eagle management objectives and permit regulations to streamline regulatory compliance with Bald and Golden Eagle Act while maintaining protection of eagles. The alternatives included combinations of different configurations of EMUs (approaches to regional management), liberal vs. conservative eagle take thresholds, and length of take permit duration. To adequately evaluate the take thresholds under which eagle preservation standards would be met, we prepared a population demographics report for Bald and Golden Eagles as a supporting document to the PEIS (“Status Report”; US Fish and Wildlife Service 2016a). In the Status Report, we updated information on Bald Eagle and Golden Eagle population sizes and trends, estimates of recent survival rates and fecundity rates (reproductive rates), and used these data in models to predict future population trends and each species ability to sustain varying levels of permitted take. Sustainable take levels were evaluated in comparison to the 2009 population estimates (US Fish and Wildlife Service 2016a, 1-2). Upon completion of the NEPA review of the PEIS, we selected the alternative with EMUs based on migratory bird flyways, conservative take levels (20<sup>th</sup> quantile of parameter estimates), and permits with a duration of up to 30 years (US Fish and Wildlife Service 2016c, 29-30).

Under the 2016 Eagle Rule Revisions, levels of Bald Eagle sustainable take were established at two scales, the regional scale (within an EMU) and the local scale (the Local Area Population; LAP). The 2016 Eagle Rule Revisions limit sustainable Bald Eagle take to 6% of the EMU population and 5% of the local area population for the permitted activity, including both permitted and unpermitted take. Take exceeding these thresholds must be mitigated. A Bald Eagle local area population is the area within 86 miles of the permitted activity (the natal dispersal distance for Bald Eagles). Prior to the 2016 Eagle Rule Revisions, the local area population cumulative effects analysis was used as guidance for evaluating permit applications; the local area population analysis is now a required part of the permit evaluation (Section 5.7.2; 81 FR 91494-91554, Dec. 16, 2016).

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In April 2013, we issued the “Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Power, Version 2” (ECPG; US Fish and Wildlife Service 2013). The ECPG provides specific, in-depth guidance for the conservation of Bald and Golden Eagles through the course of siting, construction, and operation of wind farms. The ECPG is voluntary guidance and has not been updated since the 2016 Eagle Rule Revisions. However, the ECPG was designed to help wind developers comply with regulatory requirements by avoiding unintentional take of eagles at wind energy facilities, providing the data necessary to support an ITP, and is still applicable to the 2016 Eagle Rule Revisions. We also incorporated minimal pre-construction survey standards in the 2016 Eagle Rule Revisions. To assist wind project proponents in meeting the requirements of 50 CFR §22.26, the ECPG outlines a five-stage approach to developing successful ECPs (US Fish and Wildlife Service 2013, 23-24). These five stages are:

1. Initial landscape-scale site assessment;
2. Site-specific surveys and assessment;
3. Fatality prediction;
4. Application of avoidance and minimization measures, and application of compensatory mitigation for remaining unavoidable take; and
5. Post-construction monitoring.

#### 1.1.3 Migratory Bird Treaty Act (MBTA)

The MBTA (16 U.S.C. §703-712), as amended, implements protection of all native migratory game and non-game birds. Per the December 2017 Solicitor’s Memo (M-37050), the MBTA prohibits any action that has as its purpose the take of any migratory bird, part, nest, or egg. Take, as defined in the MBTA and clarified by M-37050, includes any affirmative action directed immediately and purposefully to, by any means or in any manner, attempt to hunt, pursue, wound, kill, possess, or transport any migratory bird, nest, egg, or part thereof. The MBTA authorizes us to promulgate regulations allowing take of migratory birds in certain situations. These regulations are published at 50 CFR Part 21.

The MBTA does not prohibit incidental take of migratory birds (M-37050). However, Executive Order 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds” (Jan. 10, 2001) provides requirements for all federal agencies to incorporate considerations of migratory birds into their decision-making, including the conservation of migratory birds, the proper evaluation of them in the NEPA process, and avoidance, minimization, and mitigation of migratory birds impacts and take where appropriate. This DEA serves to comply with the NEPA process in evaluating eagles and other affected wildlife, including migratory birds.

We provide wind power developers guidance in making a good-faith effort to comply with the MBTA in the “Land-based Wind Energy Guidelines” (US Fish and Wildlife Service 2012a), which includes recommendations that are advisory in nature and do not, in and of themselves, represent or reflect agency law or policy. The Applicant has relied to some degree on our recommendations, as well as other prior-existing Service guidance in developing a Bird and Bat Conservation Strategy (BBCS) for the Project (US Fish and Wildlife Service 2003, 2012a).

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#### 1.1.4 Endangered Species Act (ESA)

We are responsible for implementing and enforcing federal wildlife laws, including the Endangered Species Act (ESA). Federally listed threatened and endangered (T/E) species and designated critical habitat are governed by the ESA of 1973, as amended (16 U.S.C. §1531–1544) and our implementing regulations at 50 CFR Parts 13 and 17. We are authorized to identify endangered and threatened species and provide for their management and protection. We also maintain a list of species that are candidates for listing pursuant to the ESA.

Section 7 of the ESA requires federal agencies to coordinate with us to ensure that actions they authorize, fund, or implement are not likely to jeopardize the existence of any listed species or result in the destruction or adverse modification of designated critical habitat. Section 7 can also be conducted by the Service internally to ensure that actions authorized under other regulations – such as the proposed issuance of an ITP under the Eagle Permit Rule – do not interfere with our mandate to preserve ESA-listed species (see Section 4.3 and Appendix A).

Section 9 of the ESA makes it unlawful for a person to “take” a listed species. Take is defined as “...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct” (50 CFR §10.12). The Secretary of the Interior, through regulations, defined the term “harm” as “an act which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering” (50 CFR §17.3). However, permits for “incidental take” can be obtained from US Fish and Wildlife Service for take of endangered species which would occur as a result of an otherwise legal activity.

Section 10 of the ESA authorizes us to issue ITPs to entities for otherwise lawful activities that may harm listed species or their habitats. To obtain an ESAN ITP, an applicant must submit a Habitat Conservation Plan outlining what the applicant will do to “minimize and mitigate” the impact(s) of the permitted take on listed species.

#### 1.1.5 National Historic Preservation Act (NHPA)

The NHPA of 1966 (Public Law 89-665; 54 U.S.C. §300101 *et seq.*) is legislation intended to preserve historical and archaeological sites in the U.S. The act created the National Register of Historic Places (NRHP), the list of National Historic Landmarks, the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Offices (SHPO) and Tribal Historic Preservation Offices (THPO) to minimize potential harm and damage to historic properties. Among other things, the act requires federal agencies to evaluate the potential impact of all federal undertakings on historic properties through a process known as Section 106 review.

The NHPA defines an undertaking as including a “project, activity, or program requiring a Federal permit, license, or approval” (54 U.S.C. §300320 and 36 CFR §800.16y), Historic properties are defined as “any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places maintained by the secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register Criteria”. 36 CFR §800.16 (l)(1). Section 106 also requires government-to-government tribal consultation “with any Indian tribe or ...that attach religious and

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cultural significance to historic properties that may be affected by an undertaking.” 800.2(c)(2)(B)(ii). Under this definition, and pursuant to USFWS Directorate Memo 062416 (Appendix A) the “undertaking” here is the proposed issuance of a Bald Eagle ITP for an operating facility.

#### **1.1.6 Tribal Trust Responsibilities**

Tribal participation is an integral part of the NEPA process in our determination of whether to issue a Bald Eagle ITP for the Project. In accordance with Executive Order 13175, “Consultation and Coordination with Tribal Governments” (65 FR 67249, Nov. 9, 2000), the NHPA Section 106 (36 CFR Part 800), and the Service’s Native American Policy, we consult with Native American tribal governments whenever our actions may affect tribal lands, resources, or the ability to self-govern. This Executive Order and other statutes, regulations, and guidance that govern the Service’s Tribal Trust responsibilities emphasize the need for regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, the responsibility to strengthen the United States government-to-government relationships with Native American tribes, and the responsibility to reduce the imposition of unfunded mandates upon Native American tribes. Our tribal consultations serve to advise the Tribes of notice of the requested issuance of a Bald Eagle ITP and to provide them with the opportunity to consult in regard to the unique, traditional religious, and cultural relationship of eagles to Native American communities, and in furtherance of the reserved rights of Native communities with respect to eagles.

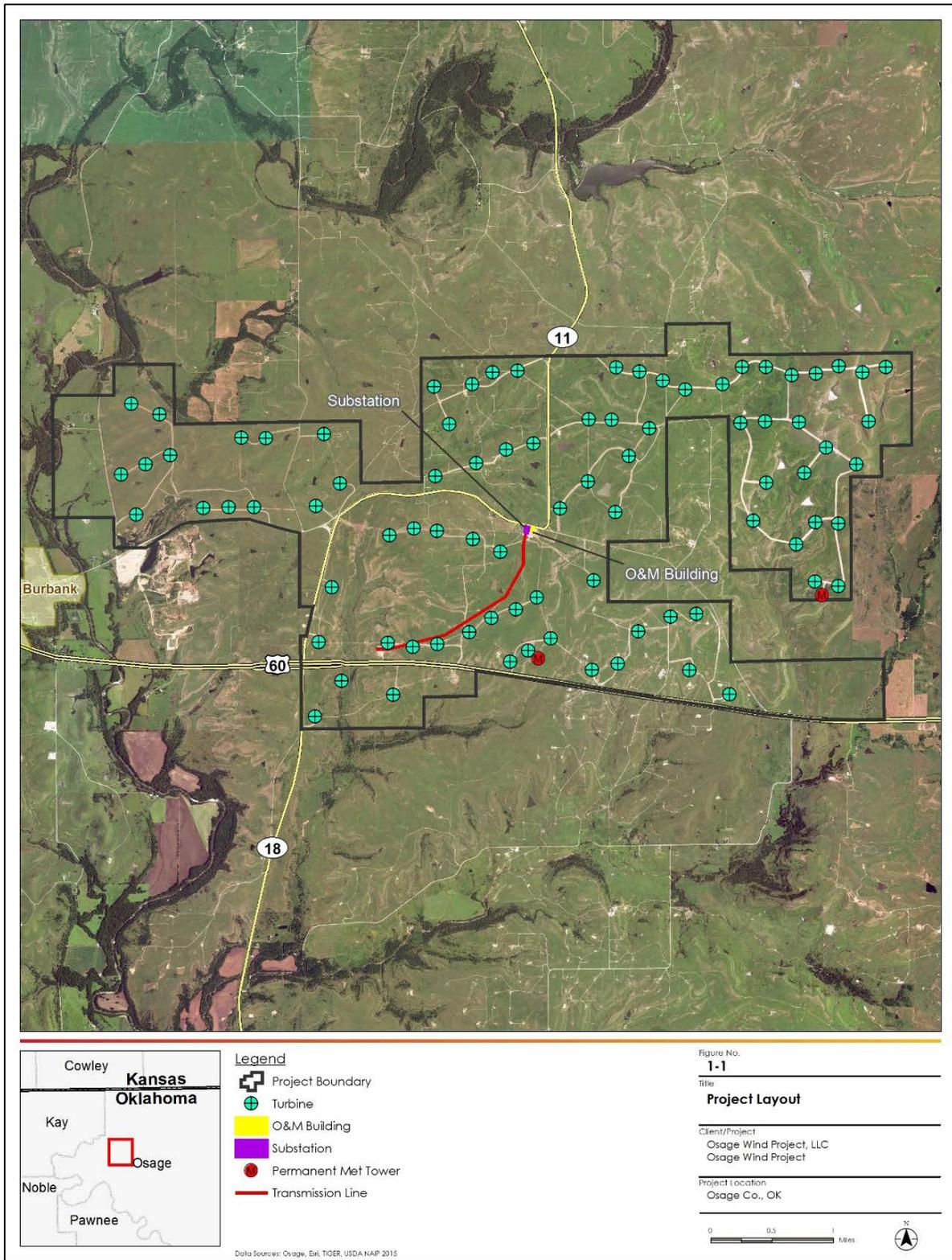
On August 29, 2017, the Service sent a letter to all Region 2 Tribes informing them of our review of the permit application and requesting any views, comments, or concerns regarding the proposed permit authorizing incidental take of Bald Eagles at the Project. This letter was accompanied by a handout providing additional information on the Project, history, mitigation, and eagle take permit rules (Appendix A). Consultation between the Service and the Tribes is an ongoing process and proceeds in parallel with the completion of this document.

## **1.2 PROJECT DESCRIPTION**

### **1.2.1 Project Owner, Location, and General Description**

Osage Wind, LLC, a limited liability company and an indirect, wholly owned subsidiary of Enel Green Power North America, Inc. (EGPNA), is the owner and operator of the Osage Wind Project located in Osage County, Oklahoma. The Project is located on approximately 8,400 acres of private land near the town of Burbank, Oklahoma. U.S. Highway 60 borders the Project’s southern boundary and State Highway 18 transects the central Project. The Project is shown in Figure 1-1. The Project was constructed in 2014 and 2015, began commercial operations in June 2015 and is anticipated to be in operation for 30 years.

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**Figure 1-1 Project Layout**

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The Project has a nameplate generation capacity of 150 megawatts (MW) based on the operation of 84, General Electric 1.79 wind turbines, which have a blade length of 50 meters (164.0 feet), a hub height of 80 meters (262.5 feet), a total structure height from base to blade tip of 130 meters (426.5 feet), and a rotor-swept area of 7,854 square meters (1.9 acres). The Project includes 27.2 miles of access roads, 36.3 miles of underground collector lines, a substation, an operation and maintenance building, and 1.7 miles of new overhead transmission line from the Project substation to the interconnection point with the electric grid near U.S. Highway 60.

The Project lies within the southern extension of the Flint Hills ecoregion, which extends southward from central Kansas into northeastern Oklahoma. Much of the Flint Hills remains as unplowed tallgrass prairie. This type of habitat is present within the Project, where it mostly is used as horse and cattle grazing operations. The remaining Project land cover is composed of small isolated tracts of developed land, hay fields, and very few deciduous woodlands along waterways. Topography in the Project site generally is rolling hills, although more abrupt changes in elevation occur near streams. Further discussion of the Project's environmental setting is presented in Section 4.1.

Operation consists of the autonomous and manual operation of wind turbines and substations for energy generation. Scheduled, routine maintenance of Project infrastructure will continue throughout the life of the Project. Emergency maintenance of the Project will occasionally need to occur, which will be completed in a safe and timely fashion. Although maintenance activities are unlikely to cause substantial site disturbance, site restoration to the extent that it is necessary will occur upon completion of planned or emergency maintenance activities.

Decommissioning and site restoration activities will be completed following the end of operations at the Project. A decommissioning plan will be prepared prior to Project decommissioning and will detail the work to be performed. Activities associated with Project decommissioning will be more limited in scope than the original construction and are anticipated to cause fewer land area disturbances.

#### **1.2.2 Project Consultation**

Consultation with us regarding the development of the proposed Project was initiated in early 2009 and is ongoing. We were consulted in the implementation of pre-construction eagle surveys and the subsequent development of the ECP and BBCS for the Project. The Applicant has also been in consultation with us regarding the proposed Bald Eagle ITP (Section 1.2.2.1).

## **2.0 PURPOSE, NEED, AND SCOPE**

### **2.1 PURPOSE OF AND NEED FOR THE FEDERAL ACTION**

The federal action under evaluation in this DEA is our decision whether to issue an ITP for Bald Eagles to the Applicant for the Project. The primary purpose of the federal action is to adhere to the regulations at 50 CFR §22.26 and comply with our objective to maintain stable or increasing Bald Eagle populations at the regional and local level as stipulated by the BGEPA. The ITP would authorize the non-purposeful take of Bald Eagles that may occur as a result of the Project's operations over the 30-year life of the permit. We may issue the permit if we find that:

- the permit issuance is compatible with preservation of the Bald Eagle and Golden Eagle;
- the permit issuance is necessary to protect an interest in a particular locality;
- the permit issuance is associated with, but not the purpose of, the activity; and
- eagle take cannot practicably be avoided.

The federal action is driven by the need for us to make a permitting decision that may enable the Applicant to continue to generate renewable energy in a manner that is consistent with federal regulations. The purpose and need for the federal action establishes the basis for evaluating the Applicant's request for a permit (including the Project's associated ECP) and reasonably likely alternatives to this request. The Applicant developed the ECP, which describes measures to avoid, minimize, and mitigate Bald Eagle mortality incurred during Project operations to the extent practicable, in coordination with us. In this EA, we consider a no-action alternative and three action alternatives, including the proposed action (Section 3.0).

Executive Order 13186 requires us to consider the effects of our actions on birds, particularly Birds of Management Concern (USFWS 2008). We also have obligations to consider the effects of the proposed action on birds protected by the MBTA (16 U.S.C. §703-712).

To be clear, we are not authorizing construction or operation of the Project. Our authority is limited to potentially authorizing incidental take of eagles by the Project. The Applicant does not require a Bald Eagle ITP from us to build or operate the Project. However, if the Project operator takes eagles without an ITP, they would violate the BGEPA and thus be subject to prosecution. In additions, an ITP would provide benefits to eagles through monitoring, adaptive management, and information necessary for us to successfully manage eagle populations.

### **2.2 SCOPE OF ENVIRONMENTAL ASSESSMENT**

The scope of this DEA is based on our evaluation of the proposed action and alternatives related to the Applicant's request for a Bald Eagle ITP. The proposed federal action is the issuance of a Bald Eagle ITP, and as such, it is not within the scope of our review to evaluate impacts associated with the siting and construction of this wind energy facility. Resources and the affected environment evaluated and included in this EA are those that may be directly, indirectly, or cumulatively impacted by the federal action and alternatives (Section 2.2.1). Resources that will not be impacted by the federal action and

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alternatives are briefly described in Section 2.2.2 but are thereafter excluded from discussion and analysis. Our evaluation in this DEA uses the PEIS analysis pursuant the current ITP regulation.

#### 2.2.1 Topics Discussed in Detail

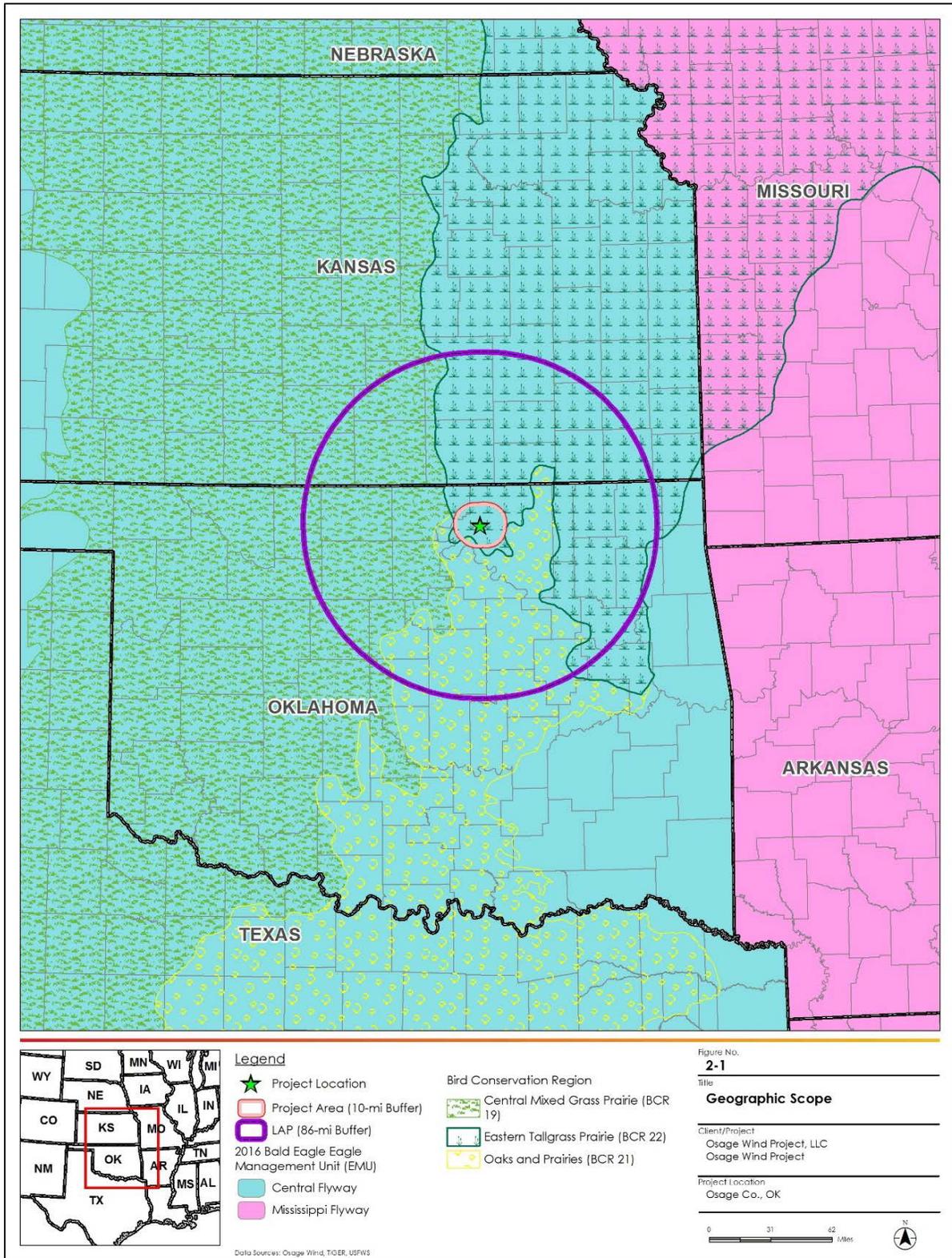
The following resource areas may be impacted by the proposed action and are included in the alternative analysis presented in Section 4.0 and evaluated in Section 5.0 in this EA:

- Bald Eagle and Golden Eagle (2016 Eagle Rule Revisions; 81 FR 91494-91554, Dec. 16, 2016);
- Migratory birds and Birds of Conservation Concern (Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds", 66 FR 3853, Jan. 17, 2001);
- Threatened and Endangered species; and
- Tribal Religious and Cultural Resources, including evaluation of trust responsibilities and assessing any impacts to the religious and cultural significance of the Bald Eagle to Native American communities (Executive Order 13175, "Consultation and Coordination with Tribal Governments", 65 FR 67249, Nov. 9, 2000).

The geographic scope of review for the affected environment includes the following areas, which are shown in Figure 2-1:

- *Project Level* - The area on and within 10 miles of the Project (Project Area);
- *Local Level (Local Area Population or LAP)* - The area on and within 86 miles of the Project boundary. This is the average natal dispersal distance for Bald Eagles, which represents the extent of movement between the place of birth and place of first breeding (81 FR 91494-91554, Dec. 16, 2016).
- *Regional Level (US Fish and Wildlife Service Eagle Management Unit or EMU)* – The Project is within the Central Flyway EMU, which includes from the Canada border to the Mexico border, the eastern border of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas to the Continental Divide in New Mexico, Colorado, and Wyoming and the eastern half of Montana (81 FR 91494-91554, Dec. 16, 2016; US Fish and Wildlife Service 2016a, 28).
- *Bird Conservation Regions (BCR)* – Other birds will be analyzed within these ecologically distinct regions with similar bird communities, habitats and management issues (Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds", 66 FR 3853, Jan. 17, 2001). There are three BCRs within the Project's local area population: Eastern Tallgrass Prairie, Central Mixed Grass Prairie, and Oaks and Prairies.

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**Figure 2-1 Geographic Scope**

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#### 2.2.2 Resources Dismissed from Further Evaluation

We are required to evaluate five resources in adherence to federal mandates when we undertake a federal action. These include effects on environmental justice, floodplains, prime and unique farmlands, and wetlands. Additionally, based on our evaluation of the proposed action as described in Section 2.1, we have determined that a number of resources will not be impacted by the proposed action or alternatives because the federal action is limited to the proposed issuance of the Bald Eagle ITP, and not the Project construction, which is complete. As a result, the following resources have been dismissed from further evaluation because we are not authorizing Project construction: environmental justice, floodplains, prime and unique farmlands, wetlands, air quality, climate change, communication signals, Federal Aviation Administration transportation, geology/hydrogeology, human health and safety, land use, noise, radar signals, sub-surface minerals, vegetation, visual resources, waters of the U.S., and socioeconomic resources. The proposed action to issue an ITP will not affect minority or low-income populations, nor will it affect the health or environmental conditions of minority or low-income populations. Native American and tribal concerns are addressed in more detail in the affects analysis (Section 5.0).

We are required to evaluate cultural resources as a part of our NEPA review. From 2011 through 2014, the applicant, Service, and the Nation engaged in consultation focused primarily on the construction of the facility, which is not within the realm of this EA. Our authority is limited to potentially authorizing incidental take of eagles by the Project. Impacts on cultural resources associated with construction of the Project are outside the scope of our review. However, Phase I and II cultural resources surveys were conducted by Algonquin Consultants, Inc., at the Project site. Survey methods met the guidelines of the Oklahoma Office of State Archaeology and the Oklahoma State Historic Preservation Office as described in its 2004 Review and Compliance (Section 106) Manual. The field surveys were conducted in accordance with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716, as updated and amended by the U.S. National Park Service), with the Secretary of the Interior's Standards for Identification (48 FR 44720-44723), and with the 1985 Oklahoma Antiquities Act (Oklahoma Statute Chapter 20, Title 53, Section 361) (Algonquin 2012a). The NRHP evaluation determined no sites were eligible for listing on the NRHP under any of the eligibility criteria (Algonquin 2012b). There are no acquisition, construction, or improvements proposed or authorized as a result of the proposed action; therefore, the proposed action will not impact NRHP properties.

### 3.0 ALTERNATIVES

NEPA requires that federal agencies consider a range of reasonable alternatives to the proposed action when evaluating the environmental effects of an action. Reasonable alternatives include those that are practical or feasible from both a technical and economic standpoint and using common sense. The scope of reasonable alternatives is defined by the purpose and need for the action (see Section 2.1). For this EA, we will evaluate four alternatives in response to the application for a Bald Eagle ITP for the Project. The alternatives are:

- Alternative No. 1: No Action
- Alternative No. 2: Issue a 5-year ITP
- Alternative No. 3: Issue a 30-year ITP (Preferred Alternative)
- Alternative No. 4: Issue 30-year ITP with additional conditions

Under Alternatives 2 to 4, the ECP will be implemented as part of the ITP. For a description of the elements of the ECP relevant to the proposed issuance of the Bald Eagle ITP see Section 1.2.3. A summary of the key components of each alternative are provided in Table 3-1.

**Table 3-1 Summary of Key Components of Alternatives**

Component	Alternatives			
	No. 1 - No Action	No. 2 - Issue a 5-year ITP	No. 3 - Issue a 30-year ITP (Preferred)	No. 4 - Issue a 30-year ITP with Additional Conditions
Predicted Annual Bald Eagle Take	3	3	3	3
ITP Length	None	5 years	30 years	30 years
Frequency of Mortality Monitoring	Complete 3 years (voluntary)	Complete First 3 years	Complete First 3 years; Year 9, 14, 19, 24, and 29	Complete First 3 years; Year 9, 14, 19, 24, and 29
Percent of Turbines Monitored	Randomly selected 30% (voluntary)	Randomly selected 30%	Randomly selected 30%	Randomly selected 50%; increased search effort
Compensatory Mitigation	None	Adaptive Management Option (see ECP)	Adaptive Management Option (see ECP)	Retrofit power poles to offset uncertainty in take estimate
Turbine Curtailment	None	Adaptive Management Option (see ECP)	Adaptive Management Option (see ECP)	Adaptive Management Option (see ECP)

### **3.1 ALTERNATIVE NO. 1 – NO ACTION**

Under this alternative, we would deny the Applicant a Bald Eagle ITP, and the Project would continue to operate without an ITP. The Applicant is not legally required to have an ITP to continue operating the Project; however, any take of eagles at the Project in the future would not be authorized under the no-action alternative. As a result, the Applicant would assume all legal liability for operating the Project without an ITP. Without an ITP, the Applicant is not legally obligated to implement continued mortality monitoring or the adaptive management identified in the ECP.

Under NEPA regulations, an evaluation of a no-action alternative is required because issuing or not issuing an ITP are potential responses to the permit application. We would select this alternative if the application fails to meet one or more of the issuing criteria under 50 CFR §22.26, as amended, described in Section 1.1.2 or because the risk to eagles is so low that an ITP is unnecessary.

### **3.2 ALTERNATIVE NO. 2 – ISSUE A 5-YEAR BALD EAGLE ITP**

Under Alternative No. 2, we would issue a 5-year Bald Eagle ITP allowing non-purposeful take of Bald Eagles, with associated conditions, pursuant to the 2016 Eagle Rule Revisions. The 2016 Eagle Rule Revisions allow us to issue ITPs for any duration between 5 years and 30 years. The permit would be for non-purposeful take of up to 15 Bald Eagles for the 5-year period. The ITP would require renewal after 5-years, which would necessitate another NEPA review. We would select this alternative if we feel the degree of uncertainty as to the effects of issuing a Bald Eagle ITP to the Applicant is too high to meet eagle preservation standards; therefore, requiring us to have greater control over the permitting process.

### **3.3 ALTERNATIVE NO. 3 – ISSUE A 30-YEAR BALD EAGLE ITP (PREFERRED ALTERNATIVE)**

Alternative 3 is the preferred alternative. Under this alternative, we would issue a 30-year Bald Eagle ITP allowing non-purposeful take of Bald Eagles, with associated conditions, pursuant to 50 CFR §22.26(f), as amended. The permit would be for non-purposeful take of up to 15 Bald Eagles per 5-year period for the 30-year life of the permit. As outlined in the 2016 Eagle Rule Revisions, we would review the ITP every 5 years for the life of the permit to reassess mortality rates, take limits, the need for mitigation, and eagle population status. We would also make adjustments to the ITP as necessary after each review. We would amend, suspend or revoke the ITP if new information indicates that revised permit conditions are necessary, or that suspension or revocation is necessary, to safeguard local or regional eagle populations.

### **3.4 ALTERNATIVE NO. 4 – ISSUE A 30-YEAR BALD EAGLE ITP WITH ADDITIONAL CONDITIONS**

Alternative No. 4 would be identical to Alternative No. 3 with the addition of conditions beyond those described in the ECP. Under this alternative, we would issue a 30-year Bald Eagle ITP allowing non-purposeful take of up to 15 Bald Eagles per 5-year period for the 30-year life of the permit, pursuant to 50 CFR §22.26(f), as amended. Additional mitigation and post-construction monitoring would be incorporated into the ITP. The monitoring would include searching for eagle carcasses under an

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additional 20% of the Project's turbines (50% total) during mortality surveys and will include mowed survey plots that are 260 meters by 260 meters (twice turbine height). Additional mitigation would include retrofitting 30 power poles according to Avian Power Line Interaction Committee (APLIC) standards within 86 mi of the Project (APLIC 2012). Retrofitting efforts will focus on power poles with the greatest potential to electrocute eagles first (EDM International, Inc. 2015).

## **3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED**

### **Issue a 5-Year Permit Under the 2009 Eagle Permit Rule**

The Applicant originally applied for a Bald Eagle take permit in 2012 prior to the issuance of the 2016 Eagle Rule Revisions and therefore was eligible for the 5-year take permit under the 2009 Eagle Permit Rule. If the Applicant chose a 5-year permit under the 2009 Eagle Permit Rule, the permit would be subject to the available take standards of the 2009 Eagle Permit Rule and the permit would require renewal after 5 years. The Applicant chose to apply for a 30-year permit under the 2016 Eagle Rule Revisions, and the deadline for receiving a 5-year permit under the 2009 Eagle Permit Rule has passed (6 months from January 17, 2017). Further a 5 year permit term would not satisfy the Purpose and Need; therefore, we do not analyze this alternative further.

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## 4.0 AFFECTED ENVIRONMENT

A key element to analyzing the effects of the alternatives is to establish and describe the affected environment. In this EA, the affected environment includes Bald and Golden Eagles, other protected bird species, other wildlife, and the cultural and religious value of Bald Eagles to local Native American tribes. In addition, this section outlines the current environmental setting of the Project to provide context for the description and analysis of the affected environment.

### 4.1 ENVIRONMENTAL SETTING

The Project is located in Osage County, Oklahoma. Osage County is the largest county in Oklahoma at 2,304 square miles (approximately 1.47 million acres) with a population of 47,806 people and a population density of 20.7 people per square mile, which is lower than the state average density of 54.7 people per square mile (U.S. Census Bureau 2016). Osage County is home of the Osage Nation of Native Americans. The Osage Nation Executive Office and Department Offices are located in Pawhuska, Oklahoma. This sovereign nation has been accommodated by inclusion in our review of the affected environment in Section 4.6.

The Project boundary is dominated by grassland/herbaceous land cover (85%) and contains about 9% developed land. Smaller proportions of the land are devoted to pasture/hay (3%) and cultivated crops (1%). Open water, deciduous forest, wetlands, and shrub/scrub each cover <1% of the remaining land use (Homer et al. 2015). The Project is within the Flint Hills ecoregion, described as an area of rolling hills and low ridges underlain by cherty limestone and shale (Woods et al. 2005). The natural vegetation community of the Flint Hills is tallgrass prairie. Tallgrass prairie species within the Project include buffalograss (*Bouteloua dactyloides*), windmill grass (*Chloris* sp.), tumblegrass (*Schedonnardus paniculatus*), western wheatgrass (*Pascopyrum smithii*), tall dropseed (*Sporobolus compositus*), threeawn (*Aristida* sp.), western ragweed (*Ambrosia psilostachya*), Baldwin ironweed (*Vernonia baldwinii*), common broomweed (*Amphiachyris dracunculoides*), bitter sneezeweed (*Helenium amarum*), wavyleaf thistle (*Cirsium undulatum*), and prickly pear cactus (*Opuntia macrorhiza*) (Terracon 2009). Tallgrass prairie within the Project is fragmented due to oil/gas development, and associated electrical distribution lines, pipelines, aboveground storage tanks, oil pumps, and private access roads. There is also fragmentation due to the encroachment of invasive plant species including sericea lespedeza (*Lespedeza cuneata*) and brome grasses (*Bromus* sp.). Based on observations by the Applicant, it appears that the tallgrass prairie ecosystem within the Project is negatively impacted by overgrazing and frequent prescribed burns (Terracon 2009).

National Wetland Inventory (NWI) data show 145 wetland features within the Project: 53 man-made ponds ranging from 0.06 to 2.9 acres in surface area, 8 emergent wetlands ranging from 0.18 to 2.7 acres, and 9 forested/shrub wetlands ranging from 0.07 to 15.8 acres (US Fish and Wildlife Service 1985). Man-made ponds supply drinking water for cattle. NWI wetlands at least partially within the Project boundary also include 75 riverine wetlands, including a portion of Salt Creek, Stewart Creek, Lost Man Creek, and Little Chief Creek. These creeks are tributaries of the Arkansas River, which forms the southwestern border of Osage County. Many unnamed ephemeral tributaries are also within the Project.

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There are no large waterbodies within the Project, but there are four large reservoirs at least partially within the Project Area. Phillips Lake is approximately 1 mile north of the Project boundary and is adjacent to the Lakeview Golf Course and Country Club. Kaw Lake is owned and managed by the United States Army Corps of Engineers (USACE) and is approximately 5 miles northwest of the Project. Kaw Lake is among the Oklahoma lakes with the highest concentrations of eagles and is a popular eagle watching destination (Oklahoma Department of Wildlife Conservation 2013). Fairfax City Lake is owned and managed by the City of Fairfax, and is 6 miles south of the Project. Bluestem Lake is owned and managed by the City of Pawhuska, and is 8 miles east of the Project. The Project's local area population also contains large reservoirs (>10,000 acres). Two of these, Keystone Lake (22 miles southeast of the Project) and the Great Salt Plains Reservoir (80 miles west), are also important eagle watching locations (Oklahoma Department of Wildlife Conservation 2013).

The Nature Conservancy's 39,650 acre Joseph H. Williams Tallgrass Prairie Preserve located north of Pawhuska, Oklahoma, is the largest tract of protected native tallgrass prairie in the world. The Nature Conservancy purchased the site in 1989 with the goal of maintaining an intact, healthy tallgrass prairie ecosystem through practices such as patch-burning and bison and cattle grazing. The preserve is home to 2,500 free-ranging bison and many tallgrass-specialist wildlife and plant species. It is located approximately 13 miles northeast of the Project. The site is managed for all types of prairie flora and fauna and serves as a biological research station for investigative studies on prairie ecology (The Nature Conservancy 2017).

## 4.2 EAGLES

### 4.2.1 Bald Eagle

The Bald Eagle is a large raptor endemic to North America. It is the only eagle unique to North America. Adults have a distinctive solid white head and tail feathers that contrast with a dark brown body and bright yellow beak and feet. Juvenile Bald Eagles have a dark beak and black eyes and are almost solid brown, although a general mottling in the body feathers and a light coloration in the head and tail develop in older immature birds. At four or five years of age, they become sexually mature adults and acquire adult plumage. Bald Eagles may weigh 8 to 14 pounds and have a wingspan of 5 to 8 feet, and as typical for most raptors, females are larger than males. Bald Eagles favor roosting, foraging, and nesting habitat containing large diameter trees with open branch structures in close proximity to open waters that support an adequate food supply. Bald Eagles are opportunistic feeders. Fish comprise much of their diet, but they also eat waterfowl, shorebirds, colonial waterbirds, turtles, snakes, small mammals, and carrion (Buehler 2000).

Breeding pairs occupy territories, areas they will typically defend against intrusion by other eagles or raptors. Bald Eagles exhibit high nest site fidelity and nesting territories are often used year after year. Bald Eagles prefer to nest in trees but will sometimes nest on rock cliffs/outcrops, on human-made structures (e.g., power poles, communication towers), and rarely on the ground. An active nest is a nest that is attended (built, maintained, or used) by a pair of Bald Eagles during a given breeding season, whether or not eggs are laid. In addition to the active nest, one or more "alternate" nests, may be built or maintained by a single pair, often within their territory, but not used for breeding. Alternate nests may be used for breeding if the primary nest is no longer desirable as a breeding location (e.g., because of disturbance or the destruction of the nest tree). Nesting activity begins several months before the breeding season, and egg-laying in Oklahoma typically occurs from December to February but may start

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as early as October (Reinking 2004; see Table 4-1). Eagles typically lay one to three eggs once a year, which hatch after about 35 days. The young eagles fledge at three months of age, but remain dependent on their parents for up to two months or more.

**Table 4-1 Bald Eagle Nesting Chronology in Northeast Oklahoma**

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Nest Building											
	Egg Laying/Incubation										
		Hatching/Rearing Young									
					Fledging/Post-fledging Dependency						

Source: US Fish and Wildlife Service 2007; Reinking 2004; Buehler 2000

In the fall, the majority of Bald Eagles that reside/breed in northern latitudes begin moving to their wintering grounds in the south, with the greatest numbers migrating in late October and November. Bald Eagles that reside/breed in warm southern climates may remain on or near their nesting territories year-round. Bald Eagles in cooler climates will migrate as prey becomes more difficult to find, with adults and juveniles migrating separately.

Wintering Bald Eagles occur throughout the United States. Bald Eagles are sociable on their winter range and frequently concentrate in large numbers at major river systems and large bodies of water where food is abundant. They often roost communally overnight, and the same roost trees are used for several years. Roosts are often in locations protected from the wind by vegetation or terrain. Bald Eagles may also spend a substantial portion of the non-nesting period in terrestrial habitats far from open water, preying on small mammals or scavenging on carrion such as big game or livestock.

#### 4.2.1.1 Population and Distribution

The Bald Eagle was listed as endangered in 1978 under the ESA due to population declines caused primarily by pesticides and other environmental contaminants. The Bald Eagle was removed from the Federal List of Endangered and Threatened Wildlife in 2007 (72 FR 37346, July 9, 2007), following its reclassification in 1995 from endangered to threatened. The species remains protected under the Bald and Golden Eagle Protection Act. As a result of these protections, over the last several decades Bald Eagles have been extensively surveyed throughout their breeding and wintering range. Within the lower 48 states and the District of Columbia, the 2007 Bald Eagle population was estimated to be about 11,040 pairs based on data collected by state and federal agencies (Suckling and Hodges 2007). With the successful recovery of the Bald Eagle, many state agencies no longer conduct surveys to estimate local populations and nest distributions. As discussed in Section 1.1.2, in 2016 we issued the Status Report as a supporting document to the PEIS (US Fish and Wildlife Service 2016a, 2016c). Based on our analysis, the median 2009 Bald Eagle population for the United States (excluding Alaska) was 72,000 and 143,000 for all of the United States (US Fish and Wildlife Service 2016c, 52). The median 2009 population for the Central Flyway EMU, where the Project is located, was 3,000 Bald Eagles (US Fish and Wildlife Service 2016c, 52).

Oklahoma supports a growing nesting population of Bald Eagles with about 80-85 breeding pairs in 2010 (Oklahoma Department of Wildlife Conservation 2013). Most of the breeding pairs occur in the eastern third of the state, especially along the Arkansas, Grand, Illinois, and lower Canadian Rivers. An intensive Bald Eagle release effort was the

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cornerstone for Oklahoma's recovery efforts. Between 1985 and 1990, the Oklahoma Department of Wildlife Conservation (ODWC) Wildlife Diversity Program assisted the George M. Sutton Avian Research Center with the release of 90 eaglets in eastern Oklahoma. Since those efforts, the number of nesting pairs has increased from zero in 1990 to likely more than 80 pairs today.

Bald Eagles are present year-round in northeast Oklahoma where the Project is located. Typically, migrants and winter residents begin arriving in late October, with peak numbers in January coinciding with coldest winter weather. Most regional migrants depart for their northern breeding range by the end of March. Wintering Bald Eagles are found statewide, with concentrations on most of the rivers and large lakes/reservoirs. During severe winters in the northern states and Canada, anywhere from 800 to 1,500 Bald Eagles may overwinter in Oklahoma (ODWC 2013). While wintering Bald Eagle populations across the Conterminous United States are showing an estimated 0.6% increase from 1986-2010, the wintering population in Oklahoma is showing an estimated 1.2% decrease for the same span of years (Eakle et al. 2015).

#### **4.2.1.2 Occurrence and Distribution in Project and Project Area**

Between 2010 and 2011, the Applicant conducted one year of site specific avian use surveys, including: avian point-count surveys, raptor surveys, and an aerial survey for Bald Eagle nests (Normandeau 2012a, 2012b). In Addition, the Applicant completed post-construction eagle nest surveys in spring 2016 and spring 2017 (Chodachek 2016; WEST 2017). The methods and results of these surveys, as well as other information pertaining the Bald Eagle occurrence and distribution in the Project Area are summarized below. Pre-construction eagle surveys are also described in the ECP.

#### **Bald Eagle Activity**

The Applicant conducted point count surveys twice each month from September 2010 until August 2011. Eleven point count locations were distributed within ( $n = 10$ ) and outside ( $n = 1$ ) the Project boundary. Each point count was conducted for 10 minutes and all birds seen or heard within an unlimited radius were recorded. Point counts were performed from 30 minutes before sunrise until the counts were completed during the day; time activity budgets for birds soaring in the afternoon hours were recorded during another survey (described below). Data recorded included species, abundance, flight height, flight direction, and general behavior.

During point count surveys, observers recorded 24 Bald Eagle sightings with the highest abundance in January and February. Fifty percent (12) of the eagle sightings were observed at one point north of the Project near a 77-acre reservoir, Phillips Lake. This point had 10 times the Bald Eagle observations (0.67 birds per count) than all observations from the 10 points within the Project (0.067 birds per count). Flight height (i.e., above ground level) observations of Bald Eagles were similar across all points with nine (37.5%) eagles observed flying < 150 feet, seven (29.2%) observed flying > 150 feet, and eight (33.3%) perched. Of the 16 birds observed in flight, 11 (68.8%) were observed at Point 1 (outside the Project) and the rest were observed at points inside the Project. Of the eight eagles observed perching, seven (87.5%) were observed inside the Project, while only one (12.5%) was observed outside the Project. These observations were conducted in the morning hours; therefore, conclusions from these data are limited to this time period.

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The Applicant conducted raptor surveys during the afternoon hours by monitoring raptors at the Project for flight height, behavior, and direction. Raptor surveys were performed by driving the roads within the Project and looking for perched or in-flight raptors, specifically Bald Eagles. Once a raptor was spotted, it was observed for up to 1 hour, and the amount of time the bird spent in flight versus perched was recorded. The raptor surveys focused specifically on Bald Eagles, although raptor behavior from other species was also recorded. Data collected from Bald Eagle observations during the raptor surveys showed that Bald Eagles spent 1,020 (91.7%) survey minutes perching and 92 (8.3%) minutes in flight. Of the observations in flight, 27 minutes (29.4%) were spent flying less than 150 feet high and 65 minutes (70.6%) were spent flying >150 feet high.

On December 5, 2012, the Osage Nation provided us with documentation of the presence of Bald Eagles in the Project and their cultural significance to the Osage Nation (see Section 4.6). Osage Nation tribal members and staff have documented the presence of Bald Eagles at and around the Project. Given the cultural and religious significance of the Bald Eagle to the Osage Nation, the Osage Nation Environmental and Natural Resource Department (ENR) implemented a program in 2010 to train ENR staff to identify and record eagle sightings on the surface lands above the Osage Nation's mineral estate. Through this program, 35 Bald Eagle sightings were recorded between 2010 and 2012, with several sightings occurring at or in the immediate vicinity of the Project. Similar to the Applicant, the Osage Nation reports the majority of Bald Eagle observations occurred between November and March with only a few sightings in the summer months; a number of Bald Eagle nests at and in the vicinity of the Project, including Nest 11 ("Little Chief Nest"; see below); and that Bald Eagle flight paths occur over the Project.

The Osage Nation also brought attention to observations of Bald Eagles at Tallgrass Prairie Preserve during the National Audubon Society's Christmas Bird Count (CBC). The center of this count circle is about 13 miles from the Project's eastern boundary. In the last 10 years (2007-2016), 116 Bald Eagles (average = 11.6 Bald Eagles/year) were recorded in the Tallgrass Prairie Preserve CBC circle. Five or more Bald Eagles were recorded each year for the past 10 years (National Audubon Society 2017).

The Project site does not appear to function as a major migratory corridor for raptors. The flight paths for Bald Eagles appear to be concentrated around Phillips Lake, approximately 1.5 mile north of the Project, and in the north-central portion of the Project. The topography within the Project does not contain features such as cliffs, buttes, ridgelines, or shorelines that typically concentrate raptor migration activity. Bald Eagle activity is concentrated at open water resources outside of the Project (i.e., Kaw Lake, Phillips Lake, Arkansas River). No high quality roosting, foraging, and nesting habitat occur within the Project; however, Bald Eagles occasionally use habitat within the Project for these purposes. Bald Eagles using nests in the vicinity of the Project appear to forage at nearby open water resources outside of the Project more than within the Project.

There are no large bodies of water within the Project except for a 12-acre lake associated with a quarry on the west side of the Project. This quarry lake and the other small, man-made lakes within the Project could attract foraging eagles, but likely in low numbers due to their size. No standardized surveys for prey abundance were conducted at these lakes. Phillips Lake, north of the Project, attracts Bald Eagles presumably to feed on fish and waterfowl. One of Oklahoma's largest populations of wintering Bald Eagles occurs annually at Kaw Lake, a 17,040-acre reservoir with 168 miles of shoreline that is about 6 miles west-northwest of the western edge of the Project. Throughout 11 annual surveys, conducted between 1986 to 2012, an average of 77 Bald Eagles were counted at Kaw Lake during the Midwinter

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Bald Eagle Surveys. These nationwide ground and aerial surveys take place during the first two weeks of January each year, are conducted by several hundred individuals who count eagles along standard, non-overlapping survey routes, and are coordinated by the United States Army Corp of Engineers (USACE) (Steenhof et al. 2008). The Arkansas River system has supported the majority of known Bald Eagle nests in the state, as well as winter residents. Highway 60 runs along the southern boundary of the Project, and raptors could be attracted to carrion along the highway. Several livestock operations occur within the vicinity of the Project and carcasses not properly disposed are scavenging opportunities for raptors as well.

### **Bald Eagle Nesting**

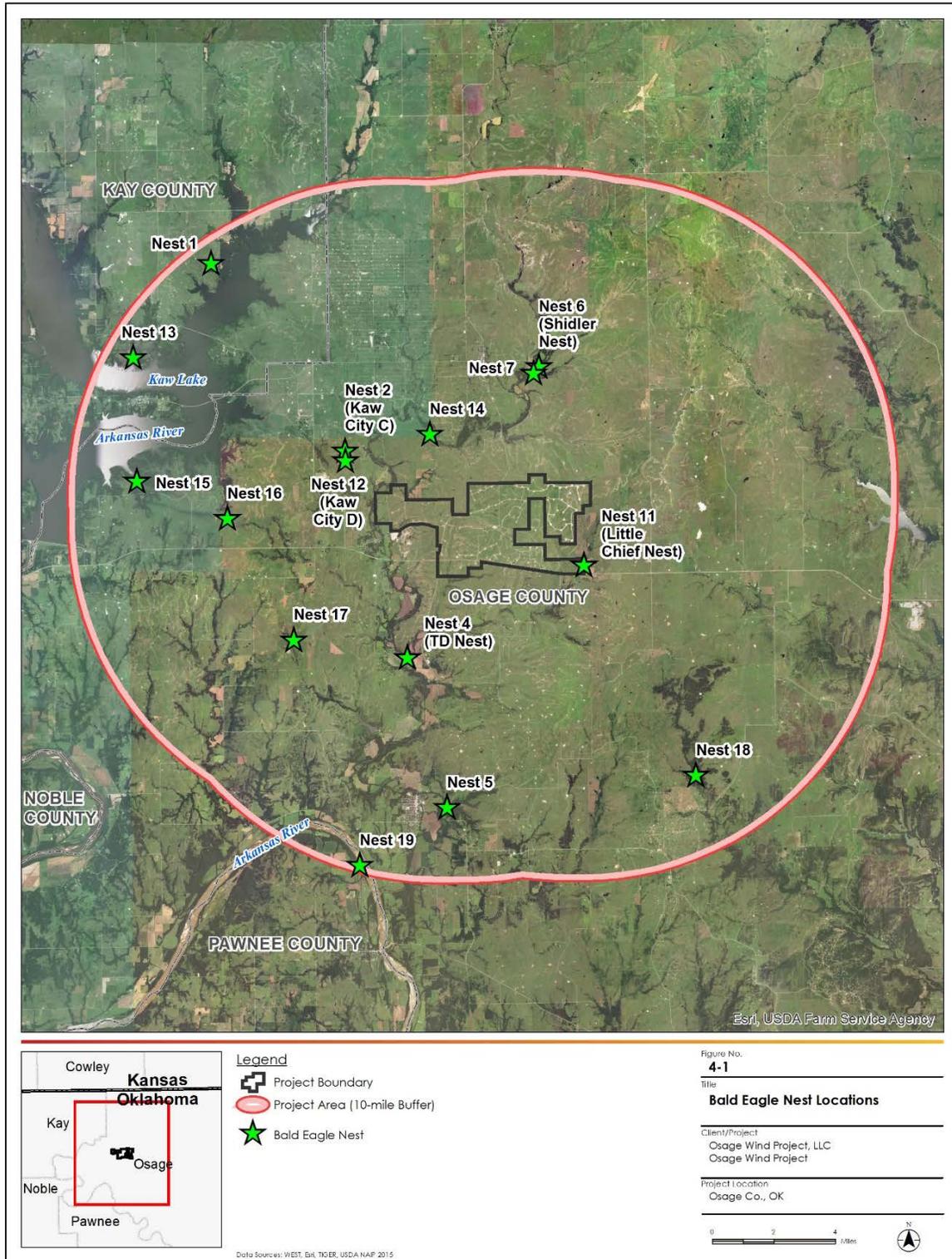
The Applicant conducted a pre-construction aerial survey for Bald Eagle nests on March 22, 2011 using a helicopter. The observer flew low-altitude flights (250 to 500 feet), while searching the Project and surrounding locations for Bald Eagle nests. The helicopter flew for 332 miles and the survey took about 4 hours to complete. The helicopter flew all the wooded areas where Bald Eagles would have the opportunity to build nests. Wooded areas were isolated in small patches and could be adequately surveyed by one observer. All nest locations were recorded with a global positioning system (GPS) unit.

Five Bald Eagle nests were observed during the pre-construction aerial eagle nest survey within the Project Area. In the nest survey results, Normandeau Associates, Inc. (Normandeau) stated none of the nests were active; however, based on the photographs and descriptions provided in the ECP, we consider two of the nests as “in-use nests”<sup>1</sup> and three as “alternate nests”. In the ECP’s photographs, one nest had an eaglet and a rabbit carcass in it and one nest had two adult Bald Eagles present, one above and one in the nest. One alternate nest appeared to be freshly lined and contained a clear center depression, however, no eagles were in attendance, nor were eagles observed during April, May or June visits. One alternate nest did not appear to be lined and the other alternate nest was described in the text as “dilapidated”. During the Applicant’s 2011 surveys, adult Bald Eagle activity was observed early in the breeding season within the immediate vicinity of one nest (Nest 11 or “Little Chief Nest”) near the Project’s southeastern boundary. On November 15, 2012, during a site visit, we found the tree that this nest was built in had fallen and the nest materials were found on the ground. Bald Eagle nests observed within the Project Area are shown in Figure 4-1.

The Applicant completed post-construction eagle nest surveys in spring 2016 and spring 2017 (Chodachek 2016; WEST 2017). These surveys were completed by Western EcoSystems Technology, Inc. (WEST) on March 17, 2016 and March 12, 2017 within the Project Area. Both years, the Project Area was searched for Bald Eagle nests by an observer and a pilot in a helicopter at low altitude (150-200 feet) by flying suitable nesting habitat. Information recorded for each nest included species, nest status, number of adults/young/eggs present, nest condition, and GPS location.

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<sup>1</sup>We define an eagle nest as: (1) “in-use” – a “bald or golden eagle nest characterized by the presence of one or more eggs, dependent young, or adult eagles on the nest in the past 10 days during the breeding season. This definition includes the period when adults are displaying courtship behaviors and are building or adding to the nest in preparation for egg-laying.” (2) “alternate nest” – “one of potentially several nests within a nesting territory that is not an in-use nest at the current time. When there is no in-use nest, all nests in the territory are ‘alternate nests’” (81 FR 91507, Dec. 16, 2016). The Applicant’s eagle nest surveys use different terms than these as they were written prior to the 2016 Eagle Rule Revisions.



**Figure 4-1 Bald Eagle Nest Locations**

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Of the five nests observed in 2011, one was in-use in 2016 (Nest 2) and no Bald Eagle activity was observed at the four others (Nest 4, Nest 6, Nest 7, and Nest 12); Western Ecosystems Technology, Inc. (WEST) confirmed that Nest 11 (Little Chief Nest) and its nest tree had fallen over. In addition, WEST documented three new Bald Eagle nests in 2016, two of which were in-use (Nest 1 and Nest 5) and one alternate nest (Nest 7) (Chodachek 2016). In 2017, WEST observed five in-use nests (Nests 1, 5, 12, 13, and 14) and nine alternate nests within the Project Area (see Figure 4-1). Two nests were in-use in both 2016 and 2017 (Nest 1 and 5) (WEST 2017).

#### 4.2.2 Golden Eagle

The Golden Eagle is a large bird of prey with dark-brown feathers mixed with a variable amount of golden-brown feathers. Juvenile Golden Eagles are generally darker brown than adults with white patches on the wings and tail. Adult plumage coloration is usually developed by five years of age. Golden Eagles may weigh 7 to 13 pounds and have a wingspan of 6 to 7 feet, and females are larger than males. Golden Eagles breed in open habitats such as shrublands, grasslands, and farmland primarily in the rocky terrain of the western United States. During the winter, they can be found in open habitats with native vegetation, including grazed grassland and shrubland. They may also be found near reservoirs and wetland systems that provide waterfowl hunting opportunities during the winter. Their main food sources are small mammals such as hares (*Lepus* spp.), rabbits (*Sylvilagus* spp.), and prairie dogs (*Cynomys* spp.), and they will frequently feed on carrion, especially during the winter. Golden Eagles will hunt cooperatively for larger prey such as ungulates, foxes, and grouse.

##### 4.2.2.1 Population and Distribution

Golden Eagles feed primarily on small mammals and were, therefore, not as susceptible to the pesticides and other environmental contaminants that caused the Bald Eagle population declines in the 1960s and 1970s. The Golden Eagle was included in the Bald and Golden Eagle Protection Act in 1962 and is afforded the same protection as the Bald Eagle. Research on Golden Eagle biology has been less extensive than for the Bald Eagle primarily because the Golden Eagle has never been listed under the ESA. Therefore, long-term population trends across the United States and within regions are not fully understood, but some populations are believed to be declining. In 2004, 21,000 to 35,000 Golden Eagles were estimated to occur in the Great Basin and Rocky Mountains in the United States (Good et al. 2004). We estimated the median 2014 Golden Eagle population for the United States (including Alaska) to be 40,467. The median 2014 population for the Central Flyway Eagle Management Unit (EMU), where the Project is located, was 15,327 Golden Eagles (United States Fish and Wildlife Service 2016a).

Golden Eagles are present in Oklahoma from late-October to mid-March in the western third of the state. They occur in the eastern third of the state during the winter on rare occasions. Breeding occurs only in Cimarron and Texas counties in the Oklahoma panhandle, which are at least 300 miles from the Project, and only two to four nesting pairs occur in Oklahoma (OBRC 2014; ODWC 2011). Due to their rarity in the state, data on Golden Eagle range and population size in Oklahoma are limited.

##### 4.2.2.2 Occurrence and Distribution in Project Area and Vicinity

On behalf of the Applicant, Normandeau conducted site-specific bird surveys during 2011 (see Section 4.2.1.2). During the raptor surveys, one Golden Eagle was observed flying north at 150 feet above

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ground level for 4 minutes until it flew out of sight. Golden Eagles were not observed during the avian point count surveys, nest surveys, or during other site visits.

On December 5, 2012, the Osage Nation provided us with documentation of Golden Eagle sightings on the surface lands above the Osage Nation's mineral estate as recorded by tribe members. Through the Osage Nation ENR's program to train ENR staff to identify and record eagle sightings on the surface lands above the Osage Nation's mineral estate, tribe members observed at least four Golden Eagles between 2010 and 2012. These sightings were generally on the eastern edge of the surface lands above the Osage Nation's mineral estate, about 15 miles from the Project, between August and March. Golden Eagles were also recorded one year during the Tallgrass Prairie Preserve CBC in the last 10 years (2007 to 2016). Two Golden Eagles were recorded in 2014 (National Audubon Society 2017).

Golden Eagles wintering in eastern Oklahoma may be found in open grassland habitats such as those present in the Project; however, the Project does not support large populations of hares, rabbits, or prairie-dogs, which may attract foraging Golden Eagles. Golden Eagles will scavenge on carrion and may be attracted to carcasses along Highway 60 and State Highway 18. Given the rarity of Golden Eagles in eastern Oklahoma and the absence of prey within the Project, Golden Eagles are expected to occur infrequently in the Project Area.

### 4.3 THREATENED AND ENDANGERED SPECIES

On June 6, 2017 we complete an Intra-Service Section 7 Biological Evaluation to fulfill the requirements of the ESA to ensure that the proposed issuance of a Bald Eagle ITP is not likely to jeopardize the existence of any listed species or result in the destruction or adverse modification of designated critical habitat (see Section 1.1.4). The Section 7 evaluation identified the following species as pertinent to the evaluation:

- the endangered American Burying Beetle (*Nicrophorus americanus*),
- the endangered Interior Least Tern (*Sternula antillarum athalassos*),
- the endangered Neosho Mucket Mussel (*Lampsilis rafinesqueana*),
- the threatened Piping Plover (*Charadrius melodus*),
- the candidate species Rattlesnake-master Borer Moth (*Papaipema eryngii*),
- the threatened Red Knot (*Calidris canutus rufa*), and
- the endangered Whooping Crane (*Grus Americana*).

Our Oklahoma Ecological Services Field Office determined the proposed issuance of a Bald Eagle ITP to the Applicant does not require further formal or informal consultation to address ESA-protected species (United States Fish and Wildlife Service June 6, 2017; Appendix A).

### 4.4 OTHER MBTA-PROTECTED BIRDS

The Project Area encompasses portions of three Birds of Conservation Regions (BCR), which are ecologically distinct areas with similar bird communities, habitats, and management issues (NABCI International 2017). Six of these BCRs occur within the state of Oklahoma, and the Project is within the Eastern Tallgrass Prairie BCR (BCR 22).

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The Project Area also encompasses portions of the Oaks and Prairies BCR (BCR 21) and the Central Mixed-Grass Prairie BCR (BCR 19) (see Figure 2-1). Oklahoma's avian fauna includes about 385 species in 55 families that occur annually within the state; of these species about 285 regularly occur in the tallgrass prairie (BCR 22) portion of Oklahoma, where the Project is located. About 118 species have at least a small nesting population within BCR 22; this BCR is especially important to tallgrass prairie-dependent birds and to transitional shrubland species (ODWC 2005). Important habitat types within this region include bottomland hardwood forest, riparian forest, upland oak woodlands, tallgrass prairies, and transitional shrublands.

There are currently no state-listed threatened or endangered bird species within the potential to occur in Osage County, Oklahoma, apart from those protected under the ESA (ODWC 2016), which are discussed in Section 4.3. Non-threatened or endangered birds that are protected under the MBTA occur year-round in the Project region, including migrating birds (spring and fall), summer resident breeding birds, and wintering birds. The Project is located in the Central Flyway, which is a major migration corridor for birds. The following sections discuss non-threatened or endangered bird species or species groups that require evaluation under Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds" (66 FR 3853, Jan. 17, 2001).

The Applicant voluntarily prepared a Bird and Bat Conservation Strategy (BBCS) consistent with the Wind Energy Guidelines (WEG) to reduce the risk to birds and bats as a result of construction and operations of the Project (Normandeau 2015). The BBCS also provides some discussion concerning bird and bat use and occurrence at the Project. The Applicant conducted bird surveys twice a month at the Project from September 2010 through August 2011 (Normandeau 2012b).

#### 4.4.1 Birds of Conservation Concern

We maintain a list of Birds of Conservation Concern (BCC), which identifies species within specific regions that have additional reasons for conservation concern (United States Fish and Wildlife Service 2008b). BCC are species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (United States Fish and Wildlife Service 2015). Table 4-2 includes a list of BCC species for BCRs 19, 21, 22 that were observed during the Applicant's 2011 point-count surveys in the Project (Normandeau 2012b).

**Table 4-2 BCC Species Identified in the Project**

Species	BCC		
	BCR 22	BCR 21	BCR 19
Pied-billed Grebe ( <i>Podilymbus podiceps</i> )	X		
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	X	X	X
Swainson's Hawk ( <i>Buteo swainsoni</i> )			X
Solitary Sandpiper ( <i>Tringa solitaria</i> )	X		X
Upland Sandpiper ( <i>Bartramia longicauda</i> )	X		X
Northern Flicker ( <i>Colaptes auratus</i> )	X		
Scissor-tailed Flycatcher ( <i>Tyrannus forficatus</i> )		X	X
Loggerhead Shrike ( <i>Lanius ludovicianus</i> )	X	X	X
Bell's Vireo ( <i>Vireo bellii</i> )	X	X	X
Sprague's Pipit ( <i>Anthus spragueii</i> )		X	X
Cassin's Sparrow ( <i>Peucaea cassinii</i> )			X

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Species	BCC		
	BCR 22	BCR 21	BCR 19
Grasshopper Sparrow ( <i>Ammodramus savannarum</i> )	X		
Dickcissel ( <i>Spiza americana</i> )	X		
Smith's Longspur ( <i>Calcarius pictus</i> )	X	X	X
Chestnut-collared Longspur ( <i>Calcarius ornatus</i> )			X
Orchard Oriole ( <i>Icterus spurius</i> )		X	

Sources: Normandeau 2012b; USFWS 2008b

## **4.5 LOCAL NATIVE AMERICAN CULTURAL AND RELIGIOUS VALUES**

### **4.5.1 Bald Eagles**

The Project is located on privately owned surface lands above the Osage Nation's mineral estate, which is approximately 1,475,000 acres of land within Osage County, Oklahoma. We must consider “the cultural significance of a local eagle population” to tribes such as the Osage Nation (50 CFR §22.6(e)(5)). Native American interests are unique because the tribes are sovereign governments. While the cultural significance of Bald Eagles is broad-based and not limited to ethnic origin, there is a separate federal trust responsibility to tribes, which safeguards indigenous religious practices, cultural practices, places, sites, and objects. As described in Section 1.1.6, we have consulted with the Tribes concerning the potential issuance of an ITP to the Project.

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## **5.0 ENVIRONMENTAL CONSEQUENCES**

The purpose of this DEA is to evaluate the effects of the proposed federal action and alternatives under consideration, namely, the proposed issuance of a Bald Eagle ITP. An important element of the evaluation is assessing the potential impacts of the alternatives on the affected environment, including direct effects, indirect effects, and cumulative effects. This section describes the likely effects of each of the alternatives with respect to two factors: (1) the specific environmental resources that might be affected; and (2) the range or types of effects the alternatives might have with respect to direct, indirect, and cumulative effects. Effects can be beneficial or adverse; major, moderate, or minor; and short- or long-term. We evaluate the intensity of an affect using the following definitions:

- Negligible – Minimal impact on the resource would occur; any change that might occur would be barely perceptible and not easily measurable.
- Minor – Change in a resource would occur, but no substantial resource impact would result; the change in the resource would be detectable but would not alter the condition of the resource.
- Moderate – Noticeable change in a resource would occur and this change would alter the condition of the resource, but the integrity of the resource would remain intact.
- Major – Substantial impact or change in a resource would occur that is easily defined and highly noticeable and that measurably alters the condition of the resource; the integrity of the resource may not remain intact.

The cumulative effects for all alternatives are addressed in a separate section at the end of this chapter. All alternatives will be assessed for adherence with 50 CFR §22.26, as amended, including an evaluation of the compatibility of estimated eagle take with the eagle preservation standards at 50 CFR §22.26.

### **5.1 EFFECTS COMMON TO ALL ALTERNATIVES**

#### **5.1.1 Estimated Take of Bald Eagles**

Under all alternatives, the Project is expected to take Bald Eagles. A fundamental component of our decision process for an ITP is the evaluation of Bald Eagle fatalities likely to occur from operation of the Project. We use the eagle fatality estimate to determine if the level of take is compatible with the eagle preservation standard in the Bald and Golden Eagle Protection Act and the PEIS analysis pursuant the current ITP regulation. The 2016 Eagle Rule Revisions established the conservative take thresholds analyzed in the PEIS, which are set at 6% of the Central Flyway EMU and 5% of the local area population for Bald Eagles (United States Fish and Wildlife Service 2016c, 29-30). As detailed in the Status Report, the conservative Bald Eagle take limit for the Central Flyway EMU (based on 2009 population estimates) is 70 Bald Eagles (United States Fish and Wildlife Service 2016a, 8). We calculated the Project's local area population Bald Eagle population to be an estimated 213 eagles, 5% of which is 10.7 Bald Eagles (i.e., 11 individual eagles; see Section 5.7.2). As of March 2018, we have issued permits for take of 9.3 Bald Eagles within the Central Flyway EMU. There are no overlapping ITPs with the Project's local area population issued at this time. Issuing this permit would not surpass the thresholds established for take at the EMU or local area population scale (United States Fish and Wildlife Service 2016a, 8).

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In the Eagle Conservation Plan Guidance (ECPG) (United States Fish and Wildlife Service 2013), we provide a mathematical model to estimate fatality risk at wind project sites (a collision risk model or CRM). The CRM relies on the assumption that there is a positive relationship between the number of minutes eagles spend flying within proximity to turbines (during pre-construction studies prior to presence of turbines), the number of turbines, the size of the turbines, and the collision risk to eagles (United States Fish and Wildlife Service 2013; 81 FR 91494-91554, Dec. 16, 2016). We are aware of arguments that our model predicts unrealistically high rates of Bald Eagle fatalities at wind facilities. We do not disagree that Bald Eagles may prove to be less at risk from blade-strike mortality than Golden Eagles, but the Bald Eagle data available are insufficient. There are plausible reasons to expect Bald Eagles mortality rates to be more variable than Golden Eagle rates, such as: (1) Bald Eagles congregate in larger numbers than Golden Eagles, where they engage in social behaviors that may increase their risk to blade strikes at a project sited in such an area; (2) in some of the areas where Bald Eagles congregate, there are multiple Bald Eagle fatalities each year from collision with static power distribution lines and vehicles, suggesting that as a species they do not possess a superior ability to avoid collisions; and (3) a thorough study in Norway documented a substantial population-level negative effect of a wind facility there on a population of the closely related eagle species as a result of blade-strike mortality (Nygaard 2010). Furthermore, if the CRM is overestimating potential Bald Eagle take, it is only likely to be a problem for the first 5 years of any ITP we issue because site-specific post-construction monitoring data will be incorporated into the CRM and we will adjust the ITP's take number accordingly. While we will continue to refine our CRM as more scientific information and data from wind projects become available, we will continue to use the current conservative model (81 FR 91522, Dec. 16, 2016). The latest iteration of the CRM (August 2014) was used to predict fatalities at the Project.

The fatality prediction for the Project, using our CRM (excluding hours when the turbines are predicted to not be operating), is a mean of 2.0 Bald Eagles per year (standard deviation [sd] = 1.5) with an 80% upper confidence limit of 2.9 Bald Eagles per year<sup>2</sup>. Thus, the model predicts that over a 5 year period, 14.5 Bald Eagles will be killed incidentally to the operation of the Project. Though the model prediction includes partial fatalities, the ITP itself must assume only whole eagles. For permitting purposes all numbers of fatality estimates are rounded up to the next whole eagle. The fatality estimate of 2.9 per year is reflected in the ITP authorization for 15 eagles per 5 year period. The level of Bald Eagle take is expected to be the same under all alternatives.

The Applicant devoted only one year to on-site surveys of eagle activity and total effort (220 10-minute point count surveys) was small relative to the size of the Project. Each survey was also shorter than currently recommended (only 10 minutes rather than 1 to 2 hours); however, the surveys were initiated prior to our issuance of the Draft ECPG. These shortcomings increased the level of uncertainty in our CRM and resulted in a higher Bald Eagle take estimate. However, should we issue an ITP with aduration of more than 5 years to the Applicant (Alternatives 3 and 4), we will re-evaluate the Project's Bald Eagle take permit at 5-year intervals. In the PEIS, we selected a conservative approach to eagle take thresholds and therefore authorized take (in this case, 3 Bald Eagles per year) is expected to be higher than the actual take (81 FR 91516, Dec. 16, 2016). The 5-year reviews provide the opportunity for us to adjust authorized take at the Project and the corresponding available take within the EMU and local area population. Our CRM was designed so that the model can be updated with new information as it becomes available to generate more accurate estimates of potential take.

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<sup>2</sup> The Service uses the upper 80% quantile of fatality distribution to determine permit limits in an effort to avoid underestimating mortality rates (81 FR 91494-91554, Dec. 16, 2016).

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A take limit of 3 Bald Eagles per year is below the Central Flyway EMU threshold of 70 Bald Eagles and the local area population threshold of 11 Bald Eagles. The take proposed here would not exceed the thresholds established by the PEIS for either the local area population or EMU. (see Section 5.7.2 for details; United States Fish and Wildlife Service 2016c, 63). Therefore, under all alternatives, Bald Eagle populations are likely to increase within the next 100 years (United States Fish and Wildlife Service 2016c, 61 and 64). The cumulative effects of authorizing Bald Eagle take at the Project along with other sources of take are discussed in Section 5.7.2.

Bald Eagle take at the Project is most likely to occur from eagles colliding with wind turbines. Take would include eagles injured but not killed as a result of the collision. Bald Eagle activity at the Project was during the winter (October through March). Bald Eagle fatalities are most likely to occur during the winter but could happen at any time of year since Bald Eagle's breed in the Project Area. Take at the Project could include immature, adult, winter-resident, or breeding eagles. The loss of a migrant Bald Eagle would not directly affect the local population but could affect the breeding population to which it belonged. However, we chose to manage eagle populations within flyway EMUs because they more accurately correspond to the annual movements and migratory cycles of Bald Eagles (United States Fish and Wildlife Service 2016c, 70).

The loss of an immature bird would mean the loss of future breeding potential and its contribution to the overall population. Bald Eagles do not generally reach breeding age until their fifth year of life and disperse an average of 86 miles from their place of birth, the average natal dispersal distance, before establishing a breeding territory (United States Fish and Wildlife Service 2016c, 60). This dispersal distance has been taken into account in the local area population analysis in Section 5.7.2. Effects from the loss of an immature Bald Eagle would probably take years to be noticeable within the population – the amount of time it would have taken it to reach breeding maturity. The loss of an immature Bald Eagle affects the local population less than the loss of an adult at breeding age. Small changes in population dynamics might occur, but the overall effect of Bald Eagle take at the Project is expected to be minor. Our take thresholds for the EMUs and local area population take into account age-specific survival rates, productivity, and density-related responses (United States Fish and Wildlife Service 2016c, 49-55).

#### **5.1.2 Estimated Take of Golden Eagles**

Take of Golden Eagles would not be allowed under any alternative. The Project is not expected to take Golden Eagles under any alternative given their rarity in eastern Oklahoma. Furthermore, the effects of any minimization or mitigation measures that are part of any action alternative would be expected to have a negligible impact on Golden Eagles due to their rarity in the area. The Applicant recorded one Golden Eagle at the Project during pre-construction surveys. See Section 4.2.2.2 for detailed discussion of Golden Eagle occurrence and distribution in the Project Area.

#### **5.1.3 Eagle Nest Disturbance or Territory Loss**

Since the Project is built and operational, disturbance of nests or roosts is not expected to occur under any alternative. Bald Eagles are unlikely to build new nests within the Project boundary given the lack of trees (see Section 1.2.1), and all known nests are  $\geq 2$  mi from the Project's turbines (see Section 4.2.1.2). All nests are greater than 660 feet from Project infrastructure, the largest recommended buffer to avoid nest disturbance in our "National Bald Eagle Management Guidelines" (United States Fish and Wildlife Service 2007).

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#### **5.1.4 Threatened and Endangered Species**

As discussed in Section 4.3, our Section 7 evaluation determined the proposed issuance of a Bald Eagle ITP to the Applicant does not require formal or informal consultation to address ESA-protected species or candidates for listing. The proposed issuance of a Bald Eagle ITP to the Applicant will therefore have no effect on T/E species under any of the alternatives. The adaptive management measures such as turbine curtailment during the winter or power pole retrofitting will not benefit the T/E bird species with the potential to occur at the Project because these species only occur in the area during migration or the summer, or they do not land on power poles (see Section 4.3 for more about these species). None of the alternatives are expected to affect the American Burying Beetle, Neosho Mucket, or Rattlesnake-Master Borer Moth.

#### **5.1.5 Other Wildlife**

As the Project is operational, the only potential effect on other wildlife from issuing a Bald Eagle ITP to the Applicant is the indirect effect on predation rates from changes in Bald Eagle populations. However, since the Project's estimated take is expected to be the same for all alternatives (3 Bald Eagles per year), Bald Eagle populations within the EMU and local area population will change in the same way for all alternatives (see Section 5.1.1). The minimization measures and adaptive management actions in the Alternatives 2 – 4 will only be necessary to keep the Project's estimated Bald Eagle take at or below 3 eagles per year. Therefore, the effects on other wildlife will be the same for all alternatives.

Implementing the ECP could impact terrestrial wildlife during post-construction monitoring as searchers travel to and from turbines. Incidental mortalities resulting from vehicle collisions could occur to local populations of turtles, snakes, lizards, and small mammals as biologists travel to and from the wind facility during post-construction monitoring for eagles. However, there would be few potential effects to aquatic species of other wildlife. In addition, the removal of carcasses from cattle operations could impact scavenger species such as Coyotes, Turkey Vultures, and carrion insects by reducing the carrion and potential foraging opportunities otherwise available.

#### **5.1.6 Native American Cultural and Religious Values**

Bald Eagles and their feathers are important elements in many Native American's cultural and religious practices. The tribes currently receive eagle feathers for religious use through the Service's National Eagle Repository program. Bald Eagle take at the Project will not decrease the availability of feathers through this program. Any Bald Eagles carcasses discovered at the Project will be added to this program. All action alternatives include mortality monitoring to discover eagle take at the Project.

Take of Bald Eagles at the Project may result in fewer Bald Eagle sightings in the vicinity of the Project. As Bald Eagle take at the Project is not expected to exceed the EMU or local area population maximum allowable cumulative take, local and regional Bald Eagle populations are expected to remain stable or increase under all action alternatives. Bald Eagle sightings on the surface lands above the Osage Nation's mineral estate should be as frequent in the future as they currently are, if not more frequent given the increasing Bald Eagle population trend. In addition, the ECP and adaptive management that will be part of the Applicant's ITP should be beneficial to eagles.

## **5.2 EFFECTS COMMON TO ALL ACTION ALTERNATIVES**

### **5.2.1 Implementation of ECP**

Under all action alternatives, the Applicant's ECP will be incorporated as part of the Bald Eagle ITP. The elements of the ECP most relevant to the ITP are the minimization measures (cattle carcass removal), post-construction monitoring, and adaptive management as described in Section 1.2.3. Several livestock operations occur within the vicinity of the Project and carcasses not properly disposed of may attract eagles and other raptors. Carcasses near turbines can increase the probability an eagle will collide with the turbine. Minimizing cattle carcasses within the Project will affect eagles by decreasing the risk of collision. The frequency and level of effort for the mortality monitoring will vary among the action alternatives but will be beneficial to eagles and our ability to manage them under all action alternatives. Monitoring provides the information necessary to appropriately set take limits (for the Project and other potential ITPs in the EMU or local area population); identify the need for and monitor the effectiveness of minimization and mitigation measures; and track eagle populations. Adaptive management allows us to adjust the Applicant's and our responses to thresholds of take such that we can potentially address "problem" turbines, eliminate ineffective eagle protection measures, add/modify/eliminate compensatory mitigation, etc., all of which will be beneficial to eagles and our management of eagles.

## **5.3 ALTERNATIVE NO. 1 – NO ACTION**

Under the no action alternative, we would not issue a Bald Eagle ITP as described in Section 3.1. The no action alternative provides a baseline against which action alternatives can be compared. We would select this alternative if the application fails to meet one or more of the issuing criteria at 50 CFR §22.26, as amended, described in Section 1.1.2 or because the risk to eagles is so low that an ITP is unnecessary. We have sufficient evidence to conclude the Project will take Bald Eagles (see Section 5.1.1), and we are able to issue an ITP in accordance with the issuing criteria at 50 CFR §22.26, as amended. Therefore, Alternative No. 1 is not our preferred alternative.

### **5.3.1 Bald Eagle**

As with all alternatives, Bald Eagles are expected to be directly impacted through fatalities via collisions with turbines (see Section 5.1.1). If we select this alternative, it is assumed the Project will continue operating with the potential to take Bald Eagles. Such take would still be within the take limits of the EMU and local area population (see Section 5.1.1) but would be unauthorized without an ITP. In addition, benefits to Bald Eagles from issuing the ITP would not be realized under the no action alternative.

The operation of the Project is expected to take an estimated 3 annually or 15 Bald Eagles over 5 years. The estimated 3 Bald Eagles per year is below the Central Flyway EMU and local area population cumulative allowable take (see Section 5.1.1). Without a Bald Eagle ITP, the Applicant would not be legally obligated to implement minimization measures, conduct continuing mortality monitoring, or implement adaptive management of eagle take, and Bald Eagles would not receive the conservation benefits from such actions (see Section 5.2.1). Under this alternative, formal post-construction monitoring would likely cease after the Applicant has completed the three years voluntarily committed to in the ECP. Without formal mortality monitoring, take at the Project would have to be discovered either by chance or via specific investigation.

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The no action alternative will have indirect effects on our permitting process and our capability to meet the requirements of the Bald and Golden Eagle Protection Act. Our ability to protect eagles under the Bald and Golden Eagle Protection Act. is facilitated by the willingness of developers of projects that may take eagles to apply for eagle ITPs, because ITPs give us the ability to continue monitoring mortality or implement conservation measures as necessary. A key part of our ability to protect Bald Eagle populations is the usefulness of our CRM. Without formal mortality monitoring at the Project, we will not receive the data that could help to refine the model and improve its accuracy or understand the influence of take on eagle populations.

#### **5.3.2 Migratory Birds**

The proposed issuance of an eagle ITP will require mortality monitoring to evaluate actual eagle take at the Project. While this monitoring will be designed, and implemented to identify eagle carcasses, the monitoring may provide the opportunity to detect a mass mortality event or individual fatalities of MBTA-protected birds. We would provide any guidance requested by the Applicant in this circumstance, which could potentially have gone undocumented without the monitoring associated with the Bald Eagle ITP. Under the no action alternative, this monitoring would likely cease after the completion of the three years of mortality monitoring the Applicant has voluntarily committed to and is in the process of conducting. However, the monitoring is likely to provide a negligible benefit to migratory birds or our regulatory responsibilities.

### **5.4 ALTERNATIVE NO. 2 – ISSUE A 5-YEAR BALD EAGLE ITP**

Under this alternative, we would issue as 5-year ITP for 15 Bald Eagles over 5 years as described in Section 3.2. The ITP would require renewal after 5 years for the Project to have authorized take for the entire 30-year life of the Project. As discussed in Section 3.2, we would select this alternative if we felt the uncertainty was too high to issue an ITP of longer duration and remain within the issuing criteria of 50 CFR §22.26, as amended. While the limited amount of pre-construction eagle-use data for the Project does increase the uncertainty of our Bald Eagle take estimate, the conservative estimate from our CRM is still below the EMU and local area population take thresholds (see Section 5.1.1). In addition, our 30-year ITP alternatives have reviews and adaptive management strategies incorporated into the permit which will serve the same purpose as renewing the 5-year permit but with continued take provisions for the life of the Project. Therefore, Alternative No. 2 is not our preferred alternative.

#### **5.4.1 Bald Eagle**

The direct effect of Alternative No. 2 on Bald Eagles is the Project's expected take of up to 15 Bald Eagles over the life of the Permit (5 years). The impacts of direct take on Bald Eagles are the same for all alternatives and are discussed in Section 5.1.1. Under this alternative, the Applicant would complete the 3 years of mortality monitoring already in progress at the Project and would implement the adaptive management described in the ECP and Section 1.2.3. Both are beneficial to eagles in that they allow us to monitor take and adjust minimization and/or mitigation as necessary, thus contributing to our overall management of the species. Should Project take exceed four Bald Eagles within a 12-month period or 10 within a 3-year period, we will work with the Applicant to identify the cause, if possible, and implement minimization or mitigation measures to reduce take (see Section 1.2.3).

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Authorizing a 5-year ITP as opposed to a permit of longer duration can have an indirect effect on our eagle permitting process and our capability to meet the requirements of the Bald and Golden Eagle Protection Act. Many of the industries seeking eagle ITPs develop projects with lifespans of longer duration than 5 years (e.g., the lifespan of most wind energy projects is 25 years or longer). It appears that the primary factor discouraging developers from seeking eagle take permits under the 2009 Eagle Permit Rule was the 5-year limit on those permits. Among other goals, we established the 2016 Eagle Rule Revisions to align our permitting with the longer duration of industrial activities. If there is no Bald Eagle take at the Project during the ITP duration, the Applicant may see future Bald Eagle ITPs as unnecessary even if the Project still has the potential for take.

#### **5.4.2 Migratory Birds**

The 3 years of mortality monitoring would occur at the Project under this alternative. While this monitoring is meant to identify eagle carcasses, the monitoring may provide the opportunity to detect a mass mortality event or individual fatalities of MBTA-protected birds. We would provide any guidance requested by the Applicant to implement corrective action in this circumstance. However, such a mass mortality event is unlikely and therefore, detection of such an event is a negligible benefit. The adaptive management options (e.g., turbine curtailment, power pole retrofitting) to reduce eagle take described in Section 1.2.3 may benefit other birds, but these benefits would be negligible.

### **5.5 ALTERNATIVE NO. 3 – ISSUE A 30-YEAR BALD EAGLE ITP (PREFERRED ALTERNATIVE)**

Under this alternative, we would issue a 30-year ITP for up to 15 Bald Eagles per 5 years as described in Section 3.3. We will review the ITP every five years to update take estimates and adjust permit conditions, as needed. This is our preferred alternative because it allows us to be involved in regulating eagle take at the Project for its entire lifespan. This alternative also meets the requirements of our eagle preservation standards without being unnecessarily burdensome on the Applicant. Bald Eagle take at the Project is expected to be within our EMU and local area population take thresholds, and we have no evidence to show unpermitted take within the local area population is excessive (Section 5.7.2). Therefore, additional minimization measures or compensatory mitigation are unnecessary except as part of the adaptive management plan.

#### **5.5.1 Bald Eagle**

The primary effect of Alternative No. 3 is the ITP would allow the non-purposeful take of up to 15 Bald Eagles every 5 years for the 30-year life of the permit. The impacts of direct take on Bald Eagles are the same for all alternatives and are discussed in Section 5.3.1. Under Alternative No. 3, the minimization measures, post construction monitoring, and adaptive management described in Section 1.2.3 would be implemented as a requirement of the ITP. The effects of implementation of the ECP are discussed in Section 5.2.1.

The indirect effects of Alternative No. 3 have the potential to impact our permitting process and thus our ability to effectively manage eagles. As discussed in Section 5.4.1, it appears that the primary factor discouraging developers from seeking eagle take permits under the 2009 Eagle Permit Rule was that those permits did not span the entire life of the project. Although we do not encourage developers to

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build projects that may take eagles, issuing ITPs to such projects increases our ability to successfully monitor eagle take rates and manage eagle populations to the preservation standards of the Bald and Golden Eagle Protection Act.

#### **5.5.2 Migratory Birds**

The effects of Alternative No. 3 on other birds are the same as the effects of Alternative No. 2 (Section 4.5.2) but applied over 30 years as opposed to 5 years. The mortality monitoring over 30 years provides more opportunity to detect mass mortality events, fatalities of other MBTA-protected species, or identify problem turbines, but the additional monitoring may also increase vehicle traffic at the Project. We would provide any guidance requested by the Applicant related to MBTA-bird fatalities. However, the effects are still expected to be negligible for both alternatives.

### **5.6 ALTERNATIVE NO. 4 – ISSUE A 30-YEAR BALD EAGLE ITP WITH ADDITIONAL CONDITIONS**

Alternative No. 4 is the same as Alternative No. 3 (Section 5.5) but includes additional monitoring and compensatory mitigation conditions. Mortality monitoring would include search plots and would occur at 20% more of the turbines than outlined in Section 1.2.3. The ITP would also include the retrofitting on 30 power poles within 86 miles of the Project (Section 3.4). We would select this alternative if the uncertainty in the predicted take at the Project was too high to meet our eagle protection standards and/or unpermitted take in the local area population was too high to allow for permitted take without requiring additional measures to reduce or offset take. As discussed in Section 5.1.1, estimated take at the Project is below the thresholds for the EMU and local area population. Also, we have adopted conservative take thresholds and use a conservative estimate of take (United States Fish and Wildlife Service 2016c, 29 and 52). Thus we have increased the probability we are underestimating the number of eagles that can be removed while maintain stable populations, regionally and nationally, and overestimating take at the Project. Our local area population analysis shows that unpermitted take in the local area population is not excessive (Section 5.7.2). Therefore Alternative No. 4 is not our preferred alternative.

#### **5.6.1 Bald Eagle**

The impacts of direct take on Bald Eagles are the same for all alternatives and are discussed in Section 5.3.1. In addition, under this alternative, the power pole retrofitting would provide additional benefit to eagles by reducing the mortality from other anthropogenic sources (i.e., electrocution).. The increased effort for mortality monitoring as a part of Alternative No. 4 would increase the probability that eagle take at the Project would be observed.

Alternative No. 4 has the potential to cause indirect effects on our ability to manage eagle populations. Similarly to Alternative No. 3 (Section 5.5.1), the 30-year length of the ITP under Alternative No. 4 would span the entire life of the Project, thus allowing us to more effectively monitor and manage eagle populations.

#### **5.6.2 Migratory Birds**

The effects of Alternative No. 4 on other birds are the same as the effects of Alternative No. 2 (Section 5.4.2) but applied over 30 years as opposed to 5 years. Under this alternative, the turbine curtailment and power pole retrofits would be required whether eagle take occurred at the Project or not. Whereas,

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under the other alternatives, the benefits of these measures would only be realized if eagle take at the Project exceeded a threshold, under this alternative other birds would receive the benefits of these measures. The mortality monitoring over 30 years and at an additional 20% of the turbines provides more opportunity to detect mass mortality events or identify problem turbines. We would provide any guidance requested by the Applicant related to MBTA-bird fatalities. Turbine curtailment would lower the risk of collision for all birds present during the winter, and power pole retrofits would be beneficial to birds susceptible to electrocution. However, the effects of all of these benefits are still expected to be negligible to minor for this alternative.

## **5.7 EVALUATION OF CUMULATIVE EFFECTS**

The Council of Environmental Quality (CEQ) defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” Cumulative impacts can result from individually minor actions but that collectively have significant effects that take place over a period of time (40 CFR §1508.7). This cumulative effects analysis includes future state, federal, tribal, local, and private actions that are reasonably certain to occur in the action area.

The cumulative effects evaluation examines the incremental effects on each resource area for which there are direct or indirect effects. If an alternative does not result in a direct or indirect effect on a resource area, then potential cumulative effects were also assumed to have no impact. The cumulative impacts on Bald Eagles, other birds, and Native American cultural and religious values are evaluated below.

Golden Eagles were dismissed from the cumulative effects because of the rare occurrence of Golden Eagles in the Project Area, all of the alternatives are expected to cause negligible effects, if any, on Golden Eagle populations. The Project is not expected to take Golden Eagles and unauthorized take within the local area population is not excessive; therefore, Golden Eagles were dismissed from the cumulative effects analysis. Other wildlife was also dismissed from the cumulative effect analysis because the effects on this resource area were negligible (see Section 5.1.5).

This cumulative effects analysis does not attempt to quantify the effects of all past and present actions on resource areas analyzed in this DEA as it would be impractical to obtain and analyze the necessary data. This analysis largely evaluates past and present actions in a general manner, which is more conducive to capturing the cumulative effects of past human actions. Reasonably foreseeable actions are analyzed the same way with the exception of wind projects. Because of the level of concern for bird mortality from the potential build out of wind energy, this cumulative effects analysis attempts to quantify the effects of present and reasonably foreseeable future wind projects on bird populations.

### **5.7.1 Methods of Cumulative Effects Analysis**

#### **5.7.1.1 Geographic Scope**

The geographic scope of this cumulative effects analysis varies by resource. The geographic scope extends to some reasonable limit based on the resource of concern. For most resources, the Project and

surrounding region encompass the geographic scope. The geographic scope for each resource is defined in the following sections.

### **Bald Eagles**

The geographic scope for Bald Eagle resources is the Central Flyway EMU and the Project's local area population (see Figure 2-1). The EMU is the appropriate geographic scope to evaluate cumulative effects because the EMUs correspond to the annual movements and migratory cycles of Bald Eagles at a broad scale. The local area population represents the natal dispersal distance (86 miles) for Bald Eagles, and most eagles hatched in this area will return to the local area population to establish breeding territories of their own (United States Fish and Wildlife Service 2016c, 60). Therefore, the local area population represents the regional population of eagles.

### **Migratory Birds**

The geographic scope for MBTA-protected birds is BCRs 19, 21, and 22. These BCRs are the appropriate scope because BCRs are the basic units in which our conservation efforts are planned and evaluated for all birds (United States Fish and Wildlife Service 2008). This DEA will address specific migratory bird impacts to the extent that they are not covered in the PEIS and are specific to the proposed issuance of a Bald Eagle ITP to the Applicant (United States Fish and Wildlife Service 2016c, 7).

### **Native American Cultural and Religious Values**

The geographic scope for Native American cultural and religious values is also the Central Flyway EMU and the Project's local area population. This geographic scope is appropriate because it is appropriate for Bald Eagles as described above, and the effects of the proposed issuance of an ITP on Bald Eagles are directly linked with Native American cultural and religious values, namely the local abundance of Bald Eagles and the availability of Bald Eagles for local Native American tribe cultural and religious purposes.

#### **5.7.1.2 Temporal Scope**

The time frame for the cumulative effects analysis for this DEA is for the life of the Project (30 years). Thirty years is the appropriate time frame as it is reasonable to assume that it will operate throughout its expected life regardless of the issuance of a Bald Eagle ITP.

#### **5.7.1.3 Past, Present, and Reasonably Foreseeable Future Actions**

For each resource area evaluated for cumulative effects, a discussion of the past, present, and reasonably foreseeable actions and their cumulative effects; and the significance of the impacts are also evaluated in the context of each alternative. While direct and indirect impacts were assessed for each resource area by alternative, the cumulative effects section has been organized by resource area and then by alternative. By allowing for an immediate comparison among the alternatives, the complex nature of the cumulative effects can be more easily understood. This is not a full, comprehensive analysis of all past, present, or possible future human actions that may cause impacts to resources analyzed in this DEA. Analysis of all human actions affecting the resources analyzed is beyond the scope of this DEA.

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#### **5.7.2 Cumulative Effects on Bald Eagle**

Bald Eagles are affected by human actions in a variety of ways including collisions, disturbance, pollution, poisoning, poaching, and habitat loss. The 2016 Eagle Rule Revisions incorporated a local area population cumulative effects analysis that existed as guidance in Appendix F of the ECPG (United States Fish and Wildlife Service 2013, 80). The purpose of this analysis is to calculate the number of Bald Eagles available for authorized take (5% of local area population) and to evaluate other sources of local take (authorized and unauthorized). If we identify particular situations where unauthorized take is excessive, then we will reduce the number of Bald Eagles available for take, and if necessary, include compensatory mitigation as a requirement of the ITP to offset take at the Project.

We derive the size of the local area population's Bald Eagle population by multiplying the estimated eagle density of the EMU by the area of the local area population (81 FR 91498, Dec. 16, 2016; United States Fish and Wildlife Service 2016c, 52). The 5% take threshold for the Project's local area population is 10.7 Bald Eagles (i.e., 11 individual eagles). As of March 2018, we have not issued other ITPs for ongoing Bald Eagle take within the Project's local area population. In our review of known Bald Eagle take within the local area population, we did not identify evidence to conclude local sources of eagle take are different from those discussed in the PEIS for the entire nation (United States Fish and Wildlife Service 2016c, 150-163). To examine cumulative effects, the following analysis will focus on six causes of Bald Eagle take. This analysis is an extension of the cumulative effects analysis in the PEIS, where we analyzed the effects of poaching, trapping, poisoning, climate change, habitat loss and fragmentation, energy production, power lines, collisions, and disease (United States Fish and Wildlife Service 2016c, 150-165).

##### **5.7.2.1 Poaching (Shooting)**

Shooting by poachers and for predator control has, and continues to be, a major cause of Bald Eagle mortality, despite laws against such activities. In the past, eagles were shot for sport, feathers, trophies, and bounty. Illegal shooting or poaching of eagles likely adds to the annual cumulative loss of eagles at a high rate and is expected to remain a factor in the foreseeable future (United States Fish and Wildlife Service 2016c, 150-151). The cumulative effects of Alternative No. 1 are more likely to be detrimental to Bald Eagles than the action Alternatives No. 2 through No. 4, because under the action alternatives, eagles will receive benefits (minimization measures, monitoring, and adaptive management). Poaching will remain a factor to be addressed during the regular review of the ITP and regional and national Bald Eagle population estimates.

##### **5.7.2.2 Electrocution**

The impact of electrical power lines due to electrocution and/or collision has historically been a cause of Bald Eagle mortality and continues to be a problem (United States Fish and Wildlife Service 2016c, 159-160). Presently, electrocution and collision mortality from electrical transmission and distribution lines still occurs; however, it has not been a limiting factor to Bald Eagle population growth in the Central Flyway EMU. The Avian Power Line Interaction Committee (APLIC) and the Service have developed comprehensive guidelines to reduce electrocution-related mortality of many birds: "Reducing Avian Collisions with Power Lines: State of the Art" (APLIC 2012). This guidance document provides "best management practices" in the planning, construction, and operation of power lines to reduce avian fatalities. These standards and guidelines have helped reduce eagle fatalities associated with transmission lines, but are not necessarily applied to

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all transmission line project. Furthermore, older transmission lines usually need to be updated to meet APLIC standards.

The Applicant constructed the Project's 1.7-mile transmission line according to the APLIC guidelines to prevent electrocution of Bald Eagles and other raptors, and reduce the potential of electrocution of other birds. Future transmission line construction in the local area population and EMU is likely to contribute to negative cumulative impacts on Bald Eagles under Alternative No. 1 because the Bald Eagles will not receive the benefits of the action alternatives. Power pole retrofitting within the local area population is an Adaptive Management option for Alternatives No. 2 and No. 3 if Bald Eagle take at the Project exceed a threshold (see Section 1.2.3). Retrofitting problem power poles to APLIC standards near the Project will be a condition of the ITP under Alternative No. 4. Transmission lines and electrocutions are expected to have a moderate cumulative effect in the foreseeable future.

#### 5.7.2.3 Poisoning (Lead and Pesticides)

Poisoning by lead and other toxins has, and continues to be, a major cause of Bald Eagle mortality (United States Fish and Wildlife Service 2016c, 151-154). Bald Eagles are also killed by the use of poisons intended for other predators to protect livestock. Lead shot and bullet fragments in the carcasses and viscera of game and other animals can pose a hazard to raptors. Diurnal (day-flying) raptors are one of the main bird groups affected by lead toxicosis (Miller et al. 2002).

The most significant past impact to Bald Eagle populations was the effects of pesticides, specifically dichloro-diphenyl-trichloroethane (DDT). The widespread use of DDT from the 1940s through the 1970s was the primary cause of Bald Eagle population declines in North America. DDT bio-accumulated in the tissues of Bald Eagles, which caused abnormally thin eggshells and the subsequent breakage and/or death of the eagle embryo (United States Fish and Wildlife Service 2016c, 162). Since DDT was banned in the United States in 1972 and the Bald Eagle gained the protection of the ESA, Bald Eagle numbers have rebounded to the current population estimate of approximately 72,000 individuals in the lower 48 states (United States Fish and Wildlife Service 2016a, 8). Pesticides continue to cause Bald Eagle deaths, but their effects are not currently as substantial as in the past.

To prevent and minimize the impacts of pesticides, we provide technical assistance and consult with the Environmental Protection Agency (EPA) regarding pesticide effects on wildlife (United States Fish and Wildlife Service 2016b). The EPA must evaluate the effects of pesticides on wildlife before they can be sold and used in the United States. The EPA must also ensure that a pesticide will not pose unreasonable adverse effects to human health and the environment. In addition, the EPA must confirm that use of pesticides it registers will not result in harm to species listed as endangered or threatened under the ESA.

Poisoning, especially from lead, will remain a factor in foreseeable future cumulative impacts. The cumulative effects of lead poisoning and pesticides are expected to have a minor to moderate effects in the foreseeable future. The cumulative effects of Alternative No. 1 are more likely to be detrimental to Bald Eagles than under the action alternatives but will be minor to moderate for all alternatives. Eagle deaths and injuries from poisoning within the EMU and local area population will remain a factor to be addressed during the regular review of the ITP and regional and national Bald Eagle population estimates.

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#### **5.7.2.4 Collisions**

Collisions with vehicles, aircraft, wind turbine blades, meteorological towers, transmission lines, and other man-made structures as past, present, and foreseeable future effects within the EMU and local area population (United States Fish and Wildlife Service 2016c, 158-162). Bald Eagles are most susceptible to collisions with vehicles when they feed on wildlife carcasses on roadsides or train tracks. Bald Eagles are large birds that cannot take off quickly to avoid vehicles and will often fly perpendicular to the road when startled. Removing carrion from roadsides is a potential mitigation strategy we are considering.

Wind energy development has been occurring rapidly in the Central Flyway EMU and across the nation. Wind is projected to comprise 20% of electric energy production in the U.S. by 2030 (United States Fish and Wildlife Service 2016c, 158), and approximately 90% of open applications for eagle ITPs are for wind resource areas (United States Fish and Wildlife Service 2016c, 158). States within the Central Flyway EMU currently have 44,670 mega watts installed (more than 25,272 turbines) with another 11,804 mega watts under construction (American Wind Energy Advocates 2017). Oklahoma and Kansas, where the local area population is located, have the estimated potential for a combined total of 850,000 to 1,200,000 mega watts of wind energy by 2030 (American Wind Energy Advocates 2017).

In addition to the potential for collisions with wind turbine blade, Bald Eagles are susceptible to collisions with meteorological towers, support guywires, and transmission lines. The exact number of Bald Eagles killed annual at wind facilities is not known because many facilities do not monitor for take or do not provide the results to us (United States Fish and Wildlife Service 2016c, 159). Among other goals, we developed the 2016 Eagle Permit Revisions to encourage more wind facilities with the potential to take eagles to seek ITPs through the extended duration of ITPs (up to 30 years; see Section 1.1.2). Through such ITPs, we will have access to more information about Bald Eagle take at these facilities through the monitoring required as part of the ITP. As of March 2018, the number of eagle take permits issued for the Central Flyway EMU or this project's local area population do not exceed the thresholds determined within the PEIS.. The Project's take will be subtracted from the available take in the EMU and local area population for any future Bald Eagle ITP application and such applications will receive a cumulative effects local area population analysis as part of their NEPA review.

Collisions, especially with vehicles and wind turbines, will remain an issue for the foreseeable future and the potential for collisions to cumulatively effect Bald Eagle populations is high. If we select Alternative No. 1, then Bald Eagle take at the Project has the potential to go unnoticed or unreported, thus adding to the cumulative effects of collisions on Bald Eagle populations. Under the action alternatives, we will monitor for Bald Eagle take and thus have the opportunity to add to our knowledge base for evaluating cumulative impacts while managing Bald Eagles in the local area population, EMU, and across the nation. In addition, the action alternatives have measures to offset take at the Project, thus decreasing the potential cumulative impact of wind development on eagles. Under Alternative No. 1, collisions have the potential to cause moderate to major cumulative impacts on Bald Eagles. Under the action alternatives, these impacts should be moderate.

#### **5.7.2.5 Disease**

Bald Eagles are affected by diseases including aspergillosis, avian pox, avian cholera (pasteurellosis), West Nile virus, and cyanobacteria (United States Fish and Wildlife Service 2016c, 163). Often it can be difficult to identify a disease as the cause of death since carcasses aren't always in good condition to the point where diagnostic tools can be used to discern morbidity. Bald Eagles often gather in large groups, especially at concentrations

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of winter food (e.g., waterfowl) or communal roosts. As a result, disease outbreaks have the potential to kill a large number of eagles in such groups (United States Fish and Wildlife 2016c, 163).

Based on past and continuing trends, the potential for disease to cumulatively contribute to changes in Bald Eagle populations is high; therefore, the effects of disease will remain a factor to be addressed during the regular review of the ITP's take numbers and regional and national Bald Eagle population estimates. The cumulative effects of diseases and Alternative No. 1 are more likely to be detrimental to Bald Eagles than under the action alternatives but will be minor to moderate for all alternatives.

#### **5.7.2.6 Habitat Loss and Fragmentation**

Much of the impact to Bald Eagles from habitat loss and fragmentation is the exposure to increased disturbance (United States Fish and Wildlife 2016c, 91). In our PEIS, we analyzed the effects of habitat loss due to climate change, invasive vegetation, wildfire-caused habitat conversion, energy and housing development, agricultural transition and increased livestock presence, recreation, and roadway construction/highway expansion (United States Fish and Wildlife 2016c, 156). The effects of habitat loss and fragmentation on Bald Eagles appears to be negligible since Bald Eagle populations have increased since the 1960s (United States Fish and Wildlife 2016a). Bald Eagles occurring in disturbed areas appear to adapt to human disturbance, whereas Bald Eagles in undisturbed landscapes may be negatively impacted by increased human presence (United States Fish and Wildlife 2016c, 157).

Habitat loss and fragmentation is continuing with the increase in human population, urban sprawl, and public and private development. However, the proposed action under evaluation in this DEA will not contribute to habitat loss and fragmentation since the Project has already been constructed; in addition, the proposed action is not expected to cause nest disturbance (Section 5.1.3). Habitat loss and fragmentation should have minor cumulative effects under all alternatives.

#### **5.7.3 Cumulative Effects on Migratory Birds**

We reviewed the cumulative effects of our eagle ITP program on migratory birds in our PEIS per Executive Order 13186 (United States Fish and Wildlife 2016c, 165-169). This review included poisoning, climate change, habitat destruction, energy production, power lines, collisions, pesticides, and disease. The following sections expand on the analysis in the PEIS, specifically for the Project and BCRs 19, 21, and 22 (see Section 5.7.1.1). None of the alternatives are expected to have more than negligible direct or indirect effects on migratory birds. As discussed in Section 2.2.2, an evaluation of the effects of construction or operation of the Project itself is not pertinent to the issuance of a Bald Eagle ITP. Therefore, we do not evaluate the cumulative effects of the wind project on migratory birds but the effects of issuing or not issuing a Bald Eagle ITP to the Applicant.

##### **5.7.3.1 Wind Energy Development**

The estimate of annual bird mortality in the United States due to anthropogenic sources ranges from 500 million to over 1 billion (Erickson et al. 2005). Wind energy projects can cause bird mortality through turbine blade strikes, meteorological tower collisions, and vehicle collisions; wind facilities can also cause behavioral displacement and habitat fragmentations (see Section 5.7.3.2). The average annual number

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of bird fatalities due to turbine collision per mega watt in the United States is 2.11. Wind energy development can also be beneficial to migratory birds by reducing the reliance on non-renewable energy sources and thus influencing the rate of climate change. Currently, there are 346 wind energy projects operating in the states within the Central Flyway, 76 of which are in Oklahoma and Kansas (AWEA 2017). We discuss the cumulative effects of energy production, climate change, and habitat destruction on migratory birds in more detail in the PEIS (United States Fish and Wildlife 2016c, 165-167).

While wind turbines cause orders of magnitude fewer bird deaths than other anthropogenic sources (e.g., buildings, windows, towers), the effects of wind energy development remain a concern for the foreseeable future. However, the alternatives will contribute negligible effects on migratory birds in combination with wind energy development.

#### **5.7.3.2 Power Lines**

The effects of electrocution of birds due to electrical transmission or distribution lines for large perching birds (raptors) are similar to Bald Eagles (see Section 5.7.2.2). Analysis of data from 1986 through 1996 estimated that 1,450 raptors were killed by electrocutions in the United States (Erickson et al. 2005). Collision with power lines has been a cause of mortality for a wide range of bird species including waterfowl, wading birds, and raptors. Due to the lack of reliable data, it is difficult to determine how many avian fatalities are caused by collisions with power lines annually in the United States. Extrapolated fatality estimates may be as high as 130 million birds per year (Erickson et al. 2005). We discuss the cumulative effects of power lines on migratory birds in more detail in the PEIS (United States Fish and Wildlife 2016c, 167).

The Project's 1.7-mile transmission line was constructed according to the APLIC guidelines to help prevent electrocution of birds, especially raptors, and reduce the risk of electrocution. Wind energy development will remain a concern for the foreseeable future. The action alternatives include adaptive management options which have the potential to benefit some migratory birds. However, these benefits are likely to be negligible. All four alternatives will contribute negligible effects on migratory birds in combination with wind energy.

#### **5.7.4 Cumulative Effects on Native American Cultural and Religious Values**

Bald Eagle take at the Project is not expected to result in regional population declines because the Project's estimated take is below the take thresholds for the Central Flyway EMU and the local area population. In addition, the Service will review take thresholds in the EMU, local area population, and at the Project on a regular basis relative to Bald Eagle population and demographic parameters and will modify or adjust permitting accordingly. If there is evidence that demand for Bald Eagle take will exceed take thresholds for the EMU, the regional structured-allocation process will ensure authorized take necessary to meet the religious need of a Native American Tribe will not be denied due to other take being authorized for another purpose (United States Fish and Wildlife 2009, 38). This may have some negative impacts on local religious and cultural resources; however, we do not expect significant cumulative effects to religious and cultural resources from any of the alternatives. Furthermore, the eagle ITPs will be issued regionally, and will include permit conditions to ensure all recoverable eagle carcasses, parts, and feathers are sent to the National Eagle Repository and could be used for Native American cultural and religious purposes.



## DRAFT ENVIRONMENTAL ASSESSMENT

### OSAGE WIND PROJECT

Summary

May 9, 2018

## 6.0 SUMMARY

This DEA examines the environmental effects of the proposed issuance of a Bald Eagle ITP under the BGEPA to Osage Wind, LLC located in Osage County, Oklahoma pursuant to 50 CFR §22.26, as amended. If issued under the preferred alternative, the permit would allow for the non-purposeful take of up to three Bald Eagles annually over the life of the 30-year permit. The potential for unintentional take of Bald Eagles in the course of otherwise lawful activity is the principal reason for the Applicant's request for an ITP. We consider the Project to be a Category 2 site: 'high to moderate risk to eagles [with the] opportunity to mitigate impacts' (United States Fish and Wildlife 2013, pg. x). The Applicant has prepared an ECP incorporating conservation and avoidance measures, mitigation, and adaptive management measures to avoid, minimize, and mitigate adverse effects to Bald Eagles. The potential impacts to Bald Eagles, Golden Eagles, other birds, other wildlife, and Native American cultural and religious values have been evaluated for each alternative.

### 6.1 SUMMARY OF ALTERNATIVES

A summary of the four alternatives we have evaluated in the EA, including our preferred alternative, is provided in Table 6-1.

**Table 6-1 Summary of Alternatives**

Component	Alternatives			
	No. 1 - No Action	No. 2 - Issue a 5-year ITP	No. 3 - Issue a 30-year ITP (Preferred)	No. 4 - Issue a 30-year ITP with Additional Conditions
Predicted Annual Bald Eagle Take	3	3	3	3
ITP Length	None	5 years	30 years	30 years
Frequency of Mortality Monitoring	Complete 3 years (voluntary)	Complete First 3 years	Complete First 3 years; Year 9, 14, 19, 24, and 29	Complete First 3 years; Year 9, 14, 19, 24, and 29
Percent of Turbines Monitored	Randomly selected 30% (voluntary)	Randomly selected 30%	Randomly selected 30%	Randomly selected 50%; increased search effort
Compensatory Mitigation	None	Adaptive Management Option (see ECP)	Adaptive Management Option (see ECP)	Retrofit power poles to offset uncertainty in take estimate
Turbine Curtailment	None	Adaptive Management Option (see ECP)	Adaptive Management Option (see ECP)	Adaptive Management Option (see ECP)

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### OSAGE WIND PROJECT

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## 6.2 SUMMARY OF DIRECT, INDIRECT, AND CUMULATIVE EFFECTS

Under all alternatives, Bald Eagles are expected to be directly impacted through fatalities via collisions with turbines. The expected Bald Eagle take at the Project is below our conservative take thresholds for the EMU (regional scale) and local area population (local scale). Small changes in population dynamics might occur, but the overall effect of Bald Eagle take at the Project is expected to be minor. Nest disturbance or territory loss effects are not expected to occur at the Project. All action alternatives would include mortality monitoring, minimization measures, and adaptive management option which would be further beneficial to eagles.

Take of Golden Eagles would not be allowed under any alternative. Because of the rare occurrence of Golden Eagles in the Project Area, the alternatives are not expected to directly or indirectly affect this species. None of the alternatives are expected to impact migratory birds including threatened and endangered birds with the potential to occur in Osage County.

All alternatives will have indirect effects on our permitting process and our capability of meeting the requirements of the Bald and Golden Eagle Protection Act. Under Alternative No.1 – No Action, we are potentially establishing a baseline for denial of Bald Eagle ITPs. For Alternatives No. 2, No. 3, and No. 4 (the action alternatives), we are potentially establishing a baseline for the proposed issuance of Bald Eagle ITPs but with varying additions that may encourage or deter other developers seeking ITPs. While the action alternatives would provide beneficial information on Bald Eagle interactions with wind farms through mortality monitoring, this information would be unavailable under Alternative No. 1. While Alternatives No. 2 and No. 4 provide us with ways to address uncertainty in our take thresholds or take estimate at the Project, these alternatives are over-cautions and as a result could have negative effects on our permitting process and the protection of eagles. Alternative No. 3 is our preferred alternative because it allows us to monitor and manage take at the Project throughout the life of the Project without imposing unnecessary additional conditions.

In our cumulative effects analysis, we determined unauthorized take within local area population was not excessive, therefore no additional limitations on take are necessary at the Project. We analyzed the cumulative effects of poaching, electrocution, poisoning, collisions, disease, and habitat loss and fragmentation in combination with the proposed action. Cumulative effects will require continued monitoring in conjunction with Bald Eagle take at the Project during future reviews of the ITP but do not prevent us from issuing an ITP to the Applicant while meeting our eagle preservation standards. We also analyzed the cumulative effects on migratory birds and Native American cultural and religious values. We did not identify any effects to prevent us from issuing a Bald Eagle ITP to the Applicant.

## 6.3 NEXT STEPS

This DEA will undergo a public comment period. We will review comments submitted by the public and will address those comments pertinent to this DEA and the proposed issuance of a Bald Eagle ITP in a final EA. Before we issue our final decision, we must determine that: (1) the activity is otherwise lawful; (2) the permit issuance is compatible with preservation of the Bald Eagle and Golden Eagle; (3) the permit issuance is necessary to protect an interest in a particular locality; (4) the permit issuance is associated with, but not the purpose of, the activity; and (5) eagle take cannot practicably be avoided. Our final decision will be issued after an assessment of public comments and an internal review.

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### OSAGE WIND PROJECT

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## **Appendix A      USFWS DOCUMENTATION**

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**OSAGE WIND PROJECT**

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May 9, 2018



**United States Department of the Interior**

**FISH AND WILDLIFE SERVICE**  
Washington, D.C. 20210

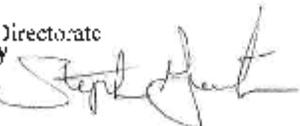


In Reply Refer To:  
FWS/AMB/DMBM/062416

FEB 24 2016

Memorandum

To: Service Directorate  
Deputy

From: Director 

Subject: Compliance with the National Historic Preservation Act during the preparation of Programmatic Eagle Take Permits

This memorandum transmits supplemental guidance, effective immediately, for complying with Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108, when approving eagle non-purposful (incidental) take permits issued under the authority of 50 CFR 22.26. Policy addressing the management and protection of cultural resources (including historic properties) is found in the U.S. Fish and Wildlife Service (Service) Manual, Chapters 614 FW 1-5. This memo is intended to be consistent with regulations promulgated by the Advisory Council on Historic Preservation (ACHP) under 36 CFR Part 800, by clarifying and interpreting key elements of the regulations as they apply to the development and issuance of non-purposful eagle take permits.

Compliance with section 106 of the NHPA, as amended, is required by law for all Federal undertakings. The NHPA defines an undertaking as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including (A) those carried out by or on behalf of a Federal agency; (B) those carried out with Federal financial assistance; (C) those requiring a Federal permit, license, or approval; and (D) those subject to State or local regulations administered pursuant to a delegation or approval by a Federal agency." 54 U.S.C. § 300320 & 36 CFR § 800.16(y). Under this definition, the issuance of eagle take permits constitutes an undertaking.

For the purposes of programmatic eagle take permits, the Federal undertaking is the issuance of the permit authorizing take and the associated conservation measures required in order to maintain compliance with the permit, specifically the avoidance, minimization, and mitigation measures. The Area of Potential Effect (APE), as defined in 36 CFR § 800.16(d), should include the areas where the Service has authorized take and influenced the project through negotiation of the avoidance, minimization, and mitigation measures, as well as the activities associated with their implementation.

The Service permit signatory has the obligation to fulfill section 106 consultation requirements. The Service staff should coordinate closely with their Regional Historic Preservation Officers early in eagle take permit development to help establish the APE, consult with the State Historic

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**INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM**

Originating Person: Kristin Madden, Deputy Chief, Division of Migratory Birds, FWS  
Southwest Region

Project Name: Osage Wind Project

Telephone Number: 505-248-6876

Date: June 6, 2017

**I. Region:** Southwest, Region 2

**II. Service Activity (Program):** Migratory Bird Permits

**III. Pertinent Species and Habitat:**

A. Listed species and/or their critical habitat within the action area:

B.

*There are no critical habitats within the project area.*

SPECIES/CRITICAL HABITAT	STATUS
Interior Least Tern, <i>Sterna antillarum</i>	E
Piping Plover, <i>Charadrius melodus</i>	T
Red Knot, <i>Calidris canutus rufa</i>	T
Whooping Crane, <i>Grus americana</i>	E
Neosho Mucket, <i>Lampsilis rafinesqueana</i>	E
American Burying Beetle, <i>Nicrophorus americanus</i>	E

C. Proposed species and/or proposed critical habitat within the action area: None

D. Candidate species within the action area: Rattlesnake-master Borer Moth,  
*Papaipema eryngii*

D. Include species/habitat occurrence on a map:

*A map of the project area is included with the attached grant project proposal.*

**IV. Geographic area or station name and action:** Oklahoma, ESFO, Southwest, Region 2

**V. Location (attach map):**

A. County and state: Osage, Oklahoma

E. Section, township, and range (or latitude and longitude):  
36°42'0.77"N, 96°40'19.60"W (approximate center of project)

F. Distance (miles) and direction to nearest town: 6 miles south of Shidler, OK

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#### G. Species/habitat occurrence:

Interior Least Tern – The species is unlikely to be found in the project area. A review of eBird data on April 12, 2016 found no records of this species in the project area.

Piping plover – Piping plovers may rarely use the project area during migration. The species prefers sandbars, reservoir shorelines, mud flats, salt marshes, and coastal lagoons. The degraded condition and small size of project area waterbodies are unlikely to attract this species. A review of eBird data on April 12, 2016 found no records of this species in the project area.

Red Knot – This species may rarely use the project area during migration. Some red knots may use saline lakeshores and intertidal sandflats during migration but these habitats are not present in the project area. A review of eBird data on April 12, 2016 found no records of this species in the project area.

Whooping Crane – The species is unlikely to be found in the project area. Nearest grain field located approximately 2 miles west of site, and waterbodies located on site typically degraded due to livestock access. Nearest preferred wetland type of playa-like condition located 35 miles northwest of site near Blackwell. Lack of suitable habitats makes occurrence of species on site unlikely. A review of eBird data on April 12, 2016 found no records of this species in the project area.

Neosho Mucket - The Neosho Mucket is associated with shallow riffles and runs comprising gravel substrate and moderate to swift currents. The species is most often found in areas with swift current. The project area appears to be largely devoid of streams meeting these criteria.

American Burying Beetle – This species was historically known to occur in the project vicinity. A population of ABB is known to occur 17 kilometers east of the Project site at the Nature Conservancy's Tallgrass Prairie Preserve (O'Melia, pers. comm.). Presence/absence trapping surveys have not been conducted within the project area. Bait-away surveys were approved for use by the OKESFO in September 2011. This species was not observed at any of the bait stations.

Rattlesnake-master Borer Moth – This species is believed to occur in Osage County, OK in herbaceous wetlands, grasslands, savanna, and woodlands, some of which occur in the project location.

#### VI. Description of proposed action (attach additional pages as needed):

The project is currently operational. Proposed action at this time is the issuance of a permit for programmatic take of eagles.

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**VII. Determination of Effects:**

Explanation of effects of the action on species and critical habitat in items III A, B, and C (attach additional pages as needed):

*There are no critical habitats within the project area.*

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES
Interior Least Tern	The species is unlikely to be found in the project area. The least tern is only provided protection under the ESA 50 miles inland.
Piping Plover	Piping plovers may rarely use the project area during migration.
Whooping Crane	The species is unlikely to be found in the project area.
Red Knot	The species is unlikely to be found in the project area.
Neosho Mucket	The species is unlikely to be found in the project area. Current operations and issuance of a permit for eagle take are unlikely to impact this species.
American Burying Beetle	This species has not been detected in the project area. Current operations and issuance of a permit for eagle take are unlikely to impact this species.
Rattlesnake-master Borer Moth	Current operations and issuance of a permit for eagle take are unlikely to impact this species.

A. Explanation of actions to be implemented to reduce adverse effects:

SPECIES/ CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
Interior Least Tern	Pre-construction avian surveys were conducted to assess potential impacts. The company is following their Bird and Bat Conservation Strategy, developed in April 2015, and they continue to conduct surveys and report any mortalities. The least tern is only provided protection under the ESA 50 miles inland.
Piping Plover	Pre-construction avian surveys were conducted to assess potential impacts. The company is following their Bird and Bat Conservation Strategy, developed in April 2015, and they continue to conduct surveys and report any mortalities.
Whooping Crane	In addition to pre-construction avian surveys, a Whooping Crane Habitat Analysis was conducted. The species is unlikely to be found in the project area. The company is following their Bird and Bat Conservation Strategy, developed in April 2015, and they continue to conduct surveys and report any mortalities.
Red Knot	Pre-construction avian surveys were conducted to assess potential impacts. The company is following their Bird and Bat Conservation Strategy, developed in April 2015, and they continue

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	to conduct surveys and report any mortalities.
Neosho Mucket	Since the project is currently operational, no impacts are anticipated to result from the issuance of the permit.
American Burying Beetle	Pre-construction surveys were conducted to assess potential impacts. No beetles were observed at the project site. Since the project is currently operational, no impacts are anticipated to result from the issuance of the permit.
Rattlesnake-master Borer Moth	Since the project is currently operational, no impacts are anticipated to result from the issuance of the permit.

**VIII. Effect determination and response requested:**                      **[\* = optional]**

A.                      Listed species/designated critical habitat:

<u>Determination</u>	<u>Response Requested</u>
No effect on species/critical habitat (species: <u>Interior Least Tern</u> )	<input checked="" type="checkbox"/> Concurrence
May affect, is not likely to adversely affect species /critical habitat (species: <u>Piping Plover</u> )	<input checked="" type="checkbox"/> Concurrence
No effect on species/critical habitat (species: <u>Whooping Crane</u> )	<input checked="" type="checkbox"/> Concurrence
No effect on species/critical habitat (species: <u>Red Knot</u> )	<input checked="" type="checkbox"/> Concurrence
No effect on species/critical habitat (species: <u>American Burying Beetle</u> )	<input checked="" type="checkbox"/> Concurrence
No effect on species/critical habitat (species: <u>Neosho Mucket</u> )	<input checked="" type="checkbox"/> *Concurrence

B.                      Proposed species/proposed critical habitat:

NA

C.                      Candidate species:

<u>Determination</u>	<u>Response Requested</u>
----------------------	---------------------------

**DRAFT ENVIRONMENTAL ASSESSMENT**

**OSAGE WIND PROJECT**

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May 9, 2018

Is not likely to jeopardize candidate species  
(species: Rattlesnake-master Borer Moth)

Concurrency

Madden

Signature

Deputy Chief, Division of Migratory Birds,  
FWS Southwest Region

6/6/2017

Date

**IX. Reviewing ESFO Evaluations:**

- A. Concurrency:  Nonconcurrency: \_\_\_\_\_
- B. Formal consultation required: no
- C. Conference required no
- D. Informal conference required no
- E. Remarks (attach additional pages as needed):

Jona E. Polk

Signature

Field Supervisor  
Oklahoma Ecological Services Field Office

6/8/17

Date

**OKES-FO Biologist notes:**

I've analyzed the wind project area using public GIS tools and our field office biological survey data. I agree with the determinations that have been made by the Region 2 Biologist.

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**United States Department of the Interior**

FISH AND WILDLIFE SERVICE

P.O. Box 1306  
Albuquerque, NM 87103-1306



In Reply Refer To:  
FWS/R2/ML/066014

Name, Title  
Organization  
Street Address  
City, State, Zip code

Dear \_\_\_\_\_:

Pursuant to the National Historic Preservation Act of 1966, and the American Indian Religious Freedom Act of 1978, this will notify you of a Federal action proposed for private land in Osage County, Oklahoma. The U.S. Fish and Wildlife Service is reviewing a permit application for the incidental take of bald eagles at the Osage Wind Energy Facility, approximately 15 miles west of Pawlaska, Oklahoma. The enclosed handout will provide you with an overview of the wind facility and the history of the application process. We are requesting your views, comments, or concerns regarding the proposed permit authorizing incidental take of bald eagles at the Osage Wind Energy Facility.

As provided under the National Historic Preservation Act, the Service has determined that eagles are species of cultural and spiritual significance to many Indian Tribes, and that eagles can be contributing elements of traditional religious and cultural importance to Native American Tribes. The Service has further determined that disturbance of eagles can affect the free exercise of American Indian religious practices, as provided under the American Indian Religious Freedom Act.

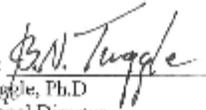
The Service looks forward to working with you to promote the conservation of bald eagles while ensuring the protection of tribal trust resources, rights, and cultural and religious values. Although there is no mandatory time limit for your response, we are requesting your reply within 30 days, so that we may further advise the permit applicant and proceed with our evaluation of the permit application.

Please contact Joe Early, Native American Liaison at, 505-248-6602 to arrange a meeting on these topics or to submit your comments to [joe\\_early@fws.gov](mailto:joe_early@fws.gov). Thank you for your review and consideration.

Sincerely,

Regional Director

Enclosure

Draft Approved:   
Benjamin N. Tuggle, Ph.D.  
Southwest Regional Director

Date:

7/26/17

# DRAFT ENVIRONMENTAL ASSESSMENT

## OSAGE WIND PROJECT

References

May 9, 2018



### Eagle Take Permit Application for the Osage Wind, LLC. Project

#### Osage Wind Energy Facility

- Owned and operated by Osage Wind LLC, a subsidiary of Enel Green Power, North America (EGPNA); approximately 8400 acres in north-eastern Oklahoma, ~15 miles west of Pawhuska, OK.
- Operational since 2015. Comprised of 84 GE wind turbines with the following specifications: 1.79-MW, 263-ft (83-m) hub height, and 328-ft (100-m) rotor diameter.

#### Permit History

- Osage Wind LLC first applied for a 5-year permit in October 2012. The application included a project-specific Eagle Conservation Plan (ECP) developed by a third-party contractor, in collaboration with Southwest Region Division of Migratory Birds staff.
- Construction on the project began in mid-2014.
- In November 2014, the U.S. Department of the Interior (DOI) filed suit on behalf of the Osage Nation claiming that Enel-Green Power, the developer of the Osage Wind project, should have applied for permits from the Osage Nation before digging pits for the construction of wind turbine foundations, removing limestone and other natural resources that belong to the tribe under federal law. Because of DOI involvement, communications with the Division of Migratory Birds were put on hold.
- In 2015, a federal judge ruled in favor of Enel-Green Power. By that time, the facility was fully operational. Soon after, discussions were reopened regarding the application for an eagle take permit.
- The USFWS is undertaking NEPA review through an updated EA since the facility is now operational. The Draft EA is expected to be released for public comment by December 2017.

#### Surveys and Monitoring

- A third-party contractor (WEST) has undertaken eagle nest surveys and fatality monitoring since 2015.
- Modeled fatality predictions estimated take of 3 Bald Eagles per year.

#### Voluntary Mitigation

- Osage Wind LLC funded \$80,000 of voluntary mitigation to the Sutton Avian Research Center for lead abatement education.
- Because estimated take is below 5% of the Local Area Population, Osage Wind will only be subject to voluntary mitigation.



# DRAFT ENVIRONMENTAL ASSESSMENT

## OSAGE WIND PROJECT

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### Eagle Take Permitting Rules

#### Eagles are protected by:

- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act (BGEPA)

No person may take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such birds **except as may be permitted under terms of a valid permit.**

#### Definition of "Take"

- Migratory Bird Treaty Act: Pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.
- Bald and Golden Eagle Protection Act: Same, but also includes shoot at, poison, or molest or disturb.

#### 2016 Rule Revision

- BGEPA requires that any authorized take of eagles be "compatible with the preservation" of bald eagles and golden eagles. The Service now defines this preservation standard to mean "consistent with the goals of maintaining stable or increasing breeding populations in all eagle management units and the persistence of local populations throughout the geographic range of each species."
- A cumulative effects analysis is required for the Local Area Population for both species as a part of permit issuance decisions. Cumulative take within a LAP may not exceed 5% of the LAP unless it is demonstrated why allowing such take is compatible with the preservation of eagles.
- Permits can be valid up to a maximum of 30 years, with mandatory re-evaluations every 5 years and mandatory adaptive management plans as conditions of the permit.
- Wind developers who wish to apply for an eagle take permit must use the survey protocols in the rule (which come from the Eagle Conservation Plan Guidance).
- Permittees who hold permits that have durations longer than 5 years must conduct monitoring using independent, qualified entities who report directly to the Service.



**Appendix B      USFWS COMMENTS RECEIVED**

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**DRAFT ENVIRONMENTAL ASSESSMENT**

OSAGE WIND PROJECT  
USFWS Comments Received  
May 9, 2018

Comments received by USFWS in response to August 29, 2017 notification and May-June 2018 public comment period on this EA.

<b>Date</b>	<b>Tribe</b>	<b>Comments</b>
10/6/2017	Kiowa Tribe	Response email stating that the Kiowa Tribe is not in support of take permits being issued to non-tribal or privately held entities.
10/11/2017	Comanche Nation	Response email stating the "No Properties" have been identified. (IAW 36 CFR 800.4(d)(1)).

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