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

## A. ALBERTA ENVIRONMENT AND PARKS – FISH AND WILDLIFE STEWARDSHIP REVIEW

The Georgetown Solar Energy Project (the Project) proposed by Georgetown Solar Inc., a subsidiary of Westbridge Energy Corp. (Westbridge) (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 September 3, 2021 and accepted by AEP-FWS on September 8, 2021.

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

- *Renewable Energy Project Submission, Solar Energy Project, Mossleigh, Alberta*; 65 pages; dated September 2, 2021
- 20220204 AEP-FWS Initial Review Questions_Georgetown Solar - WEST Responses.xlsx (excel spreadsheet); dated February 8, 2022

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 Georgetown Solar Energy 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 *PCM Protocol*). The Proponent must follow the *Directive* and *PCM 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 completed by Western EcoSystems Technology, ULC (WEST) 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 Georgetown Solar Energy Project is sited almost entirely on pre-disturbed (cultivated and industrial) land and avoids valley breaks, named lakes, and required wetland setbacks (with the exception of one fenceline within 94 m of a seasonal waterbody). One collector line will be directionally drilled under a watercourse, which will mitigate impacts to native habitat. The siting of the project, together with proposed mitigations, aligns with the *Directive*. AEP-FWS has determined the risk of wildlife entrapment, impeded movement, and collision due to the Project fence is low. AEP-FWS has determined the risk to breeding birds is low, and the overall risk of avian 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 Georgetown Solar Energy Project proposed by Georgetown Solar Inc., a subsidiary of Westbridge Energy Corp., a low risk to wildlife and wildlife habitat, based on Project siting, adherence to all wildlife feature setbacks, and commitments made by the Proponent to mitigate and monitor wildlife impacts. This AEP-FWS Renewable Energy Referral Report expires on February 9, 2027.**

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

Signature:_____ Date:____February 9, 2022_____

Printed Name and Position: Jamie Kalla, Wildlife Biologist, South Region, Edmonton, Alberta

Signature:_____ Date:____February 9, 2022_____

Printed Name and Position: Jason Unruh, Wildlife Biologist, South Region, Red Deer, Alberta

## B. PROJECT DETAILS

**Project Name:** Georgetown Solar Energy Project (also referred to as the Project)

**Proponent Name:** Georgetown Solar Inc., a subsidiary of Westbridge Energy Corp. (Westbridge) (also referred to as the Proponent)

**Project Location:** Refer to Table 1

**Table 1. Proposed legal land locations of the Georgetown Solar Energy Project area**

| Quarter(s) | Section | Township | Range | Meridian |
|---|---|---|---|---|
| SW, NW | 4 | 21 | 25 | W4 |
| SE, NW, NE | 5 | 21 | 25 | W4 |
| SE, NE | 8 | 21 | 25 | W4 |

**Project Area (hectares):**

Disturbance footprint for construction phase (temporary): 221.5 ha
Disturbance footprint for operation phase (permanent): 221.5 ha

**Nameplate Capacity (total megawatts):** 230 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.

AEP-FWS requires that three years of post-construction monitoring be completed at all solar energy facilities to assess the risk of the facility for wildlife, as per AEP-FWS policy at the time of

the project commissioning. If mortality rates are revealed to be high, then post-construction mitigation measures must be implemented in consultation with AEP-FWS. Additional years of post-construction monitoring may be required if mitigation is needed, as determined by AEP-FWS. Post-construction monitoring will include carcass searches, searcher efficiency trials, and scavenger removal rate trials, and must meet the requirements outlined in the *Directive* and *PCM Protocol*.

**PROJECT-SPECIFIC CONCERNS**

Desktop and field investigations are required to determine the potential of the Georgetown Solar Energy 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*.

## D. WILDLIFE MONITORING PROGRAM

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

**Research Permit and Collection Licence Number(s):** Research permit #21149

**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 5, and May 1, 9, and 10, 2021;
- Fall bird migration surveys: September 28 and 29, and October 7, 8, and 26, 2020;
- Breeding bird point count surveys: early survey June 1, and late survey June 16, 2021;
- Amphibian surveys: May 13 - 14, 2021 (Round 1), May 25 - 26, 2021 (Round 2), and June 3 - 4, 2021 (Round 3);
- Raptor nest searches: April 5, May 1, May 10, June 1, and June 16, 2021;
- Sharp-tailed grouse lek surveys April 5, 2021 (Round 1), May 1, 2021 (Round 2), and May 10, 2021 (Round 3); and,
- Wetland assessment surveys: June 1 - 2, 2021.

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 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: February 9, 2027), 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 Foothills Fescue and Mixedgrass Natural Sub-regions of the Grassland Natural Region. Project infrastructure, including but not limited to solar arrays, inverters, collection lines, access roads, a perimeter fence, and laydown areas, etc., has been sited to avoid native habitat because the majority of Project infrastructure is sited on cultivated land (209.93 ha), industrial land (7.15 ha), or wetlands that have been cultivated through (4.38 ha). The Proponent has sited all infrastructure to avoid native grassland; however, a limited amount of infrastructure has been sited adjacent to (within 100 m) of native and tame grassland which provides high value wildlife habitat (see the *Breeding Bird* section of this referral report for details on mitigation for avian species). This Project siting reduces the risk to wildlife habitat and aligns with the *Directive*.

#### Valley Breaks

Project infrastructure will be sited a minimum of 100 m from valley and coulee breaks. This aligns with the *Directive*.

#### Lakes and Large Waterbodies

Project siting has avoided named lakes and large waterbodies. The nearest named waterbodies in the area include Third Lake (~16 km west of the Project area) and Dalemead Lake (~19 km north-west of the Project area); this aligns with the *Directive.*

#### Wetlands

The proponent has identified 16 seasonal graminoid marshes in the Project Area. The required 100 m setback will be applied to all of these wetlands, except one, which will have a fence line placed

at a distance of 94 m from the wetland edge and will be located on the quarter section line. The Proponent has proposed to build infrastructure through some ephemeral and temporary wetlands in the Project Area, pending Water Act approvals. Amphibian surveys conducted in 2021 identified boreal chorus frogs in one seasonal and one temporary wetland delineated in the project area. The proponent has committed to the following mitigations to minimize impacts to seasonal or higher class wetlands (class 3+):

- using silt fencing to protect from temporary soil placement and construction site surface water flow
- protecting low-usage bare soil areas within 14 days of clearing by using cover crop seeding, temporary erosion control blankets, or any combination of temporary erosion control installed as a system fit for the terrain and drainage patterns of the disturbed region

Given the proposed mitigations, impacts from the fence line infringing on one wetland 100 m setback are not expected to increase risk to wildlife; therefore, the project siting protects wetland habitat and wildlife and aligns with the *Directive*.

**Watercourses**

The Proponent has identified two watercourses within and adjacent to the Project area that may provide habitat for wildlife and may also function as wildlife corridors. AEP-FWS requires a 45 m setback from intermittent/small permanent watercourses. This requirement is to conserve both the wildlife in the immediate area and wildlife moving through the area since watercourses are often used as corridors enabling wildlife movement in the local landscape. The Proponent has committed to the following setbacks for watercourses:

- GEWAC01 (small permanent watercourse): Primary infrastructure is sited outside of the required 45 m setback, but one collector line will cross the watercourse. The proponent has committed to directionally drilling the collector line under the watercourse, which will mitigate impacts to wildlife.
- GEWAC02 (intermittent watercourse): Infrastructure sited outside of the required 45 m setback.

With the alternative mitigations proposed, this plan adequately protects the wildlife using these watercourses and therefore aligns with the *Directive*.

**WILDLIFE DISTURBANCE AND MORTALITY**

**Wildlife Movement and Fencing**

The proponent has committed to the following mitigations regarding fencing design and layout to minimize impacts to wildlife:

- Avoiding wildlife and wetland setbacks, with the exception of one 100 m wetland setback (see Wetland section for details);
- Minimizing nesting habitat within fenced area by reducing space between fencing and facilities;
- Minimizing sharp corners/angles in layout;
- Gating off small corridors to prevent entrapment;
- Demarcating barbed wire on top of fencing to make it more visible to wildlife;

- Raising fencing off the ground by 40 mm to allow for passage of small wildlife, such as upland nesting waterfowl and shorebirds.

A large area is proposed to be fenced off for project infrastructure, however the fence design minimizes the creation of narrow corridors by the roadside and leaves watercourse corridors unimpeded. Given the proposed mitigations, the Project aligns with the intent of the *Directive* and AEP-FWS has assessed the risk to wildlife posed by the fence as low. AEP-FWS recommends that the proponent communicates with the municipality to explore additional mitigation measures to reduce wildlife mortality risk, such as installing wildlife warning signs along the roadway.

**Breeding Birds**

***Songbirds and waterbirds:*** Results from the 2021 breeding bird surveys for song birds and waterbirds (including waterfowl, shorebirds, grebes, loons and pelicans) show 170 individual birds from 19 species were observed at 12 survey points. This equates to an average of 1.42 individual birds per minute. The most common species observed were red-winged blackbird, vesper sparrow, and brown-headed cowbird, which are all listed as Secure. One species at risk was identified during the surveys (long-billed curlew (n=1)). The number of observations at survey points ranged from 9 to 27, with the largest number of birds counted at a survey point just outside of the project area, near a small wetland. Project infrastructure has mostly been sited on cultivated land; however, breeding birds still make use of the Project area and development for the Project could negatively impact breeding birds.

To reduce the mortality risk to breeding birds, the Proponent has proposed the following mitigations:

- Vegetation clearing associated with collector lines (and other infrastructure) will be scheduled to occur outside of the nesting bird period for Zone B3/B4 (April 15 – August 30)
- If construction (clearing or otherwise) must occur within the Zone B3/B4 nesting period, nest surveys will be completed by a qualified wildlife biologist prior to any clearing commencing. Nest surveys will cover the proposed area of disturbance, as well as a species-appropriate buffer (minimum 100 m) around the area of disturbance.
- If needed, vegetation will be trimmed or mowed outside of the avian breeding season (April 15 – August 31). If the avian breeding season cannot be avoided, nest surveys will be conducted prior to vegetation management.
- Weed management will be timed to avoid the avian breeding seasons, and nest surveys will be conducted in advance of management if avoidance of this period is not possible.

As described above, results of the pre-assessment wildlife surveys indicate that wildlife, including species at risk, use the Project area for breeding and foraging. However, given the proposed mitigations and siting of the project out of high quality habitats, the Project aligns with the intent of the *Directive* and the risk to breeding birds is assessed as low.

***Raptors:*** No raptor nests were found within the Project study area during the 2021 surveys; therefore, the Project siting abides by the setback requirements established by the *Directive* (100 m) and the risk to raptors is assessed as low.

The Proponent has committed to repeating raptor nest surveys every two years until the Project is commissioned. If 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*. These commitments are consistent with the *Directive*.

***Sharp-tailed Grouse***: Sharp-tailed grouse surveys were conducted in suitable habitat within 500 m of project infrastructure in 2021. A total of ten survey locations were visited. No sharp-tailed grouse leks were observed during the surveys, though incidental observations of sharp-tailed grouse flying past the Project area occurred during the fall migration surveys. The Project siting abides by the setback requirements established by the *Directive* (500 m) and the risk to sharp-tailed grouse is assessed as low.

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

**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*. No communications or meteorological towers are currently proposed within the Project Area, but if one is needed in the future, the design will meet the requirements outlined in the *Directive*, including demarcating the guy wires. Barbed wire on the proposed fencing will be marked to reduce the potential for bird collisions and mortality.

During the three rounds of spring 2021 migration surveys a total of 223 birds from 24 different species were identified (~0.37 bird observations per minute). The most commonly observed species during spring surveys were Franklin's gull (n=54), western meadowlark (n=34), and Savannah sparrow (n=30), which are listed as Secure in Alberta. During the three rounds of fall 2020 migration surveys, a total of 1,026 birds from 15 different bird species were identified (~1.71 bird observations per minute). The most commonly observed species during fall surveys were horned lark (n=383), European starling (n=163), and Canada goose (n=145), which are listed as Secure or Exotic/Alien in Alberta.

There were four species of management concern observed between both surveys, including sharp-tailed grouse (n=5), loggerhead shrike (n=1), long-billed curlew (n=2), and Sprague's pipit (n=1). As the Project is sited away from landscape features associated with increased bird activity during migration (e.g., valley/coulee breaks, large waterbodies) and has a relatively low number of birds and species at risk migrating through the project area, it is not expected to pose an elevated risk to migrating birds.

AEP-FWS has conducted a bird risk assessment based on the migration, breeding bird, and bird feature (i.e. nests and leks) data. The Project is sited away from named lakes, large permanent watercourses, and valley/coulee breaks, and is located on previously disturbed (cultivated or industrial) land, which reduces the habitat quality for wildlife and results in lower mortality risk for the Project. Bird activity during migration and breeding bird surveys was relatively low, the percentage of species at risk was relatively low, and all setbacks for wildlife features follow the

requirements of the *Directive*; therefore, AEP-FWS has assessed the bird mortality risk as low. 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 *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 *PCM 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 Georgetown Solar Energy 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 gridlines on 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*.