ATTACHMENT L: DRAFT HABITAT MITIGIATION PLAN

Draft
Habitat Mitigation Plan

Hop Hill Solar and Storage Project

December 2022

Prepared for:

HOHI bn, LLC
13123 E Emerald Coast Pkwy, Suite B #158
Inlet Beach, FL 32461

Prepared by

TETRA TECH
1750 S Harbor Way, Suite 400
Portland, OR 97201

Table of Contents

List of Figures

List of Tables

Acronyms and Abbreviations

Applicant	HOHI bn, LLC
ASC	Application for Site Certification
BCC	Benton County Code
BESS	battery energy storage system
BPA	Bonneville Power Administration
CAO	Critical Areas Ordinance
EFSEC	Energy Facility Site Evaluation Council
FWHCA	fish and wildlife habitat conservation area
gen-tie line	generation-tie transmission line
GMA	Growth Management Act
GMAAD	Growth Management Act Agricultural District (Benton County)
HMP	Habitat Mitigation Plan
JARPA	Joint Aquatic Resources Permit Application
kV	kilovolt
MW	megawatt
NLCD	National Landcover Dataset
O&M	operations and maintenance
POI	point of interconnection
Project	Hop Hill Solar and Storage Project
PV	photovoltaic
RCW	Revised Code of Washington
SCA	Site Certification Agreement
SEPA	State Environmental Policy Act
SR	State Route
USGS	U.S. Geological Survey
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife

1.0 INTRODUCTION

HOHI bn, LLC (Applicant), a subsidiary of BNC DEVCO, LLC, which is a joint venture between BrightNight and Cordelio Power, proposes to construct and operate the Hop Hill Solar and Storage Project (Project) located in unincorporated Benton County, Washington. The Project is an up to 500-megawatt (MW) solar photovoltaic (PV) generation facility coupled with an up to 500-MW battery energy storage system (BESS), as well as related interconnection and ancillary support infrastructure (Figure 1).

The Project also includes the following supporting components: Project substation, overhead 230-kilovolt (kV) / 500-kV generation-tie transmission line (gen-tie line), operations and maintenance (O&M) building, associated Project access roads, and perimeter fencing. Chain-link fencing will be installed around the perimeter of the solar PV array, Project substation, and O&M building area. The Project's proposed point of interconnection (POI) with the regional electrical grid is the Bonneville Power Administration (BPA) transmission system at the Midway Substation on federal land. The Project includes two alternative POIs near the BPA Wautoma Substation. An approximately 19-mile-long overhead 230-kV/500-kV gen-tie line will extend from the Project collector substation to the proposed POI at the Midway Substation (Figure 1).

The Project is approximately 11 miles north of the city of Prosser and 7 miles east of the State Route (SR) 241 and SR 82 interchange and the city of Sunnyside in Benton County, Washington. The Siting Area encompasses approximately 22,020 acres.

This Draft Habitat Mitigation Plan (HMP) has been prepared to support the Project's Energy Facility Site Evaluation Council (EFSEC) Application for Site Certification (ASC) and compliance with applicable regulations.

1.1 Siting Area

The **Siting Area** consists of the **Solar Array Siting Area** (approximately 11,179 acres) and the **Transmission Line Corridor Siting Area** (approximately 10,841 acres) that runs north to the proposed POI (Figure 1). The Solar Array Siting Area and Transmission Line Corridor Siting Area are subsets of the Siting Area within which field surveys have been conducted, or will be completed prior to final design, and Project facilities may be constructed, in compliance with conditions that may be imposed by the anticipated Site Certification Agreement (SCA). The Solar Array Siting Area encompasses approximately 11,179 buildable acres and the overhead 230-kV/500-kV gen-tie line will be developed within a 150-foot-wide corridor and microsited within the approximately 10,841-acre Transmission Line Corridor Siting Area. The final **Project Area** subject to development is anticipated to be approximately 6,000 acres and includes the construction disturbance areas associated with the solar array and associated supporting components. The overhead 230-kV/500-kV gen-tie line will transmit the electricity generated by the Project to the electrical grid via one of three POI options (i.e., the proposed POI at the Midway Substation or one of the two alternative POIs near the Wautoma Substation). The Project will use existing roads to the extent practicable but will also construct approximately 3 miles of new Project service roads within the Solar Array Siting Area. Various types of wildlife-friendly fencing are being explored in consultation with relevant agencies; however, currently chain-link fencing is proposed to be installed around the perimeter of the solar PV array, collector substation area, O&M building area, BESS area, and switchyard

area. A mixture of chain-link fencing and more wildlife-friendly fencing, dependent on the Project component, may be implemented as agency consultations continue. The Project's Commercial Operations Date is planned for fourth quarter (Q4) 2025 and Project construction is proposed to begin in Q1 2024.

1.2 Land Use

Lands in the Siting Area have historically been used for agricultural activities (primarily grazing with some crop cultivation), although the areas used for these activities have varied over time. The Project is located entirely on land within the Benton County Growth Management Act Agricultural District (GMAAD). Existing land uses in the Solar Array Siting Area include crop cultivation, rangeland, undeveloped areas, local roads, a rural residence, and agricultural structures (e.g., agricultural storage). Adjacent land uses surrounding the Solar Array Siting Area are similar and also include scattered rural residences, agricultural land (crop cultivation and rangelands), state highways, and the Hanford Reach National Monument.

2.0 REGULATIONS AND GUIDELINES

This section includes local and state regulations and guidelines that were considered during the development of this HMP, and which shape the contents and commitments included.

2.1 EFSEC

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). In the state of Washington, however, alternative energy facilities (of any size) are not required to enter the EFSEC process; the Applicant may opt in to the EFSEC process, or may choose to permit the project at the local level. For the proposed Project, the Applicant has elected to site the Project under EFSEC jurisdiction. Consequently, EFSEC has sole jurisdiction and authority over the review of environmental impacts and mitigation measures.

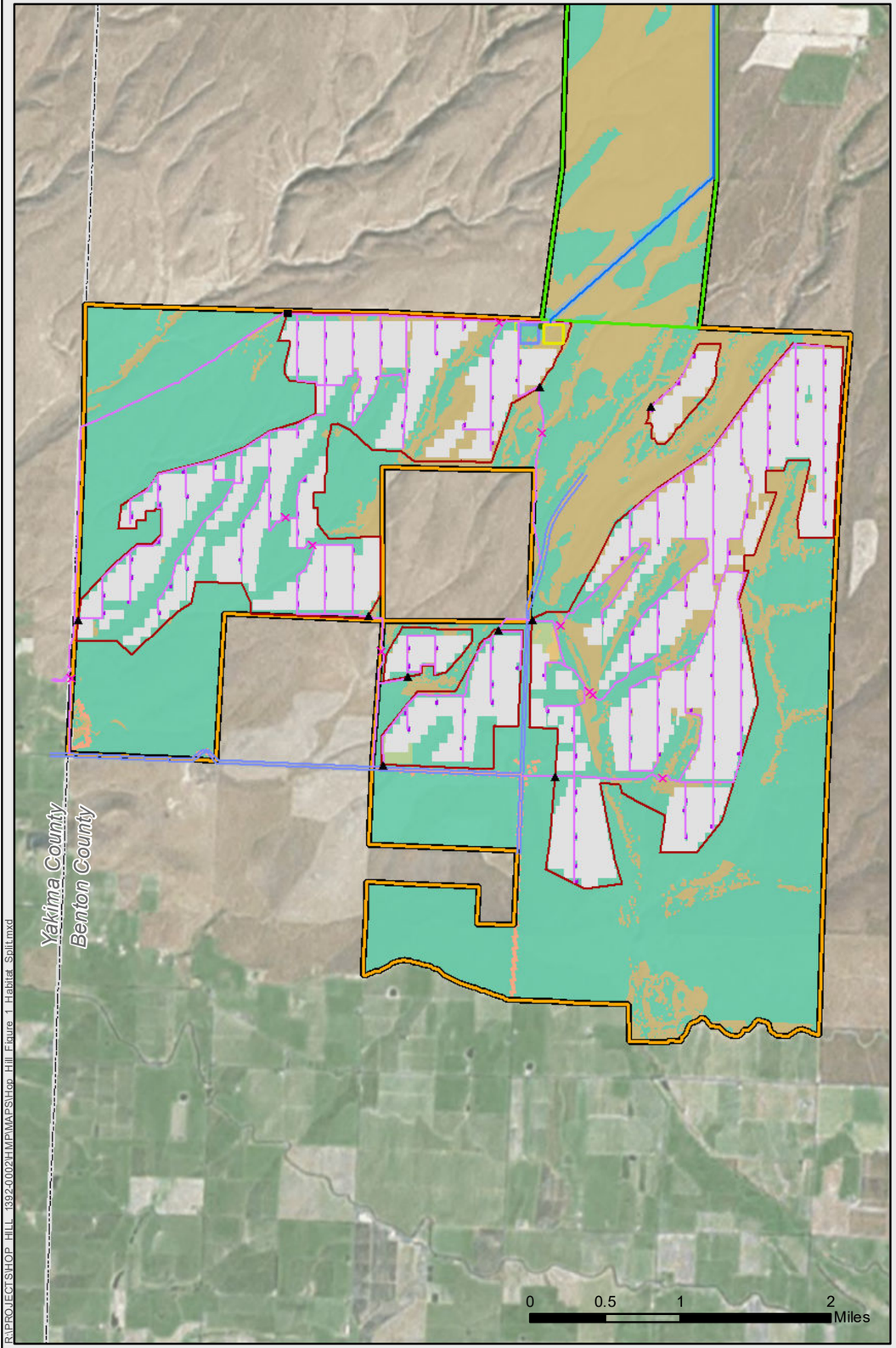
Once an alternative energy facility has elected EFSEC permitting, EFSEC coordinates the evaluation and licensing steps. EFSEC specifies the conditions of construction and operation. If approved, an SCA is issued in lieu of other individual state or local agency permits. Chapter 80.50 of the Revised Code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

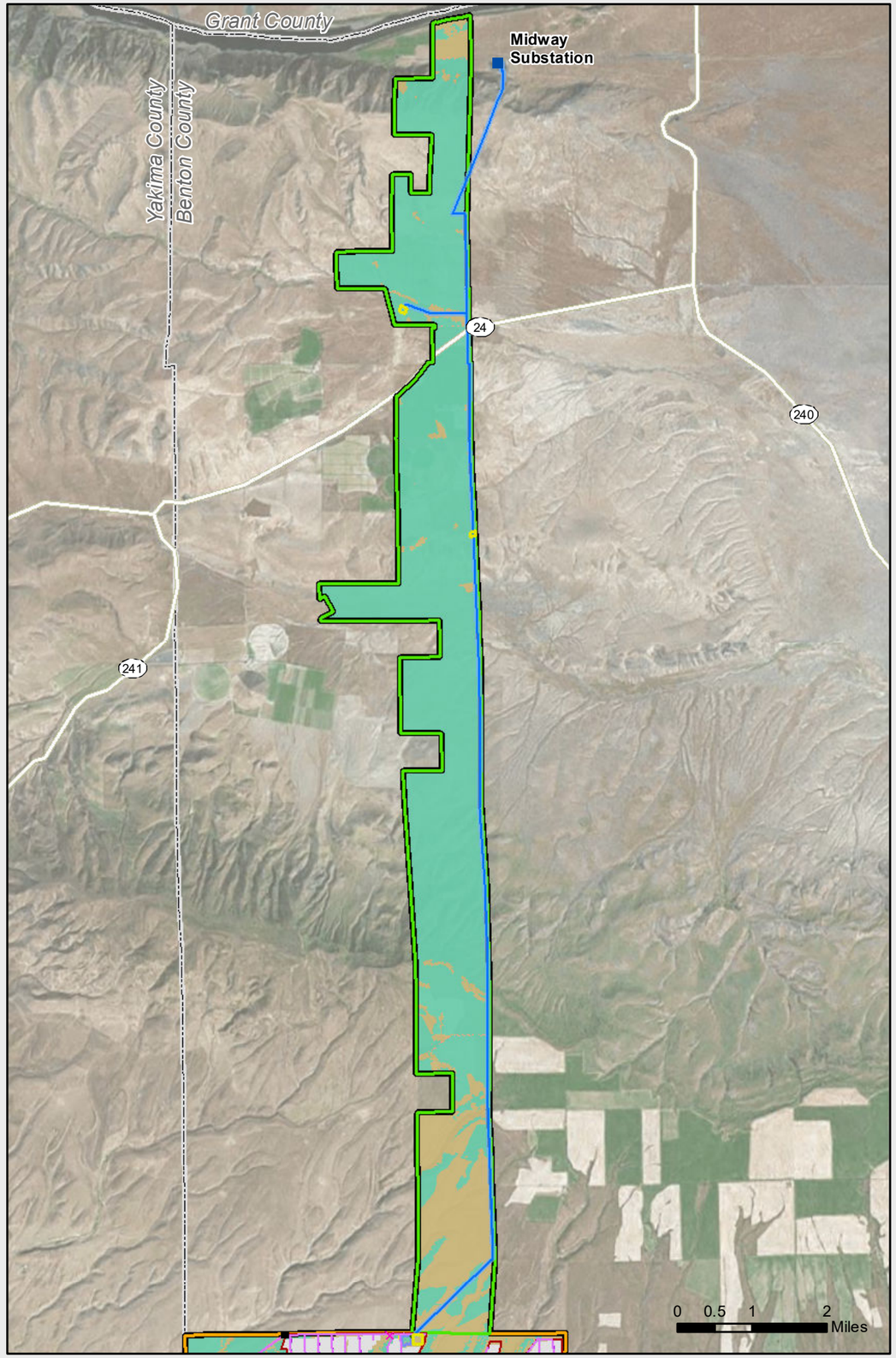
EFSEC is responsible for evaluating its applications under the Washington State Environmental Policy Act (SEPA; see Section 2.3) and to ensure that environmental and socioeconomic impacts are considered before a site is approved. After evaluating an application, EFSEC submits a recommendation to the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

Hop Hill Solar and Storage Project

Figure 1
Habitat

Benton County, Washington





- Siting Area (22,020 acres)
- Solar Array Siting Area (11,179 acres)
- Transmission Line Corridor Siting Area (10,841 acres)

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate
- Road and Collector Crossing
- 230- to 500-kV Gen-tie Line (Overhead)
- Gen-tie Line Easement (150 feet wide)

Basemap Features

- Existing Substation
- County Boundary

Habitat Type

- Croplands, Pasture, Urban and Mixed Environs
- Shrub-steppe
- Urban and Mixed Environs
- Open Water

N

NOT FOR CONSTRUCTION

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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 HMP has been prepared pursuant to WAC 463-60-332(3), which requires that the EFSEC ASC include a detailed mitigation plan in accordance with the requirements of WAC 463-60-332(3). In addition, this Draft HMP describes how the Project follows the habitat characterization and mitigation provisions of the Washington Department of Fish and Wildlife (WDFW) Wind Power Guidelines (WDFW 2009), as applicable, and Policy M-5002, pursuant to WAC 463-60-332(4).

2.2 Benton County Critical Areas Ordinance

Under Washington State's Growth Management Act (GMA), cities and counties are directed to adopt critical areas regulations. Counties and cities are required to include the best available science in developing policies and development regulations to protect the functions and values of critical areas (RCW 36.70A.172). Benton County's Critical Areas Ordinance (CAO) was developed to comply with the requirements of the GMA, and was most recently updated on August 21, 2018, consistent with the GMA periodic review requirement in RCW 36.70A.130.

Benton County's regulations regarding critical areas are established in Title 15 of the Benton County Code (BCC). Title 15 defines critical areas as including any of the following areas or ecosystems: 1) wetlands (see Chapter 15.04 BCC), 2) critical aquifer recharge areas (see Chapter 15.06 BCC), 3) frequently flooded areas (see Chapter 15.08 BCC), 4) geologically hazardous areas (see Chapter 15.12 BCC), and 5) fish and wildlife habitat conservation areas (FWHCA; see Chapter 15.14 BCC).

Per BCC 15.14.010, FWHCAs include the following:

1. Areas where federal or state designated endangered, threatened, and sensitive species have a primary association ;
2. State priority habitats and areas associated with state priority species;
3. Habitats and species of local importance as designated by Benton County (e.g., shrub-steppe habitat);
4. Waters of the state;
5. Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat;
6. Lakes, ponds, streams, and rivers planted with native fish populations;
7. Washington State Wildlife Areas; and
8. Washington State Natural Area Preserves and Natural Resource Conservation Areas (Benton County 2018).

Information provided in Part 4, Sections 4.8 and 4.9 of the EFSEC ASC submitted for this Project, as well as this HMP, addresses the requirement per BCC 15.14.030 and WAC 463-60-332(3) for the Applicant to provide a habitat assessment and discuss the habitat avoidance, minimization, and mitigation measures proposed for the Project.

As described in Part 4, Sections 4.8 and 4.9 of the EFSEC ASC, the Project would include disturbance in areas considered FWHCAs as defined by the CAO (e.g., shrub-steppe and associated wildlife species). This HMP addresses avoidance, minimization, and potential compensatory mitigation for impacts to upland habitats, including upland areas considered FWHCAs. In addition, as described in Part 4, Section 4.3 of the EFSEC ASC, surveys for the Project identified three palustrine emergent wetlands and two riverine wetland complexes within the Solar Siting Area. There are also 17 ephemeral stream segments and one irrigation canal in the Solar Array Siting Area. The majority of features within the Solar Array Siting Area were field delineated. Any portions of features located outside the Solar Array Siting Area were digitized using air photo interpretation on the desktop. The Project has been designed to minimize effects on wetlands and wetland buffers. Ephemeral streams were avoided by Project design to the greatest extent practicable. The Applicant applied a conservative 100-foot buffer to drainages from Project components within the Solar Array Siting Area. However, there are 10 locations where the collector lines and access roads will cross an ephemeral drainage. Permanent impacts associated with the installation of subsurface collector lines will occur either via trenching adjacent to the roadway or via directional boring. If directional boring is selected, the entrance and exit locations will be located outside of the floodplain.

Permanent impacts associated with the road crossings will include installation of either a low water crossing, an armored low water crossing, or a culvert in each ephemeral waterway. Low water crossings will have at least 8 inches of coarse aggregate and a layer of geotextile placed on the compacted subgrade. An armored low water crossing will have cable-connected concrete placed on a layer of geotextile and the compacted subgrade. If a culvert is used, it will have a cover of at least one foot of roadbed. The finished apron surface will align to the inner bottom of the culvert allowing water to flow through the channel unimpeded and without ponding upstream of the road crossing. Culverts will be sized for the 10-year, 24-hour storm event.

The Applicant is designing the Project to minimize impacts to ephemeral streams to the extent feasible and will obtain a Washington Hydraulic Project Approval and Clean Water Act Nationwide Permit through the Joint Aquatic Resources Permit Application (JARPA) once potential stream impacts are verified with near-final design prior to construction. Appropriate avoidance, minimization, and mitigation measures consistent with the Benton County CAO will be developed during development of the JARPA (e.g., erosion control measures).

2.3 Washington State Environmental Policy Act

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 Ch. 43.21C, Washington Environmental Policy Act, WAC Ch. 197-11, Washington State Department of Ecology SEPA Rules, and Section 6.35 of the BCC, which establish requirements for compliance with SEPA. As the Applicant has elected to site the Facility under EFSEC jurisdiction, as discussed above, EFSEC will serve as the lead agency for SEPA review.

This Draft HMP, in addition to the analysis provided in Part 4, Sections 4.3, 4.8, and 4.9 of the Project's EFSEC ASC and WAC 463-60-332(3), 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.

2.4 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 (e.g., EFSEC) is responsible for SEPA review before issuing a project permit. However, WDFW acts as a consultant to EFSEC and provides review and comments on environmental documents during the EFSEC siting process. Solar power-specific guidelines for solar energy developers to utilize in consideration of mitigation in the state of Washington are not available. Absent this guidance, and consistent with approved mitigation plans for other solar projects in Washington, the Applicant used the Wind Power Guidelines to develop this HMP where applicable, including the mitigation considerations listed below, which summarize the priorities 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 so the mitigation results in a net habitat benefit.

2.5 WDFW Policy M-5002

In 1999, WDFW established Policy M-5002 requiring or recommending mitigation. 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 development of this HMP, 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.[1]
- WDFW uses the following definition of mitigation in which avoiding impacts is the highest mitigation priority: 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

[1] WAC 463-60-332(3)(a) requires that the mitigation plan be "based on sound science."

mitigation required shall be considered and implemented, where feasible, in the following sequential order of preference:

  - Avoid the impact altogether by not taking a certain action or parts of an action.
  - Minimize impacts by limiting the degree or magnitude of the action and its implementation.
  - Rectify the impact by repairing, rehabilitating, or restoring the affected environment.
  - Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action.
  - Compensate for the impact by replacing or providing substitute resources or environments.
  - Monitor the impact and take 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;
  - O&M 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 Applicant will make to fulfill the mitigation, O&M, monitoring, and contingency plans.
- 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.

3.0 AGENCY CONSULTATION HISTORY

The Applicant met with representatives of WDFW on February, 17, 2022, to introduce the Project and discuss planned biological resource surveys. At the meeting, a summary of the planned biological resource surveys was provided. WDFW agreed that WDFW protocols should be followed for burrowing

mammals and raptor nests. They also noted the need to delineate shrub-steppe habitat. WDFW noted that there is a ferruginous hawk core nesting area near the northwest corner or the Project and therefore recommend a 3.2-kilometer (2-mile) buffer off of that area. WDFW also recommended looking into fencing alternatives that will allow for better wildlife movement through the area. The input from WDFW provided during this meeting was used to inform the habitat and wildlife background review and field surveys.

The Applicant met with representatives of WDFW again on October 7, 2022, to discuss the findings of wildlife, habitat, and wetland surveys conducted within the Siting Area, as well as to describe the Project's permitting approach and anticipated Project size and components. WDFW provided feedback on methods used and results documented. There were some specific questions about raptor nest data and some follow-up information was provided. There were general questions about the proposed Project layout and recommendations to keep the area relatively permeable to animal movement through the location of solar arrays and type of fencing used.

4.0 HABITAT MAPPING

Habitat mapping was completed using a combination of publicly available land cover data, desktop digitizing, and field verification (SWCA 2022). A field delineation of shrub-steppe habitat was completed by ERM (2021) within the Solar Array Siting Area. The results of those field verified shrub-steppe surveys were used to determine which publicly available land cover data were most accurate (i.e., aligned the best with field verified data). The U.S. Geological Survey (USGS) National Landcover Dataset (NLCD) (USGS 2019) and USGS LANDFIRE dataset (LANDFIRE 2020) were both reviewed and compared to field observations from previous habitat surveys (ERM 2021) and aerial imagery to determine the dataset that most accurately represented existing habitat conditions. It was determined that the NLCD aligned more closely with previous habitat survey results (ERM 2021) and aerial imagery than LANDFIRE (SWCA 2022). Therefore, NLCD data were used, in combination with previous habitat survey results and current and historic aerial imagery, to characterize and delineate habitat types in the Siting Area.

The majority of the Solar Array Siting Area is herbaceous grassland, followed by shrub-steppe habitat. The majority of the Solar Array Siting Area is grazed by livestock, with some smaller areas of cultivated cropland, and thus much of the natural vegetation has been disturbed, with exotic cheatgrass common throughout the site. Habitat types that were field verified within the Solar Array Siting Area and digitized within the Transmission Line Corridor Siting Area are summarized in Table 1 and are shown in Figure 1.

The extent of shrub-steppe habitat mapped in 2021 (ERM 2021) was compared to historical and current aerial imagery and then re-digitized throughout the current Solar Array Siting Area (SWCA 2022). Field verification of habitat types has not occurred in the Transmission Line Corridor Siting Area. The digitized shrub-steppe polygons were then combined with NLCD data (for non-shrub-steppe habitat types) to produce the final habitat acreages presented in Table 1.

The herbaceous grassland habitat type mapped at the Project by ERM (2021) and SWCA (2022) corresponds most closely with the pasture and mixed environs WDFW (2009) habitat type. Per WDFW (2009), unimproved pastures are "predominately non-native grassland sites, often abandoned fields

that have little or no active management." Per Johnson and O'Neil (2001), modified grasslands, a subcategory of the Agriculture, Pastures and Mixed Environs habitat type, are "generally overgrazed habitats that formerly were native eastside grasslands or shrub-steppe but are now dominated by annual plants with only remnant individual plants of the native vegetation." Modified grasslands, per Johnson and O'Neil (2001), are dominated by non-native grasses, including cheatgrass (*Bromus tectorum*) and other annual bromes, bulbous bluegrass (*Poa bulbosa*), and knapweeds (*Centaurea* spp.), such as the non-native grasslands and forblands mapped at the Project (SWCA 2022; Table 2).

Tall trees are negligible and only occur in one small stand in the far south of the Solar Array Siting Area near Spring Creek and in cultivated orchards in the north of the Transmission Line Corridor Siting Area. Following micrositing, these trees will likely be outside of the Project Area. ERM also delineated basalt cliff habitat (averaging 30 to 100 feet in height) within the Solar Arrays Siting Area along Black Canyon and Spring Creek in the northeast (Figure 1).

Table 1. Habitat Types in the Siting Area

Habitat Type	Solar Array Siting Area		Transmission Line Corridor Siting Area		Total Siting Area	
	Acres	Percent (%)	Acres	Percent (%)	Acres	Percent (%)
Herbaceous grassland	8,504	76%	5,969	55%	14,473	66%
Shrub-steppe	2,552	23%	1,913	18%	4,465	20%
Cultivated crops	68	1%	2,904	27%	2,972	13%
Developed	54	<1%	48	<1%	102	<1%
Hay/pasture	0	0%	1	<1%	1	<1%
Barren land	0	0%	5	<1%	5	<1%
Open water	0	0%	1	<1%	1	<1%
Total:	11,179	100%	10,841	100%	22,020	100%

Source: Habitat mapping based on NLCD data was updated with field data and aerial imagery.

Table 2. Project Habitat Type Crosswalk with WDFW Habitat Type and Classification

Project Habitat Type	Johnson and O'Neil (2001) Habitat Type	WDFW (2008) Priority Habitat	WDFW (2009) Wind Power Guidelines Habitat Type	WDFW (2009) Wind Power Guidelines Classification
Shrub-steppe	Shrub-steppe	Shrub-steppe	Shrub-steppe	Class II
Hay/pasture	Agriculture, Pastures and Mixed Environs	Not a Priority Habitat	Croplands, Pasture, Urban and Mixed Environs	Class IV
Cultivated crops				
Herbaceous grassland				
Barren land				
Developed	Urban and Mixed Environs		Urban and Mixed Environs	

5.0 PROJECT IMPACTS

Construction and operation of the Project would result in both permanent and temporary impacts on vegetation, as well as permanent alterations of vegetation within the solar array's perimeter fence lines, for the life of the Project. Table 3 provides the anticipated acres of impact to each habitat type

from construction and operation of the Project, including acres of temporary, permanent, and altered impacts. The following defines the terms used when discussing the various habitat impact types considered in this HMP:

- Permanent impact areas include locations where permanent Project components would occur (e.g., solar array panel posts, inverter pads, new permanent access roads, O&M building, Project substation, poles for overhead transmission lines). Vegetation in these areas would be removed for the life of the Project and constitute a permanent habitat loss.
- Temporary impact areas include work areas located outside the solar array perimeter fence that would be disturbed during construction and revegetated following construction, such as laydown areas and pulling areas for the transmission line, a corridor for trenching to install collector lines, and temporary access roads. Temporarily disturbed areas would be revegetated in accordance with a Revegetation and Weed Management Plan that will be developed and agreed upon by EFSEC, with input from Benton County Noxious Weed Control Board and WDFW, prior to construction.
- Altered habitat impacts include lands within the solar array perimeter fence, minus any areas occupied by permanent Project structures. These areas would either be passively or actively revegetated. Passive revegetation would involve waiting to see what plant species colonize naturally following construction. If passive revegetation is not successful (e.g., native species fail to colonize and site is dominated by non-native species), active revegetation could then occur. If necessary, active revegetation would include revegetating with low-growing vegetation consisting of native species and/or a mix of native and desirable non-native, non-invasive species. Inclusion of non-native, non-invasive species may be desirable in some instances. For example, some non-native, non-invasive species may provide more rapid soil stabilization and vegetative cover than slower-growing native species. Rapid vegetative cover of these species may also reduce the fuel load created by proliferation of non-native species such as cheatgrass. Following construction and revegetation, these areas would contain an altered vegetation community compatible with solar arrays and would support an altered wildlife community that is able to pass over, under, or through the perimeter fence.

Table 3. Anticipated Impacts to Habitat Types from the Project

Habitat Type	Temporary Impacts (Acres)[1/]	Altered Habitat Impacts (Acres)[2/]	Permanent Impacts (Acres)[3/]	Total[4/]
Croplands and Pasture	303	3,124	130	**3,557**
Shrub-steppe	71	1,475	58	**1,604**
Developed, Urban and Mixed Environs	3	0	< 1	**3**
Total[4/]	**377**	**4,599**	**188**	

1/ Temporary impacts include collector lines, temporary access roads, and work areas located outside the solar array perimeter fence lines and work areas within the 150-foot-wide easement for the overhead 230-kV/500-kV gen-tie line.
2/ Altered habitat impacts consist of lands within the perimeter fence lines, minus any areas occupied by permanent Project features/structures.
3/ Permanent impacts include solar array panel posts, inverter pads, permanent access roads, substation, O&M building, and poles for the overhead 230-kV/500-kV gen-tie line.
4/ 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." It is well established that compensatory mitigation, as outlined in Section 7.0, is an accepted practice at offsetting any lost habitat functionality. Areas that would be revegetated under the solar arrays following construction of the Project would not be impervious, would not be devoid of native vegetation, and would be revegetated within the life of the Project; therefore, these areas are not considered permanently impacted habitat. Following completion of construction, areas under the solar arrays would be revegetated with either low-growing native vegetation or a mix of native and non-native, non-invasive vegetation. The majority of the Solar Array Siting Area is currently degraded grassland with minimal native vegetation. With the proper seed mix and careful management the habitat condition under and around the solar arrays should improve functionality.

There is limited information about establishing and maintaining vegetation under solar panels in Washington, but there are studies showing that it is possible from other parts of the arid west. 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).

Similarly, pre- and post-construction biological monitoring data at a PV solar facility in California indicated similar to higher vegetation productivity on-site compared to reference sites (Sinha et al. 2018). At that site, the presence of dozens of wildlife species were documented, including California horned lark (*Eremophila alpestris actia*), ferruginous hawk (*Buteo regalis*), loggerhead shrike (*Lanius ludovicianus*), prairie falcon (*Falco mexicanus*), 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 site was reseeded with native plant 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). It is assumed that those results can be translated to eastern Washington, where similarly arid environs exist and that a representative wildlife community will continue to persist in the Project Area following construction.

H.T. Harvey and Associates (2015) studied avian abundance and behavior using point count methods at a PV array in grassland habitat. Counts were conducted inside the facility and in undeveloped reference areas over a three-year period before, during, and after construction. The results were highly variable, with some species (e.g., horned lark [*Eremophila alpestris*]) showing increases in abundance over time and within the facility, while others (e.g., mourning doves [*Zenaida macroura*] 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 facilities, use of the area is not eliminated; instead, the altered habitat supports an altered avifaunal community.

7.0 PROPOSED AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

The final Project layout will be designed to avoid and minimize impacts on vegetation and wildlife 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. Benton County's CAO describes mitigation requirements that are consistent with Policy M-5002. The plan presented here is consistent with both the Benton County CAO mitigation guidelines and the WDFW mitigation policy.

7.1 Avoidance and Minimization

Avoidance and minimization measures would be implemented during design, construction, and operation. The following avoidance and minimization measures were either applied during Project development or are proposed for Project construction and operations:

- To minimize impacts to wildlife and habitat, baseline studies were conducted at the Project in coordination with the WDFW and consistent with the WDFW Wind Power Guidelines (WDFW 2009). In order to minimize impacts to and avoid wildlife resources and habitat, the Applicant used the results of these baseline studies to inform the layout design.
- Project facilities were sited on previously disturbed (e.g., cultivated agricultural land, pasture, non-native grassland and forbland) areas as feasible to avoid impacts to native habitats and associated wildlife species.
- Impacts to shrub-steppe habitat were minimized to the extent feasible.
- The Project will use industry standard BMPs to minimize impacts to vegetation, waters, and wildlife.
- To the extent feasible, the solar array fence lines have been designed to enclose smaller solar arrays within the Project Area rather than enclosing one large fenced array, which will minimize habitat fragmentation and allow wildlife passage through the area. The fence design may be revised further based on ongoing coordination with EFSEC and WDFW, but the Project must prioritize regulatory compliance for electrical code and/or safety in these discussions.
- Evening and nighttime construction activities will be avoided to the extent practicable, which will limit the impacts of construction noise to wildlife.
- 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.
- If construction occurs during the bird nesting season, nest clearance surveys will be conducted if nesting substrate will be removed during the nesting season.
- 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 these resources. Construction personnel will be trained in the following areas when appropriate: awareness of biological resources (including Priority Habitats), potential bird nesting areas, and general wildlife issues.

- Overhead power lines are required to connect the Project to the grid. These lines, where feasible, will be designed and constructed to minimize avian electrocution, according to guidelines outlined in Avian Power Line Interaction Committee standards (APLIC 2012).
- Fire hazards from vehicles and human activities will be reduced via use of spark arrestors on power equipment, avoiding driving vehicles off roads, and allowing smoking only in designated areas 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 applicable agencies.
- The Applicant does not anticipate using pesticides during Project construction or operation; if unforeseen circumstances arise that require the use of pesticides, the Applicant will consult with WDFW and EFSEC regarding the use of pesticides to avoid and minimize impacts to burrowing owl (per Larsen et al. 2004).
- Unnecessary lighting will be reduced at night to limit attraction of migratory birds to the area. This may include mitigation measures such as motion and/or switch activation, using lights with timed shutoff, downward-directed lighting to minimize horizontal or skyward illumination, and avoidance of steady-burning, high-intensity lights.
- The Project was sited outside of wetlands and waters to the extent feasible to avoid and minimize impacts to these resources as described in Sections 4.3 and 4.5 of the EFSEC ASC, which will also avoid and minimize impacts to species that use these habitats.
- If special status plant species are observed, individuals and populations will be avoided to the extent possible. If avoidance is not possible, mitigation measures for impacts would be developed in consultation with the applicable agencies.
- The Applicant will limit construction disturbance by flagging any sensitive areas (e.g., wetlands, rare plant populations, if present) and will conduct ongoing environmental monitoring during construction to ensure flagged areas are avoided.

7.2 Restoration

A Vegetation and Weed Management Plan would be developed. Feedback will be requested from the Benton County Weed Control Board and WDFW 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 invasive species, weed control, monitoring; it may also include, in coordination with WDFW, adaptive management within the fenced areas. Additionally, the Vegetation and Weed Management Plan would include benchmarks and timelines to ensure revegetation success, which incorporate components of the mitigation proposal.

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, in compliance with the regulations and guidelines described in Section 2.0.

Table 4 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 4, 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 temporarily and permanently impacted habitats shown in Table 4 are based on the WDFW (2009) Wind Power Guidelines. 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." The altered habitat impact mitigation ratios were developed in the absence of solar development guidelines and considering that revegetated habitat under solar arrays does not meet the definition of temporary or permanent impacts from WDFW (2009); see Section 5.0.

Table 4. Anticipated Impacts by Habitat and Impact Type and Estimated Mitigation Need

Habitat Type	WDFW Classification	Impact (Acres)	Mitigation Ratio	Estimated Mitigation (Acres)
Temporary Impacts[1/]				
Shrub-steppe	Class II	71	1:1	71
Developed/disturbed	Class IV	3	0:1	0.0
Croplands, Pasture, Urban and Mixed Environs		303		
Altered Habitat Impacts[2/]				
Shrub-steppe	Class II	1475	1:1	1475
Developed/disturbed	Class IV	0.0	0:1	0.0
Croplands, Pasture, Urban and Mixed Environs		3,124		0.0
Permanent Impacts[3/]				
Shrub-steppe	Class II	58	2:1	116
Developed/disturbed	Class IV	<1	0:1	0.0
Croplands, Pasture, Urban and Mixed Environs		130		0.0
Total[4/]				**1,662**

1/ Temporary impacts include collector lines, temporary access roads, and work areas located outside the solar array perimeter fence lines and laydown and pulling areas associated with the transmission line.
2/ Altered habitat impacts consists of lands within the perimeter fence lines, minus any areas occupied by permanent Project features/structures.
3/ Permanent impacts include solar array panel posts, inverter pads, permanent access roads, substation, O&M building, and poles for transmission line.
4/ Total may not sum exactly due to rounding.

Table 4 depicts anticipated impacts and mitigation ratios based on the layout described in the Project's EFSEC ASC. These impacts and resulting mitigation acreages will be updated as appropriate once the final design has been completed. As discussed above and in Part 2 of the ASC, the Applicant is considering various design layouts within the Siting Area. The preliminary layout of the PV solar system and supporting components accounts for Project size, topography, and other constraints; however, the precise equipment and layout have not yet been finalized and the Applicant seeks to

permit a range of technology to preserve design flexibility. The exact locations of Project components may be revised during final Project design, and impacts from the Project could occur anywhere within the Siting Area up to the acreage identified in Table 1. The Applicant seeks the ability to scale mitigation identified in Table 4 accordingly. Additionally, per WDFW (2009), alternative ratios may be negotiated for replacement habitat that differs from impacted habitat.

The Applicant proposes three potential mitigation options including (1) acquisition of a conservation easement to protect and enhance a compensatory habitat mitigation area, (2) mitigation fee with WDFW, and (3) payment to a local land trust or conservation organization, as available. In addition, the Applicant would also consider alternative mitigation pathways if available in the future. The Applicant may use one option or a combination of options to mitigate for habitat impacts and will determine the combination of the mitigation options that best correlate to the impacted areas in consultation with WDFW and the affected landowners, subject to EFSEC's approval. The final mitigation approach will offer enough suitable habitat to meet the regulatory requirements described in Section 2. The duration of all three mitigation options will be for the life of the Project.

7.3.1 Option 1 – Conservation Easement

Option 1 may include a conservation easement on habitat, for the life of the project, that will provide functions and values for native vegetation and wildlife with an emphasis on mitigating those functions and values being impacted by the Project. The actual mitigation acres may be adjusted to account for these functions and values. For example, fewer acres of mitigation land may be required if that land is higher functioning (e.g., provides higher quality habitat, supports WDFW Priority Species) relative to the Project site or provides a beneficial expansion of high-value habitat (e.g., adjacent to existing or assumed future protected land).

The mitigation areas may be onsite (i.e., within the Siting Area). For example, some areas of shrub-steppe initially proposed for solar arrays have been avoided in the current layout. Sufficient acreage of like-kind habitat may be available within the Siting Area to mitigate for Project impacts and achieve no loss of habitat functions and values. This option would meet the criteria for replacement habitat outlined by WDFW (2009), including that it is like-kind, would be given legal protection as well as protection from degradation for the life of the Project, is in the same geographical region as the impacted habitat, and is at some risk of development given the renewable energy potential in this region.

If Option 1 is pursued, potential enhancements to provide habitat uplift may be appropriate depending on the mitigation area selected for conservation easement; enhancements could include weed control, seeding, planting, and/or other appropriate measures to ensure habitat functions and values are improved over time. The mitigation area could be managed by the Applicant or a designated conservation partner to ensure the habitat is protected from degradation for the life of the Project.

7.3.2 Option 2 – Mitigation Payment to WDFW

Option 2 is based on the mitigation "by fee" option outlined in WDFW (2009), which states that the project developer, the permitting authority, and WDFW can identify an appropriate annual fee for the

life of the Project to mitigate the Project's impacts on habitat. Alternatively, a "lump-sum" upfront payment could be applied in lieu of annual fees and be determined by the number of acres of impact taking into consideration the duration of impact. The fee (annual or lump sum) would be determined by estimating the cost of placing a conservation easement and managing the mitigation area, as described in Option 1, over a number of acres and in a location sufficient to meet the mitigation ratios and other criteria summarized in this document. Effectively, the fee would be the equivalent of the cost to acquire an easement and manage the conservation easement acres for the duration of the Project.

The payment would be used primarily to support "stewardship" (management, monitoring, restoration, protection from degradation [WDFW 2009]) of high-value habitat in the same ecological region as the Project. The stewardship funds could be applied to strategically important habitat acquired by WDFW. The annual fees or lump sum payment could be deposited into a dedicated WDFW account and may also be used for acquisition. The payment could be calculated by determining the cost per acre of obtaining a conservation easement and multiplying this by the acres of mitigation needed; the resulting value would be a payment amount equivalent to the cost of mitigating via a conservation easement. The determined cost per acre of a conservation easement may also take into consideration the cost of habitat enhancements, and maintenance and monitoring costs for the life of the Project.

7.3.3 Option 3 – Mitigation Payment to Local Conservation Entity

Option 3 may include a payment to a local land trust, conservation organization, universities and colleges, and/or tribal governments to support an ongoing or planned conservation project that benefits the types of habitats impacted by the Project. The identification of potential locations for mitigation in this option may consider areas identified for conservation and/or restoration by local tribes. The payment amount would be determined using similar methods as described for Option 2 (mitigation fee with WDFW), and could be used towards the acquisition and conservation of a property of the size described above to meet the Project mitigation need, or could be used to provide uplift to a larger area and/or at an existing conservation easement. The payment amount would be derived as described under Option 2, based on the impact acreage estimated in Table 4. The conservation project would be determined through coordination between the Applicant, EFSEC, WDFW, and the land trust or conservation organization or tribe.

This HMP 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 HMP 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 4 above would be revised to reflect actual habitat impacts 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 funding (as applicable) for approval by EFSEC. Once the conservation easement has been put in place, a copy of the deed restriction would be provided to EFSEC.

If the conservation easement option is chosen, the mitigation area would be protected from degradation, including development, for the life of the Project, and thus habitat function and value would likely improve over time as degrading forces are removed. The Applicant would also 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. The Applicant would report the results of monitoring annually for the first 5 years following construction 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: 1) protects sufficient habitat to meet the estimated habitat replacement requirements as described in Table 4, allowing for some variance based on functions and values and benefits to wildlife and wildlife habitat provided by the chosen mitigation area, as described in Sections 2 and 7.4, or 2) provides commensurate funding to WDFW or a WDFW-approved conservation project. For the funding option, mitigation would be considered successful at the time of payment to WDFW or agreed upon conservation organization.

8.0 WASHINGTON ADMINISTRATIVE CODE COMPLIANCE

Table 5 provides a summary of how this HMP is in compliance with WAC 463-60-332(3).

Table 5. Washington Administrative Code 463-60-332 (3) Requirement Matrix

Requirement	Section (s) Where Addressed
(3) Mitigation plan. The application shall include a detailed discussion of mitigation measures, including avoidance, minimization of impacts, and mitigation through compensation or preservation and restoration of existing habitats and species, proposed to compensate for the impacts that have been identified. The mitigation plan shall also:	Entire
(a) Be based on sound science	Throughout (e.g., see Sections 6.0 and 7.3.1). All references are shown in Section 9.0.
(b) Address all best management practices to be employed and setbacks to be established	Section 7.1
(c) Address how cumulative impacts associated with the energy facility will be avoided or minimized	Sections 5.0 and 7.0
(d) Demonstrate how the mitigation measures will achieve equivalent or greater habitat quality, value and function for those habitats being impacted, as well as for habitats being enhanced, created or protected through mitigation actions	Sections 4.0 and 7.0

Requirement	Section (s) Where Addressed
(e) Identify and quantify level of compensation for impacts to, or losses of, existing species due to project impacts and mitigation measures, including benefits that would occur to existing and new species due to implementation of the mitigation measures;	Sections 5.0 and 7.0
(f) Address how mitigation measures considered have taken into consideration the probability of success of full and adequate implementation of the mitigation plan	Sections 6.0 and 7.0
(g) Identify future use of any manmade ponds or structures created through construction and operation of the facility or associated mitigation measures, and associated beneficial or detrimental impacts to habitats, fish and wildlife	Not applicable
(h) Discuss the schedule for implementation of the mitigation plan, prior to, during, and post construction and operation	Section 7.3 and 7.4
(i) Discuss ongoing management practices that will protect habitat and species, including proposed monitoring and maintenance programs	Section 7.1, 7.4, and 7.5
(j) Mitigation plans should give priority to proven mitigation methods. Experimental mitigation techniques and mitigation banking may be considered by the council on a case-by-case basis. Proposals for experimental mitigation techniques and mitigation banking must be supported with analyses demonstrating that compensation will meet or exceed requirements giving consideration to the uncertainty of experimental techniques, and that banking credits meet all applicable state requirements.	Not applicable. Mitigation approaches are standard practice.

9.0 REFERENCES

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