

28 March 2023

Burns – McDonnell  
Attn: Bryan Gasper  
9400 Ward Parkway.  
Kansas City, MO 64114

Douglas County  
Track: 20230155  
S01, 02, 11, 12-T12S-R19E  
S07-T12S-R20E

RE: Free State Solar Energy Project

Bryan Gasper,

We have reviewed the information submitted for the proposed Free State Solar Project to occur near Lawrence, Douglas County, Kansas. Project details indicate the 1,153-acre project area will be used to build and operate a utility-scale photovoltaic solar energy conversion facility. The project was reviewed for potential impacts to critical wildlife habitats, current state-listed threatened or endangered species and species in need of conservation, as well as Kansas Department of Wildlife and Parks (KDWP) managed areas for which this agency has administrative authority.

The proposed project area does not intersect any Kansas-listed critical habitat areas. However, we note the state-listed piping plover (*Charadrius melodus*) and least tern (*Sterna antillarum*) may occur along the Kansas River, which has been designated as part of those species' critical habitat. Additionally, numerous bald eagle (*Haliaeetus leucocephalus*) observances and some nests have been documented near the proposed project location as have a number of Species in Need of Conservation, including: redbelly snake (*Storeria occipitomaculata*), smooth earth snake (*Virginia valeriae*), timber rattlesnake (*Crotalus horridus*), Henslow's sparrow (*Ammodramus henslowii*), Southern bog lemming (*Synaptomys cooperi*), and Southern flying squirrel (*Glaucomys volans*). We encourage review of environmental resources documented in/near the project location via the Kansas Natural Resource Planner website (<https://ku.maps.arcgis.com/apps/webappviewer/index.html?id=5e392ceb40094cf18f028ef76ed3852a>).

For additional information on bald eagles, federally listed bats, and other federal trust resources, we encourage consultation with the U.S. Fish and Wildlife Service field office in Manhattan, Kansas. They may be able to provide occurrence records or other information pertinent to the project.

Finally, research has identified a "lake effect" caused by photovoltaic (PV) solar facilities that may attract some birds and aquatic insects to PV facilities—leading to collisions or other adverse impacts. The attractiveness of the "lake effect" has not been studied in Kansas. As such, KDWP advises project sponsors of its potential to affect wildlife, and recommends conservative site selection as well as post-construction mortality monitoring to improve the available literature on the subject. We also advise incorporating the following best management practices.

- **When feasible, do not site a new facility within 1 mile of permanent and semi-permanent water features, such as rivers, ponds, and wetlands.**
- **Photovoltaic panels should contain a dense nonpolarizing (e.g. white) grid partitioning the solar-active areas of the panels to reduce or eliminate polarized light pollution. We also recommend they be coated with an anti-reflective coating that may further reduce the effects of polarized light pollution on wildlife.**
- **Panel frames should be designed or painted (e.g. white) to further reduce polarized light reflectance**

- Avoid or minimize the removal of native prairie, forest, or wetland habitats when maintaining, moving, or constructing electric generation or transmission facilities.
- Avoid/Minimize impacts to existing wetlands, springs or areas that pond water (e.g. filling).
- Avoid encroachment or development in floodplains.
- When feasible, strictly follow the road right-of-way with utility routes.
- If overhead electric distribution or transmission lines are constructed in association with the project, consult the Avian Power Line Interaction Committee Marking Guidelines for mitigating avian collisions by marking the power line appropriately.
  - Install perch guards on electric poles with repeat avian mortality.
  - Track all avian mortality and mitigate accordingly.
- If a buried electric collection or transmission lines are constructed with the project, use Horizontal Directional Drilling (HDD) at stream crossings and remain at a distance with the HDD rig as to not disturb native streamside vegetation.
- Minimize all bank or instream activity, particularly during general fish spawning season (March 1 – Aug. 31). Use natural, soft-armoring techniques if streambank stabilization is required.
  - If open trench construction will be used to install underground collection or transmission lines across streams, restore dry stream crossings to the original substrate configuration and composition. Open trench construction within streams should be avoided at times when the channel is wetted.
  - All equipment will be thoroughly washed or cleaned prior to contact with waters and should be held to the bare minimum necessary to complete the project outside of restricted dates to prevent transport of exotic species such as the Zebra Mussel (*Dreissena polymorpha*).
- Implement and maintain standard erosion control Best Management Practices during all aspects of construction by installing sediment barriers (wattles, filter logs, rock check ditches, mulching, or any combination of these) across the entire construction area to prevent sediment and spoil from entering aquatic systems. Barriers should be maintained at high functioning capacity until construction is completed and vegetation is established. For more information on erosion BMPs go to: <http://www.kdheks.gov/stormwater/#construct>.
- Incorporate principles of low impact development (LID), such as permeable asphalt pavement, porous concrete, swales, bioretention, or raingardens. More info on LID: <https://www.epa.gov/nps/urban-runoff-low-impact-development>.
- We encourage the use of short/medium statured native grasses and forbs for final stabilization of disturbed soils. KDWP would be happy to offer advice on species selection and planting techniques.
  - Monitor restoration areas to ensure adequate restoration success (85% areal coverage of restoration area), and manage any invasion by noxious or nonnative plants.
- Data gaps exist in the primary literature with regard to wildlife impacts caused by PV facilities in the Central Plains. As such, we encourage project sponsors to undertake at least two years of post-construction avian mortality surveys as well as annual insect community surveys to provide further information on animals attracted to, and potentially impacted by, developments of this type. Such an effort would have no regulatory impact on the project, but information derived could be used to help inform recommendations for future developments.

Results of our review indicate there will be no significant impacts to designated critical wildlife habitats; therefore, no special mitigation measures are recommended. The project will not impact any public recreational areas, nor could we document any direct impacts to currently-listed threatened or endangered species or species in need of conservation. No Department of Wildlife and Parks permits or special authorizations will be needed if construction is started within one year, and no design changes are made in the project plans. Permits may be required from other agencies. We recommend consultation with all other applicable regulatory authorities—including, but not limited to

Kansas Department of Health and Environment, Kansas Department of Agriculture-Division of Water Resources, U.S. Fish and Wildlife Service-Ecological Services, and the U.S. Army Corps of Engineers.

Since the Department's recreational land obligations and the State's species listings periodically change, if construction has not started within one year of this date, or if design changes are made in the project plans, the project sponsor must contact this office to verify continued applicability of this assessment report. For our purposes, we consider construction started when advertisements for bids are distributed.

Please consider this email our official review for this project. Thank you for the opportunity to provide these comments and recommendations. Please let me know if you have any questions or concerns about the preceding information.

*Please direct all review materials electronically to [kdwpt.ess@ks.gov](mailto:kdwpt.ess@ks.gov) to streamline the review process for all parties.*

Thank you.

A handwritten signature in black ink, appearing to read 'Zac Eddy', is positioned above the typed name and contact information.

Zac Eddy  
Terrestrial Ecologist  
Kansas Dept. of Wildlife, Parks, & Tourism  
512 SE 25<sup>th</sup> Ave.  
Pratt, KS 67124  
620-672-0788  
[zac.eddy@ks.gov](mailto:zac.eddy@ks.gov)

CC: L. Mendenhall, USFWS



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Mountain-Prairie Region  
Kansas Ecological Services Field Office  
2609 Anderson Avenue  
Manhattan, Kansas 66502

IN REPLY REFER TO:  
FWS/R6/

March 16, 2023

Bryan Gasper  
Burns and McDonnell  
9400 Ward Parkway  
Kansas City, MO 64114

RE: Free State Solar Project – Douglas County, Kansas  
FWS Tracking #2023-0056617

Dear Mr. Gasper:

This is in response to your February 17<sup>th</sup>, 2023 emailed letter requesting technical assistance for the proposed Free State Solar Project in Douglas County, Kansas (FWS Tracking #2023-0056617). The proposed project is approximately 200 MW and includes construction of a solar array, associated access roads, laydown yard, and other appurtenant facilities across 1,153 acres.

Our recommendations are provided in accordance with the instructions contained within the revised Department of the Interior Manual (503 DM 1), dated August 3, 1973; the Endangered Species Act (Act) of 1973 (16 U.S.C. 1531 et seq.); Migratory Bird Treaty Act (MBTA); and, the Bald and Golden Eagle Protection Act (BGEPA). Additional State and Federal regulations may apply and it is the responsibility of the applicant or agency to adhere to such regulations.

The Service requests that proposed solar project(s) and associated infrastructure such as electrical substations, powerlines, and roads, be officially submitted into our Information for Planning and Consultation (IPaC) system. Submission of project details into IPaC will generate information about natural resources for which the Service has trust or regulatory responsibility. IPaC provides regulatory guidance to assist the applicants, agencies, and the public in making determinations pursuant to Section 7 of the Act on the project's potential effects to listed species, along with additional resources to be considered (e.g., migratory birds, state listed species, wetlands, etc.).

## **Northern Long-Eared Bat** (*Myotis septentrionalis*)

On November 30, 2022 the U.S. Fish and Wildlife Service (Service) published a final rule to reclassify the northern long-eared bat as endangered under the Endangered Species Act. The rule becomes effective March 31, 2023.

You can find information related to the northern long-eared bat (*Myotis septentrionalis*) at the ECOS species profile located here: <https://ecos.fws.gov/ecp/species/9045> and the Service's

Northern Long-Eared Bat web page: <https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis> In addition, we recommend reviewing northern long-eared bat occurrence data found on the Kansas Mammal Atlas (<https://webapps.fhsu.edu/ksmammal/default.aspx>) and the Kansas Natural Resource Planner (<https://kars.geoplatform.ku.edu/pages/kansas-natural-resource-planner>).

The Service is incorporating known locations into the Northern Long-eared Bat Range-wide Determination Key so users can receive automatic concurrence for projects in areas where take is not reasonably certain to occur. Due to time constraints, this process will not be automated until March 17, 2023. In addition, tools for non-federal project proponents will not be available until the rule becomes effective March 31, 2023. We urge you to wait until the determination key is updated to complete your project review using IPaC.

### **Tricolored Bat** (*Perimyotis subflavus*)

The Service issued a proposed rule to list the tricolored bat (*Perimyotis subflavus*) as endangered on September 14, 2022. The public comment period closed on November 14, 2022. You can more find information related to the tricolored bat (*Perimyotis subflavus*), including a range map, at the ECOS species profile located here: <https://ecos.fws.gov/ecp/species/10515>

We recommend reviewing tricolored bat occurrence data found on the Kansas Mammal Atlas (<https://webapps.fhsu.edu/ksmammal/default.aspx>), the Kansas Natural Resource Planner (<https://kars.geoplatform.ku.edu/pages/kansas-natural-resource-planner>), or via project review through [Kansas Biological Survey & Center for Ecological Research](#).

### **Little Brown Bat** (*Myotis lucifugus*)

The little brown bat is currently under discretionary status review with an update expected in Fiscal Year 23. You can find information related to the little brown bat (*Myotis lucifugus*) at the ECOS species profile located here: <https://ecos.fws.gov/ecp/species/9051>

We recommend reviewing little brown bat occurrence data found on the Kansas Mammal Atlas (<https://webapps.fhsu.edu/ksmammal/default.aspx>) and the Kansas Natural Resource Planner (<https://kars.geoplatform.ku.edu/pages/kansas-natural-resource-planner>).

### **Monarch Butterfly** (*Danaus plexippus*)

The monarch butterfly has a proposed listing rule currently scheduled for Fiscal Year 2024 (i.e., October 2023-September 2024). You can access information on the Nationwide Monarch Candidate Conservation Agreement with Assurances here: <https://rightofway.erc.uic.edu/national-monarch-ccaa/ccaa-enrollment/>

We also recommend visiting the Service's monarch conservation page to access recommendations for the conservation of this candidate species (<https://www.fws.gov/savethemonarch/>).

## **Eagles**

We recommend reviewing bald eagle occurrence data found on the Kansas Natural Resource Planner (<https://kars.geoplatform.ku.edu/pages/kansas-natural-resource-planner>). Information regarding if an Eagle Take Permit is recommended can be found here: [Do I need an eagle take permit? | U.S. Fish & Wildlife Service \(fws.gov\)](#)

## **Topeka Shiner** (*Notropis topeka*) & **Pallid Sturgeon** (*Scaphirhynchus albus*)

In the event infrastructure and associated construction areas, including temporary access roadways or staging areas are sited near waterways, we have some general recommendations to aid in the avoidance and minimization of effects to aquatic species:

- the use of erosion control methods during construction to minimize the transfer of suspended solids into waterways in the immediate area
- reseeded disturbed areas with native plants
- utilizing pollution control/spill prevention measures to avoid impacts to waterways

## **Mead's milkweed** (*Asclepias meadii*) & **Western prairie fringed orchid** (*Platanthera praeclara*)

If warm season, native grasslands or hay meadows are present and will be disturbed or removed by the project, we recommend that a qualified botanist inspect the proposed site in early June to determine the presence of suitable habitat and the federally-listed plant species prior to ground disturbing activities. If these plants are present within the project boundaries, project construction may adversely affect the species. The Kansas Biological Survey, 2041 Constant Avenue, Lawrence, Kansas 66047-2906, (785) 864-1538 may be contacted for assistance in determining the necessity of and protocols for plant surveys.

Please notify this office with the results of any surveys for Mead's milkweed or western prairie fringed orchid, so that we may determine whether there may be any impacts to the species.

## **National Listing Workplan**

We are providing a link to the Service's Workplan (2021 version) because there are species with Kansas occurrences, and possible occurrences in or near the proposed project area, that have been petitioned to be listed under the Endangered Species Act with scheduled process decisions that may occur within your project timeline. These species are not currently in the Service's IPaC trust resource lists. <https://www.fws.gov/project/national-listing-workplan>

## **General Solar Recommendations**

Studies on wildlife and solar energy facilities are scarce; however, information collected at solar facilities by U.S. Fish and Wildlife Service (USFWS) personnel indicates that wildlife, particularly birds, can be negatively affected by solar energy development. Direct impacts could include birds or bats colliding with solar panels and mirrors or becoming exposed to elevated levels of solar flux. This most commonly occurs when using concentrated solar power. USFWS recommends the use of photovoltaic (PV) solar power to reduce direct adverse impacts to birds. However, Indirect

impacts could include wildlife species displaced due to alteration of key components of their habitat. Such impacts likely can be avoided or effects minimized by strategic design and placement of solar panels, mirrors, towers, and other associated infrastructure (e.g., access roads and distribution and transmission lines), as well as other best management practices. Given the limited amount of information on impacts of solar developments, following construction of solar developments, it is recommended to implement a program of monitoring to assess the relationship of pre-construction risk assessments to actual outcomes post-construction.

The U.S. Geological Survey and USFWS collaborated to produce a guidance document for designing mortality monitoring at solar facilities, *Mortality monitoring design for utility-scale solar power facilities*, <https://pubs.er.usgs.gov/publication/ofr20161087>. Information gathered through monitoring efforts will support efforts in informing risk at individual developments, as well as to develop guidance for avoiding or minimizing potential impacts of solar energy development.

USFWS recommends not developing solar sites in any native vegetation due to their importance in providing habitat for wildlife and recommends use of sites with existing disturbances (e.g., cropland, introduced pasture).

USFWS recommends limiting tree-clearing to the maximum extent possible due to potential use of listed bat species. If tree-clearing will occur, we recommend conducting these activities in the winter (November 1 – March 31) when listed bats are unlikely to be on the landscape.

USFWS recommends avoiding impacts to wetlands, including playas, in the siting and design of these projects. We recommend that a native vegetation buffer is maintained between water resources and solar facility infrastructure (e.g., panels, towers, etc.).

General avoidance measures for migratory birds could include conducting surveys prior to any mechanical clearing of brush and trees between March 15 and September 15. Surveys should include searches for birds, nests, and eggs. USFWS recommends leaving a buffer of vegetation ( $\geq 100$  feet (ft)) around songbird nests detected until young have fledged or the nest is abandoned. Surveys should be conducted within a responsible time frame prior to construction to ensure valid results.

USFWS has concerns about potential for collision injuries and mortalities of birds that mistake sunlight reflected off the PV panels as water and subsequently fly into PV panels. Data on this issue is limited, with none reported from Kansas or Missouri. We recommend that facilities collect pre- and post-construction monitoring data to have site-specific data to understand this potential adverse effect. This data could then be used by the facility to determine if additional permits are needed to reduce the risk of take of listed species (see section 7 and section 10 above).

USFWS recommends minimizing grading and earthwork at sites and ensuring implementation of appropriate measures to reduce erosion.

USFWS recommends that the construction phase of the project use best management practices for migratory birds to the extent practicable. This includes downshielding lighting and post



construction use of native, pollinator-friendly plant landscaping instead gravel or using herbicide to prevent plant growth.

### **Additional Information**

We recommend any power lines associated with the proposed project are constructed in a manner that utilizes methods identified by the Avian Power Line Interaction Committee (APLIC), including: Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006; and Reducing Avian Collisions with Power Lines: The State of the Art in 2012.

If a permit from the U.S. Army Corps of Engineers (Corps) is required, the USFWS will be given the opportunity to review the public notice on the proposed action and provide additional comments at that time. Section 404 guidelines require the sequence of avoidance of impacts, minimization of impacts and compensation for unavoidable impacts. When we review the public notice we will request information on alternatives considered, how the project avoided and minimized impacts to aquatic ecosystems, and the compensatory mitigation proposal, if one is required by the Corps.

Ultimately it is the responsibility of those involved with the planning, design, construction, operation, maintenance, and decommissioning of wind projects to conduct relevant wildlife and habitat evaluation and determine which, if any, species may be affected. The results of these analyses will inform all efforts to achieve compliance with the appropriate jurisdictional statutes. Project proponents are responsible for complying with applicable federal, state, and local laws.

Sincerely,

FOR:  
Jason Luginbill  
Project Leader  
Kansas Ecological Services Field Office