



National Audubon Society * Audubon Rockies

April 29, 2022

Tomas Kamienski, Migratory Bird Division
U.S. Fish and Wildlife Service, Interior Region 7 Upper Colorado Basin

Re: Golden Eagles; Incidental Eagle Take Permit Application; Draft Environmental Assessment; Campbell Hill Wind Power Project Wind Project Eagle Permit

Submitted by email to: tomas_kamienski@fws.gov

Dear Mr. Kamienski:

On behalf of National Audubon Society and Audubon Rockies, the regional office where the Incidental Eagle Take Permit application (IETP) is being applied, please accept and fully consider these comments on the Draft Environmental Assessment (DEA) for an IETP for the Campbell Hill Wind Power Project located in Carbon and Albany Counties, Wyoming. We appreciate the opportunity to comment on this application and the important issues it raises concerning the obligations required by the Bald and Golden Eagle Protection Act (BGEPA).

For more than a century, National Audubon Society (Audubon) has built a legacy of conservation success by mobilizing the strength of its network of approximately two million members and supporters, 450+ independent chapters, 41 Audubon centers, 23 state/regional offices, and dedicated professional staff to connect people with nature and the power to protect it. Audubon Rockies is a regional office, serving Wyoming, Colorado, and Utah. Audubon protects birds and the places they need, today and tomorrow, throughout the Americas using science, advocacy, education, and on-the-ground conservation. Engaging with a wide range of stakeholders, Audubon works to support, expedite, and expand the development of clean energy policies, planning, and properly sited and operated projects that support solutions to counteract the effects of climate change.

Our organization has for many decades sought protection for the publicly owned resources administered by the Department of the Interior and for trust species protected by federal law, including bald and golden eagles. We are strong advocates for renewable energy that is responsibly sited, developed, and operated, fully complies with all applicable laws, and effectively mitigates impacts to maximize protection of wildlife, habitat value, and other natural resources.

The statutory authority of the U.S. Fish and Wildlife Service (FWS or Service) both empowers and obligates the agency to ensure that wind projects are sited and operated responsibly and that wildlife impacts are properly mitigated, regardless of land ownership. FWS is authorized to issue take permits for wind energy projects when that take is compatible with the preservation of each eagle species, but must safeguard against what are potentially unmitigable impacts, especially in the face of noted scientific uncertainty. To address these issues in the context of bald and golden eagles, FWS developed the Eagle Conservation Plan (ECP) guidance to supplement the Wind Energy Guidelines (WEGs) and

provide the basis for IETPs. We strongly support the permit-based approach as well as the guidelines in general. As noted in your 4/1/2021 email to stakeholders, “The eagle take permitting regulatory process enables the Service to work collaboratively with industry to avoid and minimize eagle deaths, mitigate for golden eagle take that does occur and gather essential information about eagles that will help to maximize eagle conservation across the nation.” To be effective, however, there are several areas in which growth is needed:

- One is implementation of other ways to compensate for eagle collision mortality beyond power pole retrofits such as lead abatement, removal of roadkill and gut piles, or other mitigation approaches that compensate for eagle take.
- Second, and equally important, is a more inclusive and well-considered approach for evaluating cumulative effects of multiple projects on local eagle population stability and persistence.

Wyoming is home to the largest breeding population of golden eagles in the lower 48 states. Experts note that Wyoming hosts many over-wintering migrants and wandering sub-adults from both northern and southern latitudes (Wyoming Golden Eagle Working Group¹). Wyoming also has large expanses of contiguous habitat that are also under continuing threats from energy development, human population expansion, declining prey, and other factors. Thus, efforts to avoid, minimize, and mitigate impacts to these long-lived avian predators is critical.

Duke Energy’s 99-megawatt (66 turbine) Campbell Hill Wind Power Project (Project) has been in operation since December 2009. During preconstruction surveys over three seasons, and with a total survey effort of 136 hours, 183 golden eagles were observed. This is 1.3 golden eagles per hour of survey effort, a very high level of activity that should have precluded the site’s development. Since then, the Project has killed 19 golden eagles, an average of 1.7 per year. This relatively small project clearly presents a high risk to eagles.

Since 2013 the facility has been operating under a probationary agreement with the U.S. District Court of Wyoming that extends a “non-prosecution” agreement to the developer for these mortalities in exchange for fines and restitution, five years of probation, and compliance with a Migratory Bird Compliance Plan developed in consultation with FWS and DOJ. This plan required revision of the Bird and Bat Conservation Strategy (BBCS), preparation of an Eagle Conservation Plan (ECP), and application for an Incidental Eagle Take Permit (IETP). A course correction for this project is long overdue but is not being provided in the Project EA. As we have suggested for other nearby projects, a diverse approach is needed for both minimization and mitigation to protect golden eagle populations.

Audubon has a strong history of engaging on eagle conservation concerns, and particularly as related to renewable energy development. We have raised many of the issues described below in prior comments. Rather than restate them in full here, we incorporate by reference our joint comments on the Draft Eagle Conservation Plan Guidance, the proposed revisions and changes in the regulations governing eagle permitting, wind energy in the Desert Renewable Energy Conservation Plan (DRECP), and the eagle take permit applications for many wind projects.

Our comments focus on golden eagles because bald eagle mortality has not been detected to date at this site.

¹ <https://sites.google.com/view/wy-goea-wg/>

I. Preservation Standard of Eagles is the Overarching Priority

In 1940, confronted with the potential extinction of our national symbol, Congress acted to avert this threat and singled out preservation of the bald eagle as a “ward of the National Government” by enacting the Eagle Act.² In 1962, Congress extended the protections of the Eagle Act to golden eagles, both because the golden eagle population was in decline and to afford greater protection for the bald eagle.³ It is against this backdrop, of a singular statutory purpose to conserve eagles, that we must examine any authorizations that affect these iconic, culturally and biologically significant species.

As previously stated, we appreciate and recognize the significant efforts that FWS and Three Buttes Windpower, LLC, a subsidiary of Duke Energy (applicant) have made by moving forward with a programmatic eagle take permit application. Our recommendations for improving the ECP, DEA and action alternatives in these comments are made with a goal of addressing our most immediate conservation concerns and creating a means to move forward despite serious data gaps and uncertainty. The overarching purpose and frame for this action, however, must not be lost. The preservation standard is the top priority for any authorization under BGEPA and absent this outcome, any “take” authorization is inappropriate. This goal must be clearly articulated and accounted for throughout all decision documents and the analysis that follows.

II. Flawed Combined Local-Area Population (LAP) Estimate

Analysis of eagle density in LAPs should be robust enough to inform whether take is compatible with the preservation of eagles and when take may be approaching levels that are unsustainable or which cannot reasonably be offset through compensatory mitigation. As we have repeatedly stated in previous comments, the ongoing, ballpark method of defining a circular radius around projects based on mean natal dispersal distance and then estimating the population for that area as a proportion of the overall flyway population provides no certainty and relies on several biologically untenable assumptions such as no migration or dispersal and the assumption of uniform density across regional Eagle Management Units. In a state such as Wyoming, which hosts some of the largest breeding and wintering concentrations in North America, and is a conduit for migrating eagles as well, these methods are dangerously unsuitable.

Previously the FWS has stated that “over time, with better information on resource selection and factors accounting for variation in density (e.g., Tack and Fedy 2015), as well as improved knowledge of seasonal changes in eagle density and population-specific movement patterns, we can improve the LAP analysis.”⁴ A similar statement is made in Appendix F of the ECP guidance: “As the Service and others develop more reliable models for predicting the distribution of eagles within regional management populations at finer scales, these approaches should be used in place of an assumption of uniform distribution in the analyses suggested here.”⁵ Spatial data layers have been developed before and since that time that are better-suited to refining LAP population estimates for this important region, and we recommend that they be used to create the most scientifically defensible estimate of population size for the LAP rather than relying on outdated methods that FWS recognizes as being deficient.

² H.R. Rep. No. 2104, 76th Cong., 3d Sess. 1 (1940).

³ Pub. L. No. 87-884, 76 Stat. 1246.

⁴ <https://www.fws.gov/migratorybirds/pdf/management/EagleRuleRevisions-StatusReport.pdf>

⁵ <https://www.fws.gov/migratorybirds/pdf/management/eagleconservationplanguidance.pdf>

Prior research on eagles in Wyoming and North America suggest that a key assumption of the methodology used to determine the LAP is invalid (Crandall et al. 2015⁶, Tack and Fedy 2015⁷) as eagles do not have an equal distribution across the landscape. Golden eagle nest density in Wyoming was first modeled by Tack and Fedy (2015) using over 11,000 publicly available nest locations. As acknowledged in the FWS quote above, results of this study clearly show that nesting density is clustered across the landscape. The authors note that “Our models performed well, despite the generalist nature of golden eagles, likely due to the large number of samples and availability of high-quality GIS data across our study areas.” Golden eagle nest density across the western United States was also estimated by Dunk et al. (2019)⁸, using a detailed modeling process tailored to twelve distinct ecoregions. The authors state that for all areas in the Northern Great Plains, the results were “strongly validated” and had “consistently good predictive success.” Late summer distribution of golden eagles was modeled by Neilson et al. (2016)⁹ using FWS Western Golden Eagle Team aerial transect data to predict intensity of use by golden eagles across the western U.S. The authors observe that “our model could help support refined estimates of the size of local populations of golden eagles, critical to the Service’s decisions on levels of take of golden eagles annually authorized by permit.” Winter distribution and relative density modeling using tracking data is ongoing.¹⁰ These layers provide a strong basis for generating improved estimates of LAP numbers and extending this analysis across flyways to permit needed regional analyses and take planning.

In addition, the LAP estimates were derived from the North American Breeding Bird Survey and Western Ecosystems Technology, Inc’s summer survey data. The DEA fails to address mortality of migratory or wintering populations of golden eagles, which may be different. Over half of all migratory eagles that have been tracked with transmitters in the western US that migrate as far south as Wyoming during the fall migration, stop migrating and overwinter in the state (Bryan Bedrosian, personal communication, April 27, 2021), and this additive component of eagle populations in Wyoming during the winter and likely additive mortality cannot be ignored. Compared to resident birds, birds that are migratory can experience higher rates of stress, physical exertion costs, and vulnerability to other risks associated with changing landscapes and threats.¹¹

Inaccurate LAP analyses, as presented in the EA, dramatically hamper the FWS’ ability to effectively manage eagles in the future. This is especially concerning given the high level of golden eagle activity in the project area and already documented high mortality numbers. Within this area are six projects with take permits that, when combined with this project could result in take of 32.74 golden eagles annually. Added to the average unpermitted mortality from 2011-2020 of 14.5, the total estimate is 47.24. The current local area golden eagle population within 109 miles of the project is estimated at 1,547, but as detailed above the methods and data this estimate is based on are unreliable and have long needed revision.

- **Recommendation:** *Data and tools exist to move beyond the “simplistic” assumptions that guide currently inadequate population estimates for LAPs and implementing these is overdue;*

⁶ <https://doi.org/10.3356/rapt-49-04-413-428.1>

⁷ <https://doi.org/10.1371/journal.pone.0134781>

⁸ <https://doi.org/10.1371/journal.pone.0223143>

⁹ <https://doi.org/10.1371/journal.pone.0159271>

¹⁰ https://www.fws.gov/mountain-prairie/migbirds/species/birds/golden_eagle/DistributionAndMovement.php

¹¹ Newton, I. (2008). *The Migration Ecology of Birds*. Elsevier. ISBN 978-0-12-517367-4.

incorporate spatial layers of predicted breeding, late summer, and wintering eagle density into a refined LAP estimate methodology to be used for this and all future IETP applications.

III. Transparency in the Draft Environmental Assessment's Data and Analyses

Gaps in our understanding of eagle-wind energy interaction include and are not limited to the; (1) demography and status, particularly for golden eagles, relevant to calculating take thresholds, (2) population-level consequences of the high fatality rates, (3) creating models for avoidance and minimization siting and operational strategies that reduce eagle fatalities at wind energy facilities, and (4) expanding options for compensatory mitigation that offsets take at wind energy facilities. For this reason, information collected in monitoring reports and presented in annual reports, both in eagle fatality and the efficacy of mitigation options, should be made publicly accessible to further scientific knowledge.

Furthermore, golden eagles (as well as other avian species and wildlife, in general) all belong to the public trust. Impacts to wildlife at wind facilities should be documented and reported in the most accurate, honest, and transparent manner to relevant agencies and the public. Given the paucity of data about eagles and the interaction between eagles and wind development, it is in the public's best interest to ensure that all the data at wind facilities is collected correctly and reported accurately. This information can be used to inform future permitting decisions.

The applicant and FWS have undertaken significant coordination and effort throughout the project permitting and development phase to address potential impacts to eagles—especially noteworthy is the commitment to minimizing eagle mortality through smart detection and turbine shutdown. We commend this flagship effort and strongly emphasize that the data produced so far and going forward should be used for the greatest possible good for the greatest number of eagles. Accordingly, we suggest that, retroactively and going forward, FWS make available all data from the DEA analysis. The need for the public to understand the efficacy of eagle identification and shutdown systems is paramount, as is researcher accessibility to data that can lead to improved future management outcomes.

- **Recommendation:** *To inform future permitting decisions, make publicly available all data related to the past and future operation of this wind farm, to include monitoring reports.*

Given the gaps in knowledge about eagle-wind energy interactions, monitoring data collected for this project will provide FWS with the opportunity to improve understanding of population-level and cumulative impacts. With an FWS sponsored data repository, the U.S. Geological Survey and other agencies could use this data and other wind farm data (thus creating a more robust database), to perform population analyses that would improve the ability of managers to determine the effects of windfarms on golden eagle populations and the effectiveness of mitigation measures with more rigor and accuracy.

- **Recommendation:** FWS should help facilitate the use of data collected from this facility well as other wind farm data to perform population analyses that inform managers' understanding of the effects of windfarms on golden eagle populations and the effectiveness of mitigation measures.

IV. Improve Monitoring Protocols and Strengthen Adaptive Management Approach

A project-level system has already been established whereby post-construction monitoring is conducted by third-party qualified biologists and observers that report information directly to the FWS and fully submit any raw data collected on-site. We recommend that FWS require such a reporting system be used across this geography to track information on eagle fatalities and avian use, with regular data review to ensure that cumulative take of eagles is not exceeding the anticipated level, as well as real-time publicly available monitoring results. Each of these measures would allow FWS and the public to better understand and track eagle fatalities at the landscape-scale instead of just on a project-scale. At periodic, standardized intervals, this data could be reviewed to ensure that cumulative take of eagles is not exceeding the anticipated level and resulting in a net loss of golden eagles.

- **Recommendation:** Consider a reporting system to track eagle information across the entire wind resource area to ensure that cumulative take of eagles is not exceeding the anticipated level.

FWS acknowledges the need for implementation of an adaptive management framework to guide conservation practices during operation of wind facilities and describes adaptive management as “a decision process promoting flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood.”¹² Integral to the success of such a process is a fully transparent and defined process for monitoring the effectiveness of conservation practices, including public input and future revisions of the management practices where warranted. Thus, we encourage creation of a Technical Advisory Committee (TAC) for the Project, an approach that is used at other wind facilities. The TAC should be assigned clear and specific goals and timelines. TAC membership should include not only operator and state and federal agency expertise but also third-party scientists as guests, with expertise on issues related to eagles in Wyoming. A credible source of expertise could come from the Science Committee of the Wyoming Chapter of The Wildlife Society¹³. WY-TWS is composed of wildlife management professionals from across the state, who have expertise to engage on golden eagle issues.

- **Recommendation:** We recommend that a Technical Advisory Committee be formed, as has been done at other wind facilities. Given the high mortality rate already documented at the Project and the uncertainty of golden eagle population status across the West, the TAC will provide a credible platform where members can ensure implementation of an effective adaptive management framework.

V. Inadequate Suite of Mitigation Options to More Fully Offset Take

The established rules within BGEPA require that any take must be demonstrably and quantifiably offset by either reducing deaths from other causes or increasing recruitment at least equal to the projected incidental take to achieve no net loss within the affected breeding population. Methods for compensating incidental take of eagles must be quantifiable, scientifically credible, and verifiable. To date the only method used as compensation for eagle mortality is retrofitting of power poles to prevent electrocution of eagles by covering exposed power lines (FWS 2013, 2014, 2015).

¹² Shiloh DEA p 6, Section 1.4.5. Shiloh IV Wind Project Draft Environmental Assessment noticed at 78 Fed. Reg. 59710.

¹³ <https://wildlife.org/wyoming-chapter/>

In the applicant's ECP they state that a range of mitigation options would be explored, including roadkill removal, habitat enhancement, and lead abatement. In the DEA these are nowhere to be found, and instead only distribution pole retrofits are specified. This is highly inappropriate for a number of reasons.

Upfront mitigation is a positive step that paves the way for net conservation benefit; mitigation for mortality should provide benefits in advance of any mortality they compensate for and increases in mitigation should be automatically triggered as needed. Further, we support the implementation of a compensatory mitigation ratio of 1:2 as required. This ratio helps ensure that the permit terms result in a net conservation benefit for golden eagles, which is particularly important in this region given the current level of cumulative impacts. Therefore, compensatory mitigation should be both additive and a benefit to the populations impacted.

It is important to note that power pole retrofits are an inappropriate long-term mitigation strategy for wind projects because they are not additive—they are preventing electrocutions at power poles but not directly addressing take from wind projects. FWS has the authority to compel owners of power poles to retrofit them if eagle mortality has occurred, and in fact already requires that problematic power poles be retrofitted. Therefore, retrofits applied as compensatory mitigation should not include retrofits required by 3rd parties who are “unable” to fulfill their responsibility in managing their facility/infrastructure, as this does not provide additionality. Additionality is a core principle of compensatory mitigation: offsets must provide a new contribution to conservation values and functions beyond what would have occurred without the offsets (McKenney and Kiesecker 2010¹⁴).

- **Recommendation:** *Clearly demonstrate how power pole retrofits alone would provide additionality and benefit the population impacted.*

FWS must take the lead in supporting development of appropriate new compensatory mitigation options to provide for both the direct cause mortalities and the secondary indirect disturbances that “take” eagles. In their ECP, the applicant presented additional mitigation options that would not only offset eagle mortality at wind projects but also provide a net conservation benefit to the species. Unfortunately, the only mitigation accepted in the DEA is still power pole retrofits, as these are FWS' only quantified and verifiable form of golden eagle mortality mitigation. A variety of other mitigation options should be considered by FWS for the Project, with those selected be accompanied by studies to determine efficacy (thus provide empirical track record) to meet offsetting demand. Lack of mitigation alternatives will make it increasingly challenging for operators to mitigate their impacts as eagle populations continue to be impacted in areas with high wind energy buildout, ultimately leading to bottlenecks in the permitting process for wind facilities.

Lead poisoning in golden eagles due to ingestions of spent game hunting ammunition can ultimately result in mortality. Stauber et al (2010) found spatial-temporal association with lead exposure and big game hunting seasons for both bald and golden eagles¹⁵. Bedrosian et al (2012) investigated the incidence of lead exposure in bald eagles in Wyoming during big game hunting season and found eagles had significantly higher lead levels during the hunting season¹⁶. The authors found 24% of eagles tested had levels indicating at least clinical exposure (>60 ug/dL) during the hunting season while no birds did during the non-hunting seasons. During the 2009 and 2010 hunting seasons, the authors provided non-

¹⁴ <https://link.springer.com/article/10.1007%2Fs00267-009-9396-3>

¹⁵ <https://doi.org/10.1647/2009-006.1>

¹⁶ <https://doi.org/10.1371/journal.pone.0051978>

lead rifle ammunition to local hunters and recorded that 24% and 31% of successful hunters used non-lead ammunition, respectively. They found the use of non-lead ammunition significantly reduced lead exposure in bald eagles, suggesting this is a viable solution to reduce lead exposure in golden eagles as well.

Furthermore, Cochrane et al. (2015) developed an approach to quantify and analyze the effects of voluntary strategies to abate poisoning in golden eagles in Wyoming due to ingestion of lead ammunition¹⁷. This study and others provide evidence that FWS should examine the viability of lead abatement programs if accompanied by a scientifically defensible analysis of the population benefits to eagle populations in the local or regional area of the mortality. In their analysis on lead abatement in Wyoming (both lead ammunition control and gut pile removal), the authors state that “we believe it meets the expectations of the Eagle Guidance for compensatory mitigation modeling that “ensures that the USFWS can provide appropriate review of the results. . .” (USFWS 2013:93) and provides a useful framework for estimating compensatory mitigation.” The Western Golden Eagle Team has developed layers based on big game harvest records that would be useful for defining areas where big game gut piles are concentrated¹⁸.

- **Recommendation:** *Concrete and quantifiable efforts to reduce lead levels in blood and increase eagle survival through increasing the voluntary use of non-lead ammunition should be a mitigation option.*

Vehicle collisions are a reoccurring source of golden eagle deaths, as they are attracted to these high-risk areas of food sources provided by roadkill carcasses^{19,20}. This accounts for an estimated 1% annual mortality in the western U.S.⁴ Lonsdorf et al (2018)²¹ devised a methodology to estimate golden eagle vehicle collision rates based on eagle densities, road traffic volume, and animal carcass abundance and then used these predictions to analyze potential mitigation credits controlling for carcass number, traffic volume, and background carcass removals. Based on work in Wyoming, the authors emphasize the cost effectiveness and ease of implementation this strategy offers and propose it as an alternative to power pole retrofits. This mitigation strategy has already proven successful in connection with this project and should be a recognized mitigation option going forward. Multiple mitigation strategies should be pursued to ensure that mitigation benefits occur as close to the project area as possible.

Carcass removal should include rabbits and other small animals, not limited to only big game, as these comprise more than half of all golden eagle prey in the western United States (Bedrosian 2014²²). In Wyoming specifically, several studies support rabbits and hares as a major component of golden eagle diets. Therefore, their carcasses should be moved out of the project footprint, not just off the roads. Pulling the attractant carcasses out of the area of the project footprint reduces risk to scavenging behavior of eagles within the higher risk area but still ensures these avian predators have access to these food sources.

¹⁷ https://awwi.org/wp-content/uploads/2018/05/Cochrane-et-al.-2015_GOEA-lead-mitigation.pdf

¹⁸ https://www.fws.gov/mountain-prairie/migbirds/species/birds/golden_eagle/riskanalysis.php

¹⁹ <https://doi.org/10.1648/0273-8570-73.1.23>

²⁰ <https://tethys.pnnl.gov/sites/default/files/publications/Hunt-2002.pdf>

²¹ <https://wildlife.onlinelibrary.wiley.com/doi/10.1002/jwmg.21527>

²² Bedrosian, Geoffrey. 2014. Diet of Golden Eagles (*Aquila chrysaetos*) in the Western United States. Directorate Resource Assistants Fellows Program, Division of Migratory Birds, Region 6, U.S. Fish and Wildlife Service.

- **Recommendation:** *Carcass removal and collision reduction mitigation efforts should be considered by the FWS, within an area that can be linked to the impacted eagle population. Eagle collision deaths could be most effectively reduced through targeted removal efforts in specific contexts of expected carcasses, traffic volume, and background removal.*

Additional considerations should include effective management of prairie dog colonies. As chronic mortality associated with plague has reduced golden eagle abundance in areas where they rely on prairie dogs for their prey base,²³ and the importance of prairie dogs in the diets of Northwestern Great Plains golden eagles is well-documented.²⁴ As plague is a highly lethal disease for prairie dogs, an important food source for golden eagles, suppressing flea numbers and plague transmission in prairie dogs is critical.

- **Recommendation:** *The FWS should consider effective management of prairie dog colonies as a mitigation option. This management should be focused on not only prohibiting recreational shooting of prairie dogs (due to risk of lead poisoning) in the project area, but also suppressing flea numbers and plague transmission.*

The most intensive monitoring of golden eagle has showed declines in occupancy rates or measures of breeding performance (Kochert and Steenhof 2002²⁵, McIntyre and Schmidt 2012²⁶). For over 30 years, biologists have been using man-made nest in their effort to relocate active and inactive golden eagle nests as a mitigation technique at surface coal mines in northeast Wyoming²⁷. Thus, consideration should be given to creation of human-made nesting structures for golden eagles as a means to promote breeding success. To avoid conflict/risk, these platforms should be located in areas that are still of value to the impacted eagle populations but away from turbines and in consideration of other eagle territories.

- **Recommendation:** *Creation of human-made nesting structures, as a means to promote breeding success where natural structures may be limited, should be considered as a mitigation option by FWS.*

VI. Continued protections for migratory birds other than eagles are not clearly defined

A Migratory Bird Compliance Plan (MBCP) was created as a Mandatory Condition of Probation in the settlement between Duke Energy and the Department of Justice in 2013. The EA explains that “The MBCP will remain in place until it is replaced by an IETP.” (EA p. 2). While the EA provides some of the Eagle Conservation Measures (ECMs) included in that plan it does not provide the Plan itself or any analysis of the Best Management Practices (BMPs) or other measures, if any, to protect migratory birds other than eagles. The EA also does not compare the protections for migratory birds other than golden

²³ Cully, J.F., JR. 1991. Response of raptors to reduction of Gunnison’s prairie dog population change by plague. *American Midland Naturalist* 125:140–149.

²⁴ Phillips, R. L., A. H. Wheeler, J. M. Lockhart, T. P. McEneaney, and N. C. Forrester. 1990. Nesting ecology of Golden Eagles and other raptors in southeastern Montana and northern Wyoming. U.S. Fish and Wildlife Service Technical Report 26, Washington, D.C. 13 pages.

²⁵ <https://pubs.er.usgs.gov/publication/1016220>

²⁶ <https://doi.org/10.1111/j.1474-919X.2011.01181.x>

²⁷ <https://www.asrs.us/Portals/0/Documents/Conference-Proceedings/2007/0425-McKee.pdf>

eagle in the MBCP that will be replaced with the protections for migratory birds other than eagles in the IETP.

- **Recommendation:** *The FEA must clearly define how migratory birds other than eagles will be protected after the MBCP is no longer in effect; if the IETP replaces the MBCP, this content must be included*

VII. New Technologies Need Consideration at Projects with High Eagle Take Risks

If recent studies and Duke Energy's unreleased data show continued significant reductions in golden eagle take, we recommend that the FWS incentivize the use of IdentiFlight and other detection and avoidance technologies by wind projects. This can be done through discounts or other financial considerations in upfront compensatory mitigation payments or other accommodations that would incentivize the use of these technologies up front and from the project's inception. While we consider this avoidance as well as minimization, it is preferable for its immediacy of avoiding eagle take compared to compensatory mitigation of power pole retrofits, which may take years, and have difficulties in monitoring results or other uncertainties in implementation.

- **Recommendation:** *New technologies such as detection and avoidance systems and mapping to define the highest risk areas prevent mortalities should be the primary focus rather than allowing mortality to occur and defining compensation. These technologies should be required going forward in high-risk areas.*

In conclusion, we support the Proposed Action Alternative of issuing an IETP to take up to 2.9 golden eagles annually for a total authorized take of 23.2 golden eagles over the life of the 8-year permit, and we appreciate the efforts that the applicant and FWS have taken to address potential impacts to eagles. However, we remain concerned about the high mortality rate reported for golden eagles from this relatively small project, the high level and high variability in golden eagle activity throughout this hotspot area, the inadequate commitment to pursuing diverse mitigation and minimization strategies, and the uncertain, ballpark nature of the FWS's population analysis approach.

Thank you for considering our comments. We are happy to discuss these ideas and others at any time.

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Commenter 1: National Audubon Society * Audubon Rockies		
Comment	Summary of Comment and/or Recommendation	Response
I	<p>Preservation Standard of Eagles is the Overarching Priority</p> <p>A) The preservation standard is the top priority for any authorization under BGEPA and absent this outcome, any “take” authorization is inappropriate. This goal must be clearly articulated and accounted for throughout all decision documents and the analysis that follows.</p>	<p>A) The Applicant-submitted ECP demonstrates that the activities related to the Project’s operations combined with avoidance and minimization measures, compensatory mitigation, and terms and conditions of issuing the IETP are consistent with the conservation objectives and preservation standards codified in the Eagle Act regulations.</p>
II	<p>Flawed Combined Local-Area Population (LAP) Estimate</p> <p>A) Inaccurate LAP analyses, as presented in the EA, dramatically hamper the FWS’ ability to effectively manage eagles in the future. This is especially concerning given the high level of golden eagle activity in the project area and already documented high mortality numbers. Within this area are six projects with take permits that, when combined with this project could result in take of 32.74 golden eagles annually. Added to the average unpermitted mortality from 2011-2020 of 14.5, the total estimate is 47.24. The current local area golden eagle population within 109 miles of the project is estimated at 1,547, but as detailed above the methods and data this estimate is based on are unreliable and have long needed revision.</p> <p>B) Recommendation: Data and tools exist to move beyond the “simplistic” assumptions that guide currently inadequate population estimates for LAPs and implementing these is overdue; incorporate spatial layers of predicted breeding, late summer, and wintering eagle density into a refined LAP estimate methodology to be used for this and all future IETP applications.</p>	<p>A) The current LAP analysis, as analyzed in the 2016 PEIS is codified in the Eagle Act regulation and it’s the currently approved process as related to the analysis as part of the EA for potential issuance of the IETP. The Service uses the <i>Bald and Golden Eagles: Population Demographics and Estimation of Sustainable Take in the United States, 2016 Update</i> for our LAP analysis as it is the best available data.</p> <p>B) Please see the response above in bullet A.</p>

III	<p>Transparency in the Draft Environmental Assessment's Data and Analyses</p> <p>A) Recommendation: To inform future permitting decisions, make publicly available all data related to the past and future operation of this wind farm, to include monitoring reports.</p> <p>B) FWS should help facilitate the use of data collected from this facility well as other wind farm data to perform population analyses that inform managers' understanding of the effects of windfarms on golden eagle populations and the effectiveness of mitigation measures.</p>	<p>A) The Applicant has fulfilled their obligation for data collection and submission to the Service per the IETP application process and its requirements. The Service does not have the authority to require that the Applicant make public "...all data related to the past and future operation of CH, including monitoring reports and information related to informed curtailment". The Applicant submitted the monitoring reports and other data, as part of the ECP located in the Appendices section. These were made available with the draft EA and ECP.</p> <p>B) The Service uses data from the Project and other permitted projects to inform and refine its process as related to the analysis of potential impacts of issuing IETP.</p>
IV	<p>Improve Monitoring Protocols and Strengthen Adaptive Management Approach</p> <p>A) Recommendation: Consider a reporting system to track eagle information across the entire wind resource area to ensure that cumulative take of eagles is not exceeding the anticipated level.</p> <p>B) Recommendation: We recommend that a Technical Advisory Committee be formed, as has been done at other wind facilities. Given the high mortality rate already documented at the Project and the uncertainty of golden eagle population status across the West, the TAC will provide a credible platform where members can ensure implementation of an effective adaptive management framework.</p>	<p>A) This comment is beyond the scope of this analysis.</p> <p>B) The Service does not have the authority to require a formation of a Technical Advisory Committee (TAC) as part of the IETP application process. The Applicant has met their requirements of the IETP application process.</p>

<p>V</p>	<p>Inadequate Suite of Mitigation Options to More Fully Offset Take</p> <p>A) Recommendation: Clearly demonstrate how power pole retrofits alone would provide additionality and benefit the population impacted.</p> <p>B) Recommendation: Concrete and quantifiable efforts to reduce lead levels in blood and increase eagle survival through increasing the voluntary use of non-lead ammunition should be a mitigation option.</p> <p>C) Recommendation: Roadkill carcass removal to safer locations, as a means to reduce vehicle collision, should be considered by the FWS within an area that can be linked to the impacted eagle population. Eagle collision deaths could be most effectively reduced through targeted removal efforts in specific contexts of expected carcasses, traffic volume, and background removal.</p> <p>D) Recommendation: The FWS should consider effective management of prairie dog colonies as a mitigation option. This management should be focused on not only prohibiting recreational shooting of prairie dogs (due to risk of lead poisoning) in the project area, but also suppressing flea numbers and plague transmission.</p> <p>E) Recommendation: Creation of human-made nesting structures, as a means to promote breeding success where natural structures may be limited, should be considered as a mitigation option by FWS.</p>	<p>A) Currently, power pole retrofits are the accepted compensatory mitigation for offsetting permitted take of golden eagles as codified in the 2016 PEIS. As described in the EA, the applicant may use other methods of compensatory mitigation, if/when those get approval from the Service, to offset take. The Service is open to the use of other methods for achieving required compensatory mitigation requirements under an IETP. However, before these methods can be adopted sufficient data and information must be collected and presented to the Service, along with a Resource Equivalency Analysis that quantifies how implementing the mitigation method will offset the take of eagles.</p> <p>B) The Service does not have the authority to require “Concrete and quantifiable efforts to reduce lead levels in blood and increase eagle survival through increasing the voluntary use of non-lead ammunition should be a mitigation option”.</p> <p>C) The Applicant-submitted ECP outlines current efforts and policy related to carrion and carcass removal at the Project.</p> <p>D) The Service does not have the authority to require either the “management of prairie dog colonies as a mitigation option” or “prohibiting recreational shooting of prairie dogs”.</p> <p>E) The science supporting the efficacy of using human-made nesting structures for eagles is not well established. Creating human-made structures does not ensure that eagles will use them for nesting. Also, prior to the Service accepting human-made nesting structures as a form of compensatory mitigation, this method would require data and information supporting its use and applicability to the Resource Equivalency Analysis that quantifies the offset take value, as would any other alternative form of compensatory mitigation.</p>
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VI	<p>Continued protections for migratory birds other than eagles are not clearly defined</p> <p>A) The FEA must clearly define how migratory birds other than eagles will be protected after the MBCP is no longer in effect; if the IETP replaces the MBCP, this content must be included</p>	<p>A) Affected environment and potential impacts as related to migratory birds, resulting from issuing an IETP was analyzed in the 2016 PEIS and is incorporated in the EA by reference. The CH EA tiers to the 2016 PEIS for analysis of potential impact to migratory birds as a result of issuing an IETP. The Service does not have any authority under the Part 22 Eagle Act regulations to require protections or conservation measures for migratory birds other than eagles under an IETP.</p>
VII	<p>New Technologies Need Consideration at Projects with High Eagle Take Risks</p> <p>A) New technologies such as detection and avoidance systems and mapping to define the highest risk areas prevent mortalities should be the primary focus rather than allowing mortality to occur and defining compensation. These technologies should be required going forward in high-risk areas.</p>	<p>A) The Service encourages the testing of technologies such as “Identiflight and other detection and avoidance technologies” to reduce the risk of eagle take at wind energy facilities. The Service has worked collaboratively with the Applicant to continually update adaptive management efforts in order to refine and enhance these technologies to best reduce eagle mortality. The applicant is proposing installation of informed curtailment system consisting of four IdentiFlight® units to be deployed in the summer of 2022, in order to further minimize potential eagle take at this wind farm. IdentiFlight® is an autonomous aerial monitoring and detection system specifically designed to minimize potential collision of avian species with rotating wind turbines. This eagle conservation measure is specifically aimed at mitigating collision hazard related to six wind turbines associated with majority of eagle mortalities at this site.</p>

