ATTACHMENT M: WILDLIFE HABITAT MANAGEMENT AND MITIGATION PLAN

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Draft
Wildlife Habitat Management and Mitigation Plan for the Badger Mountain Solar Energy Project

Prepared for:

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Acronyms and Abbreviations

Applicant	Aurora Solar, LLC
ASC	Application for Site Certification
BESS	battery energy storage system
DCC	Douglas County Code
DNR	Washington Department of Natural Resources
EFSEC	Energy Facility Site Evaluation Council
gen-tie line	generation-tie transmission line
GMA	Growth Management Act
JARPA	Joint Aquatic Resource Permit Application
kV	kilovolt
MW	megawatt
O&M	operations and maintenance
POI	Point of Interconnect
Project	Badger Mountain Solar Energy Project
RCW	Revised Code of Washington
SCA	Site Certification Agreement
SEPA	State Environmental Policy Act
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WHMMP	Wildlife Habitat Management and Mitigation Plan

1.0 Introduction

Aurora Solar, LLC (Applicant), a wholly owned subsidiary of Avangrid Renewables, LLC, proposes to develop and operate the Badger Mountain Solar Energy Project (Project) in unincorporated Douglas County (County), Washington. The proposed Project is a 200-megawatt (MW) solar photovoltaic generation facility with an optional 200-MW battery energy storage system (BESS) and associated 3.7-mile-long overhead 230-kilovolt (kV) generation-tie transmission line (gen-tie line). The Applicant has elected to submit a streamlined solar Application for Site Certification (ASC) to the State of Washington Energy Facility Site Evaluation Council (EFSEC).

This Draft Wildlife Habitat Management and Mitigation Plan (WHMMP) addresses fish and wildlife habitat impacts and mitigation approaches for Project permitting through EFSEC. The WHMMP was developed consistent with applicable criteria under Douglas County Code (DCC) Chapter 19.18C.037, Washington Administrative Code (WAC) 463-60-332 and WAC 463-62-040, and in consideration of applicable guidelines such as the Washington Department of Fish and Wildlife (WDFW) Mitigation (M-5002) Policy to ensure no net loss of fish and wildlife habitat function and value as a result of the Project.

1.1 Project Location

The 2,390-acre Project area is generally located 3.5 miles northeast of the city limits of East Wenatchee, 3.5 miles due north of Rock Island, and 5.5 miles northeast of Wenatchee in Douglas County, Washington. The Project area occurs in Sections 21, 22, 27, 28, 34, and 35 of Township 23 North, Range 21 East, and Section 2 of Township 22 North, Range 21 (ASC Attachment A, Figure A-2). The Project area is within parcels owned by private individuals as well as the Washington State Department of Natural Resources (DNR). The Project area is located within the Level III Columbia Plateau Ecoregion, and within the further subdivided Level IV, Channeled Scablands and Loess Islands Ecoregions (Thorson et al. 2003).

1.2 Project Description

The Project will use solar modules configured in a solar array to convert energy from the sun into electric power. The solar array will consist of the solar modules, trackers, posts, cabling, inverters, transformers, and electrical collector lines. The Project includes the following supporting components: collector substation, overhead 230-kV gen-tie line, two Point of Interconnect (POI) options, switchyard, operations and maintenance (O&M) building, associated access and Project service roads, perimeter fencing, and optional BESS. The overhead 230-kV gen-tie line will transmit the generated electricity to the grid via one of two POI options. Option 1 will connect the Project collector substation to the existing Puget Sound Energy 230-kV transmission line. Option 2 will connect the Project collector substation to an existing Bonneville Power Administration transmission line.

The 2,390-acre Project area includes an approximately 2,274-acre Solar Array Micrositing Area and approximately 116-acre Gen-tie Micrositing Corridor. The Solar Array Micrositing Area is the area where the solar array and supporting components will be sited during final engineering design. The Gen-tie Micrositing Corridor is a 3.7-mile-long and approximately 200-foot-wide corridor where the Project's overhead 230-kV gen-tie line, POI options, and switchyard will be located. Project components are identified on the Preliminary Site Plan (ASC Attachment A, Figure A-1) and further described in Part 2 of the ASC.

2.0 Regulations and Guidelines

2.1 Energy Facility Site Evaluation Council

Energy facilities subject to review by EFSEC include thermal electrical generation, pipelines, electrical transmission lines, petroleum refineries, petroleum storage, and alternative energy electrical generation (wind, solar, geothermal, landfill gas, wave or tidal action, and biomass). However, alternative energy facilities, of any size, are not required to enter the EFSEC process in Washington; the applicant may opt in to the EFSEC process or may choose to permit the project at the local level. The Applicant has elected to site the proposed Project under EFSEC jurisdiction.

Once an alternative energy facility has elected EFSEC permitting, EFSEC coordinates the evaluation and licensing steps for siting that facility in Washington. EFSEC specifies the conditions of construction and operation. If approved, a Site Certification Agreement (SCA) is issued in lieu of other individual state or local agency permits. Chapter 80.50 of the Revised Code of Washington (RCW) includes the laws EFSEC must follow in siting and regulating major energy facilities. Title 463 of the WAC sets forth the regulations establishing how EFSEC functions under state and federal law.

EFSEC is responsible for evaluating applications under the Washington State Environmental Policy Act (SEPA; see Section 2.3) to ensure that environmental and socioeconomic impacts are considered before a site is approved. After evaluating an application, EFSEC submits a recommendation to the Governor. If EFSEC determines that constructing and operating the facility will produce minimal adverse effects on the environment, ecology of the land, wildlife, state waters and aquatic life, in addition to meeting its construction and operation standards, then it recommends that a SCA be approved and signed by the Governor. The SCA lists the conditions the applicant must meet during construction and while operating the facility.

WAC 463-60-332 outlines how potential impacts to habitat, vegetation, fish, and wildlife must be addressed in the EFSEC ASC. This information has been prepared and presented in Part 4 Sections 4.3, 4.8, and 4.9 of the Applicant's ASC. This Draft WHMMP has been prepared pursuant to WAC 463-60-332(3), which requires that the EFSEC ASC include a detailed mitigation plan. In addition, this Draft WHMMP describes how the Project follows the habitat characterization and mitigation provisions of the WDFW Wind Power Guidelines (WDFW 2009), as applicable, and Policy M-5002, pursuant to WAC 463-60-332(4).

2.2 SEPA

SEPA is the state interdisciplinary policy that identifies and analyzes environmental impacts associated with state governmental decisions, including permits to construct energy facilities. The applicable SEPA statutes and regulations include RCW 43.21C, Washington Environmental Policy Act, WAC 197-11, Washington State Department of Ecology SEPA Rules, and Chapter 19.04 of the DCC, which establish requirements for compliance with SEPA. The Applicant has elected to site the Project under EFSEC jurisdiction and EFSEC will serve as the lead agency for SEPA review.

This Draft WHMMP, in addition to the analysis provided in Part 4 Sections 4.3, 4.8, and 4.9 of the ASC, supports the finding that, with the implementation of proposed mitigation, probable significant adverse environmental impacts can be reduced to a level of non-significance as defined and understood in SEPA.

2.3 WDFW Wind Guidelines

The WDFW published the Wind Power Guidelines in 2009 to provide consistent statewide guidance for the development of land-based wind energy projects that avoid, minimize, and mitigate impacts to fish and wildlife habitats in Washington state (WDFW 2009). The permitting authority (EFSEC) is responsible for SEPA review before issuing a project permit. However, WDFW is considered an agency with environmental expertise through SEPA and provides review and comments on environmental documents. Solar power-specific guidelines for solar energy developers to use in consideration of mitigation in Washington are not available. Absent solar-specific guidance, as recommended by WDFW, the Applicant used the Wind Power Guidelines to develop this Draft WHMMP where applicable, including habitat characterization and the mitigation considerations listed below which summarize the criteria for the habitat selected to replace the functions and values of habitat impacted by the Project (i.e., replacement habitat):

- Like-kind (e.g., shrub-steppe for shrub-steppe, grassland for grassland) and/or of equal or higher habitat value than the impacted area, noting that an alternative ratio may be negotiated for replacement habitat that differs from impacted habitat;
- Given legal protection (through acquisition in fee, a conservation easement, or other enforceable means);
- Protected from degradation, including development, for the life of the project to improve habitat function and value over time;
- In the same geographical region as the impacted habitat; and
- At some risk of development or habitat degradation and the mitigation results in a net habitat benefit.

2.4 WDFW Policy M-5002

WDFW established Policy M-5002 requiring or recommending mitigation in 1999. This policy applies to habitat protection assignments where WDFW is issuing or commenting on

environmental protection permits, documents, or violation settlements; or when seeking commensurate compensation for impacts to fish and wildlife resources resulting from oil or other toxic spills. The Applicant reviewed Policy M-5002 to support the develop of this plan, including the following considerations:

- The goal is to achieve no loss of habitat functions and values. Mitigation credits and debits will be based on a scientifically valid measure of habitat function, value, and area. Ratios will be greater than 1:1 to compensate for temporal losses, uncertainty of performance, and differences in functions and values.
- WDFW uses the following definition of mitigation; avoiding impacts is the highest mitigation priority. "Mitigation" means actions that shall be required or recommended to avoid or compensate for impacts to fish, wildlife, or habitat from the proposed project activity. The type(s) of mitigation required shall be considered and implemented, where feasible, in the following sequential order of preference:
    - Avoiding the impact altogether by not taking a certain action or parts of an action.
    - Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
    - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
    - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
    - Compensating for the impact by replacing or providing substitute resources or environments.
    - Monitoring the impact and taking appropriate corrective measures to achieve the identified goal.
- On-site in-kind mitigation is preferred.
- Mitigation plans will include the following: baseline data; estimate of impacts; mitigation measures; goals and objectives; detailed implementation plan; adequate replacement ratio; performance standards to measure whether goals are being reached; maps and drawings of proposal; as-built drawings; operation and maintenance plans (including who will perform); monitoring and evaluation plans (including schedules); contingency plans, including corrective actions that will be taken if mitigation developments do not meet goals and objectives; and any agreements on performance bonds or other guarantees that the proponent will fulfill the mitigation, operation and maintenance, monitoring, and contingency plan.
- Mitigation measures will be completed before or during project construction.
- Mitigation site will be protected for the life of the project.

- Mitigation banking may be an acceptable form of mitigation.

2.5 Douglas County Critical Areas Ordinance

Under Washington State's Growth Management Act (GMA), cities and counties are directed to adopt critical area regulations. Cities and counties are required to include the best available science in developing policies and regulations to protect the functions and values of critical areas (RCW 36.70A.172). Douglas County's critical area regulations were developed to comply with the requirements of the GMA, and was most recently updated on May 18, 2021, consistent with the GMA periodic review requirement in RCW 36.70A.130.

Under DCC Chapter 19.18C, certain specified areas of unincorporated Douglas County are designated as "fish and wildlife habitat conservation areas." DCC 19.18C.020(B). Fish and Wildlife Habitat Conservations Areas include: 1) areas in which endangered, threatened, and sensitive species have a primary association, 2) habitats and species of local importance, 3) naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat, 4) waters of the state, 5) lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity, or 6) state natural area preserves and natural resource conservation areas. DCC 19.18C.020(B).

Per DCC 19.18C.035, the Project area was surveyed to identify the presence of potential Fish and Wildlife Habitat Conservation Areas (Tetra Tech 2021a, 2021b, 2021c). As described in Part 4 Section 4.9 of the ASC, the Douglas County Voluntary Stewardship Program Critical Areas Web Map (Douglas County VSP 2021) identified talus slopes as a Fish and Wildlife Habitat Conservation Area that overlaps with the Project. Mapping of the talus slopes was refined during surveys and will be avoided by a minimum of 50 feet and therefore, there will be no impacts on this Fish and Wildlife Habitat Conservation Area. Review of existing data and surveys did not identify any other areas in which endangered, threatened, and sensitive species have a primary association, or on habitats and species of local importance. There are no naturally occurring ponds; lakes, ponds, streams and rivers planted with game fish; or state natural area preserves or natural resource conservation areas within the Project area and as a result there will be no impacts to these types of critical areas.

Surveys for the Project identified 46 ephemeral stream segments (which are considered waters of the state) within the Project area (Tetra Tech 2021c); as described in Part 4, Section 4.3 of the ASC, some of these may be impacted during construction. No fill of surface waters is anticipated; however, some excavation and impacts to ephemeral streams would occur (see Part 4, Section 4.3 of the ASC). The extent of this excavation (e.g., cubic yards and the exact locations) is unknown at this time and will not be known until final engineering is completed. The Applicant is designing the Project to minimize impacts to ephemeral streams to the extent feasible and will obtain Hydraulic Project Approval through the Joint Aquatic Resource Permit Application (JARPA) once potential stream impacts are verified with final design prior to construction. Appropriate avoidance, minimization, and mitigation measures consistent with the Douglas County Critical Areas Ordinance will be developed during development of the JARPA (e.g., erosion control measures). In

addition, Part 4, Section 4.3 of the ASC provides additional details on measures that would be implemented to minimize impacts on ephemeral streams within the Project area.

3.0 Agency Coordination

The Applicant met with representatives from WDFW and Tetra Tech on March 3, 2021 to introduce the Project to WDFW. The meeting participants discussed wildlife, habitat, and rare plant field survey methods and Special Status Species[1] and Priority Habitats[2] with potential to occur at the Project (Tetra Tech 2021a). The input from WDFW provided during this meeting was used to inform the wildlife and habitat background review, field surveys, and impact assessment.

The Applicant met with representatives from the U.S. Fish and Wildlife Service on September 2, 2021, to discuss the Project as well as eagle use of the Project vicinity, including for nesting and hunting. Details on habitat and nest survey data were shared and options relating to construction impacts and mitigation were discussed.

The Applicant also met with a representative of the Washington Department of Ecology on March 26, 2021, to discuss survey methods, dates, and the anticipated reporting timeline for wetlands and waters surveys at the Project (Tetra Tech 2021c).

4.0 Habitat Mapping

The Applicant conducted a desktop review and field survey in May 2021 to map and characterize habitat within the Project area (Tetra Tech 2021a). Habitat surveys were conducted concurrently with wildlife and rare plant surveys (Tetra Tech 2021a, 2021b). In general, habitat types were adapted from habitat classifications and descriptions in Wildlife-Habitat Relationships in Oregon and Washington (Johnson and O'Neil 2001), the WDFW Priority Habitats and Species List (WDFW 2008), and the WDFW Wind Power Guidelines (WDFW 2009), with some modifications as described below. Descriptions of the habitat types mapped during the field surveys, as well as the number of acres of each habitat type within the Project area, Gen-tie Micrositing Corridor, and Solar Array Siting Area are provided in the 2021 Wildlife and Habitat Survey Report (Tetra Tech 2021a). Table 1 provides a crosswalk between habitats mapped in the Project area, the percent of area surveyed in each habitat, and the Johnson and O'Neil (2001) habitat types and features, WDFW

[1] For the purposes of this document, special status wildlife species include federal and state endangered, threatened, proposed, and candidate species; species of concern; birds of conservation concern; and state sensitive and Priority Species (Tetra Tech 2021a). Special status plant species include federally listed endangered, threatened, or candidate vascular plant species as well as species listed in the state as endangered, threatened, or sensitive by the Washington Natural Heritage Program (WNHP) (i.e., "rare plants" in Tetra Tech 2021b).

[2] Priority Habitats are habitat types or elements with unique or significant value to a diverse assemblage of species; a Priority Habitat may consist of a unique vegetation type (e.g., shrub-steppe) or dominant plant species (e.g., juniper savannah), a described successional stage (e.g., old-growth forest), or a specific habitat feature (e.g., cliffs) (WDFW 2008). Priority Habitats are identified by WDFW in their Priority Habitats and Species list, which is updated periodically (WDFW 2008, 2021).

(2008) Priority Habitats, and WDFW (2009) Wind Power Guidelines Habitat Types and Classifications.

Table 1. Project Habitat Type Crosswalk with WDFW Habitat Type and Classification

Project Habitat Type	Percent of Project Area[1/]	Johnson and O'Neil (2001) Habitat Type or Feature	WDFW (2008) Priority Habitat	WDFW (2009) Habitat Type	WDFW (2009) Classification
Dwarf shrub-steppe	0.7%	Dwarf shrub-steppe	Shrub-steppe	Shrub-steppe	Class II
Shrub-steppe	10.3%	Shrub-steppe			
Talus	0.4%	Talus	Talus	None	
Planted grassland[2/]	0.5%	Agriculture, Pastures, and Mixed Environs	Not a Priority Habitat	Conservation Reserve Program Lands (CRP)	Class III
Non-native grassland and forbland	0.6%		Not a Priority Habitat	None	Class IV
Agricultural	86.9%		Not a Priority Habitat	Croplands, Pasture, Urban and Mixed Environs	
Developed/disturbed	0.7%	Urban and Mixed Environs	Not a Priority Habitat		

1. Totals may not sum exactly due to rounding.

2. Following field surveys, areas mapped as planted grassland were identified as potentially enrolled in the Conservation Reserve Program (WSDA 2021).

Three of the seven habitat types mapped within the Project area are considered Priority Habitats by the WDFW. These include dwarf shrub-steppe, shrub-steppe, and talus (WDFW 2008). Priority Habitats constitute approximately 11.4 percent of the total Project area (Tetra Tech 2021a).

Of the seven habitat types mapped within the Project area, two were not readily classified based on existing habitat descriptions from the WDFW Wind Power Guidelines (WDFW 2009): talus and non-native grassland and forbland. Talus is considered a Priority Habitat and thus was considered a Class II habitat (WDFW 2009) for the purposes of this Project. Non-native grassland and forbland at the Project was primarily mapped near or within agricultural fields, was dominated by non-native grasses and forbs, and was highly degraded (Tetra Tech 2021a). This habitat type most closely matched the description of modified grasslands within the Johnson and O'Neil (2001) Agriculture, Pastures, and Mixed Environs habitat type. Therefore, this habitat was considered a Class IV habitat (WDFW 2009).

Although ephemeral drainages were located within the Project area, no wetlands or intermittent or perennial streams were recorded during wetland and water surveys conducted in 2021 (Tetra Tech 2021c).

5.0 Project Impacts

Construction and operation of the Project would result in permanent and temporary impacts to vegetation, and impacts related to altered vegetation within the solar array perimeter fence line (see Section 6). Areas of permanent impacts include locations of permanent infrastructure (i.e., solar array panel posts, inverter and transformer pads, permanent Project service roads, collector substation, switchyard, O&M building, perimeter fence, optional BESS, and poles for the gen-tie line), and constitute a permanent habitat loss. Areas of temporary impacts include temporary staging areas outside the solar array perimeter fence and work areas associated with the gen-tie line, Project service roads outside the solar array perimeter fence, and along the solar array, O&M area, collector substation area, switchyard area, and optional BESS area perimeter fence lines, all of which would be disturbed during construction and revegetated following construction.

Areas within the solar array's perimeter fence not occupied by the permanent infrastructure described above would be altered via revegetation with low-growing, native (or non-native non-invasive) vegetation following construction; following construction and revegetation, these areas would contain an altered vegetation community (i.e., that is compatible with solar arrays) and support an altered wildlife community (i.e., wildlife that is able to pass over, under, or through the perimeter fence), but would retain value to wildlife as described in Section 6 of this plan.

Table 2 provides the estimated acres of impact on vegetation, by habitat type, from construction and operation of the Project, including acres of temporary and permanent impacts and acres of altered habitat. The estimated acres of impact on each habitat type provided in Table 2 are based on the current Project design; however, as discussed in Part 2 of the ASC, the exact locations of Project components may be revised during final Project design, and impacts from the Project could occur anywhere within the Solar Array Micrositing Area or Gen-tie Micrositing Corridor up to the Project area acreage identified in Table 2. Any relocations made to the Project layout within these areas will be done in such a way as to avoid or minimize impacts to sensitive resources (e.g., Special Status Species, shrub-steppe habitats, streams, etc.) to the extent practical. The Project has been designed to avoid talus, as well as a 50-foot buffer around talus; therefore, this Priority Habitat will not be affected by the Project, and any subsequent revisions to the Project layout will continue to avoid this habitat type.

Table 2. Anticipated Impacts to Habitat Types from the Project

Habitat Type	Acres in Solar Array Micrositing Area[1/]	Acres in Gen-tie Micrositing Corridor[1/]	Temporary Impacts (Acres)[2/]	Altered Habitat Impacts (Acres)[3/]	Permanent Impacts (Acres)[4/]
Dwarf shrub-steppe	15.5	0.0	0.5	3.2	0.1
Shrub-steppe	209.8	36.9	27.0	29.2	5.6
Talus	8.3	1.8	0.0	0.0	0.0
Planted grassland[5/]	0.0	12.3	4.6	0.0	<0.01

Habitat Type	Acres in Solar Array Micrositing Area[1/]	Acres in Gen-tie Micrositing Corridor[1/]	Temporary Impacts (Acres)[2/]	Altered Habitat Impacts (Acres)[3/]	Permanent Impacts (Acres)[4/]
Non-native grassland and forbland	11.7	1.7	1.3	0.8	<0.01
Agricultural	2,014.4	62.4	57.9	1,239.0	60.1
Developed	14.9	0.7	0.5	0.0	0.0
Total[6/]	**2,274.5**	**115.7**	**91.9**	**1,272.2**	**65.8**

1. The Applicant's wildlife and habitat assessment analyzed the entire Project area, about 2,390 acres including the Solar Array Micrositing Area and Gen-tie Micrositing Area. While Project disturbances are anticipated to occur within the preliminary Project layout shown on ASC Attachment A, Figure A-1, the Project may impact areas anywhere within and up to the 2,390 acre Project area and mitigation treatments in this WHMMP will be adjusted to account for final Project disturbance areas prior to construction.

2. Temporary impacts include:

- Work area (150 feet wide, 75 feet either side of center) along the 3.7-mile-long overhead 230-kV gen-tie line with avoidance of talus habitat.
- Work area (8 feet either side) along the Project service roads within the Project area and outside the solar array perimeter fence.
- Work area (10 feet from the outside) along the solar array, O&M area, collector substation area, switchyard area, and optional BESS area perimeter fence lines.
- Temporary staging areas outside the solar array perimeter fence.

3. Altered impacts include lands within the solar array perimeter fence minus the footprint of areas occupied by Project components and structures listed below.

4. Permanent impacts include the footprint of the area occupied by the following Project components and structures: solar array posts, inverter and transformer pads, Project service roads (20 feet wide outside the solar array perimeter fence, 16 feet wide within the solar array perimeter fence), O&M building area, collector substation area, switchyard area, optional BESS area, perimeter fence, and overhead 230-kV gen-tie line poles.

5. Following field surveys, areas mapped as planted grassland were identified as potentially enrolled in the Conservation Reserve Program (WSDA 2021).

6. Totals may not sum exactly due to rounding.

6.0 Scientific Basis

WDFW (2009) defines permanent impacts to habitat as those impacts that are anticipated to persist and cannot be restored within the life of the project, which may include "new permanent roads, operations and maintenance facilities, turbine pads, impervious and/or areas devoid of native vegetation resulting from project operations." Following completion of construction, areas under the solar arrays would be revegetated with low-growing native or non-native non-invasive vegetation. As a result, these areas would not be impervious, would not be devoid of native vegetation[3] or otherwise built-up/developed, and would be restored within the life of the Project; therefore, these areas do not constitute permanently impacted habitat.

[3] It is anticipated that revegetation of areas under the solar arrays would consist at least partially, if not entirely of native species. If non-native species are used for revegetation, it would consist of desirable non-native, non-invasive species (i.e., species that would provide more rapid soil stabilization and vegetative cover than slower growing native species).

A recent study demonstrated that successful revegetation under solar panels is possible, even with native grass species adapted to full-sun conditions (Beatty et al. 2017). This study demonstrated that revegetation under solar panels was able to "achieve ground cover sufficient to control erosion and begin to restore wildlife habitat" (Beatty et al. 2017). Research in Oregon (Hassanpour Adeh et al. 2018) quantified changes to the microclimatology, soil moisture, water usage, and biomass productivity due to the presence of solar panels. In this study, areas under solar panels maintained higher soil moisture, showed a significant increase in late season biomass (90 percent more biomass), and were significantly more water efficient (328 percent more efficient), although caution should be used in applying these results from west of the Cascade Mountains to the drier Columbia Plateau (Hassanpour Adeh et al. 2018). Similarly, pre- and post-construction biological monitoring data at a solar facility in California indicated similar to higher vegetation productivity on-site compared to reference sites (Sinha et al. 2018).

As a result, areas under solar panels that would be revegetated are considered altered habitat impacts rather than permanent or temporary impacts. Habitat within the solar fence line would be altered as revegetated but remain available to wildlife such as small mammals, birds, reptiles, and invertebrates. Limited research is available regarding the effects of solar array development (including the effects of fencing and shading) on residual wildlife habitat value, but preliminary studies indicate residual habitat value remains for various species of birds, and the value may differ based on restoration and vegetation management practices. For example, DeVault et al. (2014) studied avian abundance at solar array fields and paired airport grassland areas using transect surveys. The results indicated that airport grasslands generally had greater species diversity and solar arrays generally had more total birds observed; however, overall bird mass was comparable at airport grasslands and solar arrays. Similarly, Visser et al. (2018) measured bird abundance and diversity at a solar array facility in South Africa using point counts within and outside the facility. The primary conclusion of the study was that bird diversity and density were higher outside of the facility, but the facility was not absent of birds. Visser et al. (2018) found that the bird community inside the facility comprised birds that were generalist species or those that use grassland habitat. Thus, the species composition appeared to be associated with a change from a shrub/woodland habitat to a grassland habitat within the facility. H.T. Harvey (2015) studied avian abundance and behavior using point count methods at a solar array in grassland habitat. Counts were conducted inside the facility and in undeveloped reference areas over a 3-year period before, during, and after construction. The results were highly variable, with some species (e.g., horned lark) showing increases in abundance over time and within the facility, while others (e.g., mourning doves and raptors) showed decreases during construction and increases in use upon transitioning to operations, but overall higher use in reference areas compared to the facility. This limited research demonstrates that while bird species use may change at solar arrays, use of the area is not eliminated; instead, the altered habitat supports an altered avifaunal community.

Similarly, post-construction biological monitoring data at a solar facility in California documented the presence of dozens of wildlife species, including California horned lark (*Eremophila alpestris actia*), ferruginous hawk, loggerhead shrike (*Lanius ludovicianus*), prairie falcon, black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), San Joaquin

kit fox (*Vulpes macrotis mutica*), and coast range fence lizard (*Sceloporus occidentalis bocourtii*) (Sinha et al. 2018). This California site was reseeded with native flora species to allow vegetation to grow beneath the solar panels, creating new habitats, providing sources of food for various wildlife species, and providing dust control (Sinha et al. 2018). The results of monitoring indicated that, although solar facility construction activities do involve short-term disturbance, responsibly developed solar facilities can provide shelter, protection, and stable use of land to support biodiversity (Sinha et al. 2018).

7.0 Proposed Avoidance, Minimization, and Mitigation Measures

The final Project layout will be designed to avoid and minimize impacts on vegetation and wildlife habitat to the extent possible. For impacts that cannot be avoided, mitigation is proposed. As described in WDFW's Policy M-5002 (see Section 2.5), avoidance of impacts is the highest mitigation priority. When impacts cannot be avoided, they should be minimized, restored, reduced, or compensated for, in that order of priority. Together, the Applicant's ASC and the Draft WHMMP presented here are consistent with DCC 19.18C.037, WAC 463-62-040, WAC 463-60-332(3), and the WDFW mitigation policy.

7.1 Avoidance and Minimization

Avoidance and minimization measures have been and would continue to be implemented during design, construction, and operation. As recommended by WDFW's Policy M-5002, the Applicant avoided impacts to wildlife habitat to the extent feasible by siting the vast majority of the Project (i.e., 97 percent of all impacts) on agricultural land.

During siting and design, the Applicant took several measures to avoid and minimize impacts to wildlife and habitat. The Applicant coordinated with WDFW prior to conducting surveys in 2021, and used the information obtained during this coordination to inform surveys and this assessment of impacts. As described in Part 4, Section 4.9.C of the ASC, the Applicant avoided talus slopes (i.e., a Priority Habitat) by a minimum of 50 feet, in compliance with DCC 19.18C.050(B)(2) and minimized impacts to shrub-steppe habitat to the extent feasible. Additionally, as noted above, the Project is sited primarily on agricultural land, which minimizes impacts to wildlife and habitat.

To minimize impacts to small mammals and other small animals, the Applicant is considering raising the fence 4 inches above grade to allow animals to pass through the fence and use the area inside the Project's perimeter fence. Additionally, during operations, the Applicant will limit mowing during the bird nesting season as feasible, to avoid impacts to nesting birds. The Applicant is also considering allowing alternative methods of vegetation maintenance under solar panels such as sheep grazing, as feasible based on compatibility with final Project design and landowner interest.

Additionally, the Applicant will implement the following best management practices during construction and operation:

- Unnecessary lighting will be turned off at night to limit attraction of migratory birds. This includes using lights with timed shutoff, downward-directed lighting to minimize horizontal or skyward illumination, and avoidance of steady-burning, high-intensity lights.
- If construction occurs during the bird nesting season, nest clearance surveys will be conducted prior to site disturbance, as feasible.
- The Project's Gen-tie line will be designed and constructed to minimize avian electrocution, according to guidelines outlined in Avian Power Line Interaction Committee standards (APLIC 2012).
- Evening and nighttime construction activities will be avoided to the extent practicable, which will limit the impacts of construction noise to wildlife.
- Prior to construction, construction personnel will be instructed on wildlife resource protection measures, including: 1) applicable federal and state laws (e.g., those that prohibit animal collection or removal); and 2) the importance of these resources and the purpose and necessity of protecting the resources. Construction personnel will be trained in the following areas when appropriate: awareness of sensitive resources, including Priority Habitats and Special Status bird species, potential bird nesting areas, potential bat roosting/breeding habitat, and general wildlife issues.
- The Applicant will prepare an Erosion and Sediment Control Plan which would include best management practices to minimize surface water runoff and soil erosion. Appropriate stormwater management practices will be implemented in accordance with the Stormwater Pollution Prevention Plans. The Applicant will prepare Spill Prevention, Control, and Countermeasure Plans to be implemented during construction and operation to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release.
- Vehicle speeds will be limited to 25 miles per hour on internal Project access roads to avoid wildlife collisions. Existing posted speed limits on county and private roads will be followed outside of the Project area.
- Fire hazards from vehicles and human activities will be reduced via use of spark arrestors on power equipment, avoiding driving vehicles off roads, allowing smoking in designated areas only per the requirements of WAC 463-60-352. The Applicant will prepare an Emergency Management Plan that contains fire safety measures, which will be developed with input from with the Douglas County Fire Marshal.

Following decommissioning, reclamation of the Project area will begin as quickly as possible to reduce the likelihood of ecological resource impacts in disturbed areas.

7.2 Restoration

A Vegetation and Weed Management Plan would be developed in consultation with EFSEC and the Douglas County Weed Management Task Force prior to construction. The Vegetation and Weed

Management Plan would include measures designed to ensure successful revegetation, including measures for re-establishing vegetation where appropriate, controlling the establishment or spread of noxious species, and monitoring. Additionally, the Vegetation and Weed Management Plan would include success criteria for the proposed revegetation measures.

7.3 Compensatory Mitigation

After avoidance and minimization measures have been implemented, some impacts to wildlife habitat would remain. This section describes the options being considered for compensatory mitigation to account for the effects of unavoidable impacts to habitat, consistent with the regulations and guidelines described in Section 2.

Table 3 provides the estimated acres of mitigation based on the acres of each habitat type anticipated to be impacted by the Project as currently designed. In Table 3, the acres of impact are multiplied by the appropriate mitigation ratio, depending on impact type/duration as well as habitat type, in order to determine the necessary mitigation. The mitigation ratios related to temporary and permanently lost habitats shown in Table 3 are consistent with the WDFW (2009) Wind Power Guidelines and employ the Guidelines' impact type definitions. In the absence of solar-specific guidelines, the Wind Power Guidelines are used here to help achieve WDFW's Policy M-5002 goal of "protecting the productive capacity and opportunities reasonably expected of a site in the future." This approach is consistent with EFSEC's treatment and recommendations for other permitted solar projects. The altered habitat impact mitigation ratios were developed based on the best available science on this topic and considering that revegetated habitat under solar arrays does not meet the definition of temporary or permanent impacts from WDFW (2009) (see discussion above in Section 6).

Table 3 depicts anticipated impacts and mitigation ratios based on the layout described in the Applicant's ASC and shown on ASC Attachment A, Figure A-1. These impacts and resulting mitigation acreages will be updated as appropriate prior to construction once the final design has been completed. As discussed above and in Part 2 of the ASC, to allow for siting flexibility within the Project area, the exact locations of Project components may be revised during final Project design, and impacts from the Project could occur anywhere within the Solar Array Micrositing Area or Gen-tie Micrositing Corridor up to the Project area acreage identified in Table 2. The Applicant seeks the ability to scale mitigation identified in Table 3 accordingly. Additionally, per WDFW (2009), alternative ratios may be negotiated for replacement habitat that differs from impacted habitat.

Table 3. Anticipated Impacts by Habitat and Impact Type and Estimated Mitigation Need

Habitat Type	WDFW Classification	Impact (Acres)	Mitigation Ratio	Mitigation (Acres)[1/]
Temporary Impacts[2/]				
Dwarf shrub-steppe	Class II	0.5	1:1	0.5
Shrub-steppe		27.0	0.5:1	13.5
Planted grassland	Class III	4.6	0.1:1	0.5
Non-native grassland and forbland	Class IV	1.3	No mitigation required	0.0

Habitat Type	WDFW Classification	Impact (Acres)	Mitigation Ratio	Mitigation (Acres)[1/]
Agriculture		57.9	No mitigation required	0.0
Developed		0.5	No mitigation required	0.0
Altered Habitat Impacts[3/]				
Dwarf shrub-steppe	Class II	3.2	1:1	3.2
Shrub-steppe		29.2	1:1	29.2
Non-native grassland and forbland	Class IV	0.8	No mitigation required	0.0
Agriculture		1,239.0	No mitigation required	0.0
Permanent Impacts[4/]				
Dwarf shrub-steppe	Class II	0.1	2:1	0.2
Shrub-steppe		5.6	2:1	11.2
Planted grassland	Class III	0.001	1:1	0.001
Non-native grassland and forbland	Class IV	0.006	No mitigation required	0.0
Agricultural		60.1	No mitigation required	0.0
Total[5/]				**58.3**

1. The Applicant's wildlife and habitat assessment analyzed the entire Project area, about 2,390 acres including the Solar Array Micrositing Area and Gen-tie Micrositing Area. While Project disturbances are anticipated to occur within the preliminary Project layout shown on ASC Attachment A, Figure A-1, the Project may impact areas anywhere within and up to the 2,390 acre Project area and mitigation treatments in this WHMMP will be adjusted to account for final Project disturbance areas prior to construction.

2. Temporary impacts include:

- Work area (150 feet wide, 75 feet either side of center) along the 3.7-mile-long overhead 230-kV gen-tie line with avoidance of talus habitat.
- Work area (8 feet either side) along the Project service roads within the Project area and outside the solar array perimeter fence.
- Work area (10 feet from the outside) along the solar array, O&M area, collector substation area, switchyard area, and optional BESS area perimeter fence lines.
- Temporary staging areas outside the solar array perimeter fence.

3. Altered habitat impacts include lands within the solar array perimeter fence minus the footprint of areas occupied by Project components and structures listed below.

4. Permanent impacts the footprint of the area occupied by the following Project components and structures: solar array posts, inverter and transformer pads, Project service roads (20 feet wide outside the solar array perimeter fence, 16 feet wide within the solar array perimeter fence), O&M building area, collector substation area, switchyard area, optional BESS area, perimeter fence, and overhead 230-kV gen-tie line poles.

5. Totals may not sum exactly due to rounding.

Mitigation would be achieved by one of the following options, pending concurrence from EFSEC and with input from WDFW:

- Conservation Easement Option: A conservation easement would be put in place on land acceptable to EFSEC to preserve the acreage noted in Table 3.
- Conservation Project Funding Option: The Applicant would provide funding to a conservation project to be designated by EFSEC, in an amount to be calculated based on the cost of an easement for the acreage noted in Table 3.

This WHMMP would be updated and/or supplemented prior to construction to identify the mitigation option selected, and the mitigation would be implemented concurrently with Project construction and continue through the life of the Project. Prior to construction, the Applicant would confirm the selected mitigation option and update or supplement this WHMMP to describe the mitigation area, as well as provide documentation of a conservation easement and/or a long-term financial commitment, depending on the option selected.

7.4 Monitoring and Reporting

Once the Project design has been finalized, and prior to construction, Table 3 above would be revised to reflect actual habitat impacts within the Project area and associated mitigation acres as appropriate. The Applicant would provide a memorandum to EFSEC with the updated acreage impact calculations and proposed conservation easement location or conservation project funding (as applicable) for approval by EFSEC. If a conservation easement has been put in place, a copy of the deed restriction would be provided to EFSEC.

The mitigation area would be protected from degradation, including development, for the life of the Project, and thus likely improve in habitat function and value over time as degrading forces are removed. The Applicant would monitor the habitat impacts following construction to verify the extent of impacts and document post-construction recovery of areas disturbed temporarily or altered as a result of the Project (see Section 7.2). The Applicant would report the results of monitoring annually to EFSEC.

For the conservation project funding option, part of the payment would likely fund a stewardship endowment that would cover costs for the conservation project steward to monitor and report on how they have implemented the funding to meet the mitigation needs of the Project. The Applicant would not be directly involved in this effort, beyond providing the funding necessary to conduct the effort.

7.5 Success Criteria

Mitigation of the impacts to wildlife habitat from the Project may be considered successful if the Applicant protects sufficient habitat to meet the habitat replacement requirements as described in Table 3 or provides commensurate funding. For the conservation project funding option, mitigation would be considered successful at the time of payment to EFSEC.

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