

September 8, 2020

c/o Tony Smith  
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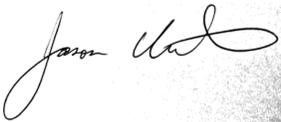
*Transmitted via email*

Dear Mr. Smith,

**RE: Renewable Energy Referral Report for the SunAlta Solar PV1 Project by 1867559 Alberta Ltd.**

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 1867559 Alberta Ltd., called SunAlta Solar PV1 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,



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Alberta Environment and Parks – Fish and Wildlife Stewardship  
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## 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 SunAlta Solar PV1 Project (the Project) proposed by 1867559 Alberta Ltd. (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 February 26, 2020 and accepted by AEP-FWS on February 27, 2020.

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

- *SunAlta Solar PV1 Technical Data Report*; 88 pages; dated February 26, 2020 (with updated version on July 16, 2020);
- 20200602 AEP Initial Review Questions\_SunAlta Solar PV1 Project\_response.xlsx (Excel spreadsheet); dated July 16, 2020

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 SunAlta Solar PV1 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 Stantec Consulting 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 Bird 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.

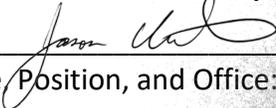
**Summary:** This summary is a condensed version of the entire referral report. For details on specific topics, see the body of this report. The overall project risk ranking is provided in the last paragraph of this summary.

The SunAlta Solar PV1 Project is sited entirely on tame grassland and avoids named lakes, permanent watercourses and valley breaks, which aligns with the *Directive*. The Proponent has provided adequate alternative mitigation for the infringement of two wetlands, which aligns with the *Directive*. The risk to wetland habitat and sensitive amphibians is low based on these commitments and limited habitat potential. AEP-FWS has determined the risk of wildlife entrapment due to the Project fence is low based on the commitments made by the Proponent.

AEP-FWS has determined the risk to migratory birds, breeding raptors, sharp-tailed grouse, and burrowing owls is low based on survey results and alternative mitigation commitments for the infringement of one raptor nest setback. The overall risk of bird mortality is also assessed as low. AEP-FWS has assessed the risk to breeding birds as moderate based on the Project location within tame grassland, survey results, and mitigation commitments made to reduce disturbance to grassland breeding birds.

**AEP-FWS has ranked the SunAlta Solar PV1 Project proposed by 1867559 Alberta Ltd., a low risk to wildlife and wildlife habitat, based on Project siting, and commitments made by the Proponent to mitigate and monitor wildlife impacts. This AEP-FWS Renewable Energy Referral Report expires on September 8, 2025.**

**AEP-FWS Renewable Referral Report Prepared by:**

Signature:  Date: September 8, 2025  
 Printed Name, Position, and Office: Jason Unruh, Wildlife Biologist, South Region, Red Deer, Alberta

**AEP-FWS Renewable Referral Report Reviewed by:**

Signature:  Date: September 8, 2025  
 Printed Name and Position: Brandy Downey, Senior Species at Risk Biologist, South Region, Lethbridge, Alberta

**B. PROJECT DETAILS**

**Project Name:** SunAlta Solar PV1 Project (also referred to as the Project)  
**Proponent Name:** 1867559 Alberta Ltd. (also referred to as the Proponent)  
**Project Location:** Refer to Table 1

**Table 1. Proposed legal land locations of the SunAlta Solar PV1 Project area**

Quarter(s)	Section	Township	Range	Meridian
NE	17	20	17	W4

**Project Area (hectares):**

Disturbance footprint for construction phase (temporary): 20.9 ha

Disturbance footprint for operation phase (permanent): 20.3 ha

**Nameplate Capacity (total megawatts):** 9.25 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 with large concentrations of waterbirds, such as lakes, rivers, 'Important Bird Areas' and 'Wetlands for Tomorrow' wetlands.

## PROJECT-SPECIFIC CONCERNS

Desktop and field investigations are required to determine the potential of the SunAlta Solar PV1 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 amphibians
- Sensitive raptors (including ferruginous hawk, bald eagle, golden eagle, peregrine falcon, and prairie falcon)
- Sharp-tailed grouse
- Burrowing owl

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):** 19-138

**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 3-4, April 17, and May 14, 2019;
- Fall bird migration surveys: August 20, September 17, and October 16, 2019;
- Breeding bird point count surveys: early survey June 4, and late survey June 26, 2019;
- Raptor nest searches: April 3-4, April 17 and May 14, 2019;
- Sharp-tailed grouse lek surveys: April 15 and May 2, 2017;
- Burrowing owl surveys: ground surveys October 16, 2019 and call playback June 21, 2020;

The Proponent has committed to keeping wildlife surveys current by completing additional site-specific wildlife surveys (i.e., raptor nest searches, sharp-tailed grouse lek surveys, and burrowing owl survey) 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 implementing additional mitigation measures if any new sensitivities or features are detected, as determined by AEP-FWS.

If the Project has not been constructed within five years of this AEP-FWS Renewable Energy Referral Report being issued (expiry date: September 8, 2025), 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 Dry Mixedgrass sub-region of the Grassland Natural Region. Project infrastructure, including but not limited to solar arrays, transformers, collection lines, access roads, a perimeter fence, and staging area, etc., is sited entirely on tame grassland. To reduce disturbance to grassland breeding birds, vegetation clearing will be minimized and avoid the primary nesting period (April 1 to August 31) to the extent practical (see *Breeding Birds* section below). The Project siting aligns with AEP-FWS Policy.

##### **Key Wildlife and Biodiversity Zone**

Project infrastructure is not sited within a Key Wildlife and Biodiversity Zone. This aligns with AEP-FWS Policy.

##### **Valley Breaks**

Project infrastructure will be sited a minimum of 100 m from valley and coulee breaks. This aligns with AEP-FWS Policy.

##### **Lakes and Large Waterbodies**

The Project siting has avoided named lakes, and large permanent watercourses. The nearest named lake is Lathom Lake, which is 1.4 kms from the Project area. This aligns with AEP-FWS Policy.

##### **Wetlands**

The Proponent has identified two intermittent saline (Class VI) wetlands, two temporary (Class II) wetlands, and one dugout within the Project boundary. An irrigation canal also borders the west side of the Project area. The Proponent has committed to avoiding all wetlands by a 15 m setback (Table 2). The wetlands identified within the Project boundary provide low suitability habitat for amphibians, particularly sensitive amphibians, due to salinity and the limited amount of time temporary wetlands contain open water.

**Table 2. Intermittent (Class VI) wetlands identified within the SunAlta Solar PV1 Project area.**

Wetland ID	Wetland Classification	Minimum Setback Distance		Rationale/Justification for Siting Decision
		Required	Proposed	
M-G-VI-WL-1	Class VI	100	15	Saline properties of wetland and disturbed vegetation and soil in and around the wetland reduce the potential for habitat; amphibian mitigation measures will be implemented.
M-G-VI-WL-2	Class VI	100	15	Saline properties of wetland and disturbed vegetation and soil in and around the wetland reduce the potential for habitat; amphibian mitigation measures will be implemented.

The Proponent has committed to the following mitigation measures to protect amphibians during construction:

- During April 15 to August 15, silt fencing will be installed along the 15 m setback from wetlands to prevent amphibians from moving into active construction areas. Fencing will be inspected daily (more frequently during cold and/or hot weather events) for amphibians prior to any construction activities scheduled for the day.
- Immediately before installation of the silt fencing, Environmental Monitors (under the direction of an experienced wildlife biologist) will conduct an amphibian sweep to remove any amphibian species of management concern (SOMC) that may be in the path of the silt fence installer. All amphibian SOMC that are observed will be salvaged and moved to a nearby wetland or to an adequate distance away from equipment.
- An Environmental Monitor (under the direction of an experienced wildlife biologist) will conduct inspections as required during construction within the setbacks of suitable wetlands; move amphibians to a suitable nearby wetland or an adequate distance away from equipment, as appropriate; and, shut down construction in emergence area during periods of high amphibians activities, if necessary.
- Outside of April 15 to August 15, an Environmental Monitor will be present on site to safely monitor for and, where applicable, relocate any amphibian SOMC observed within the construction footprint.

The proposed alternative mitigation measures adequately protect any amphibians potentially using these wetlands, and therefore meets the intent of AEP-FWS Policy. The risk to amphibians and wetland habitat is considered low.

**Watercourses**

The Project is not sited within the setback of any watercourse, which aligns with AEP-FWS Policy.

**WILDLIFE DISTURBANCE AND MORTALITY**

**Wildlife Movement and Fencing**

The Proponent has committed to installing the perimeter security fence using straight lines, no jagged corners to trap wildlife, and will be raised approximately 15 cm off the ground to prevent

brood separation for wildlife entrapment. These commitments will reduce the risk of wildlife entrapment caused by the fence and is consistent with AEP-FWS Policy.

### **Migrating Birds**

During spring 2019 migration surveys, a total of 781 birds from 34 species were identified (~ 1.08 bird observations per minute). The most commonly observed species during spring migration surveys were Canada goose, tundra swan, and horned lark, which are all listed as secure. During fall 2019 migration surveys, a total of 25,570 individuals from 32 species were identified (~35.5 bird observations per minute). The high number of birds observed during fall migration surveys was due to large flocks of snow geese flying to and from Lathom Lake, which is ~1.4 km northeast of the Project. The most commonly observed species during fall migration surveys were snow goose, Lapland longspur, and Canada goose, which are all listed as secure. There were 4 species of management concern observed during spring and fall migrations surveys, including American white pelican, eastern kingbird, great blue heron, and upland sandpiper.

Based on the results of the migration surveys and project siting the Project's risk to migrating birds has been assessed as low.

### **Breeding Birds**

***Songbirds and waterbirds:*** Results from the 2019 breeding bird surveys for song birds and waterbirds (including waterfowl, shorebirds, grebes, loons and pelicans) show 123 individual birds (including 54 birds recorded incidentally) from 29 species were observed at the four survey points. This equates to an average of 0.86 individual birds per minute (not including incidentals). The most common species observed were European starling, savannah sparrow, and western meadowlark, which are all listed as secure or exotic. Eastern kingbird and upland sandpiper were the two species of management concern observed during breeding bird surveys. The majority of birds observed were grassland-associated species. The Project area is tame pasture, which does provide nesting habitat for grassland breeding birds, and the greatest risk is possible long-term habitat loss for these birds. The Proponent has committed to the following alternative mitigation measures to reduce disturbance to breeding birds during construction and if vegetation management is required during operations:

- Vegetation clearing will be minimized and avoid the primary nesting period (April 1 to August 31) to the extent practical.
- If vegetation clearing activities occur during April 1 to August 31, a nest search will be conducted no longer than 7 days prior to the start of vegetation clearing. If nests or nesting behaviour (including but not limited to alarm calling, carrying nesting material, food or fecal sacks) are detected, a species-specific setback (minimum 100 m) will be applied until young fledge. Nest status will be checked after the estimated end date by an experienced wildlife biologist.
- If there is ongoing construction or reclamation work within 100 m of suitable nesting habitat that was initiated prior to April 1, work may continue unless a breeding bird exhibits defensive behaviour within 100 m of the disturbance. In this case, a nest search will be conducted to determine if an active nest is present within 100 m of the disturbance and setbacks would be applied if a nest is found.

Results from breeding bird surveys show that breeding birds do use the Project area for breeding and foraging. The proposed alternative mitigations are consistent with the intent of the *Directive*; however, there remains an increased risk to grassland breeding birds throughout the operation of the project. AEP-FWS has assessed that the risk to breeding birds is moderate.

**Raptors:** Raptor nest surveys in 2019 found four active Swainson's hawk nests and one active great-horned owl nest. No disturbance will occur within the 100 m setback around the four Swainson's hawk nests; however, solar panels will be placed 60 m from the great-horned owl nest. The Proponent has committed to scheduling construction activities within the nest setback only when the nest has been confirmed inactive by an experienced wildlife biologist. This is consistent with the *Directive*, and the risk to breeding raptors is assessed as low.

**Sharp-tailed Grouse:** No sharp-tailed grouse leks were observed during the 2019 surveys, and the risk to sharp-tailed grouse is assessed as low.

**Burrowing Owls:** No burrowing owls or nesting dens were observed during the 2019 and 2020 surveys, and the risk to burrowing owls is assessed as low.

### **Bird Mortality**

One electrical pole in the northwest of the Project area will be secured with guy wires. The guy wires will be equipped with markers to prevent bird collisions, which is consistent with the *Directive*. The risk to bird mortality is assessed as low.

### **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 *Project Submission* 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.

### **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*.

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 SunAlta Solar PV1 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;
- white edges on solar panels;
- 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*.