Environmental Assessment

For the Proposed Issuance of an Eagle Incidental Take Permit for Oso Grande Wind Energy Project

New Mexico

Prepared by
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for
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List of Acronyms

§	Section
ac	acre(s)
Applicant	Tucson Electric Power Company
APLIC	Avian Power Line Interaction Committee
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
CET	Cumulative Effects Tool
C.F.R.	Code of Federal Regulations
EA	Environmental Assessment
Eagle Act	Bald and Golden Eagle Protection Act
Eagle Permit	Eagle ITP
ECP	Eagle Conservation Plan
ECPG	Eagle Conservation Plan Guidance
EMU	Eagle Management Unit
ESA	Endangered Species Act
FR	Federal Register
ft	foot(feet)
gen-tie	generation tie
ha	hectare(s)
IPaC	Information for Planning and Consultation
ITP	Incidental Take Permit
km	kilometer
kV	kilovolt
LAP	Local Area Population
m	meter(s)
mi	mile(s)
MBTA	Migratory Bird Treaty Act
MW	megawatt
NEPA	National Environmental Policy Act
OGW	Oso Grande Wind LLC
PEIS	*Programmatic Environmental Impact Statement for the Eagle Rule Revision*, December 2016
Permit	eagle incidental take permit
Project	Oso Grande Wind Energy Project
REA	Resource Equivalency Analysis
Service	U.S. Fish and Wildlife Service
TEP	Tucson Electric Power Company
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
WIRP	Wildlife Incidental Reporting Program

1.0 Introduction

This Environmental Assessment (EA) is prepared to analyze the environmental consequences of the U.S. Fish and Wildlife Service (Service or USFWS) issuing an incidental take permit (ITP) for the take of golden eagles (*Aquila chrysaetos*) associated with the Oso Grande Wind Energy Project (Project) pursuant to the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] Sections [§§] 4321–4347 [1970]). Issuance of an Eagle ITP (Permit) by the Service for take that is incidental to otherwise lawful activities under the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. §§ 668–668d [1940] and 50 Code of Federal Regulations [C.F.R.] § 22.80 [2022]) constitutes a discretionary Federal action subject to NEPA. This EA assists the Service in ensuring compliance with NEPA, and in making a determination as to whether any "significant" impacts could result from the analyzed actions that require preparation of an Environmental Impact Statement. This EA evaluates the effects of alternatives for the Service's decision whether to issue a Permit.

The Eagle Act authorizes the Service to issue eagle take permits only when the take is compatible with the preservation of each eagle species, defined as "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" 50 C.F.R. § 22.6 (1974).

Tucson Electric Power Company (TEP), requests Eagle Act take coverage for operational activities associated with the Project, as more fully described below. TEP requests a 30-year Permit for golden eagles under the Eagle Act at the Project. TEP's Eagle Conservation Plan (ECP; TEP 2022; Appendix A) is the foundation of the Permit application for the Project.

Based on an estimated annual take rate of 6.42 golden eagles, TEP requests a Permit for the take of up to 193 golden eagles over a 30-year life of the Project. This EA evaluates whether issuance of the Permit will have significant effects on the human environment. Determining significance under NEPA requires consideration of the potentially affected environment and the degree of effects to that environment (40 C.F.R. § 1501.3 [2020]).

This proposal conforms with, and carries out, the management approach analyzed in, and adopted subsequent to, the Service's *Programmatic Environmental Impact Statement for the Eagle Rule Revision*, December 2016 (PEIS; USFWS 2016; https://www.fws.gov/media/final-programmatic-environmental-impact-statement-eagle-rule-revision). Accordingly, this EA tiers from the 2016 PEIS. Project-specific information not considered in the PEIS (USFWS 2016) are considered in this EA as described below.

1.1 Purpose and Need

The need for this action is a decision on a Permit application from TEP. The decision must comply with all applicable regulatory requirements, and be compatible with the preservation of eagles (50 C.F.R. § 22.80(e)(2)(i) [2022]).

1.2 Authorities

Service authorities are codified under multiple statutes that address management and conservation of natural resources from many perspectives, including, but not limited to, the effects of land, water, and energy development on fish, wildlife, plants, and their habitats. This analysis is based on the Eagle Act (16 U.S.C. §§ 668–668e [1940]) and its regulations (50 C.F.R. Part 22 [1974]). The PEIS has a full list of authorities that apply to this action (USFWS 2016, Section 1.6, pages 7-12) that are incorporated by reference here.

1.3 Background

TEP owns and operates the utility-scale Project in Chaves, Lea, and Eddy counties, New Mexico. The Project is located predominately on privately owned land, encompasses 10,322 hectares (ha; 25,507 acres [ac]), and is located approximately 29 kilometers (km; 18 miles [mi]) west of the town of Lovington, New Mexico (Figure 1; collectively referred to as the Project Area). Energy generated by the Project will be transmitted to Arizona for use. The Project has a nameplate capacity of 250 megawatts (MW), with 48, SG 145 4.5-MW turbines and 14, SWT 108 2.415-MW turbines, for 62 wind turbines supplying renewable energy. The larger 4.5-MW turbines have a hub height of 108 meters (m; 354 feet [ft]) and a rotor diameter of 145 m (476 ft). The smaller 2.415-MW turbines have a hub height of 80 m (262 ft) and a rotor diameter of 108 m. The Project has several supporting facilities, including but not limited to, step-up transformers, underground communication cables, 34.5-kilovolt (kV) overhead collector lines, two permanent meteorological towers, a 55-km (34-mi) 345kV overhead generation-tie (gen-tie) transmission line, a 345kV/34.5kV substation, a switchyard, an operations and maintenance building, an aircraft detection lighting system, and other ancillary facilities or structures (Figure 2). The gen-tie line runs southwest from the Project to the Empire Switchyard in Eddy County.

Oso Grande Wind LLC (OGW) developed the Project. Construction commenced in 2019 through 2020. OGW transferred ownership of the Project to TEP on January 9, 2020. OGW conducted pre-construction avian use surveys from October 2018 through November 2019 and documented 39 golden eagles during the large bird use surveys at 15 of the 23 survey points during 303 hours of eagle/large bird survey efforts. Raptor nest surveys conducted within 3.2 km (2.0 mi) of the Project Area in spring 2019 had no active golden eagle or bald eagle (*Haliaeetus leucocephalus*) nests or nest structures. The Project became operational May 28, 2021. TEP initiated post-construction mortality monitoring in December 2021. TEP prepared an ECP in March 2021 and submitted its application for a Permit to the Service on March 18, 2021 (TEP 2022).

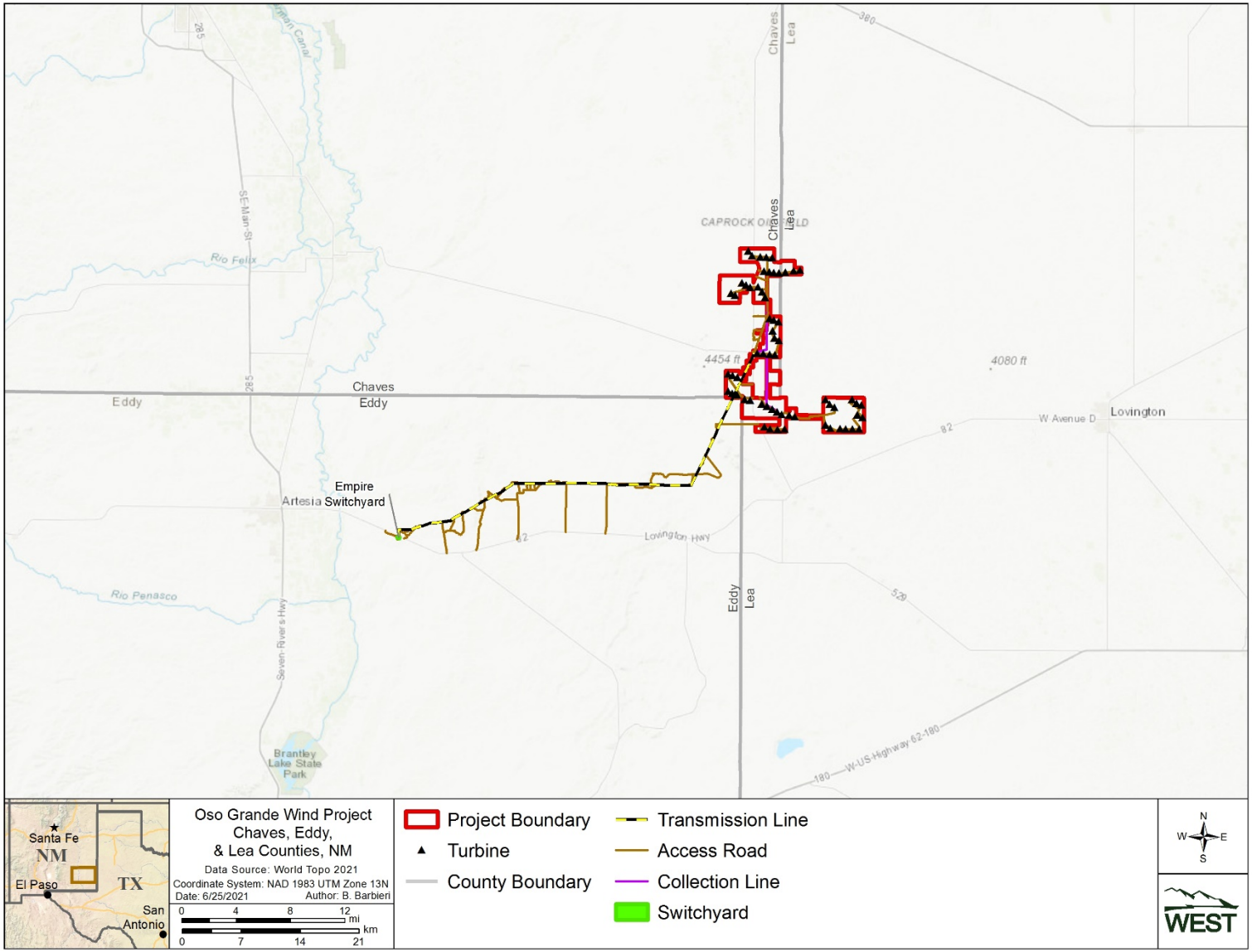

Figure 1. Project location of Oso Grande Wind Energy Project in Chaves, Lea, and Eddy counties, New Mexico.

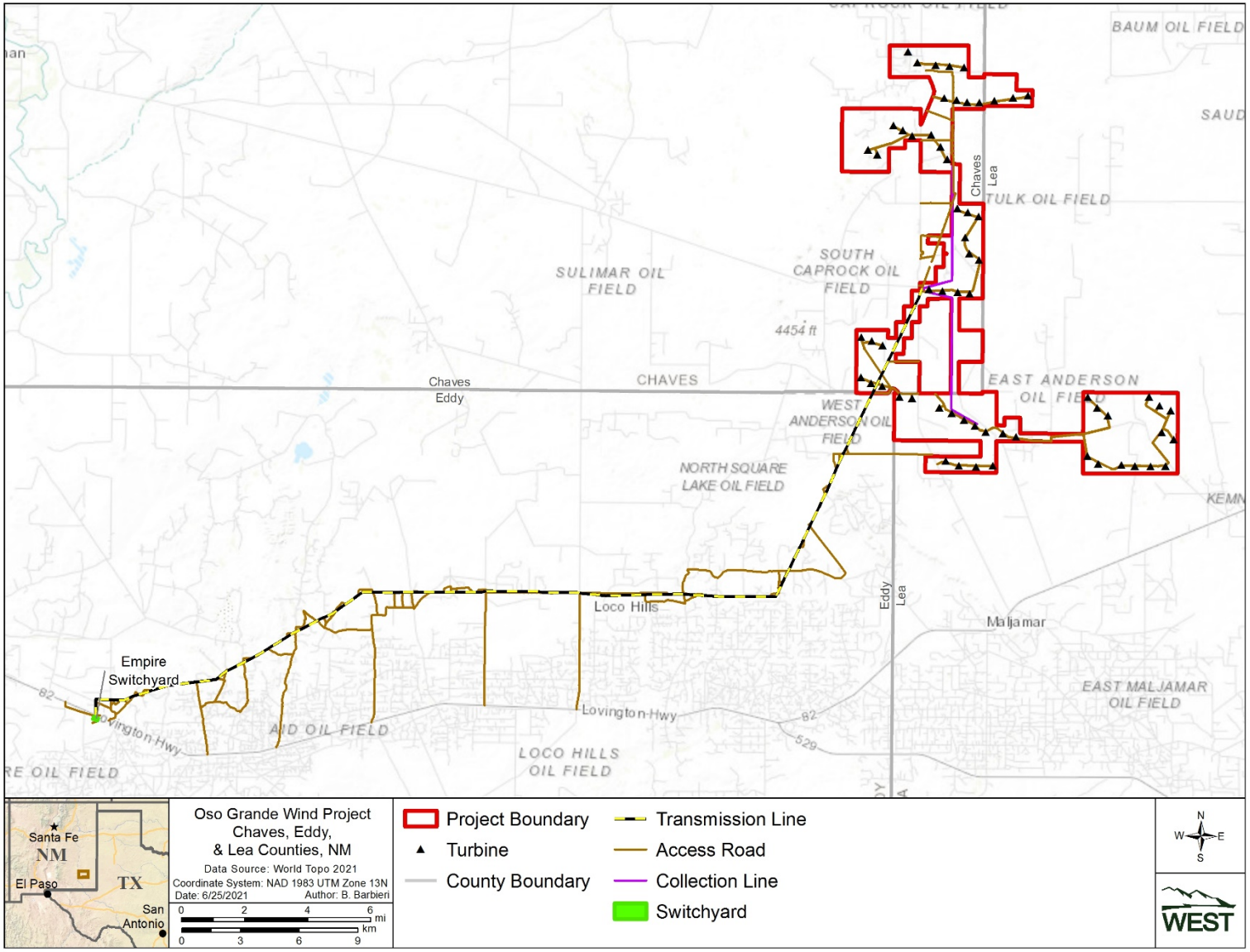

Figure 2. Infrastructure layout for the Oso Grande Wind Energy Project in Chaves, Lea, and Eddy counties, New Mexico.

1.4 Scoping, Consultation, and Coordination

This EA incorporates by reference the scoping performed for the PEIS (USFWS 2016, Chapter 6, pages 175-180). The draft EA was available for a 45-day public comment period, and it was posted on the Service's Southwest Region NEPA Documents for Eagle Permits website. We received one "No Issue" comment, four other written comments, and no Tribal Consultation requests (see Section 1.5). TEP worked closely with the Service to develop the ECP in support of its application to avoid, minimize, and mitigate adverse effects on eagles.

1.5 Tribal Coordination

This EA incorporates, by reference, the tribal consultation performed for the PEIS (USFWS 2016, Section 6.2.2, pages 177-180). On March 21, 2022, the Service sent a letter to all Southwest Region (OK, TX, NM, and AZ) 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 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 B). We received two comments from the Hopi Tribe, one comment from the Colorado River Indian Tribes, and one comment from the New Mexico Department of Cultural Affairs, Historic Preservation Division.

Comment: The Hopi Tribe encouraged the Service to give more than 45 days for Tribes to respond to proposed actions relating to eagles.

Response: There is no mandatory time limit for response from Tribes. The Service is not bound by the public comment period when we consult with Tribes. We do have internal steps for processing applications and need to be responsive to applicants, so set deadlines to keep the process moving. But we also realize Tribes have their own governmental processes and cultural considerations for their internal consultations and deliberations. Therefore, we are open to working with any Tribe to arrange for our government-to-government consultation on any important matter to a Tribe. We have extended our standard comment periods from 30 to 45 days in response to Tribal requests, and have extended that time frame considerably under unusual circumstances, such as COVID-19.

Comment: The Hopi Tribe questioned why the wind facility is already operational without an eagle incidental take permit.

Response: Applying for an eagle incidental take permit is voluntary (50 C.F.R. § 22.80 [2022]). An eagle incidental take permit only authorizes take of eagles; it is not a prerequisite or an authorization to construct and operate projects that may result in eagles being taken.

Comment: The Colorado River Indian Tribes expressed concern about the ongoing threats that utility and energy infrastructure pose for eagles and are opposed to any permitting that would threaten the protection of eagles. They questioned whether the Service has a full and accurate picture of the Project's long-term impacts to the area's eagle population, expressed concern that with no monitoring of the local population, it might be years before Project impacts to the area eagle population are fully appreciated, and are opposed to any permit that would allow a project to ignore long-term eagle take impacts of its operations.

Response: Wind energy facilities have the potential to result in the future take of eagles, whether eagle take is permitted or not. The issuance of any eagle incidental take permit seeks to reduce eagle take through Applicant-committed avoidance, minimization, and mitigation. If an eagle take permit is issued, the Project would be required to monitor impacts to eagles throughout the duration of the permit term, implement avoidance and minimization measures that are expected to reduce risk to eagles, implement an adaptive management plan that would result in more extensive or focused conservation measures if take is higher than predicted, and fully offset all authorized take with compensatory mitigation. The voluntary eagle take permit program is our only available avenue to require the implementation of these conservation measures. In the PEIS (USFWS 2016), we determined that impacts to local populations of eagles are consistent with our population management objectives and compatible with the preservation of eagles when cumulative permitted take remains below 5% of the Local Area Population (LAP). In Section 4.8 of this EA, we report that cumulative permitted take of golden eagles in the Project's LAP would not exceed 5% of the LAP, so would not significantly impact local area eagle populations.

Comment: The New Mexico Historic Preservation Division requested consultation under Section 106 of the National Historic Preservation Act of 1966, as amended, and to be provided the results of the tribal consultations.

Response: The Federal undertaking is the issuance of the Permit authorizing take. The Service did not have any influence in project planning or siting of the project and any subsequent ground disturbance as it is located on private land. Since the Project is already operational, no additional ground disturbance or other impacts will occur. Thus, no cultural and socioeconomic interests outside of those addressed in the PEIS (USFWS 2016) are expected to occur with the issuance of the Permit associated with the Project. If future mitigation might disturb land, we will consult with the State Historic Preservation Office. The results from Tribal outreach are summarized above. Should we receive requests for Tribal consultation, we will request permission of the Tribe to share the results of those consultations with the New Mexico Historic Preservation Division.

2.0 Proposed Action and Alternatives

2.1 Proposed Action

The Service proposes to issue a 30-year Permit to take up to 193 golden eagles with associated conditions, as allowed by regulation. TEP will implement all avoidance and minimization measures during operations as described in Section 5.3 of the ECP (TEP 2022; Appendix A) and the conservation commitments described in the ECP (TEP 2022; Appendix A). The Project is subject to monitoring and reporting reviews conducted by the Service throughout the Permit term. The first review period will be at two years post-Permit issuance and the following reviews will occur every five years thereafter. As described in more detail in the ECP (TEP 2022; Appendix A), TEP will implement Conservation Measures and Compensatory Mitigation (ECP Chapter 5), Post-Permit Mortality Monitoring (ECP Chapter 6), and Adaptive Management (ECP Chapter 7) commitments.

Conservation Measures and Compensatory Mitigation – OGW began implementing avoidance and minimization of risk during the Project design and planning and best management practices during construction. Once the Project was transferred to TEP, TEP continued best management practices throughout the remainder of construction and initiated avoidance and minimization measures during operations. Operational avoidance and minimization measures include but are not limited to training of personnel in wildlife and biological resources, reduce vehicle collisions, driving through the Project Area at lower speeds, and avian and bat fatality monitoring, and Wildlife Incidental Reporting Program (WIRP).

TEP has committed, and will be required, to fully offset the authorized take of golden eagles by implementing compensatory mitigation as part of the conditions of the Permit. Compensatory mitigation for this Project will consist of retrofitting high-risk power poles proportional to the predicted and adjusted golden eagle take estimate calculated by the Service. Retrofitting could include all types of retrofits performed to be consistent with Avian Power Line Interaction Committee (APLIC 2006) suggested practices (e.g., reframe, rebuild, insulating covers, and pole replacement). TEP will either work directly with local utilities to compensate them for retrofitting poles, conduct retrofits on poles within TEP's Service Area, and/or place the funds to retrofit power poles in a third-party mitigation account. Regardless of the method(s):

- All power poles retrofitted by the Project will be high-risk power poles that pose a high risk of electrocution to golden eagles.
- All power poles retrofitted by the Project will be located within the Central Flyway eagle management unit (EMU) or TEP's Service Area within the Pacific Flyway EMU.
- All power poles retrofitted by the Project must be in addition to any retrofits that are already being implemented or are already scheduled for retrofitting or replacement by the power company in the foreseeable future.

- An inspection and maintenance program will be required to ensure the retrofits remain effective for the duration of the credited period and will be repaired or replaced if no longer effective in preventing eagle electrocution.
- Reporting requirements will include an accounting of the poles retrofitted, outcomes from the implementation monitoring work, and the agreement with the utility for the long-term maintenance of the retrofits.
- The Project will retrofit the required number of poles to offset estimated take of eagles at a 1.2 to 1 mitigation ratio.
- The mitigation plan must be approved by the Service. Any changes to the mitigation program must be coordinated with and approved by the Service.

Permit regulations require compensatory mitigation to be sited within the same EMU where the permitted take will occur unless the Service has reliable data showing that the population affected by the take includes individuals that are reasonably likely to use another EMU during part of their seasonal migration (50 C.F.R. § 22.80(c)(1)(iii)(B) [2022]). The Service has determined that retrofitting high-risk power poles within TEP's Service Area in the southeastern portion of the Pacific Flyway EMU meets the Eagle ITP requirements for siting given the proximity of the Project to the Pacific Flyway EMU, the retrofits will occur on the eastern side of the EMU, and the use of the southwest during the winter by many northern migratory golden eagles from Alaska. Compensatory mitigation within TEP's Service Area may be approved with verifiable documentation to allow the Service to conclude retrofits are additional to whatever TEP had plans to retrofit (i.e., not already scheduled for retrofitting or replacement) in the foreseeable future and satisfy all of the requirements listed above and the regulatory standards for required compensatory mitigation at 50 C.F.R. § 22.80(c)(1)(iii)(A-F) (2022). All compensatory mitigation that is not conducted in TEP's Service Area will be conducted in the Central Flyway EMU.

The Service will calculate the required number of poles using the Resource Equivalency Analysis (REA), as outlined in the Eagle Conservation Plan Guidance (ECPG; USFWS 2013). Inputs into the Service's REA include the effectiveness of retrofits and the timing of the implementation of compensatory mitigation. Both the length of time retrofits are effective in avoiding the loss of eagles (to be determined from the type and quality of retrofit and the inspection and maintenance commitments) and when the retrofits will be completed affect the number of poles required. To offset the initial take estimate for the first five years of the Eagle ITP term, TEP will commit to 530 poles for 30-year retrofits or 1,217 poles for 10-year retrofits to mitigate the loss of 33 golden eagles. This amount of poles assumes that a Permit, if issued, would be issued in 2022 and retrofits would be completed before the beginning of the golden eagle breeding season in 2024. If there are changes to the longevity or implementation schedule, the Service will recalculate the number of poles that will be required to offset authorized take at a 1.2 to 1 mitigation ratio. Compensatory mitigation will be completed to fully offset take over the duration of the 30-year Permit and will be determined at each Permit review based on estimated past take and estimated future take. If the

estimated take is less than mitigated take at the Permit review, the excess mitigation will be carried forward for the next Permit review period. If take is higher than what was mitigated, increased mitigation will be required. TEP's commitment to retrofit power poles to meet or exceed the APLIC 2006 guidelines would minimize the risk of bird electrocution and collision on the retrofitted power poles (APLIC 2006).

Post-Permit Mortality Monitoring – TEP will implement baseline avian and bat fatality monitoring for one year after operations begin. TEP will also conduct systematic eagle mortality monitoring by qualified, independent, third party biologists and incidental monitoring by field personnel in accordance with the WIRP throughout the Permit term. These data will be used to ensure compliance with regulatory requirements, verify that take limits are not being exceeded, update take estimates, and evaluate the overall eagle mortality as related to meeting the objectives of Adaptive Management. This monitoring also includes searcher efficiency trials (to address bias from imperfect detection of eagle remains by observers) and carcass persistence trials (to address bias from removal of eagle remains by scavengers). These trials are designed to account for uncertainty and to develop robust estimates of mortality at the Project site. Fatality estimates would be updated to reflect project-specific conditions and compensatory mitigation would be adjusted accordingly. Annual monitoring reports will be prepared within two months of completing each year of post-construction monitoring required by the Permit, with each report including all raw monitoring data upon which the reports are based. Additionally, any eagle found dead or injured must be reported to the Migratory Bird Permit Office no later than 48 hours of discovery. Eagle remains will be handled and processed according to current Service procedures. All post construction monitoring will be conducted on existing disturbance, using existing roads, and conducted on foot.

Adaptive Management – TEP has developed an Adaptive Management Plan to monitor for impacts and avoid, minimize, and mitigate impacts to eagles and other avian species based on the Project specifics and data available (ECP Chapter 7.0). The stepwise process identified in the ECP will be used to guide the implementation of additional conservation measures as needed, and applies before take exceeds the permitted take levels.

2.2 Alternative 1: No Action

Under the No Action Alternative, the Service would take no further action on TEP's Permit application. The Service must take action on the Permit application, determining whether to deny or issue the Permit. The Service must consider this alternative because Service policy requires evaluation of a No Action Alternative and it provides a clear comparison of any potential effects to the human environment from the proposed action.

The No Action Alternative analyzes predictable outcomes of the Service not issuing a Permit. Under the No Action Alternative, the Project would likely operate without a Permit issued. Thus,

for purposes of analyzing the No Action Alternative, the Service assumes TEP will implement all measures required by other agencies and jurisdictions to conduct the activity at this site. The conservation measures proposed in the Permit application package would not be required. TEP may choose to implement some, none, or all of those conservation measures. Under this alternative, the Service assumes that TEP will take reasonable steps to avoid taking eagles, but TEP is not protected from enforcement for violating the Eagle Act should take of an eagle occur.

2.3 Alternative 2: 5-year Eagle Incidental Take Permit

Under this alternative, the Service issues a 5-year Eagle ITP authorizing the incidental take of eagles associated with the Project, pursuant to 50 C.F.R. § 22.80(f) (2022). The Permit is for the incidental take of up to 33 golden eagles during the 5-year Eagle ITP term. This alternative incorporates the same annual rate of eagle fatalities estimated for the Project as used in the Proposed Action but applies these rates to a 5-year Eagle ITP duration instead of 30 years. The 5-year Eagle ITP would incorporate the adaptive management, mitigation, monitoring, and avoidance and minimization measures, as appropriate, described for the Proposed Action; however, these commitments would be limited to five years.

2.4 Other Alternatives Considered but Not Evaluated in this Environmental Assessment

The Service considered one other alternative based on communication with TEP, but concluded that this alternative did not meet the purpose and need underlying the action because it was not consistent with the Eagle Act and its regulations. Therefore, the Service did not assess the potential environmental impacts of this alternative. Below is a summary of the alternative considered but eliminated from further review.

2.4.1 Alternative: Deny Incidental Take Permit

Under this alternative, the Service denies the Permit application because TEP is not eligible for a Permit pursuant to 50 C.F.R. § 13.21 (1974), or the application fails to meet all regulatory Permit issuance criteria and required determinations listed in 50 C.F.R. § 22.80 (2022).

Permit issuance regulations at 50 C.F.R. § 13.21(b) (1974) set forth a variety of circumstances that disqualify an Applicant from obtaining a Permit. None of the disqualifying factors or circumstances denoted in 50 C.F.R. § 13.21 (1974) apply to TEP. The Service next considered whether TEP meets all issuance criteria for the Permit. Those issuance criteria are found in 50 C.F.R. § 22.80(f) (2022). TEP's application meets all the regulatory issuance criteria and required determinations (50 C.F.R. § 22.80 [2022]) for Permits (Appendix A).

Upon review, the Service has determined TEP is not disqualified for a Permit under 50 C.F.R. § 13.21 (1974) and meets all the issuance criteria of 50 C.F.R. § 22.80 (2022). Accordingly, denial of the Permit is not a reasonable option. Therefore, the alternative of denying the Permit was eliminated from further consideration.

3.0 Affected Environment

General information on the taxonomy, ecology, distribution, and population trends of golden eagles are given in Section 3.3.1 of the PEIS (USFWS 2016, pages 71-81) and is incorporated herein by reference. The rest of this section describes the current status of the environmental resources affected by the Proposed Action and Alternatives. Specifically, this chapter describes golden eagles, bald eagles, migratory birds, threatened and endangered species, cultural and socioeconomic interests, and climate change.

3.1 Golden Eagle

Golden eagles are susceptible to anthropogenic stressors such as toxic lead shot or rodenticide contamination (Wiens et al 2017) and disturbances near roosting and foraging areas (USFWS 2011). Infrastructure associated with renewable energy projects (i.e., roads and power lines) can cause mortality in golden eagles through collisions with vehicles or energy-related infrastructure and because of electrocution risk from power poles (Wiens et al 2017). Adverse environmental conditions that affect prey abundance can lead to starvation and poor reproduction levels (Tack et al 2017). Natural stressors that can lead to eagle mortality include but are not limited to starvation and disease, injury, fighting, predation, and drowning (Millsap et al 2016).

Golden eagles breed within the region, with historical nesting territories documented in every New Mexico county except Lea County (Stahlecker et al 2010). Golden eagles also winter in and migrate through New Mexico. Golden eagles were observed within the Project Area during field reconnaissance visits in September and October 2019. Potential prey species were also observed during this time.

Pre-construction eagle use surveys conducted from October 2018 – November 2019 documented golden eagles for 62 eagle minutes (i.e., number of minutes of eagle flight activity within the three-dimensional cylindrical sample plots). During the survey period, there was no indication that eagles concentrated within the initial Project Area during any season. Fall had the highest number of eagle minutes (31), with fewer eagle minutes in winter (20) and spring (11). No golden eagles were recorded in summer (Appendix A). In 2019, aerial surveys to identify eagle nests within 3.2 km (2.0 mi) of the Project Area were conducted, and no golden eagle nests or nest structures were documented. Concentrated prey base assessments were conducted in spring 2019 via desktop evaluation. The Project Area is within the ranges of pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and white-tailed deer (*O. virginianus*). White-tailed deer are not expected due to lack of suitable habitat within the Project Area. Pronghorn and mule deer were observed during aerial eagle nest surveys and incidentally during other onsite field work. The Project Area does not contain priority habitat for either pronghorn or mule deer. Mule deer were observed west of the Project along the Mescalero Ridge. There is potential for big game individuals to occur as occasional, road-killed opportunities for scavenging by golden eagles.

Five black-tailed prairie dog (*Cynomys ludovicianus*) colonies were identified within 3.2 km (2.0 mi) of the Project Area. Two were confirmed active and the remaining three confirmed inactive (Appendix A, figure 9). The active colonies encompass 19.1 and 0.7 ha (47.3 and 1.8 ac) and are located within the Project footprint and approximately 0.8 and 1.3 km (0.5 and 0.8 mi) away from the closest Project turbines. These two active colonies likely provide an available, concentrated prey base for golden eagles, and these foraging areas are considered important eagle-use areas as defined in 50 C.F.R. § 22.6 (2022). Eagle use surveys did not indicate concentrated use of the prairie dog colonies, though one year of survey data may not capture variability in use. The Project does not appear to have any major migration concentration sites within its footprint, nor does it contain any occupied nest sites; however, it does have non-breeding/migratory/overwintering/transient use by golden eagles.

3.2 Bald Eagle

Although this document addresses both golden and bald eagles, the Project Area and surrounding vicinity do not contain suitable bald eagle nesting or foraging habitat, and no bald eagles were observed during pre-construction surveys. Therefore, because bald eagle presence in the Project Area was not observed during pre-construction surveys and is expected to be minimal or nonexistent, TEP did not request bald eagle take authorization under the proposed Permit.

Bald eagles most commonly hunt and forage near large, open lakes, reservoirs, and rivers, which are not present in the Project Area. Bald eagles may forage less frequently over open grasslands and livestock ponds, which are present within the Project Area, to take advantage of secondary food sources, such as carrion, waterfowl, or other small- to medium-sized animals. The potential for bald eagles to nest within the Project Area is very low because the Project does not contain, and is not close to, significant water bodies. New Mexico has a relatively small breeding population of bald eagles, likely less than 10 breeding pairs (New Mexico Avian Conservation Partners 2017). A review of eBird county level data revealed 20 bald eagle observations occurring in fall, winter, and early spring within two of the three counties where the Project is located (18 observations in Chaves County and two in Lea County) (eBird 2021). The closest eBird observations were reported in the winter near the Mescalero Sand Dunes, approximately 41 km (25 mi) north of the Project Area (eBird 2021). No bald eagles were observed during the September – October 2019 reconnaissance visits at the Project Area or during the October 2018 – November 2019 pre-construction eagle use surveys, and no bald eagle nests or nest structures were documented during the 2019 aerial nest surveys.

3.3 Migratory Birds

Many of the Migratory Bird Treaty Act (MBTA) protected species (16 U.S.C. §§ 703–712 [1918] and 50 C.F.R. § 10.13 [1973]) use the Project Area. Some MBTA species are year-round or seasonal (summer and winter) residents while others are only present during spring and fall migrations. The Project Area is located in the Central Flyway migration corridor. The Project is located within the Bird Conservation Region (BCR) 18 Shortgrass Prairie, borders BCR 35 Chihuahuan Desert on the west, and is within close proximity to BCR 16 Southern Rockies/Colorado Plateau to the northwest. BCRs are

defined as ecologically distinct regions with similar bird communities and habitats (North American Bird Conservation Initiative 2000). The Project Bird and Bat Conservation Strategy (TEP 2021) listed 45 species of concern based on their federal and state status and the Service's 2008 Birds of Conservation Concern (BCC) Report. The Service's BCC Report identifies species, subspecies, and populations of migratory nongame birds that could become candidates for listing under the Endangered Species Act (ESA [1973]) without additional conservation actions (USFWS 2008). An updated BCC Report and list of BCC was released in 2021 (USFWS 2021).

Using the current federal and state status, 72 bird species of concern have the potential to occur in the Project Area (Table 1). Of these 72 bird species of concern, 42 species are not expected to occur within the Project Area due to lack of habitat, 13 species have low potential to occur within the Project Area, and 17 species have high potential to occur within the Project Area (Table 1).

Table 1. Bird and bat species of concern and their potential for occurrence in the Oso Grande Wind Energy Project Area.

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Potential for Occurrence[3]
Arizona grasshopper sparrow	*Ammodramus savannarum ammolegus*	BCC	E	High
Baird's sparrow	*Ammodramus bairdii*	BCC	T; SGCN	High
bald eagle	*Haliaeetus leucocephalus*	BCC; BGEPA	T; SGCN	Low
Bell's vireo	*Vireo bellii*	—	T; SGCN	Not Expected
Bendire's thrasher	*Toxostoma bendirei*	BCC	SGCN	Not Expected
black rosy-finch	*Leucosticte atrata*	BCC	—	Not Expected
black swift	*Cypseloides niger*	BCC	—	Not Expected
black-capped vireo	*Vireo atricapilla*	BCC	—	Not Expected
black-chinned sparrow	*Spizella atrogularis*	BCC	SGCN	Not Expected
broad-billed hummingbird	*Cynanthus latirostris*	—	T; SGCN	Not Expected
broad-tailed hummingbird	*Selasphorus platycercus*	BCC	—	Low
brown-capped rosy-finch	*Leucosticte australis*	BCC	—	Not Expected
brown pelican	*Pelecanus occidentalis*	—	E	Not Expected
buff-breasted sandpiper	*Calidris subruficollis*	BCC	—	Not Expected
burrowing owl	*Athene cunicularia*	BCC	SGCN	High
California gull	*Larus californicus*	BCC	—	Not Expected
Cassin's finch	*Haemorhous cassinii*	BCC	—	Low
Cassin's sparrow	*Peucaea cassinii*	BCC	SGCN	High
chestnut-collared longspur	*Calcarius ornatus*	BCC	SGCN	High
chimney swift	*Chaetura pelagica*	BCC	—	Not Expected
Clark's grebe	*Aechmophorus clarkii*	BCC	—	Not Expected
Clark's nutcracker	*Nucifraga columbiana*	BCC	—	Not Expected
Colima warbler	*Leiothlypis crissalis*	BCC	—	Not Expected
common black hawk	*Buteogallus anthracinus*	—	T; SGCN	Not Expected
common ground dove	*Columbina passerina*	—	E; SGCN	Not Expected
common nighthawk	*Chordeiles minor*	—	SGCN	Low
eastern meadowlark	*Sturnella magna*	BCC	—	High
elf owl	*Micrathene whitneyi*	—	SGCN	Not Expected
evening grosbeak	*Coccothraustes vespertinus*	BCC	—	Not Expected
ferruginous hawk	*Buteo regalis*	BCC	—	High
flammulated owl	*Psiloscops flammeolus*	BCC	SGCN	Not Expected
golden eagle	*Aquila chrysaetos*	BCC; BGEPA	—	High
Grace's warbler	*Setophaga graciae*	BCC	SGCN	Not Expected

Table 1. Bird and bat species of concern and their potential for occurrence in the Oso Grande Wind Energy Project Area (*continued*).

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Potential for Occurrence[3]
gray vireo	*Vireo vicinior*	—	T; SGCN	Not Expected
Hudsonian godwit	*Limosa haemastica*	BCC	—	Not Expected
interior least tern	*Sterna antillarum athalassos*	BCC	E; SGCN	Not Expected
lesser prairie-chicken	*Tympanuchus pallidicinctus*	PT; PE	SGCN	Low
lesser yellowlegs	*Tringa flavipes*	BCC	—	Low
Lewis's woodpecker	*Melanerpes lewis*	BCC	SGCN	Not Expected
loggerhead shrike	*Lanius ludovicianus*	—	SGCN	High
long-billed curlew	*Numenius americanus*	BCC	SGCN	High
long-eared owl	*Asio otus*	BCC	—	Not Expected
Lucifer hummingbird	*Calothorax lucifer*	BCC	T; SGCN	Not Expected
Mexican spotted owl	*Strix occidentalis lucida*	T	SGCN	Not Expected
Mexican whip-poor-will	*Antrostomus arizonae*	BCC	SGCN	Not Expected
mountain bluebird	*Sialia currucoides*	—	SGCN	High
mountain plover	*Charadrius montanus*	BCC	SGCN	Low
Neotropic cormorant	*Phalacrocorax brasilianus*	—	T; SGCN	Not Expected
northern Aplomado falcon	*Falco femoralis septentrionalis*	EXPN	E; SGCN	Not Expected
northern beardless tyrannulet	*Camptostoma imberbe*	—	E; SGCN	Not Expected
northern harrier	*Circus hudsonius*	BCC	—	High
olive-sided flycatcher	*Contopus cooperi*	BCC	—	Low
pectoral sandpiper	*Calidris melanotos*	BCC	—	Low
peregrine falcon	*Falco peregrinus*	—	T; SGCN	High
pinyon jay	*Gymnorhinus cyanocephalus*	BCC	SGCN	Not Expected
piping plover	*Charadrius melodus*	T	T	Not Expected
pyrrhuloxia	*Cardinalis sinuatus*	BCC	—	Not Expected
red-headed woodpecker	*Melanerpes erythrocephalus*	BCC	—	Not Expected
Scott's oriole	*Icterus parisorum*	BCC	—	Not Expected
short-eared owl	*Asio flammeus*	BCC	—	Low
snowy plover	*Charadrius nivosus*	BCC	SGCN	Low
southwestern willow flycatcher	*Empidonax traillii extimus*	E	E; SGCN	Not Expected
Sprague's pipit	*Anthus spragueii*	BCC	SGCN	High
thick-billed kingbird	*Tyrannus crassirostris*	—	E; SGCN	Not Expected
thick-billed longspur	*Rhynchophanes mccownii*	BCC	SGCN	High
varied bunting	*Passerina versicolor*	BCC	T; SGCN	Not Expected
vesper sparrow	*Pooecetes gramineus*	—	SGCN	High
Virginia's warbler	*Leiothlypis virginiae*	BCC	SGCN	Not Expected
western grebe	*Aechmophorus occidentalis*	BCC	—	Low
whimbrel	*Numenius phaeopus*	BCC	—	Not Expected
Woodhouse's scrub-jay	*Aphelocoma woodhouseii*	BCC	—	Low
yellow-headed blackbird	*Xanthocephalus xanthocephalus*	BCC	—	High
Bats				
pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	—	SGCN	Low
spotted bat	*Euderma maculatum*	—	T; SGCN	Not Expected

[1.] E = endangered; T = threatened; EXPN = experimental; BGEPA = Bald and Golden Eagle Protection Act of 1940; BCC = Bird of Conservation Concern; PT = Potentially threatened; PE = Potentially endangered (U.S. Fish and Wildlife Service 2021).

[2.] E = endangered; T = threatened; SGCN = species of greatest conservation need (New Mexico Department of Game and Fish 2016).

[3.] High = the species has been documented in the Project vicinity by a reliable observer; Low = Project is within or peripheral to the species' known range and vegetation communities may resemble those known to be used by the species, but the species has not been documented in the Project vicinity by a reliable observer; Not Expected = the Project is outside the species' known range; wayward individuals and other atypical occurrences (e.g., storm system-caused vagrancy) are not evidence of potential occurrence since those occasions constitute unforeseeable anomalies.

3.4 Species Listed under the Endangered Species Act

On July 23, 2021, an Intra-Service Section 7 Biological Evaluation was completed to fulfill the requirements of the ESA to ensure that the proposed issuance of a Permit would not likely jeopardize the existence of any listed species or result in the destruction or adverse modification of designated critical habitat.

Several species listed under the ESA have the potential to occur within the Project Area. These include Mexican spotted owl (*Strix occidentalis lucida*), northern Aplomado falcon (*Femoralis septentrionalis*), piping plover (*Charadrius melodus*), southwestern willow flycatcher (*E. t. extimus*), Pecos bluntnose shiner (*Notropis simus peconsensis*), Pecos gambusia (*Gambusia nobilis*), Texas hornshell (*Popenaias popeii*), Koster's springsnail (*Juturnia kosteri*), Pecos assiminea snail (*Assiminea pecos*), Roswell springsnail (*Pyrgulopsis roswellensis*), Noel's amphipod (*Gammarus desperatus),* Gypsum wild-buckwheat (*Eriogonum gypsophilum*), Kuenzler hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*), Lee pincushion cactus (*Coryphantha sneedii* var. *leei*), Pecos sunflower (*Helianthus paradoxus*), Sneed pincushion cactus (*C. s.* var. *sneedii*), and Wright's marsh thistle (*Cirsium wrightii*). No critical habitat for these species intersects the Project Area and none of the species were documented within the Project Area during pre-construction surveys. The Service determined the Project would have no effect on the Mexican spotted owl, piping plover, southwestern willow flycatcher, Pecos bluntnose shiner, Pecos gambusia, Texas hornshell, Koster's springsnail, Pecos assiminea snail, Roswell springsnail, Noel's amphipod*,* Gypsum wild-buckwheat, Kuenzler hedgehog cactus, Lee pincushion cactus, Pecos sunflower, Sneed pincushion cactus, and Wright's marsh thistle. The Service determined the Project would not likely adversely affect the northern Aplomado falcon.

The Project is already operational and the Service's decision regarding the Permit will not alter the physical footprint of the Project and will not alter its impacts to federally threatened and endangered species. Therefore, no further evaluation of impacts to species listed under the ESA is warranted for the Service's decision of whether or not to issue a Permit (Appendix C).

3.5 Cultural and Socioeconomic Interests

Cultural and socioeconomic interests are considered in the PEIS (USFWS 2016, Sections 3.7 and 3.8, pages 117-144) and are incorporated by reference here. The PEIS examined the cultural importance of eagles to Native American tribes and the American people, and impacts on businesses and industries likely to develop in areas where eagles occur and recreational and aesthetic values of the public (USFWS 2016). Since the Project is already operational, no additional ground disturbance or other impacts will occur. Thus, no cultural and socioeconomic interests outside of those addressed in the PEIS are expected to occur with the issuance of the Permit associated with the Project.

As noted in Section 3.7 of the PEIS (USFWS 2016), eagle take can have spiritual or emotional impacts to Tribes. Although the PEIS notes that the issuance of any Permit seeks to reduce eagle take through Applicant-committed avoidance, minimization, or mitigation, Tribal notification and the opportunity to consult is required for all projects that seek a Permit. As addressed fully above, this notification occurred in regard to this Permit.

3.6 Climate Change

Climate change was considered in the PEIS (USFWS 2016, Section 3.9, pages 144-148) and is incorporated by reference here. Additionally, Arizona has a renewable portfolio standard of 15% renewable energy by 2025. The operation of this Project would contribute to enabling Arizona to meet that goal.

4.0 Environmental Consequences

This section summarizes the effects on the environment upon implementing the Proposed Action, Alternative 1: No Action, and Alternative 2: 5-year Eagle ITP. The PEIS (USFWS 2016) provides a discussion of overall effects of the Permit program and is incorporated by reference here. This section of this EA analyzes only the effects that were not analyzed in the PEIS that may result from the issuance of a Permit for this specific project. Since the Project is fully built and operational, the effects associated with developing and constructing a wind project are not considered in this analysis.

4.1 Golden Eagle

4.1.1 Effects Common to All Alternatives

Potential direct and indirect effects of continued operation of the Project on golden eagles include the risk of collision, electrocution, and disturbance/displacement. The level of direct mortality in the LAP that is caused by the Project and other reasonably foreseeable projects in relation to annual allowable take for golden eagles are provided below under Section 4.8: Cumulative Effects.

In determining the significance of effects of the Project on eagles, the Proposed Action was screened against the analysis provided in the PEIS (USFWS 2016) and the Service's 2016 report, *Bald and Golden Eagles: Status, Trends, and Estimation of Sustainable Take Rates in the United States*. The Eagle-risk Analysis (Appendix D in USFWS 2013) and Cumulative Effects Analysis (Appendix F in USFWS 2013) were also used to quantify eagle fatality risk and cumulative local population level effects.

The primary risk to golden eagles under all of the alternatives is from collision with rotating turbine blades. Mortality or injury is the direct adverse effect of golden eagles colliding with turbine blades. All three alternatives have the potential to result in the future take of eagles, whether permitted or not.

The Service uses a collision risk model to estimate the number of eagle fatalities at wind energy facilities (USFWS 2013). At the Project, we estimate a take rate of 6.42 golden eagles annually (estimate at the 80th quantile). This estimate was generated using updated national priors for golden eagle exposure and collision probability (85 Federal Register [FR] 23978 [May 5, 2021]). Eagle use data were not included in the Service's fatality estimate because they did not meet data quality standards required for Eagle ITP applications at 50 C.F.R. § 22.80(d)(3)(ii) of the 2016 Eagle Permit Rule or the assumptions of the collision risk model, including: (1) sampling was not conducted for 2 or more years, and (2) spatial coverage of sample plots did not include at least 30 percent of the Project footprint.

4.1.2 Proposed Action

Under the Proposed Action, 6.42 golden eagles are estimated to be taken annually (193 over the 30-year life of the Permit). However, the take that would be authorized by the Permit would be fully offset by the compensatory mitigation that would be provided by TEP and would not significantly impact local area eagle populations. To fully offset the authorized take of 193 eagles over the 30-year period, TEP will commit to retrofitting high-risk power poles. Power pole electrocution has been shown to cause a significant number of eagle mortalities (APLIC 2006). Therefore, retrofitting high-risk electric poles is an effective way to minimize mortalities in eagle populations (USFWS 2013). Retrofits are also an effective and quantifiable compensatory mitigation measure that may be used to offset any mortalities that may occur as a result of operation of a project.

The required compensatory mitigation commitments to offset the estimated take of eagles were calculated using the Service's REA per the ECPG (USFWS 2013). Both the credited period for effectiveness of power pole retrofits and the timing of the implementation affect the number of poles required. TEP will commit to complete 530 poles for 30-year retrofits or 1,217 poles for 10-year retrofits as compensatory mitigation to fully offset the estimated take of 33 golden eagles for the first five years of the Permit term. This amount of retrofits are needed to achieve the 1.2 to 1 mitigation ratio required by regulation for authorized take of golden eagles to ensure that take is consistent with eagle preservation (81 FR 91494 [December 16, 2016]). The final mitigation program may encompass a percentage of both retrofit types, resulting in a final number of pole retrofits between these two amounts. Compensatory mitigation to fully offset take over the duration of the Eagle ITP will be determined based on estimated past take and estimated future take. TEP will retrofit the required number of poles to offset the take of eagles over the 30-year life of the Permit at a 1.2 to 1 mitigation ratio. Retrofitted power poles will be monitored and maintained for the effective life of the retrofits. The mitigation program will be coordinated with and approved by the Service.

If an Eagle ITP is issued, eagle mortality monitoring will be conducted using a study design consistent with the ECPG (USFWS 2013) and approved by the Service. TEP would commit to implementing eagle mortality monitoring throughout the Permit tenure. The eagle mortality monitoring associated with this alternative (e.g., evaluating all turbines during a monitoring year) allows the Service and TEP to estimate the total number of annual eagle fatalities and required retrofits to ensure compliance with regulatory requirements.

The Proposed Action also includes conservation measures that incorporate adaptive management measures to minimize and avoid take (ECP Chapter 7.0). Adaptive management is the structured approach to decision-making. If implemented when triggered by eagle remains that are found on-site, these measures could result in additional monitoring and operational adjustments (Table 2). Monitoring is a critical component of adaptive management.

If a Permit is issued, administrative permit reviews will occur at least every five years as required under Permit regulations at 50 C.F.R. § 22.80(c)(7)(iii) (2022). Each review would include an evaluation of eagle take and update of the fatality estimate and required compensatory mitigation based on the mortality monitoring data collected at the Project, and an evaluation of the effectiveness of adaptive management measures implemented.

Together, the retrofitting of power poles, conservation measures, the adaptive management plan, and the 5-year reviews ensure there will be no significant impacts to golden eagles.

Table 2. Summary of stepwise adaptive management process for golden eagle take at the Oso Grande Wind Energy Project, based on a permitted take rate averaging 6.42 golden eagles/year and totaling 193 eagles (rounded) over the 30-year Permit term. Triggers are based on the number of eagles found assuming a minimum average detection probability (g) of 0.35[1] for each 5-year review period (following the initial 2-year check in) and using a 50% credible interval. Triggers refer to and would be reached as a result of golden eagle remains found, not estimates of fatalities.

Step	Trigger	Adaptive Management Measure
Step I	≥ 5 golden eagle remains found in first 5 years OR ≥ 8 golden eagle remains found in first 10 years	At the beginning of the next year of compliance monitoring, implement all of the following: • Assess eagle fatalities to determine if cause or risk factors can be determined (e.g., season, weather, presence of prey/carrion, fire, or other events) • Provide assessment results and other relevant data to USFWS
Step II	≥ 11 golden eagle remains found in first 5 years OR ≥ 22 golden eagle remains found in first 10 years OR ≥ 32 golden eagle remains found in first 15 years	At the beginning of the next year of compliance monitoring, implement all of the following: • Implement Step I adaptive management response • Complete additional studies (e.g., eagle use surveys) to better understand risk factors • Coordinate with USFWS to determine next steps
Step III	≥ 25 golden eagle remains found in first 10 years OR ≥ 36 golden eagle remains found in first 15 years OR ≥ 47 golden eagle remains found in first 20 years	At the beginning of the next year of compliance monitoring, implement all of the following: • Implement Step I and Step II adaptive management response • Test one or more conservation measures designed to reduce the likelihood of future take such as: o Reducing eagle use near turbines (i.e., deterrent), o Reducing the source of collision (i.e., curtailment), such as installation of automated eagle detection technology, or human biological monitors, or o Other measure(s) agreed upon in consultation with the USFWS. • Effectiveness study design of any conservation measure implemented must be approved by the USFWS.
Step IV	≥ 50 golden eagle remains found in first 20 years OR ≥ 58 golden eagle remains found in first 25 years	Immediately upon meeting this trigger, implement the following: • If technology, biological monitors, or other conservation measures have previously been implemented at the Project, alter the programming or implementation of those effort(s) to enhance effectiveness, or implement another conservation measure agreed upon in consultation with the USFWS. The effectiveness of any measure or enhanced measure must be studied with the study design approved by the USFWS.

[1] If the minimum average site-wide g-value (probability that eagle remains will be detected by monitoring efforts) of 0.35 is not achieved in any 5-year review period or searcher efficiency rates, as determined through on-site bias trials, are not quantifiable for every search method used during the 5-year review period, then more rigorous mortality monitoring to achieve an average g of 0.35, and/or additional searcher efficiency trials will be required. This may be implemented through additional years of third party monitoring and/or enhanced operations monitoring (e.g., increased search frequency, increased search area coverage) including searcher efficiency trials for each novel search method (e.g., full plot transect searches, scans, road and pad searches, incidental monitoring) employed during the 5-year review period.

4.1.3 Alternative 1: No Action

Under the No Action Alternative, the Service does not issue a Permit, as described in Section 2.2. As with all alternatives, golden eagles are expected to be directly impacted through mortalities from collisions with turbines. Even though the Service takes no action on the Permit application under the No Action Alternative, the Project continues to operate without authorization for the take of eagles. If take of eagles occur under the No Action Alternative, TEP is in violation of the Eagle Act. Because no measures would be required to avoid or minimize risk to eagles under this No Action Alternative, the risk to eagles is expected to be higher under this alternative as compared to the other alternatives. Under this alternative, direct impacts of the Project on the eagle population are estimated to be 6.42 eagles per year over the 30-year life of the Project. No adaptive management measures are triggered if take exceeded that level. None of the impacts to golden eagles are offset by compensatory mitigation.

This alternative does not meet the purpose and need for the action because, by regulation (50 C.F.R. § 13.21 [1974]), when in receipt of a completed application, the Service must either issue or deny a Permit to TEP. The No Action Alternative also does not meet the purpose and need for the action because it results in the adverse, unmitigated effects to golden eagles described above; effects that are not compatible with the preservation of golden eagles.

4.1.4 Alternative 2: 5-year Eagle Incidental Take Permit

Under this alternative, the Service issues a 5-year Eagle ITP for 33 golden eagles over the 5-year period as described in Section 2.3. The Permit would need to be renewed every five years for the Project to have coverage for take for the entire 30-year life of the Project. The direct effect of this alternative on golden eagles is expected take of up to 33 golden eagles over the five years of the Permit. The impacts of direct take on golden eagles are the same as the Proposed Action. In addition, all adaptive management, mitigation, monitoring, and avoidance and minimization measures would be implemented for a duration of five years for this alternative. Together, these commitments ensure there will be no significant impacts to golden eagles. This alternative meets the purpose and need for the action, but provides TEP and the Service less long-term certainty.

4.2 Bald Eagle

Bald eagles have a low likelihood of occurrence given the lack of foraging and nesting habitat in the Project Area. The Proposed Action, as well as the other action alternative, is to grant a Permit for golden eagles and does not affect bald eagles; however, implementation of avoidance and minimization measures during operations outlined in the ECP may benefit bald eagles if they occur in the area (TEP 2022; Appendix A). The No Action Alternative does not affect bald eagles. Therefore, none of the alternatives are expected to have significant effects on bald eagles.

4.3 Migratory Birds

The Proposed Action and the 5-year Eagle ITP Alternative grants a Permit for golden eagles and does not affect other migratory birds; however, implementation of avoidance and minimization measures during operations outlined in the ECP may benefit other migratory birds to a certain extent (Appendix A). The No Action Alternative does not affect migratory birds. Therefore, none of the alternatives are expected to have a significant effect on migratory birds.

4.4 Species Listed under the Endangered Species Act

Seventeen species listed under the ESA were identified by an Information for Planning and Consultation (IPaC) review and could potentially occur within the Project Area. Turbine operations, and any effects on wildlife or plant populations, will occur whether or not a Permit is issued; therefore, this criterion is not being evaluated across alternatives. Under the Proposed Action and the 5-year Eagle ITP Alternative, conservation measures and compensatory mitigation outlined in the ECP may benefit the northern Aplomado falcon (Appendix A, Appendix C). No conservation or compensatory mitigation measures would be required under the No Action Alternative.

4.5 Cultural and Socioeconomic Interests

Many Native American traditions consider eagles and eagle feathers sacred. The Proposed Action selection does not interfere substantially with the cultural practices and ceremonies of eagles and does not affect the ability of Tribes to use eagle feathers consistent with Federal law. However, it is likely there will be more eagle remains discovered under the Proposed Action compared to the 5-year Permit Alternative with a requirement for mortality monitoring that extends through the expected life of the project. Eagle remains that are discovered at the Project will be sent to the Service's National Eagle Repository. The remains will be distributed to permitted members of federally recognized Tribes if they are in good condition. The largest percentage of eagle remains may be found under the Proposed Action, which increases the number of eagles collected and available to Native Americans for their use for ceremonial purposes. If the No Action Alternative is selected, TEP is not required to implement mortality monitoring. Although on-site staff may continue to report eagle mortalities found incidentally, it is likely to be a smaller percentage without regular monitoring. This reduces the number of eagles collected and available to Native Americans for their use for ceremonial purposes.

The Service does not anticipate that the take of eagles under the Proposed Action interferes with cultural practices and ceremonies related to eagles, or affect the ability of Native Americans to utilize eagles, parts, or feathers in a manner consistent with federal law. Permitting the incidental take of eagles is not expected to interfere with other priority uses or permits during the Permit term because the eagle preservation standard is expected to be achieved through the implementation of the ECP.

Under the Proposed Action, a greater number of power pole retrofits are required to mitigate for the take of eagles. The No Action Alternative does not require TEP to mitigate for predicted eagle mortality at their facility, which results in a net loss to eagle populations. The 5-year Eagle ITP Alternative requires the mitigation of fewer power pole retrofits than the Proposed Action but more than the No Action Alternative.

4.6 Climate Change

Climate change is considered in the PEIS (USFWS 2016, Section 3.9, pages 144-148) and is incorporated by reference here. There are no climate change impacts that are expected by issuance of the Permit.

4.7 Comparison of Effects of Alternatives

A comparison of the Proposed Action, No Action, and Alternative 2 is listed below (Table 3).

Table 3. Comparison of the Proposed Action, No Action, and Alternative 2 for the Oso Grande Wind Energy Project, Chaves, Lea, and Eddy counties, New Mexico.

	Proposed Action	No Action Alternative	Alternative 2
Eagle Take Levels	193 eagles over 30 years	193 eagles over 30 years	33 eagles over 5 years
Avoidance and Minimization	Train all operations personnel on practices used to avoid and minimize impacts to wildlife and other biological resources, including identification of potential wildlife conflicts and the proper response, sensitivity to eagles and other wildlife, and education on wildlife laws. Take action to reduce vehicle collision risk to animals. Instruct project personnel and visitors to drive at low speeds (<25 miles per hour) and be alert for wildlife, especially in low visibility conditions. Implement baseline avian and bat fatality-monitoring study as soon as practicable following the start of Project operations, consistent with the Project's Bird and Bat Conservation Strategy. Implement a Wildlife Incidental Reporting Program (ECP Section 6.2) at the start of Project operations to ensure personnel document bird or bat casualties encountered during routine maintenance work or at any time when personnel are at the Project.	Same as Proposed Action	Same as Proposed Action

Table 3. Comparison of the Proposed Action, No Action, and Alternative 2 for the Oso Grande Wind Energy Project, Chaves, Lea, and Eddy counties, New Mexico (*continued*).

	Proposed Action	No Action Alternative	Alternative 2
Mortality Monitoring	Monitoring over the 30-year Eagle ITP term as described in the ECP (Appendix A, Chapter 6.0).	One year of post-construction mortality monitoring will be completed.	Monitoring during the 5-year Eagle ITP term as described in the ECP (Appendix A, Chapter 6.0).
Compensatory Mitigation	530 to 1,217 high-risk pole retrofits, depending on retrofit longevity and mitigation schedule, mitigating take of 33 golden eagles for the first five years. Mitigation required over the life of the Eagle ITP to be determined based on estimated past and future take to fully offset 30-year take of eagles at a 1.2 to 1 mitigation ratio.	No power pole retrofits.	530 to 1,217 high-risk pole retrofits, depending on retrofit longevity and mitigation schedule, mitigating take of 33 golden eagles.
Unmitigated Eagle Take	None	193 golden eagles over 30 years	None during the 5-year Eagle ITP term
Adaptive Management	See Table 2. Adaptive Management Trigger Values	None	Same as Proposed Action but limited to 5-year eagle ITP term
Data Collected by the U.S. Fish and Wildlife Service	Annual monitoring report of mortalities; reporting of injured eagles; information on the effects of specific, applied, conservation measures; report on completion of pole retrofits.	None.	Same as Proposed Action but for a 5-year duration.
Company Liability for Eagle Take	None (if in compliance with Permit conditions).	Company liable	None during the 5-year Eagle ITP term (if in compliance with Permit conditions).

4.8 Cumulative Effects

Under our Eagle Act implementing regulations, we must determine whether the direct and indirect effects of the take and required mitigation, together with the cumulative effects of other permitted take and additional factors affecting the eagle populations within the eagle management unit and the local area population are compatible with the preservation of golden eagles (50 C.F.R. § 22.80(f)(1) [2022]). Thus, we are assessing cumulative effects here pursuant to our obligations under NEPA and the Eagle Act.

4.8.1 Golden Eagle

Take of eagles has the potential to affect the larger eagle population. Accordingly, the 2016 PEIS (USFWS 2016), incorporated herein by reference, analyzed the cumulative effects of permitting take of golden eagles in combination with ongoing unauthorized sources of human-caused eagle mortality and other present or foreseeable future actions affecting golden eagle populations. As part of the analysis, the Service determined sustainable limits to permitted take within each EMU. Take limits for golden eagles in all EMUs are set to zero; therefore, all permits for golden eagle

take must incorporate offsetting compensatory mitigation after all appropriate and practicable avoidance and minimization measures are applied. The take that would be authorized by this Permit will be offset by the compensatory mitigation provided by TEP, so will not significantly impact the EMU eagle population. The avoidance and minimization measures and additional adaptive management measures that would be required under the Permit are designed to further ensure that the Permit is compatible with the preservation of the golden eagle at the regional EMU population scale.

Additionally, to ensure that eagle populations at the local scale are not depleted by cumulative take in the local area, the Service analyzed in the PEIS (USFWS 2016) the amount of take that can be authorized while still maintaining the LAP of eagles. In order to issue a Permit, cumulative authorized take must not exceed 5% of a LAP, nor can cumulative unauthorized take exceed 10% of a LAP, unless the Service can demonstrate why allowing take to exceed that limit is still compatible with the preservation of eagles (81 FR 91494 [December 16, 2016]). Permit regulations require the Service to conduct an individual LAP analysis for each Permit application as part of our application review.

This analysis, therefore, considers cumulative effects to the LAP surrounding the Project to evaluate whether the take to be authorized under this Permit, together with other sources of permitted take and unpermitted eagle mortality, may be incompatible with the persistence of the Project LAP. Data provided by TEP, Service data on other eagle take authorized and permitted by the Service, and other reliably documented unauthorized eagle mortalities were used to estimate cumulative impacts to the LAP. The scale of our analysis is a 175-km (109-mi) radius around the Project Area. The cumulative effects analysis was conducted as described in the Service's ECPG (Appendix F in USFWS 2013).

4.8.1.1 Authorized Take

Based on the analysis conducted on February 14, 2022, using the Service's cumulative effects tool (CET), the Project LAP is estimated to be approximately 290 golden eagles. Using this estimate, the 5% annual take threshold for the Project's LAP is 14.5 golden eagles. As of February 2022, there are two projects that overlap with the Project LAP that are permitted to take golden eagles. The estimated take for the Project combined with the authorized take from overlapping projects could result in a total annual take of 6.59 golden eagles, representing 2.27% of the LAP, which is below the 5% threshold.

4.8.1.2 Unauthorized Take

An important caveat with the Service's eagle mortality database is that it primarily includes records of eagle mortalities that are incidentally discovered and reported. Therefore, they represent the minimum number of unpermitted eagle mortalities, and there are likely more mortalities that were not discovered and/or reported. Additionally, some industries have self-reported incidental eagle

mortalities at a higher rate than others, and some types of eagle mortalities (e.g., from vehicle collision) lend themselves better to incidental discovery and reporting while mortalities that typically occur in remote locations are unlikely to be discovered. Thus, some causes of mortality (e.g., poisoning) may be under-represented in the Service's database. Hence, there are many types of bias associated with these records since they are not from a systematic mortality survey effort. However, the information presented below is the best information available to us regarding eagle mortalities within and around the LAP.

Based on records in the Service's eagle mortality database, 26 golden eagle mortalities were reported in the area from 2013 to 2022, for an average of 2.6 per year. Of the total reported golden eagle mortalities in this time period, two (7.7%) are due to natural causes, 15 (57.7%) are due to anthropogenic causes, and the causes of mortality of the remaining nine (34.6%) individuals were undetermined. Of the anthropogenic causes of mortality, four (15.3%) are due to electrocution, one (3.8%) is due to being shot, eight (30.8%) are due to collision with wind turbines, and two (7.7%) are due to poisoning by pesticide. All of these mortalities are unpermitted take. On an annual basis, 2.6 unpermitted golden eagle mortalities is approximately 0.9% of the total estimated golden eagle population in the LAP associated with the Project. This amount of unauthorized take is below the 10% unauthorized take threshold for the Project's LAP.

4.8.1.3 Reasonably Foreseeable Future Potential Impacts

General impacts within a distance of two times the Project LAP are examined to include information from all LAPs that overlap the Project. In terms of general growth, New Mexico's population grew 1.8% from April 1, 2010 to July 1, 2019 (World Population Review 2021). This rate of growth is trending upward at a slower pace than the rest of the nation. The major industries of Chaves, Lea, and Eddy counties include mining, quarrying, and oil and gas (Data USA 2021a, 2021b, 2021c). Long-term plans for the Project Area include continued agricultural use, oil and gas development, and wind energy. Some habitat loss and fragmentation over the next 30 years may occur due to development. Within 351 km (218 mi) of the Project Area (i.e., a distance that would capture overlapping LAPs), there are 48 operational wind energy facilities (Hoen et al. 2021). The potential impacts from the other 48 operational wind energy facilities are unknown because their fatality and monitoring data are not publicly available.

Drought associated with climate change can affect golden eagle populations in this region by reducing availability of prey. Precipitation in this part of the region is not consistent and short-term drought periods are common.

4.8.2 Conclusion

Authorizing take of golden eagles at the Project would not lead to a cumulative authorized take exceeding 5% of the LAP so will not significantly impact local area golden eagle populations. In the review of known unauthorized golden eagle take within the LAP, the Service identified no

evidence to conclude the local sources of eagle take differ from those discussed in the PEIS (USFWS 2016, Section 4.1, pages 150-165). Further, as described in this EA, the take authorized by this Permit, if issued, would be offset by the compensatory mitigation that will be provided by TEP, and would not significantly impact the EMU eagle population. The avoidance and minimization measures required under the Permit, along with the additional adaptive management measures, ensure that the Permit is compatible with the preservation of golden eagles at the regional EMU population scale.

5.0 Mitigation and Monitoring

The proposed action incorporates measures to minimize and avoid take to the maximum degree practicable, as required by regulation (50 C.F.R. § 22.80 [2022]). Regulations require that any golden eagle take that cannot practicably be avoided and is above EMU take limits must be offset by compensatory mitigation at a 1.2 to 1.0 ratio to ensure regional eagle populations are maintained consistent with the preservation standard (81 FR 91494 [December 16, 2016]). As golden eagle take limits for all EMUs are zero (USFWS 2016), compensatory mitigation is necessary to offset any authorized take of golden eagles. The compensatory mitigation of power pole retrofits is described above in Sections 2.1 and 4.1.2.

If a Permit is issued, TEP will conduct eagle-focused compliance monitoring using a study design consistent with the ECPG and PEIS 2016 Eagle Rule revisions, and approved by the Service. Monitoring will be conducted for the duration of the Permit tenure and will occur at each of the 62 Project turbines. TEP will work with the Service to determine the level of uncertainty acceptable to both the Service and TEP. The compliance monitoring and other requirements will be included in the Permit conditions. Additionally, a WIRP is developed and implemented for the lifetime of the Project.

TEP will monitor eagle mortalities using independent, third party monitors that report directly to the Service according to the methods described in the ECP (Appendix A). After the first two years, (and every five years, thereafter), the Service will review the eagle mortality data and other pertinent information, as well as information provided by TEP and independent third-party monitors, to assess whether TEP is in compliance with the terms and conditions of the Permit and has implemented all applicable adaptive management measures specified in the Permit, and to ensure eagle take has not exceeded the amount authorized within that time frame. The Service will update fatality estimates, authorized take levels, and compensatory mitigation, as needed, for future years of the Permit.

If TEP exceeds authorized take levels for the period of review in a manner or to a degree not addressed in the adaptive management conditions of the Permit (based on the observed levels of take using approved protocols for monitoring and estimating total take), the Service may require

additional actions including, but not limited to, adding, removing, or adjusting avoidance, minimization, or compensatory mitigation measures, modifying adaptive management conditions, modifying monitoring requirements, and suspending or revoking the Permit.

6.0 List of Preparers

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7.0 References

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Appendices

All appendices for this Project are available online at:
https://www.fws.gov/library/collections/nepa-documents-eagle-permits-requested-southwest

Appendix A Eagle Conservation Plan for the Oso Grande Wind Energy Project
Appendix B Tribal Coordination
Appendix C Intra-Service Section 7 Biological Evaluation