

January 29, 2021

Rebecca Crump
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647-880-7473
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Transmitted via email

Dear Ms. Crump,

**RE: Renewable Energy Referral Report for the Enterprise Solar Power Project by Enterprise Solar
GP Inc. on behalf of Enterprise Solar LP**

This letter is to advise that Alberta Environment and Parks - Fish and Wildlife Stewardship (AEP-FWS) Staff have completed the review of the project proposed by Enterprise Solar GP Inc. on behalf of Enterprise Solar LP, called the Enterprise Solar Power Project. Attached is a copy of the AEP-FWS Renewable Energy Referral Report, which reviews the potential impacts of the project on wildlife and wildlife habitat for inclusion with your application to other regulatory agencies. This review is only for the project as it has been presented by the proponent and any changes to the project (footprint, layout, mitigation measures, etc.), requires further review and written acknowledgement from AEP-FWS to ensure wildlife and habitat are protected.

Sincerely,



Jason Unruh, M.Sc.
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Alberta Environment and Parks – Fish and Wildlife Stewardship
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cc:
AEP Renewable Projects Inbox, AEP.RenewableSSR@gov.ab.ca
Brandy Downey, AEP-FWS, brandy.downey@gov.ab.ca
Jamie Sparrow, Golder Associates Ltd., jsparrow@golder.com

Alberta Environment and Parks – Fish and Wildlife Stewardship Renewable Energy Referral Report

A. ALBERTA ENVIRONMENT AND PARKS – FISH AND WILDLIFE STEWARDSHIP (AEP-FWS) REVIEW

The Enterprise Solar Power Project (the Project) proposed by Enterprise Solar GP Inc. on behalf of Enterprise Solar LP (the Proponent) was reviewed by the Alberta Environment and Parks – Fish and Wildlife Stewardship (AEP-FWS) regional wildlife contact for renewable energy projects. AEP-FWS has reviewed the proposed location, mitigation strategies, including associated infrastructure and construction plans, and post-construction monitoring and mitigation program, as presented by the Proponent in a submission dated August 14, 2020 and accepted by AEP-FWS on August 31, 2020.

Documents reviewed by AEP-FWS and collectively referred to as the *Project Submission* throughout this referral report, include:

- *Enterprise Solar Power Project Renewable Energy Submission to Alberta Environment and Parks*; 56 pages; dated August 14, 2020
- *1895548_RES_Enterprise_AEP_FWS_IR_Response_Rev0*; 11 pages; dated January 22, 2021
- *Att A_RES_Enterprise_AEP_IR_Responses_Rev0*; Excel spreadsheet; dated January 22, 2021

Note: various clarifications and edits of the original documents are discussed in the subsequent files and these changes are to supersede the original documents.

The AEP-FWS review of the Enterprise Solar Power Project was guided by the AEP-FWS policy document, *Wildlife Directive for Alberta Solar Projects* (October 2017; hereafter called the *Directive*) and the *Post-Construction Survey Protocols for Wind and Solar Energy Projects* (January 2020; hereafter called the *PCMP Protocol*). The proponent must follow the *Directive* and *PCMP Protocol* for requirements on siting, pre-construction surveys, construction, operation, and post-construction monitoring and mitigation plans.

This referral report summarizes the review undertaken by AEP-FWS that was restricted to reviewing information provided in the submitted documents, completed by Golder Associates Ltd. on behalf of the Proponent, and applying the wildlife standards and best management practices for the siting, construction and operation of the solar facility. This office undertook no independent on-site assessment. This referral report is not intended to relieve any party from any liability if there are detrimental effects to wildlife or wildlife habitat during construction or operation that were not identified and mitigated for in the documents submitted. It is the responsibility of the Proponent to ensure compliance under all other policy and legislation, including but not limited to the *Alberta Wetland Policy*, *Water Act*, *Code of Practice for Watercourse Crossings*, *Environmental Protection and Enhancement Act*, *Alberta Wildlife Act*, *Migratory Birds Convention Act*, and *Species at Risk Act*. Federal requirements may differ from AEP-FWS policy, therefore additional consultation may be necessary. AEP-FWS review does not eliminate the need for review by other branches of the Environment and Parks Department, Government of Canada or other governing bodies. This referral report summarizes the potential risks to wildlife and wildlife habitat based on the information provided to AEP-FWS.

Summary: This summary is a condensed version of the entire referral report. For details on specific topics, see the body of this report. The overall project risk ranking is provided in the last paragraph of this summary.

The Enterprise Solar Power Project is sited entirely on cultivated land and avoids, named lakes, permanent watercourses and valley breaks, which aligns with the *Directive*. AEP-FWS has determined the Project is a low risk to native habitat.

Portions of the Project area will be graded during construction, which carries risks to wildlife habitat. However, the mitigation measures committed to by the Proponent should reduce these risks, and the risk to wildlife habitat due to grading is considered moderate.

AEP-FWS has determined the risk to wildlife from the Project fence is low. AEP-FWS has also determined the risk of wildlife mortality is low based on avian use in the Project area. The Project has been sited to avoid all wildlife features, including the house, nest, den and lek of species of management concern; therefore, the risk to wildlife features is considered low.

AEP-FWS has ranked the Enterprise Solar Power Project proposed by Enterprise Solar GP Inc. on behalf of Enterprise Solar LP, a low risk to wildlife and wildlife habitat, based on Project siting, avoidance of wetland setbacks and wildlife features, and limited wildlife use in the area. This AEP-FWS Renewable Energy Referral Report expires on January 29, 2026.

AEP-FWS Renewable Referral Report Prepared by:

Signature: Jason Unruh Date: January 29, 2021
Printed Name, Position, and Office: Jason Unruh, Wildlife Biologist, South Region, Red Deer, Alberta

AEP-FWS Renewable Referral Report Reviewed by:

Signature: Brandy Downey Date: January 29, 2021
Printed Name and Position: Brandy Downey, Senior Species at Risk Biologist, South Region, Lethbridge, Alberta

B. PROJECT DETAILS

Project Name: Enterprise Solar Power Project (also referred to as the Project)

Proponent Name: Enterprise Solar GP Inc. on behalf of Enterprise Solar LP (also referred to as the Proponent)

Project Location: Refer to Table 1

Table 1. Proposed legal land locations of the Enterprise Solar Power Project area

Quarter(s)	Section	Township	Range	Meridian
All	26	16	25	W4

Quarter(s)	Section	Township	Range	Meridian
All	27	16	25	W4

Project Area (hectares):

Disturbance footprint for construction phase (temporary): 355 ha

Disturbance footprint for operation phase (permanent): 250.8 ha

Nameplate Capacity (total megawatts): 100 MW

Facility Type: Photovoltaic (PV) solar facility

C. WILDLIFE CONCERNS RELATED TO SOLAR ENERGY

Impacts to wildlife identified for all solar energy projects in Alberta, which forms the basis for project-specific review.

HABITAT LOSS, DEGRADATION AND FRAGMENTATION

Solar facilities may result in the direct loss of habitat for wildlife. Negative effects may include, but are not limited to, interruption of movement corridors, isolation of species and populations, shifts in composition and degradation of foraging/breeding/brood rearing habitat. There are particularly negative effects to wildlife, especially species at risk, by siting solar energy facilities in areas of native habitats. AEP-FWS requires siting the solar facility and associated infrastructure (access roads, substation, etc.) on cultivated or other previously disturbed lands that do not contain sensitive features such as wetlands, to significantly reduce potential negative effects on wildlife habitat.

WILDLIFE DISTURBANCE AND MORTALITY

AEP-FWS has identified concerns over the potential negative effects on wildlife caused by solar facilities and related infrastructure, including access roads, transformer/invertor stations, collection lines, and fencing. For example, solar projects may result in site avoidance and abandonment, decreased productivity, collision mortality, and trapping or stranding of wildlife.

Wildlife Movement and Fencing: Due to human safety concerns, solar photovoltaic sites are fenced to exclude people; this exclusion also impacts wildlife. Fencing can create hazards and barriers for wildlife, such as mammals, reptiles and birds. Fences can block or hinder daily wildlife movements, seasonal migrations and access to forage or watering sites. AEP-FWS requires that solar projects are fenced in a manner to prevent harm or mortality to wildlife and to facilitate reasonable wildlife movement through or around the solar project.

Direct Mortality: Bird mortalities have been documented at a number of solar facilities in North America. Bird mortality related to PV facilities is caused by impact trauma, predation and starvation. The mechanism of mortality for birds appears to vary between the family groups. Mortalities of waterbirds, such as grebes, loons and some ducks, have been detected at PV sites. Water obligate birds, such as grebes and loons, which fail to die on impact, become stranded because they require water to take flight and subsequently succumb to starvation or predation.

AEP-FWS requires siting solar facilities away from areas that may have large concentrations of waterbirds, such as large wetlands, lakes, rivers, and 'Important Bird Areas'.

PROJECT-SPECIFIC CONCERNS

Desktop and field investigations are required to determine the potential of the Enterprise Solar Power Project to affect wildlife and wildlife habitat. Per Standard 100.2.1 of the *Directive*, the Proponent must complete the following pre-assessment wildlife surveys:

- Spring and fall bird migration surveys
- Breeding bird surveys
- Raptor nest searches
- Determination of habitat types

In addition, surveys must be conducted for species of management concern that may occur in and around the Project area. The proposed Project is sited within the following Key Range or Wildlife layers, as described within the provincial Wildlife Sensitivity Data Sets:

- Sensitive raptors (including ferruginous hawk, golden eagle, and prairie falcon)
- Sharp-tailed grouse

Surveys for all of the above must be conducted following protocols outlined in the *Sensitive Species Inventory Guidelines*, as applicable. If a species of management concern is identified, AEP-FWS requires that areas immediately adjacent to key wildlife habitats be avoided by appropriate setbacks as outlined in the *Directive* and *Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta*.

D. WILDLIFE MONITORING PROGRAM

Completion of pre-development surveys and submission of information to the Fisheries and Wildlife Management Information System (FWMIS).

Research Permit and Collection Licence Number(s): 19-330 and 20-061

Pre-assessment survey data completed within two years of submission to AEP-FWS:

Pre-assessment survey methods and results were provided in the *Project Submission*.

Wildlife surveys conducted include:

- Spring bird migration surveys: April 10-11, April 21-24, and May 5-7, 2020;
- Fall bird migration surveys: September 24, October 16, and November 14, 2020;
- Breeding bird point count surveys: May 15-16, June 18, and June 29-30, 2019; May 6-7 and June 17, 2020;
- Raptor nest searches: May 15 and June 18, 2019; April 11 and June 17, 2020;
- Sharp-tailed grouse lek surveys: April 22-24, 2020;

The Proponent has committed to keeping wildlife surveys current by completing additional site-specific wildlife surveys (i.e., raptor nest searches and sharp-tailed grouse lek surveys) every two years until the Project is commissioned as per Standard 100.2.4 of the *Directive*. All wildlife related surveys (pre- and post-construction) and analysis of data are required to be conducted by experienced wildlife biologists as defined by the *Directive*. Survey results are to be submitted to the

AEP-FWS Fish and Wildlife Management Information System (FWMIS). The Proponent has committed to discussing additional mitigation measures with AEP-FWS if any new sensitivities or features are detected.

If the Project has not been constructed within five years of this AEP-FWS Renewable Energy Referral Report being issued (expiry date: January 29, 2026), wildlife surveys will need to be updated and a new Renewable Energy Referral Report will be required, as per Standard 100.2.5 of the *Directive*. Wildlife surveys that would be required may include, but may not be limited to, all those listed above.

E. SOLAR ENERGY FACILITY - AVOIDANCE AND MITIGATION OF WILDLIFE RISKS

Review of the proposed wildlife avoidance and mitigation strategies identified in the submission, in comparison with the Directive.

HABITAT LOSS, DEGRADATION AND FRAGMENTATION

Native Habitat

The Project area is located in the Mixed Grass Natural Sub-region of the Grassland Natural Region. Project infrastructure, including but not limited to solar arrays (mounted on fixed tilt racking supported by driven or helical piles), transformers, collection lines, access roads, a perimeter fence, and staging area, etc., has been sited to avoid native habitat. The Project is sited entirely on cultivated land. This aligns with the *Directive*, and the siting of the Project has been identified as a low risk for native habitat.

Valley Breaks

Project infrastructure will be sited a minimum of 100 m from valley and coulee breaks. This aligns with the *Directive*, and there is no risk to wildlife using valley breaks and coulee breaks.

Lakes and Large Waterbodies

The Project has been sited to avoid the 1000 m setback around named lakes, and large permanent watercourses. This aligns with the *Directive*.

Wetlands

The Proponent has identified a seasonal wetland (Class III) in the middle of the Project, and another seasonal wetland (Class III) on the western boundary of the Project. However, the Proponent has committed to avoiding all development within the 100 m setbacks of these two wetlands, which aligns with the *Directive*. The Proponent has also identified several ephemeral (Class I) and temporary (Class II) wetlands, which will be directly impacted by Project infrastructure. These classes of wetlands have no setbacks associated with them, and the ephemeral and temporary wetlands in the Project area have been cultivated through in the past and likely hold limited habitat value for wildlife. The Proponent has also committed to complying with all *Water Act* authorizations and the Alberta Wetland Policy for development within these wetlands. Given the avoidance of all Class III wetland setbacks and the limited habitat value of other wetlands in the Project area, the risk to wetland habitat and wildlife is assessed as low.

Watercourses

The Project has been sited to avoid all watercourses and their setbacks, which aligns with the *Directive*.

WILDLIFE DISTURBANCE AND MORTALITY

Wildlife Movement and Fencing

The Proponent has committed to installing the perimeter security fence using straight lines, squared corners and raising the fence several inches off the ground to prevent brood separation or wildlife entrapment. The fence will be approximately 2.1 m high and be constructed of chain link. These commitments align with the *Directive*, and the risk to wildlife has been assessed as low.

Migrating Birds

During spring migration surveys in 2020, a total of 935 birds were observed from 28 species. This equates to an average of 1.69 birds observed per minute. The most common species groups were waterfowl (59% of all observations) and passerines (36% of all observations). The most abundant species were tundra swan, snow goose and Canada goose; all species listed as 'Secure' in Alberta. Two species listed as 'Sensitive' were observed: American kestrel (1) and sharp-tailed grouse (2).

During fall migrations surveys in 2019, a total of 609 birds were observed from 13 species. This equates to an average of 1.27 birds observed per minute. The most common species group was passerines (97% of all observations). The most abundance species were American pipit and horned lark; both listed as 'Secure' in Alberta. One species listed as 'Sensitive' was observed: prairie falcon (1).

The Project is sited away from landscape features associated with increased bird activity during migration (e.g., valley/coulee breaks, large waterbodies), and it is not expected to pose an elevated risk to migrating birds. The risk to migrating birds is assessed as moderate.

Breeding Birds

Songbirds and waterbirds: During breeding bird surveys in 2019 and 2020, a total of 126 birds were observed from 6 species. This equates to an average of 0.49 birds observed per minute. The most abundant species were savannah sparrow, horned lark, and vesper sparrow. No species of management concern were observed during breeding birds surveys. Also, The Proponent has committed to scheduling vegetation management during operations outside of the restricted activity period (April 1 to July 15), to reduce impacts to breeding birds. Since the Project is sited entirely on cultivated land and limited breeding bird activity was observed, the risk to breeding birds is assessed as low.

Raptors: Raptor nest surveys were conducted in 2019 and 2020. Two great horned owl nests were observed. Project infrastructure has been sited outside the 100 m setback for both nests, which aligns with the *Directive*. The risk to breeding raptors has been assessed as low.

The Proponent has committed to updating raptor nest surveys, following AEP-FWS protocols, to ensure adequate coverage of the Project site and a 1000 m buffer every two years until the Project

is commissioned. If active nests are identified, the Proponent will work with AEP-FWS to ensure appropriate mitigation strategies are implemented.

Sharp-tailed Grouse: During sharp-tailed grouse lek surveys in 2020, no sharp-tailed grouse leks were observed. The risk to sharp-tailed grouse and their leks is assessed as low.

The Proponent has committed to updating sharp-tailed grouse lek surveys, following AEP-FWS protocols, to ensure adequate coverage of the Project site and a 500 m buffer every two years until the Project is commissioned. If active leks are identified, the Proponent will work with AEP-FWS to ensure appropriate mitigation strategies are implemented.

Bird Mortality

Aboveground collector lines are a risk of avian mortality due to collision or electrocution. Additionally, the presence of above ground structures could increase perching opportunities for avian predators, which could increase mortality. The Proponent has committed to installing all electrical transmission and collection lines and cables underground, which is consistent with the requirements of the *Directive*.

The Project is sited away from named lakes, large permanent watercourses, valley/coulee breaks and on previously disturbed land, which reduces the habitat quality for wildlife and results in lower mortality risk for the Project. AEP-FWS has conducted a bird risk assessment based on the migration and breeding bird data and it was determined that most species observed are currently listed as secure and only three species of management concern were observed. AEP-FWS expects that the mortality risk will be low because the Project is sited on previously disturbed land with limited wildlife use. If mortality is found to be high, the Proponent has committed to mitigating wildlife mortality as discussed in the below section titled, *Post-Construction Monitoring and Mitigation*.

CONSTRUCTION AND OPERATION MITIGATION

AEP-FWS requires the construction and operation mitigation plan, which outlines construction techniques, mitigation and standard operating procedures, will meet the requirements outlined in Stage 3 of the *Directive*. The mitigations outlined in the *Enterprise Solar Power Project Application* and *Responses Spreadsheet* will be implemented with the intent to reduce disturbance to wildlife and wildlife features (house, nest, den, etc.). This does not preclude any liability under the *Wildlife Act*, the *Species at Risk Act*, or other legislation. AEP-FWS considers all injured or dead wildlife found in the Project area during construction and operation of the facility to be caused by the facility. In the event that injured wildlife is found, AEP-FWS will be notified and the Proponent will act in accordance with regulatory direction and requirements. All wildlife mortalities must be reported to AEP-FWS.

The Proponent has indicated that significant grading will occur within the Project area, and that approximately 40,000 m² of cut and fill will be required to level portions of the site to a 10 cm pile tolerance. There is potential for grading to affect wildlife habitats and the house/nest/den of wildlife. The Proponent has committed to the following alternative mitigations to reduce these impacts:

- The general relief of the site will be maintained in areas where grading is required.

- Grading will not occur within the 100 m setbacks of Class III wetlands.
- Topography associated with natural drainages will be maintained to limit alterations to existing drainage patterns in the Project area.
- Permanent erosion and sediment control measures (e.g. silt fences) will be installed around the Class III wetland setbacks and along Project components where required.

Given the alternative mitigation measures committed to by the Proponent, the risk to wildlife and wildlife habitat from grading is considered moderate.

POST-CONSTRUCTION MONITORING AND MITIGATION

AEP-FWS requires the post-construction monitoring and mitigation plan to meet the requirements outlined in Stage 4 of the *Directive*. The proponent has committed to post-construction monitoring for the proposed Project following minimum standards outlined in the *PCMP Protocol*. A Wildlife Research Permit and Collection Licence must be obtained from AEP-FWS prior to conducting the post-construction monitoring surveys and all surveys and analysis must be conducted by an experienced wildlife biologist as defined in the *Directive*.

Notable wildlife observations as well as observed changes in wildlife behavior, species composition, or potential threats to wildlife during the post-construction monitoring period should be documented and reported.

A detailed report of the post-construction monitoring will be provided to AEP-FWS and the Alberta Utilities Commission (AUC) annually by the end of January the year following the mortality monitoring period, as per Standard 100.4.7 of the *Directive*.

Should carcass surveys, at any time, result in unusually high fatality numbers or fatalities of species at risk (provincially and/or federally listed, including species provincially listed as 'sensitive') carcasses must be collected, frozen, and submitted to AEP-FWS. The Proponent must *immediately* notify AEP-FWS and the AUC of the mortality event and then discuss mitigation measures

The Proponent has committed to operational adaptive management strategies related to avian impacts or other wildlife disturbances related to the operation of the Enterprise Solar Power Project. Should adaptive management be required, specific strategies will be developed and implemented in agreement with AEP-FWS. Potential mitigation measures for excessive wildlife fatalities may include, but are not limited to:

- the use of avian deterrents;
- addition of white edges to solar panels;
- installation of nest deterrents to prevent nesting of raptors/corvids; and
- any mitigation that is deemed appropriate based upon the site specific circumstances following consultation and agreement by AEP-FWS.

Mitigation plans will be submitted for review and agreement by AEP-FWS. If post-construction mitigation is required, as determined by AEP-FWS, at least two additional years of monitoring will be required to determine if the mitigation is successful at reducing the fatalities to acceptable levels, as per the *Directive*.