

October 5, 2020

Lana Taher
Saturn Power Inc.
Lana.taher@saturnpower.com

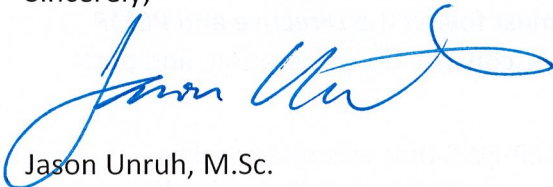
Transmitted via email

Dear Ms. Taher,

RE: Renewable Energy Referral Report for the Springbrook Solar Project by Saturn Power Inc.

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 Saturn Power Inc., called Springbrook Solar 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.
Wildlife Biologist, Renewable Energy Projects
Alberta Environment and Parks – Fish and Wildlife Stewardship
Jason.Unruh@gov.ab.ca

cc:
Scott Stevens, Senior Wildlife Biologist, AEP-FWS, Scott.Stevens@gov.ab.ca
Bryan Gale, Dillon Consulting Limited, bgale@dillon.ca

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 Springbrook Solar Project (the Project) proposed by Saturn Power Inc. (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 April 27, 2020 and accepted by AEP-FWS on April 28, 2020.

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

- *Springbrook Solar Project Renewable Energy Project Submission*; 140 pages; dated April 2020
- *20200730 AEP-FWS Initial Review Questions_Springbrook Solar Project_2020-09-02.xlsx* (Excel spreadsheet); dated September 18, 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 Springbrook Solar 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 Dillon Consulting Limited 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.

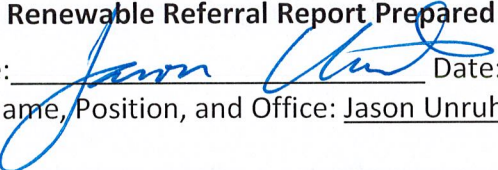
Summary: This summary is a condensed version of the entire referral report. For details on specific topics, see the body of this report. The overall project risk ranking is provided in the last paragraph of this summary.

The Springbrook Solar Project is sited entirely on cultivated land and avoids named lakes, permanent watercourses and valley breaks, which aligns with the *Directive*. The Proponent is planning to remove three seasonal (Class III) and two temporary (Class II) wetlands, and infringe upon the 100 m setback of an additional seasonal (Class III) wetland. The Proponent has proposed alternative mitigations to limit disturbance during construction to the wetland that will have its setback infringed upon. However, removal of wetlands does not align with the *Directive*, and the risk to wetland habitat is assessed as high.

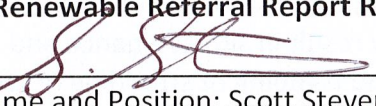
AEP-FWS has determined the risk of wildlife entrapment due to the Project fence is low, based on the commitments made by the Proponent. AEP-FWS has determined the risk of wildlife mortality is low based on avian use in the Project area. The Project has been sited to avoid all wildlife features, including 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 Springbrook Solar Project proposed by Saturn Power Inc., a low risk to wildlife and wildlife habitat, based on Project siting, limited wildlife use in the area, and commitments made by the Proponent to mitigate and monitor wildlife impacts. This AEP-FWS Renewable Energy Referral Report expires on October 5, 2025.

AEP-FWS Renewable Referral Report Prepared by:

Signature:  Date: October 5, 2020
Printed Name, Position, and Office: Jason Unruh, Wildlife Biologist, South Region, Red Deer, Alberta

AEP-FWS Renewable Referral Report Reviewed by:

Signature:  Date: October 5, 2020
Printed Name and Position: Scott Stevens, Senior Wildlife Biologist, South Region, Red Deer, Alberta

B. PROJECT DETAILS

Project Name: Springbrook Solar Project (also referred to as the Project)

Proponent Name: Saturn Power Inc. (also referred to as the Proponent)

Project Location: Refer to Table 1

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

Quarter(s)	Section	Township	Range	Meridian
NW	23	37	28	W4
NE	23	37	28	W4

Quarter(s)	Section	Township	Range	Meridian
SE	23	37	28	W4

Project Area (hectares):

Disturbance footprint for construction phase (temporary): 46.5 ha

Disturbance footprint for operation phase (permanent): 35.0 ha

Nameplate Capacity (total megawatts): 20 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 Springbrook Solar 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 bald eagle, golden eagle, peregrine falcon, 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): Not applicable

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 15, April 30, and May 14, 2019;
- Fall bird migration surveys: September 19, October 7, and October 23, 2019;
- Breeding bird point count surveys: early survey June 4, and late survey June 25, 2019;
- Raptor nest searches: April 30, May 14, and June 4, 2019;
- Sharp-tailed grouse lek surveys: April 15, April 30, and May 14, 2019;

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) 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: October 5, 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 Central Parkland sub-region of the Parkland Natural Region. Project infrastructure, including but not limited to solar arrays, transformers, collection lines, access roads, a perimeter fence, and staging area, etc., has been sited to avoid native habitat because the Project is sited almost entirely on cultivated land (94% cultivated, 4% wetlands, 2% treed windbreak). The Project area is comprised of cultivated fields, infrastructure associated with the Red Deer Regional Airport, residential areas, a primary public highway. This Project siting reduces the risk to wildlife habitat and aligns with the *Directive*. The siting of the Project has been identified by AEP-FWS as a low risk for wildlife and wildlife habitat.

Key Wildlife and Biodiversity Zone

The Project is not sited within a Key Wildlife and Biodiversity Zone.

Valley Breaks

Project infrastructure is sited a minimum of 100 m from valley and coulee breaks, which aligns with the *Directive*.

Lakes and Large Waterbodies

The Project siting has avoided named lakes, and large permanent watercourses. The nearest watercourse is the Red Deer River, which is 650 m west of the Project area.

Wetlands

The Proponent has identified 6 wetlands that will be impacted by Project infrastructure. Three seasonal graminoid marshes (Class III) and two temporary graminoid marshes (Class II) will be permanently impacted by Project infrastructure (Table 2). In total, 1.33 ha of seasonal wetlands (Class III) and 0.008 ha of temporary wetlands (Class II) will be permanently removed to allow for the construction of Project infrastructure. Another seasonal graminoid marsh (Class III) will have its 100 m setback infringed upon by Project infrastructure (Table 2). This does not align with the *Directive*.

Table 2. Temporary (Class II) and seasonal (Class III) wetlands identified within the Springbrook Solar Project area in 2017, including required and proposed setback distances.

Wetland ID	Wetland Classification	Minimum Setback Distance (m)		Infrastructure Type	Amount of wetland disturbed
		Required	Proposed		
Wetland 1 ¹	Class III	100	0	solar panel array	0.38 ha
Wetland 2 ¹	Class II	0	0	solar panel array	0.08 ha
Wetland 3 ¹	Class III	100	0	solar panel array	0.33 ha
Wetland 4 ¹	Class III	100	0	solar panel array	0.62 ha
Wetland 6	Class III	100	60	access road and solar panel array	NA

* AEP-FWS recommends that no disturbance occur within the margins of ephemeral and temporary (Class I and II) wetlands.

¹The Proponent has proposed to build infrastructure throughout these wetlands, pending *Water Act* approvals.

The Proponent has committed to the following alternative mitigations to reduce impacts to wetland habitat and wildlife within the 100 m setback of Wetland 6:

- Vegetation disturbance will be schedule outside of the nesting breeding bird period (April 1 to July 15).
- Allow for natural site drainage to continue during construction and avoid activities that could cause ponding of runoff. Travel and equipment movement on-site will be avoided during wet periods to minimize rutting and alteration of natural drainage patterns.
- Following clearing activities, minimal surface grading and leveling may be required for the installation of access roads, fencing, and other required Project infrastructure. Appropriate grading techniques will be used to prevent increased runoff potential and maintain desired drainage patterns.
- Temporary dust, sediment, and erosion control measures will be put in place for the duration of the construction of the solar facility, until reclamation and revegetation is complete.
- Areas surrounding these temporary measures will be rehabilitated after construction (i.e. graded, topsoil added as needed, planted with an appropriate seed mixture to control erosion and replace habitat to an equivalent land capability).
- In addition, the Red Deer Regional Airport operates a bird deterrence program to reduce the presence of birds in the area (including surrounding wetland habitat) to maintain safety for aviation.

The alternative mitigations proposed to reduce the impacts of development and operation of the solar facility within the 100 m setback of Wetland 6 will reduce to the risk to that particular habitat. However, the removal of wetlands does not align with the *Directive*, and the risk to wetlands is assessed as high.

Watercourses

The Project is sited at least 100 m from large permanent watercourses, and 45 m from small permanent watercourses, 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 a chainlink fence with a height of 2.1 m (7 feet) and will be raised 15 cm at the bottom. These commitments align with the *Directive*, and the fencing risk to wildlife is assessed as low.

Migrating Birds

During spring migration surveys in 2019, a total of 486 birds from 27 different species were identified (~1.4 bird observations per minute). During fall migration surveys in 2019, a total of 53 birds from 13 different species were identified (~0.15 bird observations per minute). The most commonly observed species were mallard, northern pintail, red-winged blackbird and Canada goose, all of which are listed as secure. Two species of management concern were observed during surveys, including American kestrel and sandhill crane.

The Project is also located beside the Red Deer Regional Airport, which operates a bird deterrence program for the purpose of avian safety. This reduces the potential for migratory birds to use the site as a stopover during migration. The Project is also sited away from landscape features associated with increased migration during migration (e.g. valley/coulee breaks, large waterbodies). This aligns with the *Directive* and the risk to migratory birds is assessed as low.

Breeding Birds

Songbirds and waterbirds: Results from the 2019 breeding bird surveys for songbirds and waterbirds (including waterfowl, shorebirds, grebes, loons and pelicans) show 126 individual birds from 18 species were observed at the five survey points. This equates to an average of 1.3 birds per minute. The most common species observed were red-winged blackbird, Brewer's blackbird, and savannah, which are all common and secure species. Three species of management concern were observed, including common yellowthroat, least flycatcher, and sora.

While the Project area does not include high quality native habitats (e.g. native grassland), there are small areas of balsam poplar and trembling aspen that occur along the perimeter of the Project footprint. Some of these treed areas will be cleared to facilitate construction. To reduce the disturbance and mortality risk to breeding birds during construction, the Proponent will schedule the removal of trees/shrubs outside of the restricted activity period (RAP) for breeding birds (April 1 to July 15), which aligns with the *Directive*. Furthermore, the Proponent confirms that during operations, vegetation management will be scheduled to occur outside of the breeding bird RAP. If necessary maintenance is required during this period, a nest will be performed by a qualified biologist prior to any activities commencing. Appropriate measures will be implemented if an active nest is found (i.e. stop work, nest setback will be implemented [100 m minimum] until the young have fledged or the nest becomes inactive). These alternative mitigations align with the *Directive*, and the risk to breeding birds is assessed as low.

Raptors: Raptor nest searches were conducted in 2019 and no raptor nests were observed. The risk to breeding raptors is assessed as low.

The Proponent has committed to repeating raptor nest surveys every two years until the Project is commissioned. If new raptor nests are identified during these surveys a mitigation plan will be developed in consultation with AEP-FWS to meet the intent of the *Directive*.

Sharp-tailed Grouse: Sharp-tailed grouse lek surveys were conducted in 2019 and no leks were observed. The risk to sharp-tailed grouse is assessed as low.

The Proponent has committed to repeating sharp-tailed grouse surveys every two years until the Project is commissioned. If new sharp-tailed grouse leks are identified during these surveys a mitigation plan will be developed in consultation with AEP-FWS to meet the intent of the *Directive*.

Bird 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 three species at risk were observed. AEP-FWS expects that the mortality risk will be low because the Project is small and 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 *Springbrook Solar 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.

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*.

The Proponent has committed to repeating breeding bird surveys during the first year of operation to determine potential wildlife displacement. Point count surveys will be conducted at the same

locations used during the pre-construction surveys to provide a comparison with species composition and total abundance of birds observed during the pre-construction surveys. Notable wildlife observations as well as observed changes in wildlife behavior, species composition, or potential threats to wildlife during the post-construction monitoring period will 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 February 15 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 Springbrook Solar 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;
- vegetation modification
- 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*.