Exhibit P

Fish and Wildlife Habitats and Species

Carty Generating Station
October 2026

Prepared for

Portland General Electric Company

Prepared by

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Acronyms and Abbreviations

AC	alternating current
APLIC	Avian Powerline Interaction Committee
ASC	Application for Site Certificate
BCP	Boardman Coal Plant
BESS	battery energy storage system
BGEPA	Bald and Golden Eagle Protection Act
Certificate Holder / PGE	Portland General Electric Company
CGS / Facility	Carty Generating Station
Council	Oregon Energy Facility Siting Council
GPS	Global Positioning System
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MW	megawatt
OAR	Oregon Administrative Rules
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ORBIC	Oregon Biodiversity Information Center
PV	photovoltaic
RFA	Request for Amendment
WAGS	Washington ground squirrel
USACE	U.S. Corps of Engineers

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1.0 Introduction

The Portland General Electric Company (PGE or Certificate Holder) is submitting a Request for Amendment (RFA) 4 to the Site Certificate for the Carty Generating Station (CGS or Facility). The Facility is located approximately 13 miles southwest of Boardman, in Morrow County, Oregon. As currently approved, the Facility is capable of generating up to 450 megawatts (MW) from the natural gas-fueled combined-cycle unit (Unit 1).

In RFA 4, the Certificate Holder is proposing photovoltaic solar energy generation with approximately 200 MW alternating current (AC) of nominal and average generating capacity and battery energy storage system (BESS) with the capability of storing up to 200 MW AC. The overall CGS additions proposed with RFA 4 (including the BESS) are referred to throughout this request as the Carty Solar Farm with proposed RFA 4 changes. The solar generation is proposed in two separate solar areas referred to as the Northern Solar Area, located north of the Carty Reservoir, and the Southern Solar Area, located south of the reservoir [see Figure 2 in RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station)].

Exhibit P was prepared to meet the submittal requirements in Oregon Administrative Rules (OAR) 45-001-0010(1)(p) to provide information about the fish and wildlife habitats and species that could be affected by the Carty Solar Farm with proposed RFA 4 changes. State threatened, endangered, and candidate species are exclusively addressed in Exhibit Q.

2.0 Analysis Area

The analysis area for fish and wildlife habitat and species identified in Exhibit P includes the Amended Site Boundary as defined in detail in Section 4.1.1.2 of the RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station), plus a 0.5-mile buffer, in accordance with OAR 345-001-0010(35)(c). The Exhibit P analysis area is shown on Figure P-1.

Figure P-1 also identifies the Biological Study Area where field surveys were performed in 2023 (Attachment P-1). Because disturbances are not proposed in all areas of the Amended Site Boundary, the Biological Study Area covered approximately 1,213 acres of the 3,603-acre Amended Site Boundary. As described below in Section 4.1, the desktop review in support of this exhibit was conducted for the entire fish and wildlife habitat and species analysis area (Figure P-1).

3.0 Agency Consultation

PGE has consulted with the Oregon Department of Fish and Wildlife (ODFW) regarding the appropriate protocols for documenting the presence of state sensitive species as required in OAR 345-021-0010(1)(p)(D) and the classification of fish and wildlife habitat as required in OAR 345-021-0010(1)(p)(B). AECOM is the consulting firm that conducted the 2023 biological surveys for

the Carty Solar Farm with proposed RFA 4 changes described throughout this exhibit. Tetra Tech is the consulting firm that conducted the 2026 botanical surveys and prepared this exhibit and its attachments. A summary of this consultation process is provided below.

- April 17, 2023. PGE and AECOM held a meeting to discuss level of survey intensity within the former BCP areas, use of The Nature Conservancy data, and level of effort expected for other sensitive species surveys.
- April 20, 2023. AECOM met with ODFW biologists to review survey protocols and to visit active Washington ground squirrel colonies.
- June 23, 2023. AECOM met with ODFW to obtain guidance on WAGS identification based on scat photos.
- December 1, 2023. PGE, AECOM, and Tetra Tech met with ODFW biologists to discuss the results of the 2023 biological surveys.
- January 16, 2024. PGE and Tetra Tech met with ODFW biologists to discuss habitat impacts and mitigation, as well as Site Certificate conditions.
- July 6, 2026. Tetra Tech coordinated with Oregon Department of Agriculture (ODA) prior to conducting surveys to verify the timing of surveys was appropriate to identify Lawrence's milkvetch.

4.0 Description of Biological and Botanical Surveys Performed – OAR 345-021-0010(1)(p)(A)

OAR 345-021-0010(1)(p) Information about the fish and wildlife habitat and the fish and wildlife species, other than the species addressed in subsection (q) that could be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0060. The applicant must include:

OAR 345-021-0010(1)(p)(A) A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey.

4.1 Desktop Review

In 2023, Tetra Tech conducted a desktop review to verify and revise the status and occurrences of species originally identified in 2016 (PGE 2018). Tetra Tech first reviewed ODFW's sensitive species list to identify state sensitive species with the potential to occur within the analysis area based on the ecoregion (ODFW 2021), and then removed any not listed in Morrow County (Oregon Explorer 2023). Species were further excluded for consideration if no potential habitat was present within the analysis area (Oregon Explorer 2023). Oregon Biodiversity Information Center (ORBIC) data (ORBIC 2023) was then reviewed to determine available species occurrence locations within the analysis area. The results of this desktop review are discussed in Section 6.1, and the results

from field surveys verified available habitat for wildlife species and provided further documentation of sensitive species within the analysis area.

Bird checklists recorded through eBird were reviewed for Carty Reservoir, a more than 1,000-acre industrial waste treatment and cooling pond located approximately 10 miles south of the Columbia River. Those checklists indicate a high use of migrating waterbirds recorded there from February through May and September (eBird 2023). Six water obligate species (i.e., grebes and mergansers) were recorded, as well as 30 water associate species (i.e., ducks, geese, coots, pelicans, cormorants, gulls, terns, egrets, herons, shorebirds).

4.2 Field Surveys

Table P-1 provides a summary of biological and botanical field surveys conducted at the Facility in 2023 within portions of the analysis area (Figure P-1). The survey reports are included in Attachment P-1, except for the wetlands and waters survey report, which is included in Exhibit J, Attachment J-1. Note that PGE biologist conducted Washington Ground Squirrel surveys each year since 2023; however, formal reports were not prepared.

Table P-1. Summary of Field Surveys Conducted at the Facility in 2023

Survey	Survey Timing	Reference	Extent
Vegetation and Habitat Mapping	April, May, and June	Attachment P-1	Biological Study Area
Noxious Weed Surveys			Biological Study Area
Rare Plant Surveys			Biological Study Area
General Wildlife Surveys			Biological Study Area
Raptor Nest Surveys			1-mile buffer of Biological Study Area
Washington Ground Squirrel Surveys	April and May		Biological Study Area, plus 1,000-foot buffer in suitable Washington ground squirrel habitat, and not separated from proposed ground disturbance by a habitat barrier.
Wetlands and Waters Surveys	April and May	Exhibit J, Attachment J-1	Wetland Study Area (approximately 1,167 acres)
Botanical Surveys[1]	July	Attachment P-1	Botanical Survey Area (approximately 958-acres)
1. Botanical surveys were completed July 15-17, 2026.			

4.2.1 Vegetation and Habitat Mapping

Vegetation and habitat mapping occurred in April, May, and June 2023 by AECOM biologists within the Biological Study Area (AECOM 2023a; included in Attachment P-1). Because disturbances are not proposed in all areas of the Amended Site Boundary, the Biological Study Area covered approximately 1,213 acres of the 3,603-acre Amended Site Boundary. During the habitat mapping, habitat categories established by the ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-

415-0025) were used to rank the habitat types present within the Biological Study Area. At least one vegetation survey plot, consisting of a 30-ft radius circle, was established for each field-delineated habitat type documented in the Biological Study Area. At each of these vegetation survey plots the dominant plant species were recorded and their percent cover estimated. The absolute cover for a given plant species was estimated by visually assessing the approximate percentage of the plot that species occupied including canopy cover for shrub and tree species. Dominant plant species included those species that comprised of more than 2 percent of the overall plot. Survey plot locations were established in areas that most fully represented the delineated habitat type, avoiding areas with atypical features like rock piles, recent disturbance, and roads. For the portions of the analysis area that were not covered by the Biological Study Area, habitat mapping is based on a desktop analysis using aerial photography interpretation and the Certificate Holder's familiarity with the site acquired through operation of the former BCP and existing CGS natural gas power plant (i.e., Unit 1).

4.2.2 Noxious Weed Surveys

Noxious weeds were documented incidentally during other biological surveys in April, May, and June 2023 within the Biological Study Area (AECOM 2023a; included in Attachment P-1). Noxious weeds were primarily documented while conducting the vegetation and habitat mapping and Washington ground squirrel (WAGS; *Urocitellus washingtoni)* surveys. A subsequent botanical survey was completed by Tetra Tech botanists in 2026 (Tetra Tech 2026). The purpose of the botanical surveys was to document the presence of federal or state-listed endangered, threatened and candidate vascular plant species and state and county-designated noxious weeds. All weed species listed in the Morrow County Weed Department's A and B weed lists were documented. The "A List" (noxious) weeds are classified as injurious to public health, crops, livestock, land, or property and mandated for control. The "B List" weeds (weeds of economic importance) are of limited distribution in the county and are subject to intensive control or eradication where feasible. Locations of distinct infestations or small clusters of individual plants were collected with GPS units. In areas where weeds were more widespread, those species were incorporated into the habitat mapping.

4.2.3 Rare Plant Surveys

Rare plants were documented incidentally during other biological surveys in April, May, and June 2023 within the Biological Study Area (AECOM 2023a; included in Attachment P-1). Lawrence's milkvetch (*Astragalus collinus* var. *laurentii*; threatened) was the only Oregon Department of Agriculture's (ODA)-listed plant species that could occur in the analysis area, based on previous site investigations and of ranges and habitat requirements of ODA threatened, endangered, and candidate plant species (PGE 2018). All milkvetch species encountered incidentally during other survey efforts were identified to species. Results from the 2023 surveys are summarized in Exhibit Q and presented in the corresponding survey report (Attachment P-1).

A subsequent botanical survey was completed by Tetra Tech botanists in 2026 (Tetra Tech 2026). The purpose of the botanical surveys was to document the presence of federal or state-listed endangered, threatened and candidate vascular plant species and state and county-designated noxious weeds. No endangered, threatened, proposed, or candidate vascular plant species were documented within the Survey Area during a desktop review or during the 2026 botanical field surveys.

4.2.4 General Wildlife and Raptor Nest Surveys

Wildlife observations were documented while conducting biological surveys within the Biological Study Area in April, May, and June of 2023 (AECOM 2023a; included in Attachment P-1). A list of wildlife species encountered was created and observations of special status species' activity centers (e.g., nests, dens, burrows) were documented with a Global Positioning System (GPS) point to mark the location.

The raptor nest survey area included a 1-mile buffer of the Biological Study Area. Surveys were performed by AECOM and PGE biologists. PGE regularly monitors raptor and common raven (*Corvus corax*) nests within 1 mile of their existing CGS facilities. To avoid duplicative efforts, AECOM only surveyed areas not covered by PGE in the raptor nest survey area. Raptor nests were documented by AECOM while conducting biological surveys in April and May 2023 and during targeted raptor nest surveys in June 2023. Documented nests were described and their location documented with a GPS unit during pedestrian and windshield surveys. Binoculars were used to search for and identify raptor nests in suitable habitat (e.g., trees, cliffs, rock outcroppings). Results from AECOM and PGE field surveys are presented in Section 7.1.

4.2.5 Washington Ground Squirrel Surveys

AECOM biologists conducted WAGS surveys from April 19-25 and May 22-26, 2023, following the protocol requirement for two survey phases (AECOM 2023a; included in Attachment P-1). The first day also included ODFW WAGS training to identify the species and learn the survey protocol. The WAGS surveys generally followed methodology developed in the Status and Habitat Use of the Washington Ground Squirrel (*Spermophilus washintoni*) on State of Oregon Lands, South Boeing, Oregon in 1999 (Morgan and Nugent 1999). The WAGS survey area included the Biological Study Area plus a 1,000-foot buffer in suitable habitats. Suitable habitat generally includes native and non-native grasslands and shrub-steppe habitats. Active agriculture and developed habitats are not considered suitable WAGS habitat and therefore were not included in the WAGS survey area. Active agriculture and developed habitats were field verified to confirm both habitat type and boundary Results from the 2023 WAGS surveys are summarized in Exhibit Q and presented in the corresponding survey report (Attachment Q-1).

4.2.6 Wetlands and Waters Surveys

Two site visits were conducted on April 24 and May 25, 2023, by AECOM biologists to delineate wetlands and other water features within the Wetlands Study Area (AECOM 2023b). Because

disturbances are not proposed in all areas of the Amended Site Boundary, the Wetlands Study Area covered approximately 1,213 acres within and adjacent to the Amended Site Boundary. The Wetlands Study Area is the same as the Biological Study Area. Wetlands were determined using methods described in the U.S. Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Data collected during wetlands and waters surveys informed habitat categorization and helped with the determination of state sensitive species presence described in this exhibit. Results from the 2023 wetlands and waters surveys are summarized in Exhibit J and presented in the corresponding survey report (Attachment J-1).

5.0 Identification and Description of Habitat – OAR 345-021-0010(1)(p)(B)(C)

OAR 345-021-0010(1)(p)(B) Identification of all fish and wildlife habitat in the analysis area, classified by the general fish and wildlife habitat categories as set forth in OAR 635-415-0025 and the sage-grouse specific habitats described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through 635-140-0025 (core, low density, and general habitats), and a description of the characteristics and condition of that habitat in the analysis area, including a table of the areas of permanent disturbance and temporary disturbance (in acres) in each habitat category and subtype.

OAR 345-021-0010(1)(p)(C) A map showing the locations of the habitat identified in (B).

5.1 ODFW Habitat Categorization

The ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0015) provides a framework for assigning one of six category types to habitats based on the relative importance of these habitats to fish and wildlife species. The definition of each category type, as well as an example of each category type within the analysis area, is shown in Table P-2. The Facility does not occur in sage-grouse habitat and therefore the Greater Sage-Grouse Conservation Strategy for Oregon does not apply.

Table P-2. ODFW Habitat Categorization

ODFW Habitat Category	Definition[1]	Examples of ODFW Habitat Categories within Analysis Area
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population, or unique assemblage.	• Occupied Washington ground squirrel burrow complexes identified during 2023 surveys. Category 1 habitat includes the burrow locations buffered by 785 feet to include the adjacent habitat.

ODFW Habitat Category	Definition[1]	Examples of ODFW Habitat Categories within Analysis Area
2	Essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population, or unique assemblage.	• WAGS seasonal home range shift areas. Category 2 habitat includes the ODFW-recommended 4,921-foot buffer (1,500 meters) of active WAGS burrows in suitable habitat.
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.	• Big Sage/Juniper Woodland and Big Sage Shrubland – These habitats provide forage and shelter for a wide variety of wildlife species. • Riparian Areas – This habitat provides abundant insects, plants, and moisture throughout the year.
4	Important habitat for fish and wildlife species.	• Broom Snakeweed Shrubland, Broom Snakeweed/Juniper Woodland, and Rabbitbrush Shrubland – These habitats may still provide habitat for wildlife, but the partial dominance of non-native weed species and recent disturbances preclude them from being considered limited in the area. • Cheatgrass Savannah – This habitat may be adjacent to sites that provide higher quality habitats or may encompass features that can provide habitat for wildlife.
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.	• No Category 5 habitat is presented in this exhibit.
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.	• Agricultural Areas – Include irrigated crop circles and areas associated with active agriculture. • Developed Areas – These areas include existing infrastructure and developed areas, such as the existing sewage lagoons.

1. Source: OAR 635-415-0025.

5.2 Description of Fish and Wildlife Habitat in the Analysis Area

The analysis area is situated within a mix of shrub steppe, annual grasslands, agricultural, and developed habitat types. The analysis area is generally flat; one drainage is present within Sixmile Canyon, and Carty Reservoir is located in the central portion of the analysis area.

Dominant vegetation identified by AECOM (2023a) includes big sage (*Artemisia tridentata*), cheatgrass (*Bromus tectorum*), bluebunch wheatgrass (*Pseudoroegneria spicata*), broom snakeweed (*Gutierrezia sarothrae*), and rubber rabbitbrush (*Ericameria nauseosa*). Small areas surrounding the Carty Reservoir consist of riparian vegetation, which includes black cottonwood (*Populus trichocarpa*) and Russian olive (*Elaeagnus angustifolia*). Wetland areas associated with Sixmile Canyon contain similar riparian vegetation in addition to wetland plants such as common reed (*Phragmites australis*). Representative photos of the area are included in the Biological Resources Survey Report (AECOM 2023a; Attachment P-1).

Habitat types within the analysis area are described in Table P-3 and displayed in Figure P-2. All habitat types and categories were identified within the Biological Study Area by AECOM during 2023 field survey efforts (Attachment P-1). In addition to the habitat mapping completed by AECOM, Tetra Tech reviewed mapping performed for previous RFAs and performed aerial photo interpretation to complete the habitat mapping of the analysis area. Some habitat types identified during surveys were combined into a single habitat type for purposes of this exhibit (e.g., cheatgrass savannah, weedy disturbed, and grassland post-burn were combined to non-native grassland; broom snakeweed shrubland and broom snakeweed/juniper woodland were combined to broom snakeweed shrubland; rabbitbrush shrubland and rabbitbrush/weedy shrubland were combined to rabbitbrush shrubland; and all habitat types containing riparian vegetation were combined to a single riparian habitat type).

Table P-3. Description of Habitat Types within Analysis Area

Habitat Type	Dominant Vegetation
Agriculture	Cultivated crops and associated disturbed areas
Developed	Roads and existing disturbed industrial areas
Big Sage Shrubland	Big Sage (*Artemisia tridentata*)
	Bare Ground
	Broom snakeweed (*Gutierrezia sarothrae*)
	Cheatgrass (*Bromus tectorum*)
	Yarrow (*Achillea millefolium*)
Big Sage/Juniper Woodland	Big Sage
	Bare Ground
	Broom snakeweed
	Cheatgrass

Habitat Type	Dominant Vegetation
	Western Juniper (*Juniperus occidentalis*)
Broom Snakeweed Shrubland	Cheatgrass (*Bromus tectorum*)
	Broom snakeweed
	Bluebunch Wheatgrass (*Pseudoroegneria spicata*)
	Balsam Root (*Balsamorhiza* sp.)
	Western Juniper
	Russian Thistle (*Salsola australis*)
Non-native Grassland	Cheatgrass
	Bare Ground
	Bulbous Bluegrass (*Poa bulbosa*)
	Crested Wheatrgrass (*Agropyron cristatum*)
	Sandberg Bluegrass (*Poa secunda*)
	Yellow Sweet Clover (*Melilotus officinalis*)
	Medusa Head (*Taeniatherum caput-medusae*)
	Tall Tumble Mustard (*Sisymbrium altissimum*)
	Russian Thistle
	Broom Snakeweed
Rabbitbrush Shrubland	Cheatgrass
	Rubber Rabbitbrush (*Ericameria nauseosa*)
	Bluebunch Wheatgrass
	Balsam Root
	Yellow Sweet Clover
	Crested Wheatgrass
	Broadleaved Pepperweed (*Lepidium latifolium*)
Riparian	Cheatgrass
	Russian Olive (*Elaeagnus angustifolia*)
	Black Cottonwood (*Populous trichocarpa*)
	Western Juniper

5.3 Quantity of Habitat Types by Habitat Category within the Analysis Area

Table P-4 shows the acreages within the analysis area of each habitat type with the assigned habitat category. The locations of each habitat type by category within the analysis area are shown on Figure P-2, as directed by OAR 345-021-0010(1)(p)(C). Presence of a particular habitat category within the analysis area does not indicate that this habitat will necessarily be impacted by the Carty Solar Farm with proposed RFA 4 changes. Table P-6 in Section 8.1 presents the areas of permanent disturbance and temporary disturbance (in acres) in each habitat category and habitat type with discussion on potential impacts to fish and wildlife habitat.

Table P-4. Acres of Habitat Type by ODFW Habitat Categories within Analysis Area

Habitat Type	Acres within Analysis Area[1]						Total Acres within Analysis Area[1]
	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	
Agriculture	-	-	-	-	-	1,316	**1,316**
Big Sage Shrubland	49	167	420	69	-	-	**705**
Big Sage/Juniper Woodland	-	81	57	-	-	-	**138**
Broom Snakeweed Shrubland	37	936	-	1,545	-	-	**2,518**
Developed	1	2	-	-	-	368	**371**
Non-native Grassland	5	21	-	349		-	**375**
Open Water	-	-	1,072	-	-	-	**1,072**
Rabbitbrush Shrubland	101	591	-	227		-	**919**
Riparian	17	56	355	2		-	**430**
Totals	**210**	**1,854**	**1,904**	**2,192**	**0**	**1,685**	**7,844**

1. Acres within analysis area do not total the acres of potential impact. Impacts are discussed in Section 8.

6.0 Identification of State Sensitive Species and Site-Specific ODFW Issues – OAR 345-021-0010(1)(p)(D)

OAR 345-021-0010(1)(p)(D) Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) and appropriate field study and literature review, identification of all State Sensitive Species that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW.

6.1 Identification of State Sensitive Species

Based on the desktop analysis and field surveys, 17 state sensitive species and 2 eagle species have potential to occur in the analysis area (Table P-5). Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are addressed in Exhibit P as species of concern protected under the Bald and Golden Eagle Protection Act (BGEPA). Of the 17 state sensitive species that have potential to occur in the analysis area, 7 are sensitive-critical and 10 are sensitive in the Columbia Plateau Ecoregion (ODFW 2021). This includes 2 reptile, 10 bird, and 5 mammal species. No state sensitive fish species are known or expected to occur in Carty Reservoir (PGE 2017). State threatened and endangered species are addressed in Exhibit Q.

6.2 Site-Specific Issues Identified by ODFW

ODFW did not identify any site-specific issues for the Carty Solar Farm with proposed RFA 4 changes. During the consultation described in Section 3.0, there were brief discussions regarding fence design specific to deer and elk getting in the enclosed solar area. The fencing in these areas will be 8 feet in height with an additional 1-foot of razor or barb wire, which is adequate to exclude deer and elk.

Table P-5. ODFW State Sensitive Species and Eagles with Potential to Occur in the Analysis Area

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area[3, 4, 5, 6]	Potential Use of Habitat Within the Analysis Area
Reptiles					
Northern Sagebrush Lizard	*Sceloporus graciosus graciosus*	Sensitive	Sagebrush habitat, but also chaparral, juniper woodlands, and coniferous forests.	High. Observed during 2016[7] surveys.	Shrub-steppe habitats with sandy soils
Western Painted Turtle	*Chrysemys picta bellii*	Sensitive-Critical	Marshy ponds, small lakes, slow-moving streams, and quiet, off-channel portions of rivers. Prefer waters with muddy bottoms and aquatic vegetation.	Moderate. Recorded in Morrow County. Analysis area within fair predicted habitat.	Carty Reservoir
Birds					
Bald Eagle	*Haliaeetus leucocephalus*	None[3]	Nests adjacent to large bodies of water. Nests in trees, rarely on cliff faces and ground nests in treeless areas. Known to scavenge opportunistically on carcasses in otherwise unsuitable habitat particularly during migration.	High. Observed during 2023 surveys. Two nests documented along south shore of Carty Reservoir.	Trees in riparian habitat associated with the margins of Carty Reservoir
Brewer's Sparrow	*Spizella breweri breweri*	Sensitive	Large expanses of sagebrush habitat.	Moderate. Documented within the analysis area by PGE during routine breeding bird surveys (last documented in 2013). Analysis area within good predicted habitat.	Sagebrush and other shrublands

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area[3, 4, 5, 6]	Potential Use of Habitat Within the Analysis Area
Burrowing Owl (Western)	*Athene cunicularia hypugaea*	Sensitive-Critical	Open grassland and shrub-steppe habitats with burrows created by other species, such as badgers, to use for nesting.	Moderate. Analysis area within good predicted habitat. Note PGE documented burrowing owls in the analysis area prior to a 2008 fire.	Shrub-steppe habitats, grassland habitats
Common Nighthawk	*Chordeiles minor*	Sensitive	Nesting habitat: open landscapes with little ground cover in sagebrush and rocky scablands and rimrock habitats of eastern Oregon.	High. Observed by PGE biologists during breeding bird surveys as recently as June 2023. Analysis area within fair to good predicted habitat.	Rocky portions of shrublands and grasslands, agricultural fields
Ferruginous Hawk	*Buteo regalis*	Sensitive-Critical	Open, arid landscapes. They typically use grassy areas and shrub-steppe with scattered shrubs or trees for perching and nesting. Also nest on rimrock or undisturbed ground.	High. Observed during 2023 surveys.	Shrub-steppe habitats, grassland habitats
Golden Eagle	*Aquila chrysaetos*	None[3]	Forages in open habitats.	High. Two historic ORBIC nest territories overlap the analysis area. PGE has documented foraging eagles on a regular basis. Analysis area within fair to good predicted habitat. Analysis area lacks nesting habitat but provides foraging habitat.	All mapped habitats within analysis area

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area[3, 4, 5, 6]	Potential Use of Habitat Within the Analysis Area
Grasshopper Sparrow	*Ammodramus savannarum*	Sensitive	Dry grassland habitat, generally with low to moderate grass height and low percent shrub cover.	High. Observed by PGE biologists during breeding bird surveys as recently as 2023. Analysis area within very limited predicted habitat.	Grassland habitats
Lewis's Woodpecker	*Melanerpes lewis*	Sensitive-Critical	Ponderosa pine forests, oak woodlands, oak-pine woodlands, cottonwood riparian forests, and areas burned by wildfires.	Low, during migration. Recorded in Morrow County. Analysis area not within predicted habitat.	Trees in riparian habitat around Carty Reservoir
Loggerhead Shrike	*Lanius ludovicianus*	Sensitive	Tall sagebrush for nesting and roosting and open areas with grasses and significant bare ground for foraging.	High. PGE biologists have documented the species within the analysis area (last documented in 2020) and in eBird checklists within the Amended Site Boundary. Analysis area within good predicted habitat.	All terrestrial habitats
Long-billed Curlew	*Numenius americanus*	Sensitive-Critical	Open habitat with relatively short grass and little woody vegetation.	High. Observed by PGE biologists during surveys as recently as 2023. Analysis area within fair to good predicted habitat.	Grassland habitats, agriculture

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area[3, 4, 5, 6]	Potential Use of Habitat Within the Analysis Area
Sagebrush Sparrow	*Amphispiza nevadensis*	Sensitive-Critical	Large patches or expanses of shrub-steppe habitat with high shrub cover, particularly big sagebrush.	High. PGE biologists have documented sagebrush sparrows during breeding bird surveys as recent as 2023. Analysis area within good predicted habitat.	Big sage shrubland habitat
Swainson's Hawk	*Buteo swainsoni*	Sensitive	Expansive grassland habitat with scattered nest trees.	High. Observed during 2023 surveys. One nest documented within analysis area.	Shrub-steppe habitats, grassland habitats, agriculture
Mammals					
Hoary Bat	*Lasiurus cinereus*	Sensitive	Middle age to older mixed coniferous and deciduous forests for roosting and breeding. Forages along edges of riparian corridors and openings within forests.	Low, during migration. Recorded in Morrow County.	Riparian habitat around Carty Reservoir
Pallid Bat	*Antrozous pallidus*	Sensitive	Dry, open habitat. Prefer grassland, shrub-steppe, and dry forest ecotones for foraging. Use crevices in cliffs, caves, mines, or bridges (and sometimes, buildings) for day, night, or maternity roosts, or hibernacula.	Moderate. Recorded in Morrow County.	Shrub-steppe habitats, grassland habitats, riparian habitat
Silver-haired Bat	*Lasionycteris noctivagans*	Sensitive	Late-successional conifer forests, although they may be found in other habitat types during migration.	Moderate, during migration. Recorded in Morrow County.	Riparian habitat around Carty Reservoir

Common Name	Scientific Name	State Status[1]	Expected Habitats[2]	Probability of Occurrence within Analysis Area[3, 4, 5, 6]	Potential Use of Habitat Within the Analysis Area
Spotted Bat	*Euderma maculatum*	Sensitive	Crevices in cliffs, caves, and canyon walls for day and night roosting. They also roost in trees adjacent to meadows at night. They typically forage in meadows, shrub-steppe, or along riparian corridors and water sources.	Low, during migration. Not recorded in Morrow County. Analysis area not within predicted habitat.	Treed edges along Carty Reservoir
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Sensitive-Critical	Use caves, mines, and isolated buildings for day and night roosting, maternity roosts, and hibernacula. Occasionally, uses hollow trees and bridges for day or night roosting.	Moderate. Recorded in Morrow County.	Roosts in caves, mines, hollow trees, built structures

[1] State Sensitive Species Status Definitions (ODFW 2021):

Sensitive = Fish and wildlife species that are facing one or more threats to their populations and/or habitat; are defined as having small or declining populations, are at-risk, and/or are of management concern. Implementation of appropriate conservation measures to address existing or potential threats may prevent them from declining to the point of qualifying for threatened or endangered status.

Sensitive-Critical = Sensitive species of particular conservation concern; have current or legacy threats that are significantly impacting their abundance, distribution, diversity, and/or habitat. They may decline to the point of qualifying for threatened or endangered status if conservation actions are not taken.

[2] Expected Habitats (ODFW 2023)

[3] Oregon Explorer species by county and species predicted habitats (Oregon Explorer 2023).

[4] ORBIC (2023) occurrence locations are from a variety of sources that vary in accuracy and precision. Because some ORBIC records, particularly older records, have a high level of uncertainty, some occurrence locations are represented by large polygons in order to reflect this lack of precision. These polygons are sometimes more than 1 mile in diameter around a single occurrence location, and do not necessarily reflect the actual location of the sensitive species. As a result, the ORBIC occurrence information was used as a rough approximation of occurrence.

[5] eBird 2023.

[6] Oregon Breeding Bird Atlas (Adamus et. al 2001).

[7] PGE 2018.

7.0 Baseline Survey of Habitat Use by State Sensitive Species – OAR 345-021-0010(1)(p)(E)

OAR 345-021-0010(1)(p)(E) A baseline survey of the use of habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW.

The desktop analysis described in Section 4.1 was performed to determine which sensitive species may be using the habitats available within the analysis area for breeding, foraging, or stop over habitat during migration. Baseline field surveys for available wildlife habitat were completed in 2023 within portions of the analysis area and sensitive wildlife species were recorded during both the habitat and WAGS surveys, as described in Section 4.2. Additional details on the field survey methods and results are provided in Attachment P-1. The use of habitats within the analysis area by state sensitive species are summarized in Table P-5.

7.1 Results of Field Surveys

7.1.1 2023 Biological Resources Surveys

Habitat types were identified within the Biological Study Area during surveys and habitat types within the analysis area, but beyond the Biological Study Area were identified by review of previous RFAs and aerial photo interpretation. All the habitat types were then categorized according to ODFW's Fish and Wildlife Habitat Mitigation Policy Habitat Categorization flowchart (ODFW 2008). Seven noxious weed species and no rare plant species were identified within the Biological Study Area (Attachment P-1). No rare plants species were identified during the 2026 botanical survey.

One amphibian, three reptile, 40 bird, and six mammal species were observed during field surveys within the Biological Study Area. Three WAGS colonies were detected during 2023 surveys (AECOM 2023c). Aside from WAGS, no other state-listed threatened, endangered, or candidate species were observed during surveys (Attachment P-1).

Two state sensitive species were observed during 2023 AECOM field surveys: one ferruginous hawk (*Buteo regalis*) and a family group of Swainson's hawks. The ferruginous hawk was observed in the distance flying to the east of the analysis area, and a pair of Swainson's hawks with a fledgling were observed in the southeast portion of the analysis area in a cluster of juniper trees; no nest was observed.

For the 2023 field season, PGE monitored historic nests and recorded new nests in the analysis area. A total of one bald eagle, three red-tailed hawk (*Buteo jamaicensis*), one osprey (*Pandion haliaetus*), one great horned owl (*Bubo virginianus*), and one Swainson's hawk active nests were documented by PGE within the analysis area. Of these, only Swainson's hawks are on the ODFW sensitive species list. The active Swainson's hawk nest was located in a Western juniper tree just

east of the former BCP coal yard. The two bald eagle nests were located right next to each other, one serving as the alternate nest, along the southern shoreline of Carty Reservoir.

Raptor nest surveys have occurred annually since 2023 in the general area and there have not been significant changes to nest density or species from the 2023 survey. Annual variability in occupancy is normal, and nest locations can shift around in a given area. The available nesting habitat has not changed, and pre-construction surveys will provide up-to-date nesting data for construction considerations.

8.0 Description of Potential Adverse Impacts – OAR 345-021-0010(1)(p)(F)

> *OAR 345-021-0010(1)(p)(F) A description of the nature, extent and duration of potential adverse impacts on the habitat identified in (B) and species identified in (D) that could result from construction, operation and retirement of the proposed facility.*

Construction and operation of the Facility will result in both permanent and temporary impacts to wildlife and their habitats. Permanent impact areas are those that will be converted from the existing condition to a different condition for the life of the Carty Solar Farm with proposed RFA 4 changes (e.g., BESS and associated perimeter fencing, collector substations, operations and maintenance building, solar areas). The two solar areas will produce permanent impacts to wildlife and their habitats as the vegetation will be removed and replaced with gravel or revegetated after construction. The solar areas include all solar components (i.e., modules, inverters, transformers, tracking systems, posts, perimeter fencing, access roads, and other associated equipment). The support poles associated with the 2-mile-long, 34.5-kV overhead collector line running along the road easement of the eastern shore of Carty Reservoir and southern end of the Northern Solar Area are also categorized as a permanent impact. These components are described in detail in Section 4.0 of the RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station).

Temporary impact areas include areas proposed to be temporarily impacted during construction of the 34.5-kV underground collector line and aboveground permanent project facilities. One temporary construction area will be created to support construction, store supplies and equipment, and facilitate the delivery and assembly of materials and equipment. This area is 21.4 acres in size and is located in an area that was formerly part of the BCP power block; following demolition of the BCP, the area was left as gravel and crushed concrete. The RFA 4's Division 27 document (Request for Amendment 4 for the Carty Generating Station) presents the temporary and permanent impacts of each component in Section 4.4. Restoration of the temporary impact areas will occur following construction as described in the Draft Vegetation and Soil Management Plan (VSMP; Exhibit I, Attachment I-2).

8.1 Potential Impacts to Fish and Wildlife Habitat

Potential impacts on fish and wildlife habitat include the temporary and permanent disturbance to habitat associated with the construction and operation of the Carty Solar Farm with proposed RFA 4 changes. The acres of temporary and permanent disturbances are summarized in Table P-6. Some impacts will be avoided or minimized as described in Section 9.0. Impacts that cannot be avoided will be mitigated as described in the draft Habitat Mitigation Plan (Attachment P-4).

Table P-6. Acres of Temporary and Permanent Disturbances

ODFW Habitat Category	Habitat Type	Temporary Disturbance (acres)	Permanent Disturbance (acres)
1	NA	0	0
2	Big Sage Shrubland	0.3	15.3
	Big Sage/Juniper Woodland	0.1	7.8
	Broom Snakeweed Shrubland	0.9	126.6
	Rabbitbrush Shrubland	2.5	5.2
	Category 2 Subtotal	**3.8**	**154.9**
3	Big Sage Shrubland	0	40.3
	Big Sage/Juniper Woodland	0	57.3
	Open Water[1]	0.3	0
	Riparian	0.8	4.9
	Category 3 Subtotal	**1.1**	**102.5**
4	Broom Snakeweed Shrubland	0.4	149.2
	Non-native Grassland	0.5	132.4
	Rabbitbrush Shrubland	8.4	151.9
	Category 4 Subtotal	**9.3**	**433.5**
5	NA	0	0
6	Developed	29.3	169
Total		**43.5**	**859.9**

[1] There are not any temporary disturbances in open water habitat types. The habitat mapping included the rip-rap shoreline on the eastern edge of Carty Reservoir as an open water habitat type. Refer to Exhibit J for detailed analysis of impacts on wetlands and waters.

8.2 Potential Impacts to State Sensitive Species

This section addresses potential adverse impacts to state sensitive species identified in Section 6.0. Habitat loss and modification resulting from construction activities will occur in permanent impact areas and temporary construction areas, and the associated impacts on wildlife will vary by species. In addition to these habitat-related impacts, potential adverse impacts to sensitive species due to construction and operation activities may include potential nesting and breeding disturbance,

collision with solar arrays, security perimeter fencing, overhead collector lines, vehicles and heavy equipment, and disturbance related to artificial lighting.

8.2.1 Reptiles

Two state sensitive reptile species have the potential to occur within the analysis area: Northern sagebrush lizards and Western painted turtles. Northern sagebrush lizards were recorded in two locations in the northeast portion of the proposed Southern Solar Area during surveys conducted in 2016.

Construction will result in loss of habitat where northern sagebrush lizards have been observed in the recent past, although their preferred habitat (big sagebrush and open sandy soils) is limited within the Amended Site Boundary. Based on the habitat mapping, there is big sagebrush habitat located in the northwest section of the proposed Southern Solar Area, as well as a couple of small, isolated areas northwest of the BCP. This species is fast and expected to avoid construction equipment, although construction-related mortalities are still possible, especially along newly constructed dirt roadways.

Western painted turtles have not been recorded within Carty Reservoir; therefore, adverse impacts associated with the Carty Solar Farm with proposed RFA 4 changes will be negligible. The Carty Solar Farm with proposed RFA 4 changes will not directly disturb Carty Reservoir; however, indirect impacts could occur if sediment enters the reservoir from nearby construction disturbance or if project-related chemicals spill into the reservoir. Per Site Certificate Condition 9.1, implementation of the Erosion and Sediment Control Plan (Exhibit I, Attachment I-1) during construction will avoid and minimize sediment and stormwater runoff from entering the reservoir. Per Site Certificate Conditions 5.9 and 10.37, implementation of a Spill Prevention, Control and Countermeasure Plan and the Hazardous Materials Management and Monitoring Plan will ensure measures are in place to avoid and minimize environmental effects of spills and hazardous materials.

8.2.2 Birds

Ten state sensitive bird species and two protected eagle species have the potential to occur within the analysis area and could be potentially impacted by the Carty Solar Farm with proposed RFA 4 changes (Table P-5). Other, non-sensitive bird species potentially occurring within the Amended Site Boundary could be impacted. Construction and operation of the Carty Solar Farm with proposed RFA 4 changes will result in minimal permanent loss of habitat, which will displace some nesting and foraging birds. Birds using habitat within the Amended Site Boundary are expected to relocate to other suitable habitat in the greater vicinity to the north, south, and east of the Amended Site Boundary; land use to the west is active agriculture.

Temporary impacts from noise and visual disturbance associated with the presence of personnel, vehicles, and equipment during construction could disrupt normal feeding or breeding activities or

cause birds to avoid the area. Operations will have reduced levels of human activity compared to construction but could still cause birds to alter their typical behavior and/or avoid the area.

Unlike avian fatality data available for wind turbines, there has been limited standard fatality data associated with photovoltaic (PV) solar energy infrastructure collected and available across the country. The available data on avian mortality at utility-scale solar energy sites suggests mortality at PV facilities is low, compared to collisions occurring with other anthropogenetic infrastructure (e.g., wind turbines, communication towers, tall buildings). In a study by Kosciuch et al. (2020) that analyzed fatality monitoring data from 10 PV solar facilities in California and Nevada, a fatality estimate of 2.5 birds/MW/year was calculated, but this was reduced to an average annual fatality rate of 1.8 birds per MW per year when an outlier project was removed.

It is theorized that waterbirds confuse the reflective array of solar panels located near ground level to be a body of water and attempt to land on them, and other bird species may fly into the reflective panels like they would windows, unable to perceive the difference between the sky and the glass. The Kosciuch et al. (2020) study showed that water obligate bird fatalities were present in most of the studies (80 percent). Water obligates are species that depend on water for mobility and cannot take flight from land, while water associates are species that rely on water for foraging, reproduction, and/or roosting. Kosciuch et al. (2020) stated that the causal mechanism responsible for water obligate mortalities at PV facilities could not be concluded with their study, and their results were not predictive outside of the vicinity of the sites included in their study.

In a recent solar study that included six small solar arrays located next to Lake Michigan, no water obligate mortalities were recorded and only two water associate mortalities showed evidence of death caused by colliding with solar panels (Rodriguez et al. 2023). In addition, an analysis that summarized bird fatalities to date at PV solar facilities in Alberta, Canada, was conducted and found no correlation with water associate and water obligate mortalities being present at higher numbers than other avian species (Kosciuch et al. 2022).

The results from three publicly available studies from large-scale California PV facilities reported the avian taxonomic groups most highly represented as fatalities were passerines (49 percent), followed by doves/pigeons (22 percent), although loons and grebes ranked second at one facility (23 percent; WEST 2014). Passerines are “perching birds” that make up almost half of all bird species, so that high percentage could easily correlate with the high number of birds in that taxonomic group. When analyzing the fatality species composition, often the species with the largest populations spend most of their time close to the ground and inhabit landscapes with relatively low-growing vegetation or are habituated to human structures. These species often represent the highest number of fatalities at PV facilities (e.g., horned larks, western meadow larks, mourning doves, house sparrows, house finches, gray partridge; Kosciuch et al. 2020, Kosciuch et al. 2022, WEST 2014).

In Oregon, results of a fatality study at a 56-MW photovoltaic facility near Prineville detected only three bird fatalities during one year of standardized searches, including only two native birds: horned lark (*Eremophila alpestris*) and a dark-eyed junco (*Junco hyemalis*) (ODOE 2020). These findings, which are the first for the region in Oregon, imply that significant fatality events are

unlikely at photovoltaic solar facilities in the area. However, low numbers of common ground-dwelling bird species fatalities are possible (ODOE 2020).

Although the fatality numbers from solar studies suggest the probability for waterbird fatality events associated with hitting solar panels is low, waterbirds may attempt to land on the solar panels at the two solar areas located next to a known waterbird stop-over area (Carty Reservoir), especially in times of poor weather and low visibility, and during nocturnal migration.

Artificial lighting has been shown to attract nocturnally migrating birds, resulting in collisions with structures such as communication towers, guy wires, and wind turbines. Research has shown that lighting at solar energy facilities can be designed to minimize that attraction, including using lights that are directed downward, have the lowest allowable intensity, and are on timers or motion sensors.

The 34.5-kV overhead collector line also poses a collision risk to birds given the proximity to Carty Reservoir. The collector line, estimated to be approximately 2 miles in length, is located along the eastern shoreline road of Carty Reservoir and to the south of the Northern Solar Area. Implementing the measures in the PGE (2020) Avian Protection Plan as referenced in the Amended Wildlife Habitat Monitoring and Mitigation Plan (Attachment P-3) will minimize the effects of the overhead collector line on birds. Powerline electrocution to raptor species along this same stretch of aboveground collector line is not expected because it will be constructed following the Avian Powerline Interaction Committee (APLIC) suggested practices manual and PGE's avian-safe design standards as outlined in the PGE (2020) Avian Protection Plan.

The security perimeter fencing proposed in this RFA, estimated to be up to 15 miles long, is an additional collision hazard for birds. The security fencing will be chain-link perimeter fencing up to 8 feet in height with additional strands of barbed wire on top.

During the 2023 survey effort, one active Swainson's hawk (state sensitive) nest was observed in a lone juniper tree east of the proposed Northern Solar Area and one active bald eagle nest was observed within the riparian areas associated with Carty Reservoir (Figure P-3). Construction activities occurring near these nests during the sensitive breeding season could cause the nests to fail. The protective buffers and monitoring requirements identified in Site Certificate Condition 10.8 will be implemented for sensitive raptor nests that are determined to be active during construction. Active Swainson's hawk nests' sensitive periods identified in Condition 10.8 apply from April 1 to August 15, and bald eagle (*Haliaeetus leucocephalus*) nests' sensitive periods apply from January 1 to August 15. Active raptor nests of great horned owls (*Bubo virginianus*) and red-tailed hawks (*Buteo jamaicensis*) were recorded within the riparian habitat types associated with Carty Reservoir. The protective measures included in Condition 10.8 do not apply to these species as they are generally more tolerant of disturbance. Implementation of the PGE (2020) Avian Protection Plan as referenced in the Amended Wildlife Habitat Monitoring and Mitigation Plan (Appendix P-3) would avoid or minimize impacts to these species, as feasible.

Construction occurring during the songbird breeding season (as early as February and lasting through August for horned larks) could cause active nests to fail due to direct destruction of nests

or nearby disturbance causing nest abandonment. All active bird nests from native species are protected under the MBTA.

As described above, 10 state sensitive bird species and two eagle species may occur within the analysis area. Impacts specific to sensitive bird species with the potential to occur within the Amended Site Boundary are addressed below. Measures described in Section 9.0 will be used to minimize or avoid these potential impacts.

- **Bald eagle (no state status, BGEPA-protected):** Two bald eagle nests were recorded during 2023 surveys, one of which is an alternate nest within one active territory (Attachment P-1). Minor disturbances to riparian habitat (Table P-6) would not directly disturb any known eagle nests. This species has also not been presented in the limited solar fatality data and is assumed not to be at risk of colliding with solar arrays. However, the overhead electrical collection line poses a collision risk to birds. PGE's Avian Protection Plan (PGE 2020) includes use of flight diverters or other line marking devices if warranted, which would reduce the likelihood of collision. Electrocution from the collector line is not expected due to the avian-safe design standards.

- **Brewer's sparrow (state sensitive):** No Brewer's sparrows were recorded during 2023 surveys (Attachment P-1), although they could occur in the limited shrub-steppe habitat within the Amended Site Boundary. Construction and operation of the Carty Solar Farm with proposed RFA 4 changes will result in the loss of suitable breeding and foraging habitat and potential nesting disturbance and potential collision risks with vehicles, solar arrays, perimeter fencing, and overhead collector line. Sparrow fatalities have been documented at PV solar facilities (WEST 2014), although no Brewer's sparrows have been reported specifically. Brewer's sparrows are a nocturnal migrant (ADW 2023); therefore, this species may be attracted to artificial lights produced by the Carty Solar Farm with proposed RFA 4 changes during migration, increasing collision risks.

- **Burrowing owl (state sensitive-critical):** No burrowing owls were recorded during 2023 surveys (Attachment P-1), although they could occur in grassland and shrubland habitats within the Amended Site Boundary, especially if burrowing mammals are present. Potential adverse impacts include the loss of foraging and breeding habitat and potential collision risks with vehicles, solar arrays, perimeter fencing, and overhead collector line during the breeding season. Burrowing owl fatalities have been documented at PV solar facilities and this species is a nocturnal migrant (WEST 2014); therefore, this species may be attracted to artificial lights produced by the Carty Solar Farm with proposed RFA 4 changes during migration, increasing collision risks.

- **Common nighthawk (state sensitive):** No common nighthawks were recorded during the 2023 surveys conducted by AECOM (Attachment P-1). Common nighthawks were recorded during PGE's breeding bird survey in 2023. Nesting habitat is present within the Amended Site Boundary. Nest sites can include a variety of substrates in open areas including bare

ground, gravel, and lithosol. Males also tend to roost on gravel roads, and therefore may roost within the Amended Site Boundary. Nesting disturbance and collision with vehicles could occur during construction and operation. Nighthawks most often feed at dawn and dusk during low light conditions and nighthawk fatalities have been documented at PV solar facilities (WEST 2014), therefore collision risks with the solar arrays, perimeter fencing, and overhead collector line are possible. This species is a diurnal migrant and should not be adversely impacted by artificial lighting at the Carty Solar Farm with proposed RFA 4 changes during migration.

- **Ferruginous hawk (state sensitive-critical):** Ferruginous hawks were recorded during 2023 surveys (Attachment P-1). The potential adverse impact to this species includes loss of foraging habitat, as no nests were observed within the analysis area. Limited hawk fatalities have been documented at PV solar facilities, and no ferruginous hawk fatalities specifically; therefore, the solar arrays should not create a collision risk to this species. However, the overhead electrical collection line poses a collision risk to birds. PGE's Avian Protection Plan (PGE 2020) includes use of flight diverters or other line marking devices if warranted, which would reduce the likelihood of collision. Electrocution from the collector line is not expected due to the avian-safe design standards.

- **Golden eagle (BGEPA):** No golden eagles were recorded during 2023 surveys (Attachment P-1), although they could forage in open grassland or shrubland habitats within the Amended Site Boundary. This species has also not been presented in the limited solar fatality data and is assumed not to be at risk of colliding with solar arrays. However, the overhead electrical collection line poses a collision risk to birds. PGE's Avian Protection Plan (PGE 2020) includes use of flight diverters or other line marking devices if warranted, which would reduce the likelihood of collision. Electrocution from the collector line is not expected due to the avian-safe design standards.

- **Grasshopper sparrow (state sensitive):** No grasshopper sparrows were recorded during the 2023 surveys conducted by AECOM (Attachment P-1). Grasshopper sparrow was recorded during PGE's breeding bird survey in 2023. They could nest in the grassland habitats within the Amended Site Boundary. Construction and operation of the Carty Solar Farm with proposed RFA 4 changes will result in the loss of suitable nesting and foraging habitat for grasshopper sparrows during the breeding season. Potential adverse impacts from collision risks exist with vehicles, heavy equipment, solar arrays, perimeter fencing, and overhead collector line. Sparrow fatalities have been documented at PV solar facilities (WEST 2014). Grasshopper sparrows are also a nocturnal migrant (Hill and Renfrew 2018); therefore, this species may be attracted to artificial lights produced by the Carty Solar Farm with proposed RFA 4 changes during migration, causing additional collision risks.

- **Lewis's woodpecker (sensitive-critical):** No Lewis's woodpeckers were recorded during 2023 surveys (Attachment P-1). The Amended Site Boundary does not provide breeding habitat, but the species could travel through the treed riparian areas during migration. Construction of the Carty Solar Farm with proposed RFA 4 changes will not impact suitable habitat. Additionally, as a diurnal migrant (Audubon 2023), this species will not be adversely impacted by artificial lighting. This species has also not been presented in the limited solar fatality data. However, potential adverse impacts may occur for migrant individuals passing through due to collision with perimeter fencing and overhead collector line.

- **Loggerhead shrike (state sensitive):** No loggerhead shrikes were recorded during 2023 surveys (Attachment P-1), although they could occur in the shrub habitats within the Amended Site Boundary. The potential adverse impacts to loggerhead shrike include habitat loss, nesting disturbance, and collisions associated with vehicles, heavy equipment, solar arrays, perimeter fencing, and overhead collector line. Loggerhead shrike fatalities have been documented at PV solar facilities and this species is a nocturnal migrant (WEST 2014); therefore, this species may be attracted to artificial lights produced by the Carty Solar Farm with proposed RFA 4 changes during migration, creating increased collision risks with solar arrays, perimeter fencing, and overhead collector line.

- **Long-billed curlew (state sensitive-critical):** No long-billed curlews were recorded during the 2023 surveys conducted by AECOM (Attachment P-1). Long-billed curlew were recorded during PGE's annual raptor nest survey in 2023. They could occur in grassland habitats within the Amended Site Boundary. Potential adverse impacts include loss of potential nesting and foraging habitat as well as potential collision with the solar arrays, perimeter fencing, overhead collector line, and moving vehicles and heavy equipment operating on-site during the spring and summer months. Long-billed curlew fatalities have been documented at PV solar facilities and this species is a nocturnal migrant (WEST 2014); therefore, this species may be attracted to artificial lights produced by the Carty Solar Farm with proposed RFA 4 changes during migration, creating additional collision risks. Additionally, long-billed curlews are susceptible to human disturbance during the breeding season, which can result in nest abandonment or disruption of brood-rearing (Dugger and Dugger 2002); the construction of the Carty Solar Farm with proposed RFA 4 changes may adversely impact active breeding attempts if construction occurs in proximity to long-billed curlew during the breeding season.

- **Sagebrush sparrow (state sensitive-critical):** No sagebrush sparrows were recorded during the 2023 surveys conducted by AECOM (Attachment P-1). Sagebrush sparrow were recorded during PGE's breeding bird survey in 2023. This species prefers expanses of shrub-steppe habitat with high shrub cover, particularly big sagebrush, although they could occur in the limited shrub-steppe habitat within the Amended Site Boundary. Potential

adverse impacts to sagebrush sparrows include permanent habitat loss, nesting disturbance, collision with solar panels and security fencing, and possibly lighting-related disturbance during migration, though this species' migratory behavior is poorly described. Sagebrush sparrow fatalities have been documented at PV solar facilities and this species is nocturnal migrant (WEST 2014); therefore, this species may be attracted to artificial lights produced by the Carty Solar Farm with proposed RFA 4 changes during migration, causing additional collision risks.

- **Swainson's hawk (state sensitive):** This species was recorded nesting at two locations in the analysis area during 2023 surveys; in addition, a pair of adults with a fledgling were observed in the southeast portion of the analysis area (Figure P-3; Attachment P-1). Construction will result in loss of foraging habitat and reduce nesting habitat if trees are removed. There is also collision risk associated with the aboveground collector line and solar arrays. Hawk fatalities have been documented at PV solar facilities (WEST 2014).

8.2.3 Mammals

Five state sensitive bat species have the potential to occur within the analysis area, although two of these species have a low probability (hoary bat and spotted bat) and one a moderate probability (silver-haired bat) of potentially moving through during migration (Table P-5). The permanent removal of habitat associated with the two solar areas and substation will reduce the foraging opportunities for two bat species potentially using the Amended Site Boundary: pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*). Carty Reservoir and the surrounding wetland habitat will remain available for foraging and roosting.

Collision with solar panels and security fencing is a potential threat to bats. Post-construction bat mortality data at utility scale photovoltaic solar energy sites are limited. Smallwood (2022) reviewed 18 California fatality monitoring reports from 1982 to 2018 and calculated an average fatality estimate of 0.06 bats/MW/year at PV solar arrays, 2.56 bats/kilometer (km)/year along perimeter fences, and zero fatalities associated with generation tie-in power lines.

9.0 Measures to Avoid, Reduce, or Mitigate Impacts – OAR 345-021-0010(1)(p)(G)

OAR 345-021-0010(1)(p) (G) A description of any measures proposed by the applicant to avoid, reduce, or mitigate the potential adverse impacts described in (F) in accordance with the general fish and wildlife habitat mitigation goals and standards described in OAR 635-415-0025 and a description of any measures proposed by the applicant to avoid, minimize, and provide compensatory mitigation for the potential adverse impacts described in (F) in accordance with the sage-grouse specific habitat mitigation requirements described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through 635-

140-0025, and a discussion of how the proposed measures would achieve those goals and requirements.

This section describes measures to avoid, minimize, and mitigate for impacts to state sensitive and other wildlife species and their habitats, and describes how those measures are expected to achieve the habitat mitigation goals of OAR 635-415-0025. The Facility does not occur in sage-grouse habitat; therefore, the mitigation requirements associated with the Greater Sage-Grouse Conservation Strategy for Oregon do not apply.

Some of the potential impacts described in Section 8 have been or will be avoided or minimized through micrositing, timing of construction, and other conditions described in the Third Amended Site Certificate (Council 2022) and summarized in Section 9.1. For unavoidable impacts associated with ground-disturbing activities that temporarily or permanently remove functional habitat, compensatory mitigation has been proposed as summarized in Section 9.2.

9.1 Avoidance and Minimization

9.1.1 Facility Design

Measures employed during design of the Carty Solar Farm with proposed RFA 4 changes to avoid and minimize impacts to fish and wildlife habitat, as well as state sensitive species, included the following:

- To the extent feasible, PGE sited the Carty Solar Farm with proposed RFA 4 changes on previously disturbed habitat, including developed areas and degraded habitat adjacent to developed areas.
- PGE sited all components of the Carty Solar Farm with proposed RFA 4 changes outside of Category 1 habitat, per Site Certificate Condition 10.7.
- PGE will construct the overhead collector line and 300-foot-long transmission line following PGE's avian-safe design standards which are consistent with the suggested practices manual published by APLIC (APLIC 2026). This is expected to minimize the risk of electrocution and collision to all bird species, including bald eagles, golden eagles, Swainson's hawks, and ferruginous hawks.

9.1.2 Construction and Operation Plans

PGE will finalize its Habitat Mitigation Plan with ODFW. PGE will adhere to the measures included in the Habitat Mitigation Plan (Attachment P-4) and Draft Vegetation and Soil Management Plan (VSMP; Exhibit I, Attachment I-2) to avoid, reduce or mitigate adverse impacts on fish and wildlife and their habitats during construction and operation of the Carty Solar Farm with proposed RFA 4 changes. In general, those measures include a combination of project siting, pre-construction surveys, temporal and spatial avoidance buffers, compensatory mitigation (Section 9.2), habitat restoration, and monitoring (per Condition 10.2). PGE also will take steps to control designated

noxious weeds and prevent fires and will implement measures from their company-wide Avian Protection Plan (PGE 2020).

The Certificate Holder proposes revisions to two Site Certificate Conditions to incorporate the amendments proposed in RFA 4.

The Certificate Holder proposes revisions to Condition 5.5 to require consultation with the Morrow County Weed Control Supervisor and obtain approval of the Amended Revegetation and Noxious Weed Control Plan and Vegetation and Soil Management Plan prior to construction of the Carty Solar Farm with proposed RFA 4 changes approved in Final Order on RFA 4 as follows:

5.5 i *Prior to beginning construction of Unit 1, ~~facility components approved in Final Order on RFA1, or~~ facility components approved in Final Order on RFA2, ~~or facility components approved in Final Order on RFA4,~~ the certificate holder must consult with the Morrow County Weed Control Supervisor and obtain approval of a Revegetation and Noxious Weed Control Plan. The final Revegetation and Noxious Weed Control Plan must be submitted to the Department of Energy, based upon the draft amended plan provided as Attachment ~~D~~ X of the Final Order on Amendment ~~2~~4, for approval prior to the start of construction.*

During construction and operation of the facility, the certificate holder must implement a revegetation and weed control plan. The certificate holder must comply with the applicable provisions of the Morrow County Weed Control Ordinances, as determined by the Morrow County Weed Control Supervisor and the Gilliam County Weed Control Officer.

[Final Order IV.D.2.6] [AMD1] [AMD2] [AMD4]

ii *Prior to beginning construction of Carty Solar Farm and facility components approved in Final Order on AMD 4, the certificate holder must consult with the Morrow County Weed Control Supervisor and obtain approval of a Vegetation and Soil Management Plan (VSMP). The final VSMP must be submitted to the Department of Energy, based upon the draft amended plan provided as Attachment X of the Final Order on Amendment 4, for approval prior to the start of construction.*

During construction and operation of the facility, the certificate holder must implement a VSMP. The certificate holder must comply with the applicable provisions of the Morrow County Weed Control Ordinances, as determined by the Morrow County Control Supervisor and the Gilliam County Weed Control Officer.[AMD4]

The Certificate Holder proposes modifications to Condition 10.1 to clarify which portions of the condition are applicable to CGS Unit 1 and Carty Solar Farm as follows:

10.1 Prior to construction, the certificate holder shall:

i. For Unit 1, ~~C~~consult with the Oregon Department of Fish and Wildlife and prepare a final Wildlife and Habitat Monitoring Mitigation Plan and submit the plan to the Department for review and approval. The certificate holder must conduct all wildlife and habitat monitoring as described in the approved Wildlife and Habitat Monitoring and Mitigation Plan, as amended from time to time.

[Final Order IV.H.2.1] [Mandatory Condition OAR 345-027-0020(6)] [AMD4]

ii. For Carty Solar Farm, ~~S~~submit for review and approval by the Department, in consultation with the Oregon Department of Fish and Wildlife, a final Wildlife and Habitat Monitoring Mitigation Plan based upon the mitigation methodology and enhancement actions in the

draft amended plan and draft Carty Solar Farm Habitat Mitigation Plan provided in the Final Order on Amendment ~~2~~4. The certificate holder must conduct all wildlife and habitat monitoring as described in the approved ~~Wildlife and Habitat Monitoring and Mitigation~~ Plans, as amended from time to time.

[AMD1] [OAR 345-025-0016] [AMD1] [AMD2] [AMD4]

9.1.3 Environmental Training and Sensitive Resource Awareness

Per Condition 10.12 and Condition 10.17, PGE will provide environmental training to construction and operation staff to avoid impacts to sensitive species, their habitat, review exclusion areas/seasonal avoidance buffers, and other environmental issues. Training includes reporting injured or dead wildlife to the on-site environmental manager.

9.1.4 Speed Limits

Per Condition 10.15, PGE will impose a speed limit of 20 miles per hour during construction and operation, which will minimize the occurrence of wildlife and vehicle collisions. A speed limit of 10 miles per hour will be implemented during the active WAGS season in proximity to known colonies.

9.1.5 Avian Protection

PGE will implement the following avian protection measures:

- Condition 10.8 – nest buffers and seasonal restrictions.
- Condition 10.10 – design above-ground electrical collection and transmission lines in accordance with PGE's overhead line avian-safe design standards and suggested practices for avian protection on power lines established by APLIC.
- Condition 10.11 – raptor nest monitoring.
- Company-wide Avian Protection Plan (PGE 2020)
    - Avian-safe design, consistent with Condition 10.10.
    - Consideration of risk factors for avian collisions and use of flight diverters, if warranted.
    - Internal reporting system for tracking avian mortalities.
- Implement the Amended Wildlife Habitat Monitoring and Mitigation Plan (Attachment P-3)
    - Raptor nest monitoring and nest buffers and seasonal restrictions; consistent with Condition 10.8.
    - Where feasible, conduct site preparation for construction to minimize potential for impacting nesting birds, such as performing ground/vegetation clearing outside of the typical bird breeding season (generally March to July).

9.2 Mitigation

Per Conditions 10.1, 10.2, and 10.3, PGE will consult with ODFW and ODOE to finalize the Amended Wildlife and Habitat Monitoring and Mitigation Plan (draft included as Attachment P-3), and the draft Habitat Mitigation Plan (Attachment P-4) including agreement on the total acreage mitigation required. PGE will acquire the legal right to a habitat mitigation area where habitat enhancement actions and monitoring will take place to account for the mitigation needs for the temporary and permanent impacts of the Carty Solar Farm with proposed RFA 4 changes.

10.0 Monitoring Program – OAR 345-021-0010(1)(p)(H)

> *OAR 345-021-0010(1)(p)(H) A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).*

No formal monitoring program is applicable to some of the measures discussed in Section 9.0. For instance, other than through professional review of the information included in this RFA, there is no monitoring program for design of the Carty Solar Farm with proposed RFA 4 changes. Similarly, adherence to speed limits will be expected but not formally monitored.

Environmental monitors will be on-site during construction to support implementation of the environmental training and sensitive resource awareness.

The Draft Vegetation and Soil Management Plan (VSMP; Exhibit I, Attachment I-2), the Amended Wildlife Habitat Monitoring and Mitigation Plan (Attachment P-3), and the Habitat Mitigation Plan (Attachment P-4) contain monitoring methods and success criteria.

Avian protection is monitored through implantation of the Amended Wildlife Habitat Monitoring and Mitigation Plan, which includes specific avian monitoring efforts for the Facility. The Amended Wildlife Habitat Monitoring and Mitigation Plan includes by reference the monitoring program that PGE implements company-wide through its Avian Protection Plan (PGE 2020).

11.0 Conclusion

As part of the RFA process, PGE identified and categorized the fish and wildlife habitats within the analysis area pursuant to OAR 635-415-0025. Based on survey results, infrastructure for the Carty Solar Farm with proposed RFA 4 changes was adjusted to avoid all impacts to Category 1 habitat, and where feasible, to Category 2 habitats. For other habitat categories, the Certificate Holder will mitigate for habitat impacts consistent with OAR 635-415-0025. Therefore, based on the information provided in this exhibit, there is sufficient evidence upon which the Council may find that the design, construction, and operation of the Facility as modified by this RFA, considering the proposed mitigation measures, is consistent with the fish and wildlife mitigation goals and standards of OAR 635-415-0025. Accordingly, PGE demonstrates compliance with OAR 345-022-0060.

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Figures

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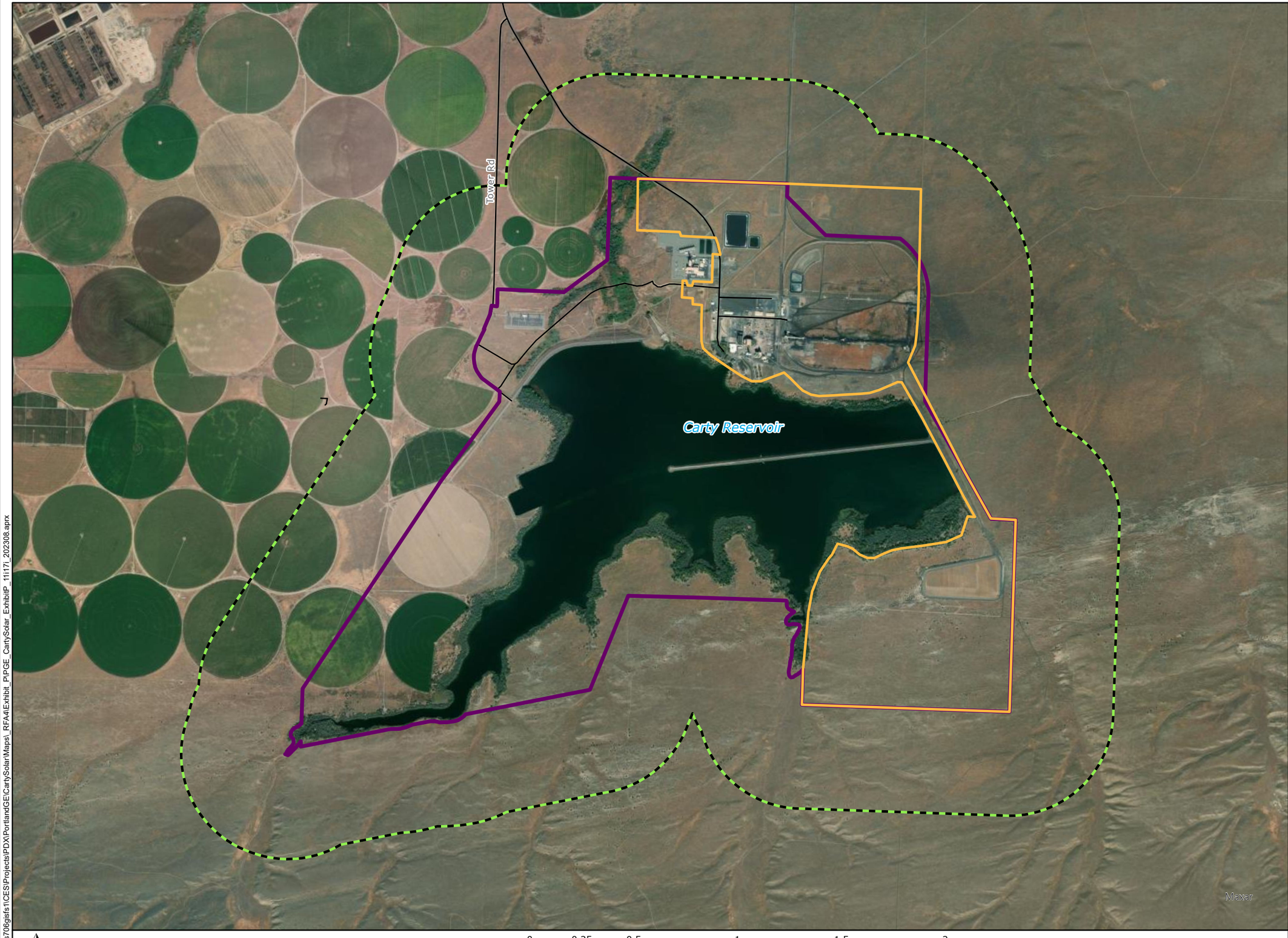
Carty Generating Station Request for Amendment 4

Figure P-1 Analysis Area for Fish and Wildlife Habitat

MORROW COUNTY, OR

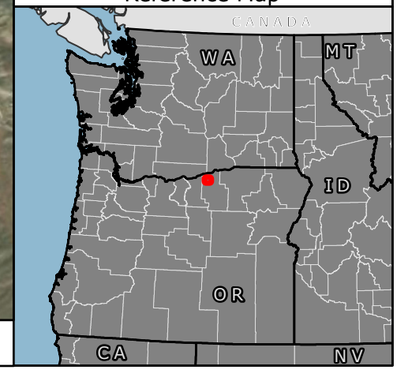


- Amended Site Boundary
- Analysis Area (0.5-mile buffer)
- Local Roads
- Biological Study Area (AECOM 2023)

TETRA TECH

PGE

Reference Map



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WGS 1984 UTM Zone 11N

0 0.25 0.5 1 1.5 2 Miles

NOT FOR CONSTRUCTION

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Carty Generating Station Request for Amendment 4

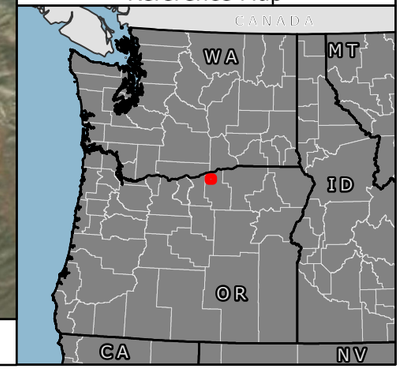
Figure P-2 Habitat Types and Habitat Categories in the Analysis Area

MORROW COUNTY, OR

Amended Site Boundary
Analysis Area (0.5-mile buffer)
Local Roads
Biological Study Area (AECOM 2023)
Habitat Category 1
Habitat Type (labeled with Habitat Category)
Agriculture
Big Sage Shrubland
Big Sage/Juniper Woodland
Broom Snakeweed Shrubland
Developed
Non-native Grassland
Open Water
Rabbitbrush Shrubland
Riparian

TETRA TECH
PGE

Reference Map



Tower Rd
Carty Reservoir
Maxar

1:28,000
WGS 1984 UTM Zone 11N
0 0.25 0.5 1 1.5 2 Miles
NOT FOR CONSTRUCTION

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Attachment P-1. Biological Survey Reports

(Confidential and provided under separate cover)

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Attachment P-2. Amended Revegetation and Noxious Weed Control Plan

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Carty Generating Station: Amended Revegetation and Noxious Weed Control Plan[1]

July 2, 2014[2], December 14, 2018[3], February 19, 2021,[4] **MONTH XX, 2026**

1 INTRODUCTION

Portland General Electric (PGE or certificate holder) received a site certificate from the Energy Facility Siting Council (Council) in June 2012 authorizing the construction and operation of a 900 megawatt (MW) combined-cycle natural gas-fueled energy generating facility in Boardman, Oregon in Morrow County (Carty Generating Station). The Council's 2012 approval authorized construction and operation of two 450-MW combined-cycle natural gas-fueled turbine generators (Unit 1 and Unit 2). PGE commenced Unit 1 construction on January 9, 2014; PGE completed Unit 1 construction on December 26, 2016; Unit 1 began operation on July 29, 2016. The construction commencement deadline for Unit 2 expired in June 2017 and therefore the certificate holder no longer has the authority to construct or operate Unit 2.

The Council issued the First Amended site certificate on December 14, 2018, authorizing a site boundary change and the construction and operation of a 50 MW photovoltaic solar unit, five 34.5 kilovolt (kV) interconnecting transmission line routing options, and temporary construction and laydown areas (Carty Solar Farm). The construction commencement and completion deadlines for the components authorized in the First Amended site certificate are February 4, 2022, and February 4, 2025, respectively. The Council issued the Second Amended site certificate on November 19, 2020 authorizing a boundary change; construction and operation of a new substation and associated distribution lines, septic system, backup water pipeline, wastewater pipeline, office/warehouse building, and security guard station; and incorporation of existing facilities that had been permitted under the Boardman Coal Plant site certificate including Carty Reservoir, existing transmission infrastructure, and interconnecting water pipelines. The construction commencement and completion deadlines for the components authorized in the Second Amended site certificate are December 9, 2023 and December 9, 2026 respectively. The Council issued the third site certificate on July 22, 2022, authorizing the extension of construction commencement and completion deadlines for the 50-MW Carty Solar Farm that was authorized in the First Amended site certificate by three years. The Carty Solar Farm was not constructed before that amended construction commencement date and therefore was no longer authorized.

In 2026, the certificate holder submitted a Request for Amendment 4 (RFA 4) to the Site Certificate for the Carty Generating Station in which the certificate holder proposed a new Carty Solar Farm. As part of RFA 4, the certificate holder developed a separate vegetation and soils management plan (VSMP) for the Carty Solar Farm; subsequently, this Amended Revegetation and Noxious Weed Control Plan has been

[1] This Plan is incorporated by reference in the Site Certificate for the Carty Generating Station and must be understood in that context. It is not a "stand-alone" document. This Plan does not contain all revegetation and weed control measures required of the certificate holder.

[2] A draft version of this Plan was included as Exhibit 1 to the Energy Facility Siting Council's Final Order on the Carty Generating Station Application for Site Certificate (June 29, 2012). In accordance with Site Certificate Condition 5.5 the certificate holder consulted with the Morrow County Weed Control Supervisor and obtained Oregon Department of Energy (ODOE) approval of the Plan prior to the start of construction (December 2013). As allowed by Section IX of the Plan, ODOE reviewed and approved the amended Plan on July 7, 2014.

[3] Minor Plan updates were made to reference additional facilities within Morrow County included in the First Amended Site Certificate, and the updated Plan was reviewed and approved by the Morrow County Weed Control Supervisor in December 2017 (see Section 7, References). Subsequent edits were made in February 2017 to remove references to the unbuilt transmission line between Grassland Switchyard and Slatt substation and remove references to Gilliam County. Finally, revisions to the agency consultation procedures, revegetation monitoring protocol, and success criteria were made in consultation with ODOE and ODFW in June 2018.

[4] Minor Plan updates were made to reference additional facilities within Morrow and Gilliam Counties included in the Second Amended site certificate, and for submittal of plan prior to 2021 septic system and substation construction activities.

revised to remove all references to Carty Solar Farm and focus on Unit 1 only. RFA 4 did not propose any changes affecting Unit 1.

The site certificate for the facility requires restoration of disturbed areas to satisfy the requirements of the Fish and Wildlife Habitat standard (OAR 345-022-0060), which aligns with the mitigation goals and policies within the ODFW Fish and Wildlife Habitat Mitigation Policy (OAR 635 Division 415). In order to meet the 'no net loss of habitat quality' goal of the mitigation policy, the certificate holder shall revegetate disturbed areas according to a set of agreed-upon success criteria that return the site to pre-disturbance condition. In addition, the certificate holder shall mitigate for permanent habitat impacts and temporal habitat loss in temporary disturbance areas by creating, enhancing, and monitoring a habitat mitigation area as detailed in the Wildlife Habitat Monitoring and Mitigation Plan (WHMMP). See the WHMMP for more detail on mitigation measures and mitigation acreages by disturbance type and habitat category.

This Amended Revegetation and Noxious Weed Control Plan (Amended Plan) outlines the goals, methods, and success criteria that will be used for revegetation of areas temporarily disturbed during construction and operation of the Carty Generating Station, including: the already-constructed Carty Unit 1; Grassland Switchyard; the transmission line segment connecting Unit 1 to the switchyard; laydown and parking lot areas; water pipeline area; wastewater pipeline area, sewer line area; and, areas temporarily disturbed during construction and operation of additional components approved under the original and ~~First and~~Second Amended site certificates. The new substation and associated distribution lines approved as part of the Second Amended Site Certificate are not included because they will be constructed in developed graveled areas and therefore re-vegetation and weed management is not required under this plan. Weed management of developed gravel areas is managed under PGE's routine facilities maintenance activities.

This Amended Plan has been developed in consultation with the Oregon Department of Energy (ODOE), Oregon Department of Fish and Wildlife (ODFW), and the Morrow County Weed Control Supervisor, and the Gilliam County Weed Officer, and utilizes restoration, revegetation, and weed control methods developed by other energy projects in this region of Oregon that were approved by Oregon Energy Facility Siting Council (2007). The objective of this Amended Plan is to minimize and mitigate potential impacts to the site, help bolster the native plant community, and provide clear guidelines for the revegetation and weed control of all areas disturbed by facility-related activities that are not occupied by permanent structures or facilities.

It is estimated that temporary impacts will occur on up to ~~165~~ 57.55 acres within the amended site boundary (Table 1). In general, the intensity of construction impacts on vegetation and habitat in temporary disturbance areas will be low and will often be limited to the flattening of vegetation by rubber-tired vehicles. Such low impact areas will not require the revegetation or soil management measures (such as topsoil salvage) described below but may require noxious weed prevention best management practices (BMPs) as appropriate (such as washing vehicles arriving from outside Morrow County or Gilliam County). In some instances, however, the intensity of impacts in temporary disturbance areas will be higher and will involve the removal of topsoil and vegetation through grading, excavation, or drilling activities.

The certificate holder will implement revegetation and weed control measures in all temporary construction disturbance areas where soil is disturbed. Such soil disturbance sites will require active measures to restore vegetation cover in a timely manner, control erosion, and prevent the establishment and spread of noxious weeds (plant species listed as noxious under the Oregon Department of Agriculture [ODA] Noxious Weed Control Program, and the Morrow County and Gilliam County weed lists).

Table 1. Estimated acreage of areas temporarily disturbed during Carty Generating Station Construction

Habitat Type by Project Area	Temporary Impact Areas to be Revegetated (acres)
Unit 1 and Supporting Facilities[5]	55.4
~~Carty Solar Farm and Supporting Facilities~~[6]	~~107.43~~
Amendment 2 facility components.[7]	2.15

2 GOALS AND OBJECTIVES

The overall goal of this Amended Plan is to return the facility site to pre-construction (or better) conditions. The Amended Plan has the following objectives:

- Promote recovery of disturbed areas;
- Re-establish native plant communities;
- Control the introduction and spread of undesirable plants;
- Protect the site from erosion; and
- Support existing wildlife habitat.

These objectives will be achieved by a combination of techniques, including, but not limited to, the following:

- Installing and maintaining appropriate erosion control BMPs and construction limit staking per the Oregon Department of Environmental Quality (ODEQ) 1200-C permit;
- Revegetating disturbed areas with native grasses, forbs, and shrubs (See Table 2 in Section 5 for species list);
- Controlling weed germination and growth for the life of the facility including facility pre-construction, construction and operation; and
- Establishing a regular monitoring program prior to and after construction to ensure the continued successful development of restored areas, and to quickly identify new populations of weeds.

3 SITE DESCRIPTION

The facility site is located in Morrow and Gilliam Counties, Oregon, approximately 13 miles southwest of the town of Boardman. The Carty Generating Station facility area is situated approximately 7–10 miles south of the Columbia River within the Columbia Plateau ~~physiographiceco~~region. The facility includes two transmission lines: one 500 kV line that extends west from the Grassland Switchyard 17 miles to the Slatt Substation and one 230 kV line that extends approximately 17 miles northwest to the

[5] Unit 1 temporary disturbance areas are in the 5th year of revegetation monitoring as of 2021.

[6] ~~Development of Carty Solar Farm has not yet occurred as of 2021.~~

[7] New septic system, Carty Substation, water pipeline, wastewater pipeline, office/warehouse building, security guard station, and associated plumbing and communication lines. Of the approved components, the ~~S~~septic system, ~~and~~ Carty Substation, and office/warehouse building construction ~~planned for 2021~~was completed between 2021 and 2023. The water pipelines and security guard station were ultimately not constructed.

Dalreed Substation. There is no proposed disturbance associated with the existing transmission lines. All proposed new areas of disturbance are within Morrow County. The facility is located on an upland plateau at an elevation of approximately 650 feet above sea level.

Habitat Types and Subtypes within Facility Site

The facility area is composed primarily of shrub-steppe and grassland habitat subtypes or agricultural cropland. The agricultural lands are typically used for rotating crop production, including potatoes, onions, and corn. The Shrub-steppe habitat subtype located toward the eastern end of the facility, including areas near Unit 1, is rangeland that is no longer being grazed. There are some riparian and wetlands habitats present within the amended site boundary; however, all facility components – including transmission line towers – have been sited to avoid impacts on these habitats. Soil types in the area consist primarily of sandy loam, silt loam, and very stony loam.

Much of the native Shrub-steppe vegetation within the site boundary has been modified by livestock grazing and past wildfires. Functional mature shrub-steppe habitat is patchy and is dominated by big sagebrush (*Artemisia tridentata*), broom snakeweed (*Gutierrezia sarothrae*), bluebunch wheatgrass (*Pseudoroegneria spicata*), cheatgrass (*Bromus tectorum*), gray rabbitbrush (*Ericameria nauseosa*~~*us*~~), needle-and-thread grass (*Hesperostipa comata*), and Sandberg's bluegrass *(Poa secunda)*. Grasslands consist of cheatgrass, crested wheatgrass (*Agropyron cristatum*), bulbous bluegrass (*Poa bulbosa*), bluebunch wheatgrass, needle-and-~~-~~thread grass, Sandberg's bluegrass, redstem filaree (*Erodium cicutarium*), and mouse-ear chickweed (*Cerastium* sp.). Additional species found within the site boundary include yarrow (*Achillea millefolium*), yellow sweet clover (*Melilotus officinalis*), balsam root (*Balsamorhiza* sp.), tall tumble mustard (*Sisymbrium altissimum*), Western juniper (*Juniperus occidentalis*), Russian olive (*Elaeagnus angustifolia*), and black cottonwood (*Populous trichocarpa*). Riparian forests are dominated by Russian olive, Pacific willow (*Salix lucida* ssp.), Canada goldenrod (*Solidago canadensis*), amaranth (*Amaranthus* sp.), and broadleaf cattail (*typha latifolia*). The wetland areas associated with Sixmile Canyon not only contain similar riparian vegetation found around the reservoir, these areas also contain wetland plants such as common reed (*Phragmites australis*).

Weed Types within Facility Site

Multiple species classified as noxious weeds by the Oregon Department of Agriculture (ODA) occur in Morrow and Gilliam Counties. ODA has designated two categories of noxious weeds, "A" list species and "B" list species. Weeds designated on the "A" list are species of known economic importance which occur in the state in small enough infestations to make eradication or containment possible or are rare species not known to occur in the state but which have a presence in neighboring states, making future occurrence seem possible. Weeds on the "B" list are weeds of economic importance which are regionally abundant but may have limited distribution in some areas. Listed species identified during site surveys (2010–2023~~17~~) within the amended site boundary~~area have not~~ do not include~~d~~ any ODA "A" list species, but ~~have~~ include~~d~~ the following ODA "B" list species: diffuse knapweed (*Centaurea diffusa*), yellow star-thistle (*Centaurea solstitialis*), Canada thistle (*Cirsium arvense*), ~~and~~ bull thistle (*Cirsium vulgare*), perennial pepperweed (*Lepidium latifolium*), Scotch thistle (*Onopordum acanthium*), houndstongue (*Cynoglossum officinale*), medusahead rye (*Taeniatherum canput-medusae*), rush skeletonweed (*Chondrilla juncea*), saltcedar (*Tamarix ramosissima*), and alkali ~~swainsonpea~~ Swainsonpea (*Sphaerophysa salsula)*. The Morrow County weed list classifies yellow star-thistle, Scotch thistle, rush skeletonweed, and houndstongue as ~~an~~ "A" list species at the county level. ~~Rush skeletonweed (*Chondrilla juncea*) is another county "A" list species that is present in the area and has high potential to occur on the site.~~ Morrow County considers both yellow star-thistle and rush skeletonweed as high priority species needing ~~for~~treatment. The Morrow County weed list classifies diffuse knapweed, medusahead rye, perennial pepperweed, and Canada thistle as "B" list species at the county level. Gilliam County follows ODA regulations and does not have a separate weed list.

4 PRE-CONSTRUCTION AGENCY CONSULTATION

This section of the Amended Plan was incorporated on December 14, 2018, and does not apply to activities already completed, including construction of Unit 1 and its associated components. Therefore, this section applies to components approved in the First Amended site certificate and any subsequent site certificate amendments, with the exception of Solar Facilities included under the Carty Solar Farm VSMP.

Prior to construction, the certificate holder shall consult with ODFW, ODOE, and Morrow and/or Gilliam County Weed Departments to discuss: habitat category and habitat subtype conditions; monitoring site locations and conditions; reference site (as needed, see Section 6) locations and conditions; revegetation methods; erosion and sediment control measures; weed inventory and control methods; monitoring methods; and implementation schedule.

Prior to facility construction, the certificate holder shall identify monitoring sites and reference sites (as needed) in consultation with ODFW and ODOE. If reference sites are needed, they should closely resemble the pre-disturbance characteristics of the revegetation area monitoring sites as indicated by site conditions, including vegetation density and relative proportions of desirable vegetation and species diversity (see discussions of monitoring protocol and success criteria in Section 6). The certificate holder shall consider land use patterns, soil type, local terrain, and noxious weed densities in selecting monitoring and reference sites. See Section 6 for a more detailed discussion of monitoring site selection and protocol.

Once monitoring and reference sites are selected by the certificate holder and approved by ODOE and ODFW, the monitoring and reference sites shall remain in the same location unless approval for use of a differing reference site is obtained from ODOE and ODFW.

It is expected that minor, <0.25-acre soil disturbance associated with future transmission line maintenance activities will require erosion control and seeding consistent with this plan but not the detailed five-year monitoring protocol. Impacts of any major transmission line construction work will be evaluated for revegetation and monitoring needs in consultation with ODFW and the County weed agencies.

5 REVEGETATION AND WEED CONTROL METHODS

Soil preservation and preparation techniques that are essential to a successful revegetation program, including topsoil segregation, erosion control, and noxious weed control, will begin prior to, or at the start of, construction. Other restoration and revegetation measures will be initiated immediately after construction and other disturbances to project areas are completed. Re-seeding activities may need to be delayed, depending on the season or on weather conditions, but will always occur as soon as appropriate after construction.

The certificate holder will employ the following general restoration and revegetation steps to meet short- and long-term goals:

- Re-seed construction soil disturbance areas to restore vegetation;
- Prior to construction, pre-treat state-designated noxious weeds, as appropriate and practical, in temporary soil disturbance areas, with an emphasis on treatment of roadsides that will be used frequently throughout project construction;
- Prevent introduction of seeds and minimize dispersal of state-designated noxious weeds by following appropriate and standard methods of abatement, including BMPs for washing project-related vehicles and equipment, especially for vehicles newly arriving at the project site. Implement documentation procedure for ensuring that applicable vehicles are washed before use on site;
- Use proper soil management techniques, including stripping, stockpiling, and reapplying topsoil (generally defined as the upper 6 to 12 inches of soil where biological activity is concentrated) to establish surface conditions that will enhance development of diverse, stable,

and self-generating plant communities. Topsoil management will apply to all areas of the project where excavation, grading, or other construction activities could result in mixing of soil layers;

- Establish stable surface and drainage conditions and use standard erosion control devices and techniques to minimize soil erosion and sedimentation, including the installation of silt fencing, straw bales, mulch, straw wattle, erosion control fabric, and slope breakers, as appropriate.
- If the applicability requirements of the NPDES Stormwater discharge permit #1200-c are met, maintain compliance with the Erosion and Sediment Control Plan (ESCP) requirements of the National Pollution Discharge Elimination System (NPDES) 1200-C permit. Maintain the ESCP drawings onsite during construction.
- Use certified weed-free straw bales, straw mulch, hydromulch, and/or other appropriate weed-free mulch materials for soil erosion and sediment control measures;
- Prevent introduction of seeds from plants that are listed by Oregon or on the U.S. Department of Agriculture federal list (PLANTS website) as noxious or invasive weeds;
- Establish terrain compatible with the surrounding landscape (recontouring) that emphasizes restoration of existing drainage and landform patterns, to the extent practical; and
- Minimize construction impacts in the project area by, where practical and safe, limiting grading and clearing to avoid impacts to native vegetation and wildlife habitat.

5.1 Revegetation of Shrub-Steppe and Grassland

Shrub-steppe and Grassland habitat subtypes are the primary non-agricultural vegetation type present in the facility area. Much of these habitat subtypes are considered marginal in quality due the presence of invasive weeds and past fires.

Seed Mix

The certificate holder will use a seed mixture consisting of native grass, forb, and shrub species known to provide erosion control and wildlife forage benefits. Seed mixture selection was based on consultation with ODFW (2010b), online guidance provided by ODFW for the restoration of burned areas in northeastern Oregon (ODFW 2010a), consultation with County weed control staff (2013 and 2020), and availability from native seed suppliers. The current seed mix (Table 2) may be altered at the request of landowners, ODOE, and ODFW.

Plant materials (seed and nursery stock) used in revegetation must be adapted to the conditions of the site in order to have the best chance of germinating and long-term survival. All plant materials shall meet the following requirements, pending approval by ODFW and the Morrow and Gilliam County Weed Departments:

- Seed and nursery stock shall be "source identified." The original source for the plant material should be Columbia Plateau Ecoregion (north-central Oregon State). The seed should be a locally adapted biotype, adapted to conditions similar to the project site.
- Seed shall be certified "weed free", indicating there are no noxious weeds in the seed.
- Seed application rates shall be based on pure live seed per pound, which is passed upon purity and germination testing.
- Seed shall be tested within 120 days of application for purity, germination, and noxious weed content. Inert matter should not exceed 10%. A tetrazolium test may be performed on forb species, which are limited in availability in order to assess viability of the seed before it is used.

Table 2. Seed Mix for Temporarily Disturbed Project Areas in Shrub-Steppe and Grassland Habitat Types (Habitat Category 2, 3 and 4)

Common Name	Scientific Name	PLS lbs/Acre[1,2]	Description/ Purpose
Bluebunch wheatgrass	*Pseudoregneria spicata*	7	(N) (EC) (F)
Big bluegrass	*Poa ampla*	2	(N) (F)
Great Basin wildrye *	*Elymus cinereus*	1.5	(N) (EC) (F)
Needle and thread grass*	*Hesperostipa comata*	1.5	(N) (EC) (F)
Sandberg bluegrass*	*Poa secunda*	1.5	(N) (EC) (F)
Lewis flax	*Linum lewisii*	0.25	(N) (EC) (F)
Western yarrow	*Achillea millefolium*	0.15	(N) (EC) (F)
Wyoming sagebrush	*Artemisia tridentata*	0.25	(N) (F)

(N) = Native, (EC) = Erosion Control, (F) = Forage

* Optional species depending on site and availability

[1] PLS= pure live seed

[2] Final lbs/acre may change at the request of the landowner or ODFW

Areas of temporary disturbance will be graded to be consistent with existing topography and drainage patterns as soon as possible after the final construction ground disturbance and, if necessary, areas compacted by construction activities shall be ripped to a depth of 12" where feasible and roughened to provide maximum seed-soil contact. Re-seeding may not be necessary or appropriate in some areas, including places where vegetation has been flattened but not crushed and those where little or no vegetation was present prior to construction. Areas will be evaluated to determine whether re-seeding or other revegetation techniques are required to return the area to preconstruction vegetation conditions (as further described in Section 6, *Monitoring Program,* of the Amended Plan).

5.2 Seed Planting Methods and Schedule

Re-seeding of temporary disturbance areas will be conducted during the appropriate season and as weather conditions allow. The recommended seed mixture (Table 2) will be applied at an approximate rate of at least 8 to 12 pounds/acre and will be dependent on the method of seeding used. Seeds will be applied using either manual or mechanical methods, depending on factors such as the size of the area to be re-seeded and risk for further disturbance due to the use of planting equipment (e.g., tractor or all-terrain vehicle). Straw mulch, hydro-mulch, and/or other appropriate weed-free mulch material may be applied as needed immediately after seeding. The certificate holder anticipates using the restoration and re-seeding guidelines provided in this Amended Plan; however, the methods and timing could be altered at the request of landowners, ODOE, or ODFW.

Disturbed areas will be re-seeded as soon as possible after final construction disturbance in each area. Crews will attempt to conduct all re-seeding during the period from February through early April for construction disturbances that occurred during the winter and early spring. For areas where construction is completed outside of the winter or spring periods, re-seeding will be delayed until the months of October or November. If final construction and soil restoration is not completed at a time that allows immediate re-seeding during one of the two periods listed above (winter/spring or fall), the areas will be mulched or otherwise treated to minimize erosion, if necessary, until seeding can be conducted.

The certificate holder may employ broadcast seeding, drill seeding, and/or hydroseeding to apply the seed as appropriate and feasible; the choice of method will depend on slope and other site conditions. For example, drill seeding and broadcast seeding could be used as appropriate on areas with a slope of less than 3:1, and hydroseeding should be used on areas with a slope of greater than 3:1. Seeding rates (pounds of pure live seed per acre) must be adjusted according to the seeding method used. For hydroseeding, green ~~-~~dyed, wood-fiber mulch shall be added to the slurry mixture at a rate of 1,000 pounds per acre. In addition to serving as a carrying agent for the seed, the biodegradable green mulch serves as a tracer for visually checking distribution to ensure complete and uniform coverage of the disturbed areas.

5.3 Weed Control Strategies

Weed control will be a priority for the life of the facility including pre-construction, construction and on-going operation and should begin early to prevent infestations and development of substantial weed seed reservoirs in the soil. Emphasis will be placed on avoiding infestations and controlling populations of state-listed and county-listed noxious weeds known to occur on the site.

The certificate holder shall conduct long-term weed surveys following the initial five years (or more) of annual surveys required to document revegetation success criteria under this amended plan. Once revegetation success has been documented, long term surveys of the revegetation areas will be conducted and reported consistent with the schedule for noxious weed monitoring of the Habitat Mitigation Area as described in the WHMMP. Comprehensive surveys will occur every five years (in years divisible by five) for the life of the facility. Weed control and monitoring activities will be conducted more frequently (at least every two years) in areas prioritized based on the results of the comprehensive surveys and reported to ODOE and ODFW as part of WHMMP reporting. Weeds will be controlled as needed to maintain and enhance habitat quality within the revegetation areas, with the goal of working toward eradication of targeted noxious weeds or, if eradication is not practical, decreasing their abundance to minimize impacts on native plant communities.

6 MONITORING PROGRAM

The certificate holder will monitor the revegetated areas according to the protocol and schedule described below. For revegetation of minor acreage associated with Second Amended site certificate site improvements, the certificate holder will use pre-construction consultation with ODFW, ODOE, and the Morrow and/or Gilliam County Weed Departments to determine the appropriate mix of monitoring methods, schedule, and success criteria appropriate to the scale and location of small revegetation areas. The purpose of monitoring is to evaluate long-term soil stability, vegetation composition and cover, and occurrence of noxious and invasive weeds within areas disturbed during construction. In order to properly assess the progress of vegetation establishment, the certificate holder shall maintain a record of revegetation work. In the record, the certificate holder shall include the date that construction activity was completed in the area to be restored, a description of the affected area (location, acres affected and pre-disturbances condition) and supporting figures representing the revegetated area, the date that revegetation work began and a description of the work done within the affected area. The certificate holder shall update the revegetation records as revegetation work occurs.

The certificate holder shall use experienced and properly trained personnel ("investigators") to conduct the monitoring required under this Amended Plan. The professional qualifications of the investigators are subject to approval by ODOE; the qualifications of the investigators shall be provided to ODOE prior to pre-construction monitoring (see Section 6) and ODOE shall be notified if changes in investigator occur.

It should be noted that post-construction annual monitoring and reporting for Unit 1 and its associated components commenced in 2017 and ~~will continue through 2021~~is still ongoing as of 2026 in areas that have not met revegetation criteria. ~~, or until~~ ODOE, in consultation with ODFW, ~~concludes that~~determines when success criteria have been met and when monitoring efforts are no longer needed, or ~~that~~ if a less frequent revegetation monitoring schedule may be implemented.

~~Post-construction annual monitoring for the new components approved in the Second Amended site certificate and the Carty Solar Farm and its associated facilities may be conducted in coordination with monitoring for Unit 1 and its associated components, if the timing aligns; however, revegetation records and reporting should be maintained and submitted to ODOE separately (either as separate reports or clearly delineated sections of the same report) since the impacts, revegetation status, and activities may differ for the previously approved operating facility components compared to the facility components approved in the First and Second Amended site certificates.~~

6.1 Pre-Construction Vegetation and Weed Survey

Revegetation success shall be measured at approved, fixed-point monitoring sites within the disturbed area and compared to pre-disturbance habitat conditions as documented by pre-disturbance vegetation monitoring at the same site. If pre-disturbance monitoring data is not available for a particular site, revegetation monitoring data will be compared to a reference site approved by ODFW. Pre-disturbance monitoring will be conducted using the same protocol described below for post-construction monitoring, which will allow comparison of revegetated condition to pre-disturbance condition. The pre-disturbance vegetation and weed survey plan shall be submitted for review and approval by ODOE, in consultation with ODFW, as part of the agency consultation described in Section 4 of this plan.

6.2 Monitoring Procedures

Annual post-construction vegetation and weed surveys will be conducted for a period of at least five years to monitor revegetation success and invasive species control needs at construction disturbance areas. A representative sample (at least 50%) of all disturbance sites will be monitored for revegetation success. As described above in Section 4, *Pre-Construction Agency Consultation*, monitoring sites and reference sites (as needed) shall be identified by the certificate holder and approved by ODOE, in consultation with ODFW, prior to construction. Reference sites (as needed) should be identified that closely resemble the pre-disturbance characteristics of the revegetation area monitoring site as indicated by site conditions, including vegetation density, relative proportion of desirable vegetation and species diversity of desirable vegetation.

Revegetation monitoring will begin in the first year following initial revegetation of temporary disturbance areas and continue annually for five years or until monitored sites are successfully revegetated according to the success criteria described below. All soil disturbance sites will be visited at least once within the first year following revegetation, and annual surveys will be conducted for five years, or until ODOE, in consultation with ODFW, determines the success criteria to be achieved.

To select quantitative monitoring sites, the certificate holder will divide the total disturbance area into multiple monitoring sites, each of which is predominately of one habitat type (grassland or shrub steppe) and no larger than five acres. After dividing the area into such sites, a subset of sites (comprising at least 50% of each habitat type's total temporary disturbance acreage) will be randomly selected to be quantitative monitoring sites. Pre-disturbance vegetation data will be collected at each quantitative monitoring site using a systematic sampling method that can be repeated for post-construction monitoring. For example, a minimum of one, randomly located 100-meter long by 5-meter wide belt transect could be used for documenting shrub and bunchgrass density, within which a point-intercept method or sampling quadrats could be used for collection of percent cover data. All sites not selected for quantitative monitoring would be qualitatively monitored using photo points and visual surveys.

During revegetation surveys, a qualified biologist shall inspect all areas of revegetation, including each revegetation area monitoring site, to assess revegetation success based on the success criteria and to recommend remedial actions, if needed. The qualified biologist will collect quantitative and qualitative monitoring information within the general revegetation area, revegetation monitoring sites, and within the reference sites (if needed), as detailed below.

Quantitative monitoring will include a systematic monitoring protocol conducted at each monitoring site. The following data will be collected at quantitative monitoring sites (both pre-disturbance and post-construction) and reference sites (if needed, just once):

- The habitat type of the area to be disturbed;
- Photo(s) representing the habitat (from documented location and direction so they are repeatable for post-disturbance revegetation monitoring);
- Density and percent cover of vegetation by plant species (determined through a quantitative sampling design such as randomly located quadrats, belt transects, or other monitoring design approved by ODFW);
- Percent cover bare ground within the same sampling plots, and also estimated for the entire monitoring site, noting any large areas (>100ft^2) of bare ground and estimated area;
- Percent cover of "other" ground cover by category (i.e., rock, gravel, hydro-mulch, vegetation litter, etc.);
- Percent cover estimate and species list of noxious weeds on the entire monitoring site in addition to sampling plot data; and
- Vegetation structural stage, slope, soil type.

The following qualitative monitoring data will be collected both pre-disturbance and post-construction at all disturbance sites that are not quantitatively monitored:

- Photo(s) representing the habitat (from documented location and direction so they are repeatable for post-disturbance revegetation monitoring);
- List of noxious weed species present and estimated percent cover; and
- Note any erosion issues that need remedial action or any large areas of bare soil (>100ft^2) that may require additional seeding.

6.3 Remedial Action and Maintenance

Following each of the surveys described above, the site certificate holder will consult with ODOE and ODFW to determine need for remedial measures to address remaining soil impacts and revegetation requirements not achieved through initial seeding or plantings. The nature of the remedial actions will depend on the problems that arise. ODOE may require reseeding or other remedial measures in those areas that do not meet the success criteria.

Common remediation measures will include:

- Reseeding of select areas where significant areas of bare soil remain after establishment of initial seeding;
- Determining the cause of low plant survival and implementation of actions appropriate to the cause of mortality (this may include selection of an alternate species better adapted to conditions at the site);
- Control of noxious weed/invasive plant species by qualified personnel using appropriate methods for the target species (e.g., herbicides applied according to label requirements if herbicides required);
- Repair of erosion control structures; and
- Soil decompaction.

The certificate holder will make every attempt to implement the recommended remedial actions as soon as possible, considering the season, weather conditions, and other site-dependent constraints.

The certificate holder will document revegetation progress and remedial actions in an annual Revegetation and Noxious Weed Control Monitoring Report to ODFW and ODOE (see section 5.4 below).

If a wildlife habitat area is damaged by fire during the first five years following initial seeding, the certificate holder shall work with the landowner to restore the damaged area. The certificate holder shall continue to report on revegetation progress during the remainder of the five-year period. The certificate holder shall report to ODOE the damage caused by fire and the cause of the fire, if known.

If an area is not trending toward meeting the success criteria at Year 5, the certificate holder may propose and ODOE may require remedial action and additional monitoring based on an evaluation of site capability. As an alternative, the certificate holder or ODOE, in consultation with ODFW, may conclude that revegetation of the area was unsuccessful and propose appropriate mitigation for the permanent loss of habitat quality and quantity. The certificate holder shall implement a remedial action plan, subject to the approval of ODOE in consultation with ODFW.

6.4 Revegetation Success Criteria

Revegetation will generally be considered successful when the revegetated areas support non-noxious plant communities that are similar in vegetation percent cover and erosion potential comparable to pre-disturbance condition or surrounding undisturbed areas. While the certificate holder shall evaluate whether all previously disturbed wildlife habitat areas are trending towards revegetation success, the success criteria are evaluated based on the revegetation success of the approved revegetated monitoring sites compared to either pre-disturbance condition or reference sites, as appropriate. A wildlife habitat area is successfully revegetated when the habitat quality is equal to, or better than, the habitat quality of the pre-construction condition of the monitoring site itself or of an appropriate reference site selected in consultation with ODFW.

When the site certificate holder determines that an area of the project has been successfully restored by satisfying all success criteria, this will be stated in the annual revegetation report. If ODFW and ODOE concur, the site certificate holder will conclude that it has no further obligation to perform revegetation activities in that area of the facility. Reseeding or replanting efforts will occur, in consultation with ODFW, in any area where monitoring identifies a restoration failure.

The following criteria will be used to determine success of revegetation efforts related to construction of facilities authorized under the ~~First and~~ Second Amended Site Certificate:

1. Native Shrubs: The average density of the shrub component should be at least 50 % of the pre-disturbance or reference site density within 5 years. At least 15 % of the shrub density should be the dominant species found during pre-disturbance monitoring or on the reference site. The diversity of shrub species within the revegetated areas should at least equal the shrub species diversity measured during pre-disturbance monitoring or on the reference site.

2. Native Grasses: Revegetated sites should maintain grass species diversity and density that is at least 85% similar to pre-disturbance or reference sites diversity and density. Native bunchgrasses should be given preference. Native grasses are to be planted at rates sufficient to achieve abundance and diversity characteristics of the grass component compared to pre-disturbance or reference site conditions.

3. Non-Native Weeds: Every attempt should be made to prevent and control all species listed on county, state, and federal noxious weed lists. Revegetation sites should not contain a higher percentage of non-native weed cover than the pre-disturbance or reference site condition. All state and federal laws pertaining to noxious weeds must be followed. Highly competitive invasive species such as cheatgrass and other weedy brome grasses are prohibited in seed mixtures and should be actively controlled if any are found in the reclaimed areas.

The following success criteria from the original plan apply to temporary disturbance areas associated

with Unit 1 construction. For those areas, PGE may either continue to use the criteria below, or follow the newer success criteria above using a reference site (approved by ODFW) for comparison.

1. The vegetation percent cover by native species and desirable non-native species (both seeded and naturally recruited) is 40 percent or more, or not significantly less than the percent vegetation cover of surrounding undisturbed areas.
2. Noxious weeds are absent or constitute only a small percentage (<5%) of vegetation otherwise dominated by native or desirable non-native species.
3. The percentage of bare soil (excluding rocky areas) in the sample plot is not significantly greater than the percentage of bare soil in surrounding undisturbed areas.

When ODOE, in consultation with ODFW, finds that the conditions of the wildlife habitat area revegetation monitoring sites satisfy the criteria for revegetation success, ODOE shall conclude that the certificate holder has met the restoration obligations for that area.

6.5 Reporting

The certificate holder will provide an annual Revegetation and Noxious Weed Control Monitoring Report for five years or until success criteria are achieved following initial revegetation of construction disturbance areas. In addition to the annual reports, PGE will share preliminary monitoring results with ODFW/ODOE as soon as possible following monitoring fieldwork to allow consultation regarding planning necessary remedial measures such as erosion control, reseeding, and weed control. Such consultation will allow more timely coordination and response to habitat management needs than may occur under the annual reporting process. This additional consultation is required for revegetation monitoring associated with facilities authorized under the ~~First and~~ Second Amended Ssite Ceertificate and is recommended as a best management practice for Unit 1 revegetation areas.

Each annual report will contain a summary of field data collected during field visits and include: an assessment of whether revegetation area monitoring sites are trending toward meeting the success criteria; assessment of factors impacting the ability of the revegetated area monitoring sites to trend towards meeting the success criteria; a summary of consultation with ODOE, ODFW, and Morrow and Gilliam Counties and remedial measures (e.g., seeding, noxious weed control, and repair of erosion control structures) taken since the last annual report; any additional remedial measures planned; and the anticipated dates of completion of additional remedial measures.

6.6 Amendment of Plan

This Plan may be amended from time to time by agreement of the certificate holder and the Oregon Energy Facility Siting Council (Council). Such amendments may be made without amendment of the site certificate. The Council authorizes ODOE to agree to amendments to this Plan. ODOE shall notify the Council of all amendments, and the Council retains the authority to approve, reject, or modify any amendment of this Plan agreed to by ODOE.

7 REFERENCES

Oregon Department of Fish and Wildlife. 2010a. Rehabilitating Habitat. ODFW website: http://www.dfw.state.or.us/fire/fire_rehab.asp. Accessed on December 15, 2010.

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_____. 2017. Personal communication between Andy Bidwell of PGE and Dave Pranger, Morrow County Weed Coordinator/Inspector. Email correspondence dated December 21, 2017.

_____. 2018. Conference call attended by PGE, ODFW, and ODOE to discuss revisions to the Carty Generating Station Revegetation and Noxious Weed Control Plan, June 12, 2018.

Attachment P-3. Amended Wildlife and Habitat Monitoring and Mitigation Plan

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Carty Generating Station: Amended Wildlife and Habitat Monitoring and Mitigation Plan[1]

December 14, 2018[2], February 23, 2021[3], MONTH XX, 2026[4]

I. INTRODUCTION

The Carty Generating Station includes existing generating components (Unit 1 and its associated components and existing components originally approved under the Boardman Coal Plant site certificate) and approved, but not yet constructed generating components (Carty Solar Farm and its associated components and new components proposed in the Second and Fourth Amended site certificate). Portland General Electric (PGE or certificate holder) received a site certificate from the Energy Facility Siting Council (Council) in June 2012 authorizing the construction and operation of a 900 megawatt (MW) combined-cycle natural gas-fueled energy generating facility in Boardman, Oregon in Morrow County (Carty Generating Station). The Council's 2012 approval authorized construction and operation of two 450-MW combined-cycle natural gas-fueled turbine generators (Unit 1 and Unit 2). PGE commenced Unit 1 construction on January 9, 2014; PGE completed Unit 1 construction on December 26, 2016; Unit 1 began operation on July 29, 2016. The construction commencement deadline for Unit 2 expired in June 2017 and therefore the certificate holder no longer has the authority to construct or operate Unit 2.

The Council issued the First Amended site certificate on December 14, 2018, authorizing a site boundary change and the construction and operation of a 50 MW photovoltaic solar unit, five 34.5 kilovolt (kV) interconnecting transmission line routing options, and temporary construction and laydown areas (Carty Solar Farm). The construction commencement and completion deadlines for the components authorized in the First Amended site certificate are February 4, 2022, and February 4, 2025, respectively. The Council issued the Second Amended site certificate on November 19, 2020 authorizing a boundary change; construction and operation of a new substation and associated distribution lines, septic system, backup water pipeline, wastewater pipeline, office/warehouse building, and security guard station; and incorporation of existing facilities that had been permitted under the Boardman Coal Plant site certificate including Carty Reservoir, existing transmission infrastructure, and interconnecting water pipelines. The construction commencement and completion deadlines for the components authorized in the Second Amended site certificate are December 9, 2023~~,~~ and December 9, 2026 respectively. The Council issued the Third Amended site certificate on July 22, 2022, authorizing the certificate holder to extend the construction commencement and completion deadlines for the components authorized with the first amendment. The construction commencement and completion deadlines authorized in the Third Amended site certificate are February 4, 2025, and February 4, 2028, respectively. The 50-MW Carty Solar Farm was not constructed before the construction commencement date and therefore is no longer authorized to

[1] This Amended Plan is incorporated by reference in the site certificate for the Carty Generating Station and must be understood in that context. It is not a "stand-alone" document. This plan does not contain all mitigation required of the certificate holder.

[2] A draft version of this plan was included as Exhibit 1 to the Energy Facility Siting Council's *Final Order on the Carty Generating Station Application for Site Certificate* (June 29, 2012). In accordance with Site Certificate Condition 10.1, the certificate holder consulted with the Oregon Department of Fish and Wildlife (ODFW) and obtained Department approval of the Plan prior to the start of construction (December 2013). As allowed by Section IX of the Plan, ODOE reviewed and approved an amended Plan on July 7, 2014. ~~This~~ The February 2018 amended plan ~~is being~~was submitted as part of the Request for Amendment No. 1 of the Carty Generating Station Site Certificate.

[3] Minor Plan updates were made to reference additional facilities within Morrow and Gilliam Counties included in the Second Amended site certificate.

[4] Minor Plan updates were made to reference changes to the Carty Solar Farm proposed in RFA 4.

be constructed.

The certificate holder submitted a Request for Amendment 4 (RFA 4) to the Site Certificate. In RFA 4, the certificate holder proposed to add a Carty Solar Farm with approximately 200 MW by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir. As part of RFA 4, the certificate holder proposed the addition of battery energy storage systems (BESS) to the Carty Generating Station.

This Amended Wildlife and Habitat Monitoring and Mitigation Plan (Amended Plan) describes wildlife monitoring and habitat mitigation that the certificate holder shall conduct during construction and operation of the Carty Generating Station (facility), including the already constructed Carty Unit 1; Grassland Switchyard; the transmission line segment connecting Unit 1 to the switchyard; ~~additional facilities as approved under Site Certificate Amendment 1, including the Carty Solar Farm site just southeast of Carty Reservoir and the associated interconnection transmission line; and~~additional facilities as approved under the Second Amended site certificate; and any wildlife monitoring required for the Carty Solar Farm proposed in RFA4. A separate Habitat Mitigation Plan (HMP) has been prepared for the Carty Solar Farm Habitat Mitigation Area (HMA) proposed in RFA 4. The monitoring objectives are to determine whether the facility causes significant fatalities of wildlife species or results in a loss of habitat quality.

This Amended Plan also describes methods and standards for preservation and enhancement of land near the Carty Generating Station to mitigate for impacts of the Carty Unit 1 facility on wildlife habitat and addresses mitigation for both the permanent impacts of facility components and the temporal impacts of Unit 1 facility construction. The certificate holder has prepared a separate HMP specific to the permanent and temporal construction impacts of the Carty Solar Farm proposed in RFA 4. The certificate holder shall protect and enhance the Unit 1 mitigation area~~(s)~~ as described herein. This Amended Plan specifies habitat enhancement actions and monitoring procedures to evaluate the success of those actions. Remedial action may be necessary if the mitigation area(s) do not demonstrate progress toward habitat enhancement success.

II. DESCRIPTION OF THE FACILITY

The Carty Generating Station Site is located in Morrow and Gilliam Counties, Oregon, approximately 13 miles southwest of the town of Boardman, Oregon. The facility includes two transmission lines: one 500 kV line that extends west from the Grassland Switchyard 17 miles to the Slatt Substation and one 230 kV line that extends approximately 17 miles northwest to the Dalreed Substation. There is no proposed disturbance associated with the existing transmission lines. All proposed disturbance is within Morrow County. The facility would be located on an upland plateau at an elevation of approximately 650 feet above sea level. The facility components would be located entirely on private lands that are mostly characterized as shrub-steppe, grassland, developed or agricultural areas. There are some riparian and wetlands habitats present within the amended site boundary.~~; however, all~~ All new facility components will be sited to avoid impacts on ~~these habitats~~wetlands; there may be minor impacts to riparian habitats. Soil types in the area consist primarily of sandy loam, silt loam, and very stony loam.

Much of the native shrub-steppe vegetation within the site boundary has been modified by livestock grazing and past wildfires. Functional mature shrub-steppe habitat is patchy and is dominated by big sagebrush (*Artemisia tridentata*), broom snakeweed (*Gutierrezia sarothrae*), bluebunch wheatgrass (*Pseudoroegneria spicata*), cheatgrass (*Bromus tectorum*), gray rabbitbrush (*Ericameria nauseos~~a~~us*), needle-and-thread grass (*Hesperostipa comata),* and Sandberg's bluegrass *(Poa secunda)*. Grasslands consist of cheatgrass, crested wheatgrass (*Agropyron cristatum*), bulbous bluegrass (*Poa bulbosa*), bluebunch wheatgrass, needle-and-thread grass, Sandberg's bluegrass, redstem filaree (*Erodium cicutarium*), and mouse-ear chickweed (*Cerastium* sp.). Additional species found within the site

boundary include yarrow (*Achillea millefolium*), yellow sweet clover (*Melilotus officinalis*), balsam root (*Balsamorhiza* sp.), tall tumble mustard (*Sisymbrium altissimum*), Western juniper (*Juniperus occidentalis*), and black cottonwood (*Populous trichocarpa*). Riparian forests are dominated by Russian olive (*Elaeagnus angustifolia*), Pacific willow (*Salix lucida ssp*.), Canada goldenrod (*Solidago canadensis*), amaranth (*Amaranthus* sp.), and broadleaf cattail (*typha latifolia*). Wetland areas associated with Sixmile Canyon not only contain similar riparian vegetation found around the reservoir; these areas also contain wetland plants such as common reed (*Phragmites australis*).

The Oregon Department of Fish and Wildlife (ODFW) describes habitat categories in its Wildlife Habitat Mitigation Policy (Oregon Administrative Rules [OAR] 635-415-0025). The facility will be constructed in two phases, with the generating components referred to as Unit 1 and the Carty Solar Farm. Unit 1 (generating unit and a portion of the switchyard), completed in 2016, occupies approximately 45 acres of Category 4 shrub-steppe habitat, and temporary construction-related impacts occurred on approximately 55.4 acres of Category 4 shrub-steppe habitat. Portland General Electric Company (PGE) established a Habitat Mitigation Area (HMA) of 78 acres (the HMA for Unit 1) to mitigate these permanent and temporal impacts.

~~PGE will establish the HMA for the Carty Solar Farm to mitigate permanent and temporal impacts that result from construction of the Carty Solar Farm.~~ The ~~overall~~ HMA described in this Amended WHMMP is specific for the Carty Generating Station, Unit 1. ~~(the Carty Generating Station HMA, or just HMA in this document) will consist of the combined areas of the HMA for Unit 1 and the HMA for the Carty Solar Farm. Disturbance and mitigation acreage for the Carty Solar Farm will be finalized and updated in this Amended Plan in consultation with ODFW and the Oregon Department of Energy (ODOE) prior to construction of each phase of the project (see Section IV for HMA acreage calculation).~~

In addition ~~to these two construction phases~~to the Unit 1 construction phase, minor construction activities will occur as a result of the Second Amended site certificate, which includes a new substation and associated distribution lines, septic system, new back up water pipeline, wastewater pipeline, new security guard station and associated plumbing and communication lines, and new office/warehouse building. Only the new septic system, new wastewater pipeline, and new security guard station and associated plumbing and communication lines would be constructed in vegetated areas with a total temporary disturbance of approximately 2.15 acres and permanent disturbance of 1.45 acre (estimated at the time of the Second Amendment). The ~~existing habitat management area (HMA)~~HMA for Unit 1 is large enough to accommodate this additional disturbance; therefore, no new HMA is proposed to account for the additional mitigation associated with the Second Amended site certificate.

III. WILDLIFE MITIGATION AND MONITORING MEASURES

The certificate holder shall use a qualified investigator (wildlife biologist) to conduct monitoring for Washington ground squirrel (WGS; *Spermophilus washingtoni*), ~~post-construction avian and bat mortality study,~~ raptor nest surveys, and avian use of the facility area. Specific monitoring and mitigation measures for these species are described below (also see Section VII for Unit 1 HMA monitoring requirements):

A. Washington Ground Squirrel

Best Management Practices

- The certificate holder shall impose and enforce a construction and operation speed limit of 20 miles-per-hour throughout the facility site and, during the active squirrel season (February 1 through June 30) a speed limit of 10 miles-per-hour on private roads near known WGS colonies.

- Conduct Environmental Awareness Training for all facility personnel and construction contractors prior to the beginning of construction or before entering the Project right-of-way (ROW). The training program shall discuss WGS and all other environmental issues related to the facility and ~~include handouts with WGS identification information and~~ reporting procedures. Smaller training sessions shall be conducted as needed for personnel that start after the beginning of construction.
- In order to discourage WGS from moving into planned construction areas that are currently not within 785 feet of a known WGS colony the certificate holder may disc or till a minimum of an 800-foot buffer within the perimeter of the planned ground disturbance areas in closest proximity to squirrel activity areas. Proposed measures and areas where measures will be implemented shall be reviewed by ODOE, in consultation with ODFW, and shall be informed by the most recent WGS survey data. If the certificate holder discs or tills areas, the certificate holder shall plant dryland wheat or another sterile cover crop approved by ODFW in tilled areas. Such areas shall be tilled annually until construction begins to maintain a soil disturbance regime that is unsuitable for use by WGS. Other potential measures for deterring WGS movement into planned construction areas, such as installation of perimeter silt fences, will be planned in coordination with and approved by ODFW. In addition to preventing WGS from moving into the planned construction areas, discing or tilling the planned construction area, and/or implementing other approved deterrence measures, means the area will no longer be considered WGS habitat and would not be included in the no-impact buffer area for any new WGS burrows that are established within 785 feet of the Facility Site Boundary. (Note, an approximately 45-acre portion of the Energy Facility Site was tilled and planted with winter wheat in December 2012 following coordination with ODFW and USFWS).
- If pre-construction surveys determine that WGS burrows have been established in previously inactive areas, the certificate holder shall immediately report to ODOE and ODFW. The certificate holder shall coordinate with ODOE and ODFW to establish additional mitigation measures or to obtain an Incidental Take Permit, as appropriate.
- The certificate holder will consult with ODOE and ODFW to discuss the situation and potential additional avoidance measures should WGS establish burrows within 785 feet of existing facilities, construction activity, or planned construction disturbance areas. If there is concern that, despite reasonable avoidance measures, WGS may accidently be killed or injured by construction activities, then the certificate holder shall work with ODFW to obtain an Incidental Take permit, as appropriate.

WGS Monitoring

The certificate holder shall conduct post-construction surveys on known colonies within the amended Site Boundary, on land owned by the certificate holder, ~~and~~ within the Unit 1 and Solar HMAs, and where known active burrows were recorded during pre-construction field surveys. The surveys shall be led by a qualified wildlife biologist with WGS survey experience leading a survey crew experienced in biological surveys and confirmed ability to identify WGS burrows and hear WGS calls. Surveys will be conducted in year one, year three, and year five after operation of Unit 1 has begun (i.e., 2017, 2019, and 2021), and in year one, year three, and year five after Carty Solar Farm operation has begun (years tbd), and ~~otherwise~~ at least every five years thereafter (in years divisible by five) for the life of the facility. Known colonies, if identified, within the existing right-of-way for the 500 kV Grassland to Slatt and 230 kV Boardman to Dalreed transmission lines incorporated into the Second Amended site certificate will be included in the every-five-year WGS surveys. Planned work areas associated with transmission line maintenance will be spot checked for WGS activity as needed. Surveyors shall

record evidence of WGS activity, current land use, and any conditions caused by the facility that might increase erosion or result in a decline in vegetation quality and adversely affect a WGS colony. Unit 1, portions of the potential Carty Solar Farm transmission line, and portions of new components proposed as part of the second amended site certificate are located on the southwest side of Tower Road. In consultation with ODFW, it was determined that Tower Road is a significant boundary to WGS habitat. Therefore, for active burrows located on the northeast side of Tower Road, the 785-foot buffer will not extend across Tower Road.

B. Raptor Nest Monitoring

During the year in which any phase of construction occurs, the certificate holder shall use a protocol approved by ODFW to conduct raptor nest surveys to determine whether there are any active nests that would potentially be disturbed during construction. Surveys will consist of ground-based and/or helicopter aerial searches, as appropriate to the construction activity locations planned for a given year. Surveys will be carried out to one mile from portions of the amended site boundary within which construction is planned.

If a nest is occupied by any of these sensitive raptor species, the certificate holder shall not engage in high-impact construction activities (activities that involve blasting, grading, or other major ground disturbance) or allow high levels of construction traffic within designated buffer distances for each species (Table 1). Buffer distances may be decreased with approval by ODFW and USFWS depending on the intensity of construction activity and whether sufficient barriers (e.g., vegetation, topography) are present to shelter a particular nest site from construction disturbance or if consultation determines a lesser distance is feasible and appropriate. The certificate holder also will instruct construction personnel to avoid any unnecessary activity within the buffer area.

Table 1. Critical Nesting Periods for Sensitive Raptors

Species	Disturbance Buffer Distance (line of sight)	Critical Nesting Period	Early Release Date
Ferruginous Hawk	0.6 mile	March 15 to August 15	May 31
Bald Eagle	0.5 mile	January 1 to August 15	May 31
Swainson's Hawk	0.25 mile	April 1 to August 15	May 31
Golden Eagle	1 mile	January 1 to August 15	May 31
Burrowing Owl	0.25 mile	April 1 to August 15	July 15
Long-billed Curlew*	0.5 mile	March 8 to June 15	May 31

*Although not a raptor species, a critical nesting period and buffer of 0.5 mile for active long-billed curlew nests were included in the Site Certificate. While not actively surveyed for, any curlew nests that are incidentally found will be protected with the stipulated nest buffer.

The certificate holder will direct a qualified biological monitor, as approved by ODOE, to observe the active nest sites during the sensitive period for signs of disturbance. The qualifications of the biological monitor shall be provided to ODOE in the annual report; the certificate holder shall provide notification to ODOE if changes in biological monitor occur. If an active State-sensitive raptor nest is found during construction that is for a species not

currently identified in Table 1, the certificate holder will consult with ODFW and USFWS and institute buffer distances and monitoring as appropriate.

The certificate holder may begin or resume high-impact construction activities before the ending day of the sensitive period if any known nest site is not occupied by the early release date (Table 1). If a nest site is occupied, the certificate holder may begin or resume high-impact construction before the ending day of the sensitive period, with the approval of ODFW and USFWS, after the young are fledged. The certificate holder would use, and shall provide a copy to ODOE, of a protocol approved by ODFW and USFWS to determine when the young are fledged (that is, when the young are independent of the core nest site).

Annually during construction and in year one, year three, and year five after operations of Unit 1 have begun (i.e., 2017, 2019, and 2021) and year one, year three and year five after operations of Carty Solar Farm have begun (years tbd) and ~~otherwise~~ at least every five years (in years divisible by five) for the life of the facility thereafter, the certificate holder shall provide sensitive species raptor nest monitoring report to ODOE, ODFW and USFWS. The report will document the locations and nest productivity of sensitive raptor species nests within one mile of the amended site boundary. The existing 500 kV Grassland to Slatt and 230 kV Boardman Coal Plant to Dalreed transmission lines incorporated into the Second Amended site certificate will be included in the every-five-year raptor nest surveys with focus on any nests on transmission line structures or nearby that may be impacted by transmission line maintenance. Planned work areas associated with transmission line maintenance or construction will be spot checked for nearby raptor nesting activity prior to work. The certificate holder shall consult with USFWS and ODFW regarding any active protected bird nests found within the construction disturbance area or within the disturbance buffer distances (Table 1) of facility construction or operational activities.

If nest monitoring detects nest site abandonment or other adverse impact to nesting activity caused by facility activity, the certificate holder shall implement appropriate mitigation, in consultation with ODFW and subject to the approval of ODOE. The certificate holder shall propose and implement mitigation for the affected species in consultation with ODOE, ODFW, and USFWS. Mitigation shall be designed to benefit the affected species or contribute to overall scientific knowledge and understanding of what causes nest abandonment or nest failure. Mitigation may be designed to proceed in phases over several years. It may include, but will not be limited to, additional raptor nest monitoring, protection of natural nest sites from human disturbance or cattle activity (preferably within the general area of the facility), or participation in research projects designed to improve scientific understanding of the needs of the affected species.

All bird mortalities and active nests of all other protected bird species found in association with facility components shall be documented and reported consistent with PGE's adopted Avian Protection Plan. All eagle and other sensitive raptor species mortalities shall be reported immediately to USFWS and ODFW.

C. Avian Protection

The certificate holder maintains a company-wide Avian Protection Plan (APP) to reduce impacts to avian species from electrocutions and collisions with electric utility power lines and equipment. The APP is hereby adopted by reference. The APP includes the following three-phased approach to address avian risks that will be applied to the development of the Carty Generating Station:

- Preventive – Emphasize compliance with applicable laws, regulations, and permits. Use avian-

safe standards company-wide for all designs ~~in areas identified as having high avian risk~~;

- Reactive – Implement the Avian Reporting System ~~(~~to ~~report~~document bird mortalities and conduct remedial measures as appropriate~~)~~; and
- Proactive – Conduct employee training and risk assessments of existing lines, modify lines when necessary, install nesting platforms, and contribute to research of avian/electrical equipment interactions.

Electrocution from high-voltage transmission lines is very rare because the distances between conductors, and between conductors and grounded hardware, are greater than the wingspan of any raptor (APLIC 2006).[5] However, transmission lines ~~do~~ can present a collision risk for birds, particularly the static wire at the top of the structures. Consistent with the APP, the certificate holder shall employ ~~pre-construction~~ measures to protect raptors in the design and construction of transmission lines. Protection measures to reduce the potential risks to raptors and other birds will include the following:

- Design and construct all above-ground transmission line support structures following the practices suggested by the Avian Powerline Interaction Committee (APLIC)~~, including a minimum separation of 9 feet between all energized transmission conductors~~;
- If perching or nesting is determined to put birds at risk, measures to reduce risk will be evaluated and implemented if feasible;~~Install perch guards or other deterrents as needed and safe alternative perching or nesting locations, as appropriate;~~ and
- Install bird flight diverters ~~and~~ or other line marking devices ~~where necessary to minimize~~ in areas of bird collision risk if evaluation of the area, including ~~, such as~~ bird concentration areas (wetland/riparian areas) and known migratory flight routes, presents a probable risk.

A nest management procedure, which identifies steps facility employees must take when a nest is encountered on utility structures, is also included in the APP. As described in the APP, the certificate holder will track avian mortalities, nest management issues, and remedial actions taken using an internal reporting system and database~~, the Avian Reporting System~~. This reporting database allows: (1) tracking of incidents and remedial actions to ensure that all measures are completed and documented, (2) accumulation of a long-term data set, and (3) compliance with the reporting requirements of the USFWS Special Purpose Permit currently held by the certificate holder. The reporting system also provides data on the location and frequency of bird mortalities and problem nests.

Where feasible, the certificate holder shall conduct site preparation for construction of the Carty Generating Station and transmission line in a manner that minimizes potential for impacting nesting native birds protected by the Migratory Bird Treaty Act, such as conducting initial site clearing outside of the typical bird breeding season (generally March to July). Prior to commencement of construction activity during the breeding season, a qualified biologist shall survey the construction site to determine the presence of any active protected bird nests. Construction personnel shall be trained in avian awareness, reporting of protected bird nests, and the proper procedures if dead birds are found at the construction site.

[5] APLIC (Avian Power Line Interaction Committee). 2006. Suggested Practices for Avian Protection On Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington D.C. and Sacramento, CA. http://www.aplic.org/uploads/files/2643/SuggestedPractices2006(LR-2).pdf. Accessed August 23, 2016.

D. ~~Post-construction Avian and Bat Mortality Monitoring (Carty Solar Farm)~~

~~Monitoring Goals~~

~~The monitoring program will involve surveys designed to estimate bird and bat fatality rates at the Carty Solar Farm in the year following start of Carty Solar Farm operation. The certificate holder will analyze bird and bat carcass monitoring data to accomplish the following goals:~~

- ~~Detect carcasses and estimate bird and bat fatality rates for the Carty Solar Farm;~~
- ~~Estimate fatality rates for species of concern, if practicable; and~~
- ~~Determine whether additional conservation measures are needed to reduce impacts to birds and bats at the Carty Solar Farm.~~

~~Monitoring Methods~~

~~i) Study Design~~

~~The avian and bat mortality monitoring study is designed to maximize the accuracy of the fatality estimates and to correct for the following sources of field sampling error: (1) carcasses that occur on a highly periodic basis, (2) carcass removal by scavengers, (3) searcher efficiency, and (4) carcasses or injured birds or bats that may land or move to areas not included in the search transects (Kunz et al. 2007). Post-construction monitoring at the Carty Solar Farm will involve standardized distance-sampling based carcass searches, searcher efficiency trials, and carcass persistence trials, consistent with recommendations from Huso et.al (2016b) and accepted monitoring designs at other utility-scale solar facilities (WEST 2016a-c). Surveys of the PV panel area will be conducted using a distance-sampling based methodology. The layout of PV facilities is often well-suited to a distance-sampling approach. Distance sampling involves searching a transect line and assumes that searcher efficiency decreases (possibly dramatically) as a function of distance from the observer and is ideally suited to situations in which animals (or carcasses) are sparsely distributed across a landscape (Buckland et al. 1993). As the landscape at the Carty Solar Farm would be flat and relatively clear of vegetation, a distance sampling design is well supported, as demonstrated at other PV solar facilities (WEST 2016a; Huso et. al 2016b).~~

~~Distance sampling adjusts carcass counts for variable searcher efficiency by calculating the *effective* searcher efficiency along a transect. Effective searcher efficiency is the average probability of detection in the searched area, derived from the detection function. As a highly simplified example, if a searcher walks a 10-m (33-ft) long transect line and detects 90% of all carcasses within 10-m of the line, and 60% of carcasses that are 10 to 30 m (33 to 99 ft) from the line, then the effective searcher efficiency between zero and 10 m would be 0.9 and the effective searcher efficiency between 10 and 30 m would be 0.6. For the total 10 by 30-m area, the effective searcher efficiency would be = 0.5.~~

~~In practice, searcher efficiency is modeled as a continuous function of distance, and the detection function is estimated from bias trial data. An advantage to the use of data from bias trials is that the assumption that carcasses are randomly distributed within the search area (typical of most distance sampling designs) becomes unnecessary. Furthermore, having a sufficient sample size to fit the detection function is no longer dependent on what is observed, as in most distance sampling studies, and trials can be placed to measure potential covariates such as carcass size and ground cover. The fitted detection function is used to determine the overall probability of detection as well as to inform the approximate effective view shed of non-zero detection probability for observers.~~

~~Final study design will depend on actual as-built configuration of the Carty Solar Farm and post-construction site conditions, and current knowledge of avian mortality at PV solar farms~~

~~and will be determined in coordination with ODFW. One potential design, if compatible with site design and conditions such as vegetation height, would be for surveyors to walk or drive an ATV along the facility's access roads, perpendicular to panel rows, and scan 90 meters (295 ft) along the PV array rows (Figure 1). Surveys will include a 50% sample of the blocks in the PV panel area. Study design may be refined, scaled down, or systematic study eliminated entirely if results from other PV solar farm systematic studies to date at the time of project construction indicate a low expected risk of bird mortality at Carty Solar Farm.~~

~~ii) Search Interval and Search Period~~

~~Surveys will be conducted once every three weeks November through February, and once every two weeks from March through October in the year following start of Carty Solar Farm operation; this period includes spring and fall migration and summer nesting/maternity seasons for birds and bats, respectively. Carcass persistence trials will be conducted concurrently with carcasses searches, and if documented scavenger rates indicate that shorter or longer search intervals are needed, the search intervals may be modified to improve carcass detection rates. Guidance from Huso et. al (2016b) suggests determining search intervals such that the average probability a carcass is available to be found is at least 50%. Since carcass persistence may vary by carcass size, search intervals should be determined based on the size or sizes of principal species of interest; for example, if impacts to water-associated birds are a focus, then search intervals can be adjusted based on persistence times for large and medium-sized birds, such as grebes, ducks, and loons.~~

~~iii) Searcher Qualifications~~

~~Searchers will be trained to conduct carcass searches and will be familiar with and able to accurately identify bird and bat species likely to be found in the Carty Solar Farm area. Any unknown birds and bats or suspected state or ESA-listed species discovered during carcass searches will reported to a qualified biologist for positive identification.~~

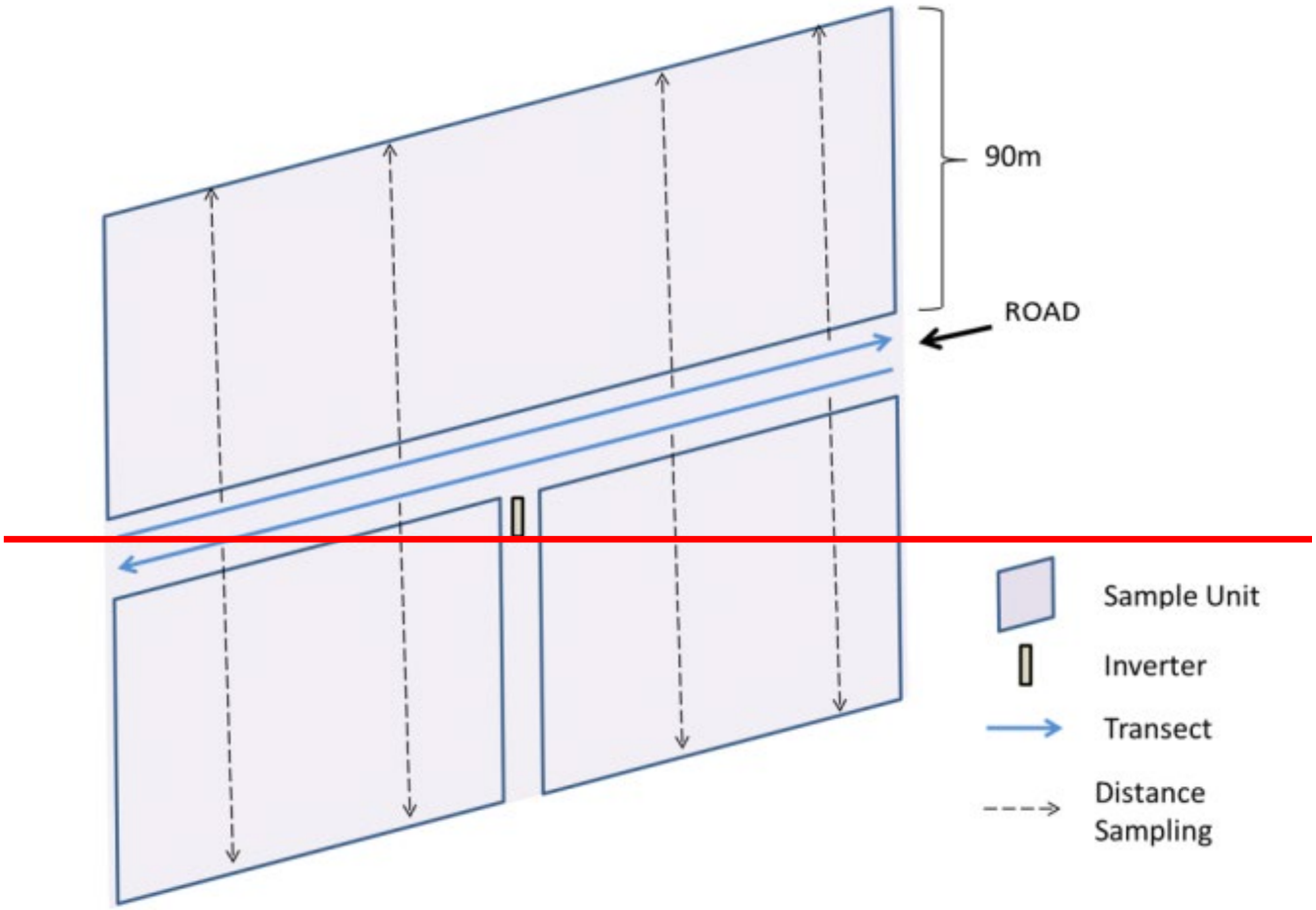
~~iv) Data Collection~~

~~For each carcass or injured bird found, data recorded will include the following:~~

- ~~Photos of the carcass from different angles and including a size-referencing object~~
- ~~Date and time~~
- ~~Initial species identification~~
- ~~Sex, age, and reproductive condition (when possible)~~
- ~~GPS location~~
- ~~Nearest CARTY SOLAR FARM component (PV array, control house/storage facility, equipment, or other)~~
- ~~Distance to the nearest PV panel~~
- ~~Distance from observer when carcass first observed~~
- ~~Substrate/ground cover conditions~~
- ~~Condition of specimen~~
  - ~~Dead and intact~~
  - ~~Fresh or Dry~~
  - ~~Dismembered~~
  - ~~Feather spot (at least two or more primary feathers, five or more tail feathers, or ten or more feathers)~~
  - ~~Other evidence of scavenging~~

~~Injured (note apparent injuries)~~

~~Bird and bat carcasses found in non-search areas (i.e., outside of the sampled areas described in Section i) will be coded as incidental finds and documented in a similar fashion to those found during standard searches. Incidental finds will be included in the raw survey summary totals but will not be included in the estimated fatality calculations. Carcasses be collected and disposed of consistent with PGE's Avian Protection Program and existing federal Migratory Bird Special Purpose Utility permit. Injured birds will be transferred to a licensed rehabilitator.~~



~~Figure 1. Example illustration of generic PV sampling unit with travel routes and searches using distance sampling ('observation perspectives').~~

~~(1) Searcher Efficiency and Carcass Persistence Trials~~

~~Searcher efficiency and carcass persistence trials will be conducted in conjunction with standard carcass surveys. Searcher efficiency trials will be placed throughout each season on scheduled search days to ensure trials are representative of search conditions throughout each season. Trials will be placed on at least five different days throughout each season. Searcher efficiency trials will be used to estimate the percentage of bird and bat carcasses that are detected during the carcass searches. Using the detection function fit from searcher efficiency trial data, the average probability of detecting a carcass along a specified length of panel rows can be calculated and used to adjust discovered carcasses for detection bias. Similarly, carcass persistence trials will be used to estimate the percentage of bird and bat carcasses that persist (i.e. are not removed by scavengers) long enough to be located by searchers. When~~

considered together, the results of searcher efficiency and carcass persistence trials will inform the likelihood that a bird or bat carcass that falls within the searched area will be recorded. These correction factors will be incorporated into a fatality estimate model to estimate fatality rates.

The bias trial sample sizes required to produce precise, adjusted fatality estimates are not well established, in part because needs may vary substantially depending on actual project-specific searcher efficiency, carcass persistence, and fatality rates. However, using searcher efficiency trials to help evaluate the efficacy of the distance sampling approach used in this investigation will require larger sample sizes to produce a sampling design that effectively accounts for distance as a key covariate of interest. A minimum of 25 carcass samples per small size class, 15 for medium, and 10 for large is anticipated within the solar array per season (Table 2). Searcher efficiency will be summarized for each individual searcher, but to avoid needlessly inflating the variance of the estimate, individual searcher effects will not be included in the fatality estimation model.

Table 2. Approximate Searcher efficiency trial sample sizes per season.

Facility component	Size	Sample size
solar arrays	Small	25
	Medium	15
	Large	10
Totals		50

Carcasses of bird or bat species recovered during the study that are not listed under the Migratory Birds Species Act or state or federal endangered species regulations may be re-used in the searcher efficiency trials, as carcass condition allows. Species such as house sparrows (*Passer domesticus*) and European starlings (*Sturnus vulgaris*) may be used to represent small-sized birds; rock doves (*Columba livia*) and commercially raised hen mallards (*Anas platyrhynchos*) or hen pheasants (*Phasianus colchicus*) may be used to represent medium to large-sized birds. If visibility classes are established, to account for differences in vegetation, trial carcasses will be placed in a variety of vegetation types so that searcher efficiency rates can be determined for each visibility class. The number of carcasses used will be limited to ensure that a scavenger swamping does not occur. Searcher efficiency trials will be conducted blindly; the searchers will not know when trials are occurring, within which transects the trial carcasses are placed, or where trial carcasses are located within the project.

The number and location of trial carcasses found by searchers will be recorded and compared to the total number placed in the transects. Searchers will be instructed prior to the initial search effort to leave carcasses, once discovered to be trial carcasses (by inconspicuous ID tags), in place (these carcasses will also be used to calculate carcass persistence). The number of trial carcasses available for detection (non-scavenged) will be determined immediately after the conclusion of the trial. Searcher efficiency of the surveyors will generate the estimate of searcher bias for input into the fatality estimate models.

Carcass persistence trials will be conducted concurrently with searcher efficiency trials and, to the extent possible, using the same carcasses from the searcher efficiency trials. In total, 30 small, 20 medium, and 10 large carcasses will be randomly placed and monitored within the solar arrays, each season (Table 3). Carcass persistence trials in the solar arrays will be monitored, using motion-triggered, digital trail cameras (e.g., see Smallwood et al. 2010). The status of each trial carcass (e.g. gone/present, fresh/desiccated, whole/partial) will be recorded throughout the trial. The length of time carcasses persist on the ground will be used to generate the estimate of carcass persistence for input into the fatality estimate models.

~~It may not be necessary to use cameras to monitor every carcass, as carcass persistence can also be conservatively estimated by frequent field visits and using the last date a carcass was observed as its removal date. However, at least a subset of carcasses will be monitored with cameras to help determine fate of scavenged carcasses. Cameras may also be useful for other purposes. For example, if trained on solar arrays and facility fences, motion-activated cameras could help to document cause of avian and bat fatalities, which is often undetermined at solar farms. The number and purpose of cameras used will be determined along with final study protocol in consultation with ODFW and ODOE.~~

~~Table 3. Approximate Carcass Persistence Trail Sample Sizes Per Season.~~

~~Facility component~~	~~Size~~	~~Sample size~~
~~solar arrays~~	~~Small~~	~~30~~
	~~Medium~~	~~20~~
	~~Large~~	~~10~~
~~Totals~~		~~60~~

~~Fake cameras or cameras without bias trial carcasses may also be placed to avoid training ravens to recognize cameras as "feeding stations". Periodic ground-based checking of carcasses also will occur to guard against misleading indicators of carcass removal, such as wind blowing the carcass out of the camera's field of view. To minimize potential bias caused by scavenger swamping (Smallwood 2007, Smallwood et al. 2010), carcass persistence specimens will be distributed across the entire Facility, not just in areas subject to standard surveys, and new specimens will be placed every two to three weeks in small numbers.~~

~~*(2) Data Analysis and Modeling*~~

~~Because the detectability of carcasses during field surveys can be imperfect, raw carcass counts generally underestimate actual mortality. Therefore, the Huso fatality estimator (Huso 2011; Huso et al. 2012, Huso et. al 2016a), modified to account for distance sampling (WEST 2016a, Huso et. al 2016b), will be applied to generate corrected fatality rate estimates for the Carty Solar Farm.~~
~~The Huso fatality estimator (Huso 2011; Huso et al. 2012) allows the user to model categorical covariates that may affect searcher efficiency and carcass persistence. AICc scores are used to evaluate the effectiveness of candidate models before generating final fatality estimates. Because the underlying assumption that searchers have a single opportunity to discover a carcass, only those carcasses determined to have occurred within the previous search interval will be used to generate adjusted fatality estimates. In addition, the model does not produce reliable estimates when there are few carcasses included in analysis.~~

~~When fewer than five carcasses belonging to a group of interest (e.g. small birds) are found and included in analysis, estimates will not be provided. Corrected fatality estimates will be reported for the solar Facility (PV panel area). Estimated mortalities will be expressed in terms of carcasses/MW/season and in other metrics appropriate for a solar facility to facilitate comparison with other studies. Analysis of data collected during the post-construction study will include seasonal fatality estimates for all birds and bats to the taxonomic level where fatality estimates can be calculated. Fatality estimates and confidence intervals will be compared to determine if differences in fatality estimates between taxa or group (e.g. birds compared to bats, large birds compared to small birds), or season. Because representative fatality estimates are more challenging to develop for small (i.e. <5) numbers of carcasses, appropriate taxonomic level fatality estimates will only be calculated if the number of carcasses is sufficient.~~

Reporting

The Certificate Holder will document the results of the monitoring in a summary report following the completion of the post-construction monitoring. The certificate holder may include this summary report of bird and bat fatality monitoring data and analysis in the annual report required under OAR 345-026-0080 or submit this information as a separate document at the same time the annual report is submitted.

The summary report will include fatality estimates and data summaries. The report will include all data analyses, including correlation analyses and overall fatality estimates, and a discussion of monitoring results and their implications. The certificate holder shall notify the appropriate agency immediately upon the discovery of a carcass of any state-listed, ESA-listed species or eagle on the Facility site.

Adaptive Management

i. Adaptive Management Goals

Adaptive management will allow the Certificate Holder to meet the goals of avoiding and minimizing impacts to birds and bats. After the end of the first year of post-construction monitoring, if the fatality rates do not exceed any thresholds of concern identified in Section 3.2, no additional monitoring will be conducted. However, if the fatality rates do exceed any of the thresholds of concern in Section 3.2, ODOE, in consultation with ODFW and the Certificate Holder, will determine if additional monitoring is warranted based on the number of observed carcasses and estimated fatality rates and consideration of any other significant information available at the time.

ii. Adaptive Management Process

To enable new information, including the results of post-construction monitoring, to influence and improve avoidance and minimization measures, certain trigger events and the subsequent changes or actions have been established. The events that would trigger need to consider the additional avoidance and minimization measures presented herein would be:

- Discovery of an eagle carcass
- New ESA-listing of a bird or bat species
- Discovery of an ESA-listed species carcass
- New state-listing of a bird or bat species
- Discovery of a state-listed species carcass
- The total number of observed bird and bat mortalities is higher than expected and likely to be significant, as defined in Section 3.2.6.

1) Discovery of an Eagle or ESA-listed Species Carcass

If an eagle or ESA-listed species carcass is discovered within the Carty Solar Farm, the following actions will be taken:

- Certificate Holder will, working with a qualified wildlife biologist, promptly identify and secure the carcass at the place of its discovery in the field until USFWS personnel can be reached and provide the further instruction for the storage of the carcass.
- Certificate Holder will notify USFWS, ODFW, and ODOE within one business day after discovery and positive identification of the carcass.
- Certificate Holder will work with the USFWS to evaluate available data concerning the find and, as appropriate, identify and implement avoidance and minimization measures to reduce the risk of future carcasses. Potential adaptive management approaches are presented in Section 3.2.7

~~below.~~

- ~~Certificate Holder will assess the need to obtain additional authorizations in view of the new information.~~

~~2) New ESA-listing of a Bird or Bat Species~~

~~If a bird or bat species, known to occur or that has a high likelihood to occur within the Carty Solar Farm area, becomes listed under the ESA during the life of the facility, Certificate Holder will coordinate with USFWS. If this trigger is met, Certificate Holder will work with USFWS to assess the potential for the facility to impact the species and subsequently to determine the appropriate action(s), if any.~~

~~3) New State-listing of a New Bird or Bat Species~~

~~If a bird or bat species, known to occur or that has a high likelihood to occur within the Carty Solar Farm area, becomes listed by ODFW during the life of the facility, Certificate Holder will coordinate with ODFW and ODOE. If this trigger is met, Certificate Holder will work with ODFW and ODOE to assess the potential for the facility to impact the species and subsequently to determine the appropriate action(s).~~

~~4) Discovery of a State-listed Species Carcass~~

- ~~Certificate Holder will, working with a qualified wildlife biologist, promptly identify and secure the carcass at the place of its discovery in the field until ODFW personnel can be reached and provide the further instruction for the storage of the carcass.~~
- ~~Certificate Holder will notify ODFW and ODOE within one business day after the discovery and positive identification of the carcass.~~
- ~~Certificate Holder will work with the ODFW and ODOE to evaluate available data concerning the discovery and, as appropriate, identify and implement avoidance and minimization measures to reduce the risk of future mortalities.~~
- ~~Certificate Holder will assess the need to obtain additional authorizations in view of the new information.~~

~~5) Total Number of Observed Bird and Bat Mortalities is Higher than Expected and Likely to be Significant~~

~~Mortalities to birds and bats during operations are expected to be low. Significance of the levels of mortality of any bird or bat species would be determined in coordination with USFWS, ODFW and ODOE based on the best available information, including the most recent data on species' population sizes and trends and fatality rates at technologically and geographically similar facilities if available. At this time, there is no publicly available avian fatality data at PV facilities in Oregon, but there may be in the future. This approach recognizes that higher levels of mortality of common species may not be significant. Conversely, lower levels of mortalities of less common species may be of more concern, particularly if these species appear to be at risk (e.g., Oregon sensitive-critical species). Given the assessment and prediction that impacts are likely to be low, the following actions are suggested in response to monitoring outcomes:~~

- ~~If documented fatalities are low and not considered significant for the species involved, no mitigation will be conducted.~~
- ~~If fatalities are high enough that they could be considered significant for the species involved, Certificate Holder will meet and confer with the ODFW and ODOE and the applicable actions presented below will be carried out. If a particular cause can be identified, Certificate Holder will~~

~~develop specific mitigation measures in consultation with ODFW and ODOE to address the occurrence.~~

~~6) Potential Adaptive Management Approaches~~

~~Circumstances that trigger the need for adaptive management will be investigated such that the Certificate Holder can, in consultation with ODFW and ODOE, implement avoidance, minimization, and mitigation measures designed and implemented to reduce impacts to birds and/or bats while maintaining Facility viability. If ODOE determines that additional avoidance, minimization or mitigation measures are appropriate based on analysis of the data, consultation with ODFW, and consideration of other significant information available at the time, the Certificate Holder, in consultation with ODOE and ODFW, shall propose and implement measures to address the concern, subject to the approval of ODOE. Avoidance, minimization, and mitigation actions that may be taken under adaptive management include, but are not limited to, the following:~~

- ~~Remove or modify any identified sources of bird or bat attraction to the extent practicable.~~
- ~~If more than one eagle carcass is discovered in a 5-year time period, Certificate Holder will develop and implement a roadkill removal program on roads within or near the Carty Solar Farm, as appropriate, to offset Carty Solar Farm impacts to eagles.~~
- ~~Implement technological solutions. If bird and/or bat carcass discoveries exceed the above-defined adaptive management triggers and new techniques or technology become available, the Certificate Holder, ODOE, and/or ODFW shall propose new approaches, techniques or technology designed to avoid and/or minimize impacts to the affected species, taking into consideration factors including but not limited to cost effectiveness and feasibility to implement, subject to the approval of ODOE. At this time, there are no technological solutions available. If ODOE determines that additional monitoring is appropriate based on analysis of the data, consultation with ODFW and Certificate Holder, and consideration of any other significant information available at the time, the Certificate Holder shall conduct additional specific, targeted monitoring to determine if adaptive management measures are effective.~~

IV. CALCULATION OF THE SIZE OF THE MITIGATION AREA

The HMA must be large enough and have characteristics that meet the standards set by ODFW's Wildlife Habitat Mitigation Policy. These standards include: no net loss of habitat quantity or quality and to provide a net benefit of habitat quantity or quality for Category 2 habitat; no net loss of habitat quantity or quality for Category 3 habitat (in-kind, in-proximity mitigation); no net loss of habitat quantity or quality for Category 4 habitat; net benefit in habitat quantity or quality for Category 5 habitat (i.e., actions that improve habitat conditions); and minimize impacts for Category 6 habitat.

~~Unit 1 permanent impacts and estimated acreage permanent impacts for the Carty Solar Farm are shown in Table 4~~Table 4 shows the acres of temporary and permanent impacts for the Carty Generating Station Unit 1 and associated mitigation acreage. For permanent impacts, the mitigation area shall include 2 acres for every acre of impacts to Category 2 habitat (a 2:1 ratio to provide no net loss and a net benefit of habitat quantity) and 1 acre for every acre of permanent impacts to Category 3 and 4 habitats (a 1:1 ratio to provide no net loss). Mitigation for temporary impacts shall include 1 acre for every acre of impacts to Category 2 habitat (a 1:1 ratio) and 0.5 acre for every acre of temporary impacts to Category 3 and 4 habitat (a 0.5:1 ratio) that have not previously been mitigated for temporary impacts (e.g., areas of temporary impacts that are mitigated as part of construction for Unit 1 that are reused for subsequent units will not result in additional mitigation acreage). Temporary impacts on grasslands typically do not require mitigation in the form of land acquisition and/or conservation.

The acreages of impact in this Amended Plan for Unit 1 are based on the final design layout of the facility

submitted to ODOE and ODFW prior to beginning of Unit 1 construction and the revised final design layout of the facility and the associated impact acreages provided to ODOE and ODFW during construction. The construction of Unit 1 resulted in 45 acres of permanent disturbance and 55.4 acres of temporary disturbance, resulting in a total required mitigation area of 72.7 acres.

~~The acreages of impact for the Carty Solar Farm are based on preliminary design and will be updated based on final design layout of the amended facility. The acreages of impact will be submitted for approval to ODOE and ODFW prior to beginning construction to demonstrate that the HMA is appropriately sized. The calculated maximum habitat impact estimates of the Carty Generating Station construction associated with each unit are shown in the table below (Table 4).~~The acreages of impact for the septic system and security guard station including associated plumbing and communication lines ~~are~~ were based on preliminary design; the guard station and associated plumbing and communication lines were never constructed ~~and will be updated based on the final design layout of the amended facility. The acreages of impact will be submitted for approval to ODOE and ODFW prior to beginning construction to demonstrate that no new HMA is needed~~. The calculated maximum habitat impact estimates associated with the Second Amended site certificate are shown in Table 4. The HMA for Unit 1 is 78 acres; the maximum habitat impact estimates in Table 4 are 73.65 acres; therefore the HMA for Unit 1 impacts remains sufficient.

Table 4. Estimated Habitat Impacts of the Carty Generating Station by Habitat Category

Habitat Type by Project Area	Temporary Impacts (acres)[1]	Permanent Impacts (acres)[2]	Calculated Mitigation Area (acres)[1,2]
Unit 1 and Supporting Facilities[3]			
Category 4	55.4	45	72.75
Total Unit 1 Area Requiring Mitigation[1,2]	27.75	45	72.75
Proposed new Facility components of Request for Amendment 2[4]			
Category 4	0.8	0	0.4
Category 6	0	1.07	0
Total Area RFA2 Area Requiring Mitigation[1,2]	0.4	0	0.4
~~**Carty Solar Farm and Related or Supporting Facilities [5]**~~			
~~Category 2~~	~~6.39~~	~~259.32~~	~~525.03~~
~~Category 3~~	~~7.66~~	~~42.84~~	~~46.67~~
~~Category 4~~	~~90.57~~	~~18.79~~	~~64.08~~
~~Category 6~~	~~2.81~~	~~0.19~~	~~0.00~~
~~Total Solar Farm Area Requiring Mitigation[1,2]~~	~~55.51~~	~~580.27~~	~~635.78~~
Mitigation Summary			
Mitigation Required to date (Unit 1)			72.75
Additional Mitigation Required under RFA2			0.9
Total Mitigation for Amended Project			~~709.43~~73.65

Table 4. Estimated Habitat Impacts of the Carty Generating Station by Habitat Category

Habitat Type by Project Area	Temporary Impacts (acres)[1]	Permanent Impacts (acres)[2]	Calculated Mitigation Area (acres)[1,2]

Notes:

In all cases, impacts in a given project area will only be mitigated once.

[1]Temporary impact mitigation is based on a 1:1 ratio for Category 2, a 0.5:1 acre ratio of Category 3 and 4, and zero for Category 6.

[2] Permanent impact mitigation is based on a 2:1 ratio for Category 2, a 1:1 acre ratio of Category 3 and 4 and zero for Category 6.

[3] Unit 1 includes Unit 1 and all related or supporting facilities constructed as part of Unit 1.

[4] New facility components as proposed in RFA2 include the new security guard station, wastewater pipeline, septic system, water pipeline, office/warehouse building, and the Carty substation and associated distribution lines. Note that the septic system, substation, and office/warehouse were constructed so the acreage in Table 6 is for only components that have been constructed and does not match the amount originally estimated in the Second Amendment.

~~[5] The Carty Solar Farm includes the Carty Solar Farm energy facility site, the potential route for the Carty Solar Farm interconnection transmission line that would require the most mitigation acres (Route 1), the Grassland Switchyard buildout area if interconnection Option 1 is selected (along with potential interconnection Route 1), and temporary construction laydown and parking areas.~~

V. DESCRIPTION OF THE MITIGATION AREA

To comply with the mitigation criteria outlined in OAR 635-415-0025, the certificate holder shall mitigate for impacts to Category 2, 3, 4, and 5 habitats in a manner consistent with the ODFW habitat mitigation policy and subject to the approval of ODFW. The certificate holder will establish a HMA (or areas) that will be maintained, enhanced, and monitored throughout the life of the facility[6] through implementation of the habitat enhancement actions described in this Amended Plan. The certificate holder shall provide appropriate legal documentation to ODOE showing the legal right to create, maintain, and protect the HMA for the life of the facility. The certificate holder shall not undertake any development activities within the HMA throughout the life of the facility.

The 78-acre HMA for Unit 1 is located immediately east of the Site Boundary and comprises all or portions of map T3N R24E, tax lots 101, 113, and 116. The parcel is owned and has been placed under conservation easement by the certificate holder. It is adjacent to the existing PGE-owned natural habitat areas on the north and east sides, and a conservation area maintained by The Nature Conservancy along part of the west boundary. The vegetation in the HMA is dominated by Sandberg's bluegrass, bluebunch wheatgrass, and intermittent areas of needle-and-thread grass, as well as cheatgrass. There are also occasional green rabbitbrush (*Chrysothamnus viscidiflorus*), gray rabbitbrush, big sagebrush, fiddleneck (*Amsinckia menziesii*), and yarrow (*Achillea millefolium*). WGS burrows were identified within the HMA for Unit 1 in 2006. As of 2010, approximately 80 percent of the HMA for Unit 1 area was located within 785 feet of identified WGS burrows and was therefore considered Category 1 habitat. The remainder of the HMA for Unit 1 was included in the buffer area for previously occupied WGS habitat and was therefore designated as Category 2 habitat. ~~Based on 2016–2017 WGS surveys, the majority of the HMA for the Carty Solar Farm (see below) would be located on Category 2 or Category 3 habitat based on the current habitat categorization for Amendment 1.~~ The 78-acre HMA is 5.25 acres larger than required for temporary and permanent impacts associated with Unit 1 and supporting facilities. Therefore; the

[5] As used in this plan, "life of the facility" means continuously until the facility site is restored and the site certificate is terminated in accordance with OAR 345-027-0110.

additional 1.10 acres of mitigation required for the septic system and security guard station included in the Second Amended Site Certificate are covered by this HMA.

~~The proposed HMA for the Carty Solar Farm and supporting facilities (the HMA for the Carty Solar Farm), estimated at approximately 636 acres per Table 4, would be located within a portion of the PGE-owned, 880-acre natural habitat area that contains remnant stands of sagebrush. The parcel adjoins the HMA for Unit 1 to the north and east and is located in Section 26, T3N R24E tax lot 101 and the eastern half of Section 35, T3N R24E, tax lot 113). The certificate holder plans to mitigate for the habitats impacted by placing a conservation easement on the appropriate acreage and by providing habitat uplift through the habitat enhancement and monitoring activities described below. Final location of the HMA for the Carty Solar Farm will be delineated in coordination with ODFW prior to construction once final design layout and mitigation acreage is determined.~~

VI. HABITAT ENHANCEMENT ACTIONS

The objectives of habitat enhancement and restoration are to protect habitat within the mitigation area from degradation and improve the habitat quality of the mitigation area. The certificate holder shall initiate the habitat enhancement actions for the facility before beginning operation. The certificate holder shall restrict uses of the mitigation area that are inconsistent with the goal of no net loss and net benefit of Category 2 habitat and no net loss of Category 3 and 4 habitats. The certificate holder shall implement habitat enhancement actions as described in this Amended Plan and as specified in the amended Site Certificate.

A. Noxious Weed Prevention, Inventory, and Control within the Habitat Management Area

The certificate holder shall conduct comprehensive noxious weed inventories to identify patches of weed infestation within the HMA during year one, year three, and year five after construction of Unit 1 (i.e., 2017, 2019, and 2021), and then continue once every five years (in years divisible by five) for the life of the facility. Weed control and monitoring activities will be conducted more frequently (at least every two years) in areas prioritized based on the results of the comprehensive surveys and reported to ODOE and ODFW. Weeds will be controlled as needed to maintain and enhance habitat quality within the mitigation area, with the goal of working toward eradication of targeted noxious weeds or, if eradication is not practical, decreasing their abundance to minimize impacts on native plant communities. Weed management practices will be consistent with an integrated weed management approach, using an appropriate combination of inventory; prevention (such as best management practices to prevent weed establishment); and control methods (such as hand pulling, mowing, biological control, and/or herbicides). The certificate holder shall obtain ODFW's approval prior to the use of pesticides. Controlling weeds in the HMA should promote growth of native vegetation. If a substantial area of soil is left bare from weed control activities, the area will be seeded using the appropriate methods (as described in the Revegetation and Noxious Weed Control Plan) during the appropriate time of year and using an appropriate mixture of native grass and/or shrub seeds.

B. Fire Damage Revegetation

If vegetation in the HMA is damaged from fire or from fire suppression efforts (e.g., vehicular disturbance), the area would be seeded as necessary with the appropriate seed mix using the appropriate methods, as described in the Revegetation and Noxious Weed Control Plan.

C. Access Control and Wildlife-Compatible Fencing

The certificate holder will monitor and control access to the HMA and will post informative signs depicting the area(s) as "protected" and including natural resources information as appropriate for the

life of the facility. Primary access to the PGE property is controlled by a gate off Tower Road north of the Carty Generating Station (currently used by PGE and The Nature Conservancy [TNC]), the gated entrance to the Boardman Plant, and a gated road from Ione to the south. TNC and Three Mile Canyon Farms may occasionally use the two-track access crossing PGE's property to access the Farm's conservation area. Approved access to the site is currently limited to such occasional approved use of access roads and PGE's general operational needs. Any fences within or bordering the mitigation area(s) will be removed or modified to wildlife-friendly specifications as appropriate. No livestock grazing is currently occurring on the site, and grazing would not be allowed in the future. Periodic monitoring (at least annually but typically more frequently concurrent with other site activities) will be conducted to evaluate effectiveness of access control measures and signage maintenance needs.

~~**D. Enhancement and Sagebrush Habitat**~~

~~To mitigate for permanent impacts to Category 3, and 4 sagebrush habitat affected at the Carty Solar Farm (see acreage in Table 4), the certificate holder will plant sagebrush and/or bitterbrush seedlings in the HMA for the Carty Solar Farm, focusing on enhancing and expanding remnant stands of shrubs that were impacted by past wildfires. Sagebrush and/or bitterbrush seedlings will be planted at a density of 450 plants per acre (approximately 10 feet on center). Planted shrubs will be monitored annually for a period of five years, with a performance goal of 60% survival at the end of the five-year monitoring period. Methods and performance criteria to be finalized through consultation with ODFW.~~

~~**E. Provide Additional Raptor Nesting Opportunities**~~

~~As recommended by ODFW, to mitigate for removal of juniper trees and potential raptor nesting sites in the Carty Solar Farm permanent footprint, the certificate holder will plant up to one tree per 10 acres (roughly 660-foot spacing on center) based on the final size of the HMA for the Carty Solar Farm. Initial planting will be conducted in the October/November or February/March time period during the first year following start of construction. Planted juniper trees will be monitored annually for a period of five years, with a performance goal of 60% survival at the end of the five-year monitoring period. Methods and performance criteria to be finalized through consultation with ODFW.~~

VII. MITIGATION AREA MONITORING

The certificate holder shall use a qualified investigator (botanist, wildlife biologist, or revegetation specialist) to conduct a comprehensive monitoring program for the HMA. The purpose of this monitoring is to evaluate on an ongoing basis the protection of habitat quality, the results of enhancement actions, and the use of the area by avian and mammal species, especially during the wildlife breeding season.

The investigator shall visit the HMA as necessary to complete the required monitoring during the first, third, and fifth year after Unit 1~~, and the Carty Solar Farm construction (i.e., 2017, 2019, 2021)~~ and every fifth year thereafter (in years divisible by five, unless otherwise specified for specific measures) for the life of the Project. Monitoring activity shall include an assessment of the following:

General quality of vegetation cover (dominant species, structural age, etc.), as determined by ocular estimates and photo points (see below);

1) Success of weed control efforts;
2) Success of remedial actions to restore habitat quality in damaged areas (such as managed weed infestations and any necessary seeding/planting areas), as determined by vegetation cover (ocular estimate) and photo points (see below). Areas where remedial actions involve soil disturbance and reseeding would be monitored consistent with the revegetation monitoring methods and schedule as described in the Amended Carty Generating Station Revegetation and Noxious Weed Plan. ~~See~~

~~Section VI for schedule and performance criteria for habitat enhancements involving shrub and juniper plantings.~~

3) Photos taken from established photo points within the HMA, including 1) a minimum of five permanent photo points distributed to show general vegetation status throughout the HMA, and 2) additional photo points as needed to monitor success of significant enhancement activities, such as managed weed infestations and/or any necessary seeding/planting areas;
4) Incidental wildlife occurring within the HMA (counts concurrent with all other monitoring work);
5) Environmental factors found on site during monitoring activities and annual summary records (such as precipitation);
6) Surveys of resident special status wildlife species (WGS) that have been documented during previous monitoring or survey efforts within the HMA, using existing protocols approved by ODFW; and
7) Avian point counts during the breeding season at existing point count stations, formerly monitored under the Boardman Plant Ecological Monitoring Program, in the vicinity of the HMA(s). Four point-count stations are located in the immediate vicinity of the HMA for Unit 1, and an additional ~~four sites~~ six point-count stations are located in the immediate vicinity of the proposed HMA for the Carty Solar Farm.

VIII. DATA REPORTING

The certificate holder shall submit a report including wildlife and habitat monitoring data and analysis to ODOE and ODFW during each monitoring year according to the schedule in Table 5. The certificate holder shall notify USFWS and ODFW within one business day if any federal or state endangered or threatened species are killed or injured on the facility site or within the HMA. The certificate holder may include the reporting of wildlife monitoring data and analysis in the report required under OAR 345-026-0080 or submit this information as a separate document concurrent with the submittal of the report. In addition, the certificate holder shall provide ODOE with any data or record generated by the investigators in carrying out this Amended Plan upon request by ODOE.

Table 5. Schedule of Wildlife Mitigation and Monitoring Programs

Task	Schedule
Post-construction Washington Ground Squirrel Survey Monitoring	Year one, three and five after operation of Unit 1 has begun and in year one, three and five after operation of Carty Solar Farm has begun, and otherwise at least every five years (in years divisible by five) thereafter for the life of the facility.
Raptor Nest Monitoring	
~~Post-construction Avian and Bat Mortality Monitoring~~	~~A full year of formal post construction avian and bat monitoring in the year following start of Carty Solar Farm operation.~~ ~~N/A for Unit 1.~~
General HMA Monitoring	During the first, third, and fifth year after Unit 1 HMA, (i.e., 2017, 2019, 2021) ~~and during the first, third, and fifth years after Carty Solar Farm construction for Carty Solar Farm HMA,~~ and ~~otherwise~~ every fifth year thereafter for
Noxious Weed Inventory for HMA	

	the life of the facility for entire applicable HMA.
General Weed Control and Monitoring Activity for HMA	At least every two years (in priority areas based every-five-year comprehensive inventory results) starting from the completion of construction.
~~HMA Sagebrush Habitat Monitoring~~	~~Annually for a period of five years, with a performance goal of 60% survival at the end of the five-year monitoring period, for the Carty Solar Farm.~~ ~~N/A for Unit 1.~~
~~Additional Raptor Nest Opportunities (juniper plantings) Monitoring for HMA~~	~~Annually for a period of five years, with a performance goal of 60% survival at the end of the five-year monitoring period for Carty Solar Farm.~~ ~~N/A for Unit 1.~~

IX. AMENDMENT OF THE PLAN

This Wildlife and Habitat Monitoring and Mitigation Plan may be periodically amended and updated to include current and best available practices by agreement of the certificate holder and ODOE. Such amendments may be made without amendment of the Site Certificate. The Energy Facility Siting Council (Council) authorizes ODOE to agree to amendments to this plan and to mitigation actions that may be required under this Plan. ODOE shall notify the Council of all amendments and mitigation actions, and the Council retains the authority to approve, reject, or modify any amendment of this plan or mitigation action agreed to by ODOE.

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Attachment P-4. Draft Habitat Mitigation Plan

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Carty Solar Farm

Draft Habitat Mitigation Plan

Carty Generating Station
Request for Amendment 4
October 2026

Prepared by

Portland General Electric Company

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1.0 Introduction

This draft Habitat Mitigation Plan (HMP) was submitted by the Portland General Electric Company (PGE or Certificate Holder) for photovoltaic (PV) solar energy generation and battery storage (Carty Solar Farm with proposed Request for Amendment [RFA 4] changes) associated with the Carty Generating Station (CGS). CGS, owned and operated by PGE, is located within an approved site boundary comprising approximately 5,250 acres, approximately 13 miles southwest of Boardman in Morrow County, Oregon. CGS consists of the operating 450 megawatts (MW) natural gas-fueled combined-cycle unit (Unit 1). This HMP is specific to the Carty Solar Farm with proposed RFA 4 changes; the habitat mitigation area requirements for Unit 1 are contained in the Amended Wildlife and Habitat Monitoring and Mitigation Plan (WHMMP) developed for Unit 1.

Construction of the Carty Solar Farm with proposed RFA 4 changes is anticipated to commence in Q3 of 2027. PGE will own and operate the solar facility as a part of the CGS.

The Certificate Holder's goal is to preserve and maintain in-kind habitat in the Columbia Plateau Ecoregion to achieve a net benefit to Category 2 habitat, and no net loss of Category 3 or Category 4 habitat, through the measures described in this HMP.

2.0 Finalization of the HMP (PRE-FW-01)

Fish and Wildlife Habitat Condition PRE-FW-XX requires finalization of the draft HMP, stating the following:

> *Prior to construction of the solar facility, as applicable, the certificate holder shall submit a final Habitat Mitigation Plan substantially similar to Final Order on RFA4 Attachment X, based on the finalization requirements included in Section 2.0 of the plan. The final plan must be submitted for review and approval by the Department, in consultation with ODFW.*

This HMP must be finalized prior to construction of the Carty Solar Farm with proposed RFA 4 changes and will be amended prior to construction, if necessary. The HMP will be updated to include the estimated permanent habitat impacts associated with the facility, as applicable. Final review and approval of the HMP was delegated by Energy Facility Siting Council (EFSC) under Oregon Revised Statutes (ORS) 469.402 to the Oregon Department of Energy (ODOE). ODOE, in consultation with the Oregon Department of Fish and Wildlife (ODFW), will review the final HMP based on the following scope:

1. **Final habitat and impact assessment.** Based on final design/layout, update tabular summaries of temporary and permanent disturbance estimates (acres).
    a. Table 2. Temporary and Permanent Impacts by Habitat Category and Habitat Subtype,
    b. Table 3. Calculating Mitigation for Permanent Impacts; and
    c. Table 4. Calculating Mitigation for Temporary Impacts.

2. **Execute legal instrument.** PGE will obtain and submit to ODOE a copy of the conservation easement or legal instrument securing the Habitat Mitigation Area (HMA) for conservation purposes as outlined in this HMP:
    a. The term of the conservation easement or legal instrument will be for the life of the Carty Solar Farm with proposed RFA 4 changes.
    b. The terms of the conservation easement or legal instrument will be binding upon the landowner, heirs, or successors, and would run with the land if property is sold.
    c. The conservation easement or legal instrument will identify restricted uses that have the potential to diminish wildlife habitat functions and value, including but not limited to, grazing; grading, mowing, blading or expansion of impervious surfaces or access road networks; division of the property.
3. **Identify/map baseline condition/monitoring sites and enhancement action areas.** Map baseline habitat conditions of the HMA. Propose number and location of monitoring sites for noxious weeds and shrub-planting. Submit habitat mapping and monitoring site locations to ODOE and ODFW for review and approval.
    a. Provide baseline habitat maps, photographs, and maps/GIS data for proposed monitoring sites at the HMA with a description of the weed and vegetative cover.
        i. Baseline monitoring plot photo points within the HMA include 1) a minimum of 10 permanent photo points distributed across each Quarter Section (160 acres) to show general vegetation status throughout the HMA, and 2) additional photo points as needed to monitor success of noxious weed control and shrub-planting;
4. **Finalize enhancement actions and success criteria in Section 6.2.1, 6.2.2, and 6.2.3.** Based on the baseline assessment completed under Sub(3) above:
    a. Provide maps/GIS data of enhancement action locations.
    b. Determine sagebrush planting density.
    c. Finalize the success criteria for weed treatment and shrub planting.
        i. Success criteria for weed treatment must represent a percent increase in native vegetation cover and percent decrease in invasive cover at monitoring sites compared to baseline.
        ii. Shrub planting will be considered successful when shrub density in enhancement areas is 150 percent of existing sagebrush density within disturbance areas, as determined prior to construction.
    d. Propose restoration methods in the event of fire, which at a minimum include post-burn seeding and noxious weed control.
    e. ODOE and ODFW must evaluate whether the combined enhancement actions satisfy the Category 2 mitigation goal of a net benefit in habitat quality and the Category 3 and 4 mitigation goal of a no net loss of habitat quantity or quality. If the HMA has minimal need or opportunity for the enhancement actions as currently proposed, additional actions may be identified/required.
5. **Finalize Implementation Schedule.** Provide an implementation schedule for habitat enhancement actions and monitoring.

6. **Finalize Monitoring Protocols and Survey Methods.** Submit final proposed monitoring protocol and survey methods to monitor and evaluate the success of enhancement actions.

Approval of the final HMP will be based on review by ODOE, in consultation with ODFW, based on the adequacy of information provided to address the steps/requirements listed above.

3.0 Habitat Categories and Habitat Types

A habitat survey was conducted in 2023 to verify habitat subtypes and habitat categories of all areas to be affected by the Carty Solar Farm with proposed RFA 4 changes. The survey area covered approximately 1,213 acres. The ODFW Fish and Wildlife Habitat Mitigation Policy (Oregon Administrative Rules [OAR] 635-415-0025) provides a framework to categorize habitats based on type, quality, availability, and usefulness/importance to wildlife, and establishes mitigation goals and implementation standards for each. Table 1 defines each of the six habitat category types as presented in the ODFW Habitat Mitigation Policy.

Table 1. Habitat Categorization Types

Category Type	Definition[1]	Mitigation Goal
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.	The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality.
2	Essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population, or unique assemblage.	The mitigation goal, if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality.
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.	The mitigation goal is no net loss of either habitat quantity or quality.
4	Important habitat for fish and wildlife species.	The mitigation goal is no net loss of either habitat quantity or quality.
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.	The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality.
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.	The mitigation goal is to minimize impacts.
1. Source: OAR 635-415-0025.		

4.0 Temporary and Permanent Impacts

Impacts may be permanent or temporary. Permanent impacts are defined as those impacts that will exist for the life of the Carty Solar Farm with proposed RFA 4 changes. Temporary impacts are those impacts that will last for a time less than the life of the Carty Solar Farm with proposed RFA 4 changes. The duration of temporary impacts to habitat will vary by habitat subtype. For example, grasslands generally recover within 3 to 7 years, and shrublands may require 10 to 50 years to recover (with the longer recovery periods associated with disturbances in mature sagebrush [*Artemisia* sp.] habitats). The Certificate Holder will restore temporary impacts consistent with the Vegetation and Soil Management Plan (VSMP; see Exhibit I, Attachment I-2 of RFA 4).

As described in Exhibit P of RFA 4, there are no impacts to Category 1 habitat within the Carty Solar Farm with proposed RFA 4 changes. Category 2 habitat occurs in the Solar Areas and will be impacted by the solar components (Table 2). Category 2 habitat within the Amended Site Boundary is associated with Washington ground squirrel (*Urocitellus washingtoni*; WGS) seasonal home range shift areas. A 1,500-meter buffer, including all suitable habitat, from the edge of Category 1 habitat areas was used to delineate Category 2 habitats, which is ODFW's typical recommendation. This recommendation from ODFW is based on the average dispersal distance of most WGS, and is the standard that ODFW has used on previous projects (ODFW 2019). Category 3, 4, 5, and 6 habitat will also be impacted by the Carty Solar Farm with proposed RFA 4 changes. Table 2 shows the acres of anticipated permanent and temporary impacts in each habitat category by habitat subtype for the Carty Solar Farm with proposed RFA 4 changes.

Table 2. Anticipated Temporary and Permanent Impacts by Habitat Category and Habitat Subtype

ODFW Habitat Category	Habitat Type	Disturbance (acres)	
		Temporary Impacts	Permanent Impacts
1	N/A	0	0
2[2]	Big Sage Shrubland	0.3	15.3
	Big Sage/Juniper Woodland	0.1	7.8
	Broom Snakeweed Shrubland	0.9	126.6
	Rabbitbrush Shrubland	2.5	5.2
	Category 2 Subtotal	**3.8**	**154.9**
3	Big Sage Shrubland	0	40.3
	Big Sage/Juniper Woodland	0	57.3
	Open Water[1]	0.3	0
	Riparian	0.8	4.9
	Category 3 Subtotal	**1.1**	**102.5**
4	Broom Snakeweed Shrubland	0.4	149.2
	Non-native Grassland	0.5	132.4
	Rabbitbrush Shrubland	8.4	151.9

ODFW Habitat Category	Habitat Type	Disturbance (acres)	
		Temporary Impacts	Permanent Impacts
	Category 4 Subtotal	**9.3**	**433.5**
5	N/A	0	0
6	Developed	29.3	169.1
	Category 6 Subtotal	**29.3**	**169.1**
	Total	**43.5**	**859.9**

[1] There are not any temporary disturbances in open water habitat types. The habitat mapping included the rip-rap shoreline on the eastern edge of Carty Reservoir as an open water habitat type. Refer to Exhibit J for detailed analysis of impacts on wetlands and waters.
[2] Note that all Category 2 habitat is classified as such due to WGS home range and none of the underlying habitat type has been classified as Category 2 on its own.

5.0 Methods for Calculating Mitigation

Carty Solar Farm with proposed RFA 4 changes impacts would result in a mitigation need of 854.8 acres, including 845.8 acres of mitigation for permanent impacts and 9.0 acres of mitigation for temporary impacts (Table 3 and Table 4).[1] The actual acres of temporary and permanent impacts and the associated mitigation requirements will be confirmed based on final design and again following construction. The Certificate Holder is not proposing compensatory mitigation under the ODFW Fish and Wildlife Habitat Mitigation Policy for impacts to Category 6 habitat.

Table 3. Calculating Mitigation for Permanent Impacts

Habitat Category	Impact Acres	Mitigation Ratio[1]	Mitigation Need	Mitigation Description
Category 2	154.9	2:1	309.8	The mitigation goal for Category 2 habitat is "no net loss" and "net benefit." Accordingly, mitigation for permanent impacts on Category 2 habitat needs to demonstrate a net benefit in quality or quantity.
Category 3	102.5	1:1	102.5	The mitigation goal for Category 3 habitat is "no net loss" in quantity or quality.
Category 4	433.5	1:1	433.5	The mitigation goal for Category 4 habitat is "no net loss" in quantity or quality.
Category 6	169.1	0:1	0	The mitigation goal for impacts on Category 6 habitat is minimization; no compensatory mitigation proposed.
Grand Total	**860.0**	**--**	**845.8**	--

1. Acres mitigation per acres impacted.
Note: Totals in this table may not sum correctly due to rounding.

[1] Temporary impacts result in temporal loss of habitat function and values from the time an impact occurs to the time when the restored habitat provides a pre-impact level of habitat function. Sagebrush steppe and riparian tree habitat subtypes are reasonably expected to require a longer restoration timeframe (5+ years) and therefore would be expected to result in temporal loss requiring compensatory mitigation beyond the Certificate Holder's revegetation obligation.

Table 4. Calculating Mitigation for Temporary Impacts

Habitat Category	Impact Acres	Mitigation Ratio[1]	Mitigation Need	Mitigation Description
Category 2	3.8	1:1	3.8	The mitigation goal for Category 2 habitat is "no net loss" and "net benefit." Accordingly, mitigation for permanent impacts on Category 2 habitat needs to demonstrate a net benefit in quality or quantity.
Category 3	1.1	0.5:1	.5	The mitigation goal for Category 3 habitat is "no net loss" in quantity or quality.
Category 4	9.3	0.5:1	4.7	The mitigation goal for Category 4 habitat is "no net loss" in quantity or quality.
Category 6	29.3	0:1	0	The mitigation goal for impacts on Category 6 habitat is minimization; no compensatory mitigation proposed.
Grand Total	**43.5**	**--**	**9.0**	--

1. Acres mitigation per acres impacted.
Note: Totals in this table may not sum correctly due to rounding.

6.0 Carty Solar Farm with Proposed RFA 4 Changes Habitat Mitigation Area

The HMA is the area where the Certificate Holder is proposing to perform enhancement and preservation actions that are in addition to the revegetation of areas of temporary disturbance associated with the Carty Solar Farm with proposed RFA 4 changes. The HMA must be large enough and have the characteristics to meet the standards set in OAR 635-415-0025.

According to ODFW standards, areas appropriate for mitigation of Category 2 habitat impacts must provide "in-kind" mitigation that creates similar structure and function to that being disturbed, be "in-proximity" to the Carty Solar Farm with proposed RFA 4 changes, and have potential for habitat enhancement. The mitigation goal for Category 3 habitat is "no net loss" in quantity or quality and mitigation for impacts to Category 4 habitat may be "in-kind" or "out-of-kind" and "in-proximity" or "out-of-proximity."

The Certificate Holder identified 880 acres of suitable in-kind and in-proximity habitat with potential for habitat enhancement for the HMA located within a PGE-owned natural habitat area adjacent to the Carty Generating Facility to fulfill the mitigation need for the Carty Solar Farm with proposed RFA 4 changes (Figure 1). The identified area is larger than its mitigation need to allow for flexibility during final design, construction, and management of the HMA. ODOE and ODFW previously approved the identified 880-acre natural habitat area for solar mitigation in the Second Amended WHMMP, providing assurance that the mitigation goals of "in-kind" and "in-proximity" can be met.

6.1 Habitat Assessment and Mitigation Accounting

The 880 acres of suitable in-kind and in-proximity habitat within the PGE-owned natural habitat area (Figure 1) adjoins two other HMA easements and a large conservation area maintained by The Nature Conservancy (South Farm Conservation Area; Figure 1). The proposed Carty Solar HMA is located in Section 26, T3N R24E tax lot 101 and the eastern half of Section 35, T3N R24E, tax lot 113. Final location of the HMA for the Carty Solar Farm with proposed RFA 4 changes will be delineated in coordination with ODFW prior to construction, once final design layout and mitigation acreage is determined.

Habitat mapped within the HMA includes rabbitbrush shrubland and broom snakeweed shrubland (Figure 1). The HMA is dominated by Sandberg's bluegrass (*Poa secunda*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and intermittent areas of needle-and-thread grass (*Hesperostipa comata*), as well as cheatgrass (*Bromus tectorum*). There are also occasional occurrences of green rabbitbrush (*Chrysothamnus viscidiflorus*), gray rabbitbrush (*Ericameria nauseosa*), big sagebrush (*Artemisia tridentata*), antelope bitterbrush (*Purshia* tridentata), fiddleneck (*Amsinckia menziesii*), Carey's balsamroot (*Balsamorhiza careyana*), and yarrow (*Achillea millefolium*).

The HMA is mostly within a Priority Wildlife Connectivity Area (PWCA) connector (ODFW 2026)[2], and considered Category 2 habitat by ODFW. The HMA also contains Category 2 habitat associated with active WGS colonies that are immediately adjacent to the HMA. Historically, PGE has documented active WGS colonies throughout the HMA area, suggesting much of the habitat is suitable for WGS occupancy.

The Certificate Holder plans to mitigate for the habitats impacted by placing a conservation easement on the appropriate acreage and by providing habitat uplift through the habitat enhancement and monitoring activities described below.

6.2 Habitat Enhancement Actions

The objectives of habitat enhancement and restoration are to protect habitat within the HMA from degradation and improve the habitat quality of the HMA. The Certificate Holder shall initiate habitat enhancement actions for the Carty Solar Farm with proposed RFA 4 changes before beginning operation. The Certificate Holder shall restrict uses of the HMA that are inconsistent with the goal of no net loss and net benefit of Category 2 habitat and no net loss of Category 3 and 4 habitats, as designated in the conservation easement. The Certificate Holder shall implement habitat enhancement actions as described in this HMP and as specified in the Site Certificate. Enhancement actions and monitoring procedures are detailed below, as finalized in this HMP prior to

[2] The Oregon Conservation Strategy (ODFW 2026) defines PWCA "regions" as the combined top one percent of connectivity priorities across all 54 Oregon Connectivity Assessment and Mapping Project (OCAMP) species' connectivity models. Regions are large, contiguous areas and represent the highest-value habitat for facilitating species movement throughout the state. PWCA "connectors" are described as pathways that provide the best available habitat for facilitating movement between regions. Connectors may pass through high-quality habitat in intact, relatively undisturbed parts of the landscape, as well as the best remaining marginal habitat in developed or degraded areas.

construction. Besides legal protection to ensure no development, enhancement actions for the HMA include those detailed in the following subsections.

6.2.1 Restoration and Enhancement Actions in the Event of Fire

The following actions will be implemented at the HMA if the site is damaged from fire or fire suppression efforts (e.g., vehicular disturbance or chemical application):

1. GIS mapping of fire scar, fire lines, and/or chemical disturbance areas.
2. Photopoint monitoring at all established monitoring points.
3. Assessment of fire severity and native vegetation damage to inform restoration needs.
4. Invasive annual grass surveys will be performed in fall and early spring for a minimum of two years after the fire. Noxious weed surveys will be performed according to HMP noxious weed survey requirements.
5. Annual grass treatments as needed (pre- and/or post-seeding) as native vegetation establishes, especially during the first two growing seasons.
6. Noxious and nuisance weed treatments as needed until noxious weeds are controlled at pre-fire levels.
7. Seeding where warranted during the first seeding window following the fire (based on timing of fire and climatic conditions but likely September–November) using an appropriate native bunchgrass seed mix at a drill seeding rate of 8–10 pounds pure live seed per acre. Appropriate seeding method will be determined based on the size and severity of the disturbance area and presence of WGS colonies. Seeding methods may include drill seeding or broadcast seeding (hand, ATV with harrow, and/or aerial). Low intensity fire is often beneficial to native vegetation and may not require reseeding.
8. Sagebrush will be planted to replace burned sagebrush stands to pre-fire conditions.
9. Secondary seeding of native forbs, as needed, after native grasses have reestablished. Need for forb seeding will be determined based on the presence/absence and diversity of forbs naturally established in the burn area.

6.2.2 Noxious Weed Prevention, Inventory, and Control

Weeds will be controlled as needed to maintain and enhance habitat quality within the mitigation area, with the goal of working toward eradication of targeted noxious weeds or, if eradication is not practical, decreasing their abundance to minimize impacts on native plant communities. Weeds known to occur within the HMA include rush skeletonweed (*Chondrilla juncea*), knapweed (*Centaurea* spp.), and yellow starthistle (*Centaurea solstitialis*). Recommended control methods are provided in Table 5. The Certificate Holder shall obtain ODFW's approval prior to the use of pesticides. Controlling weeds in the HMA should promote growth of native vegetation.

Table 5. Recommended Noxious Weed Control Methods

Scientific Name	Common Name	Recommended Treatment
Centaurea sp.	knapweed	Mechanical: Manually remove entire plant, including taproot, prior to flowering. Chemical: Apply to actively growing plants in fall or spring from rosette to bolting stage. Biocontrol: Agents include several seed feeding flies and weevils and a root-boring beetle.
Centaurea solstitialis	yellow starthistle	Mechanical: Manually remove entire plant including taproot. Chemical: Post-emergent herbicide application to rapidly growing plants prior to flowering (rosette to bolting stage). Biocontrol: Agents include two seed weevils, a seed fly, and a rust.
Chondrilla juncea	rush skeletonweed	Mechanical: Regenerates from root fragments. Manually remove entire plant, including taproot, prior to flowering. Will require multiple efforts during the growing season for more than one year. Chemical: Apply to rosettes in spring immediately before or during bolting. Biocontrol: Agents include a gall midge, gall mite, rust fungus, and root-mining moth.
Sources: DiTomaso et al. 2013: ODA 2025; Prather et al. 2019.		

6.2.3 Access Control

The Certificate Holder will monitor and control access to the HMA and will post informative signs depicting the area(s) as "protected" and will include natural resources information as appropriate for the life of the facility. Primary access to the PGE property is controlled by a gate off Tower Road north of the CGS (currently used by PGE and The Nature Conservancy), the gated entrance to the former Boardman Coal Plant area, and a gated road from Ione to the south. The Nature Conservancy and Three Mile Canyon Farms may occasionally use the two-track access crossing PGE's property to access the Farm's conservation area. Approved access to the HMA is currently limited to such occasional approved use of access roads and PGE's general operational needs. No livestock grazing is currently occurring within the HMA, and grazing will be a restricted use identified in the conservation easement, as established in Section 2.0 of this HMP. Periodic monitoring will be conducted to evaluate the effectiveness of access control measures and signage maintenance needs.

6.2.4 Shrub Planting

To mitigate for temporal and permanent impacts to Category 3 sagebrush habitat, the Certificate Holder will plant sagebrush and/or bitterbrush seedlings in the Carty Solar Farm HMA focusing on enhancing and expanding remnant stands of shrubs that were impacted by past wildfires. Planting density will be determined in this HMP prior to construction.

6.2.5 Annual Grass Treatment

The Certificate Holder will treat the entire HMA with a pre-emergent herbicide such as Rejuvra to control invasive annual grasses during the first year after construction. Additional pre-emergent or post-emergent broadcast or spot herbicide applications will be conducted as necessary to control annual grasses prior to seeding or planting. The timing of sagebrush planting and pollinator habitat enhancement will depend on the timing and efficacy of invasive annual grass control.

6.2.6 Enhancing Pollinator Habitat

Many native forb species that provide pollinator habitat are well established throughout the HMA and are expected to increase after invasive annual grasses are controlled. If vegetation monitoring does not demonstrate an increase in native forb cover within 3 to 5 years of annual grass treatment, then the Certificate Holder will seed native forbs to enhance pollinator habitat as necessary to meet success criteria. The location of pollinator habitat enhancement will be determined, if necessary, after 3 to 5 years of monitoring.

6.2.7 Provide Additional Raptor Nesting Opportunities

As recommended by ODFW, to mitigate for removal of juniper trees and potential raptor nesting sites in the Carty Solar Farm with proposed RFA 4 changes permanent footprint, the certificate holder may plant juniper trees and/or create other artificial nesting opportunities for raptors within the Carty Solar HMA. Based on the final construction impacts to juniper trees, the exact location(s), type of structures, monitoring and performance criteria will be finalized through consultation with ODFW. Mitigation measures will be finalized in this HMP prior to construction.

7.0 HMA Enhancement Monitoring

The Certificate Holder will use a qualified investigator (botanist, wildlife biologist, or revegetation specialist) to conduct monitoring at the HMA. The purpose of this monitoring is to evaluate, on an ongoing basis, the protection of habitat quality and the results of enhancement actions. Final monitoring methods are presented below for ODOE concurrence. The vegetation monitoring methods for cover and density, including fixed radius plots and Daubenmire cover scale, were recommended and reviewed by Tim Walters of Haley Aldrich as the consulting botanist for ODOE in May 2026.

The investigator will visit the HMA during the growing season for the first 5 years post planting/weed treatment. If success is achieved at year 5, monitoring may be reduced to every fifth year thereafter (in years divisible by 5, unless otherwise specified for specific measures) for the life of the Facility. Monitoring shall include an assessment of the following:

1. General quality of vegetation cover (dominant species, structural stage, etc.), as determined by ocular estimates, measurements, and photo points;

2. Success of weed control efforts;
3. Sagebrush density in enhancement areas;
4. Success of remedial actions to restore habitat quality in damaged areas (such as managed weed infestations, fire damage, and any necessary seeding/planting areas), as determined by vegetation cover (ocular estimate) and photo points;
5. Incidental wildlife occurring within the HMA;
6. Environmental factors found on site during monitoring activities and annual precipitation records;
7. Surveys of resident special status wildlife species (WGS) that have been documented during previous monitoring or survey efforts within the HMA, using existing protocols approved by ODFW; and
8. Avian point counts during the breeding season at existing point count stations, formerly monitored under the Boardman Plant Ecological Monitoring Program, in the vicinity of the HMA(s). Six additional point-count stations are located in the immediate vicinity of the proposed Carty Solar HMA.

7.1 Monitoring Location Establishment

Monitoring locations will be established using the following methods after determining the final mitigation acreage and enhancement actions. Each half of each Quarter Section of the HMA will be divided into four quadrants (NW, NE, SW, SE). The monitoring location within each quadrant (photo point and fixed radius plot) will be randomly generated using the ESRI ArcGIS Pro Create Random Points tool. If a point is located within 100 feet of the proposed HMA boundary or is located within line of sight of another monitoring location, an alternate randomly generated location will be used. The fifth monitoring location will be placed at the centroid (C) of the four quadrants. This will result in a minimum of 10 monitoring locations within each Quarter Section of the HMA. All monitoring locations will be monumented with a t-post and survey nail. Additional monitoring locations to monitor weed infestations and shrub planting success will be established as needed.

7.2 Photo Points

At each monitoring location , a photo will be taken in each of the four cardinal directions.

7.3 Vegetative Cover

To determine vegetative cover, measurements will be made using 100 meter squared (m^2, 0.025 acre) fixed radius plots at the established monitoring locations. Each plot will be sampled using a 5.64-meter radius string secured around the t-post located at the center of the monitoring plot. Within each plot, percent cover measurements of cover types described in Table 6 will be recorded using the Daubenmire cover scale modified by Bailey and Poulton to account for the presence of small forbs commonly found in grasslands (Bonham 2013). The Class midpoints are then averaged for each plot to estimate the percent cover for each cover type. To ensure consistency

during classification, a botanist will perform an initial plant species inventory of the HMA, categorizing all species as desirable, undesirable, or noxious.

Table 6. Cover Types

Cover Type	Description
Desirable grasses	Seeded or naturally recruited native and desirable non-native herbaceous grasses.
Desirable forbs	Seeded or naturally recruited native and desirable non-native herbaceous forbs.
Shrubs	Species such as rabbitbrush (*Chrysothamnus* sp.) and big sagebrush (*Artemisia tridentata*).
Undesirable species	Invasive, non-native species not found on ODA or county A, B, and T noxious weeds lists, such as cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola tragus*).
Noxious weeds	Species found on the ODA and/or county A, B, and T noxious weed lists.
Litter/mulch	Natural litter layer or mulch from hydroseeding.
Rock	Gravel, cobble, boulders, and bedrock.
Bare ground	Exposed soil with no litter or vegetation.

7.4 Density

Due to the patchy and uneven distribution of shrub and weed species throughout the HMA, density will be used to help determine success of shrub plantings and noxious weed management at monitoring locations. Measurements will be made using 100 m^2 fixed radius plots at each shrub and weed infestation monitoring point. Each plot will be sampled by using a 5.64-meter radius string secured around the t-post located at the center of the monitoring plot. Occasionally, a scaled-down radius may be used for dense populations. Noxious weed species densities will be assessed at the established monitoring locations and at all weed infestation monitoring locations. Shrub density will be collected at monitoring locations within delineated shrub planting areas and only for planted species, such as big sagebrush. Shrub monitoring locations will be set up at a subset of sagebrush planting clusters throughout the shrub planting area.

For species density measurements, every plant species of interest that is rooted within the circular 100 m^2 plot will be counted. Larger plants that are on the line will be included if the majority of their stem is within the plot. The total number of individuals per acre will then be calculated by multiplying the density count per 100 m^2 by 40.4686.

7.5 Weed Monitoring

Annual noxious weed inventories will be conducted within the HMA during construction and in preparation for sagebrush planting, then every year for the first 5 years following implementation of initial enhancement. Noxious weed monitoring will be conducted every fifth year thereafter (in years divisible by 5) for the life of the Facility, concurrent with WGS monitoring. Control and monitoring of specific noxious weed occurrences will be conducted more frequently (at least every 2 years) in areas prioritized based on the 5-year monitoring results. Weed monitoring will identify

new noxious weed occurrences, the status of existing occurrences, and the progress of weed control efforts in eradicating or reducing populations. Weed inventories will be conducted on foot. Detailed information on noxious weed occurrences will be collected, including but not limited to, species, location, growth form, number of individuals, and density. In addition, the surveyor will identify potential weed control strategies for each occurrence, as well as constraints that could limit the effectiveness of weed control efforts.

Results from the surveys will be incorporated into a GIS database and provided to ODOE with the Monitoring Report. Weed occurrences will also be photographed over time to document progress of weed control efforts.

8.0 Success Criteria

Enhancement actions will be assessed using the following success criteria:

- **Native and Invasive Vegetative Cover -** Decrease in invasive plant cover and increase in native/desirable plant cover at monitoring sites compared to baseline.
- **Sagebrush -** Sagebrush density in enhancement areas is 150 percent of pre-construction shrub density at the Facility 5 years after planting.

9.0 Data Reporting and Timeline

The Certificate Holder will submit a report including wildlife and habitat monitoring data and analysis to ODOE and ODFW during each monitoring year according to the schedule in Table 7. The Certificate Holder will notify the U.S. Fish and Wildlife Service and ODFW within one business day if any federal or state endangered or threatened species are killed or injured within the HMA. The Certificate Holder may include the reporting of wildlife monitoring data and analysis in the report required under OAR 345-026-0080 or submit this information as a separate document concurrently with the submittal of the report. In addition, the Certificate Holder will provide ODOE with any data or record generated by the investigators in carrying out this Plan upon request by ODOE.

Table 7. HMA Schedule of Implementation and Monitoring

Task	Schedule
Baseline Monitoring	During the first year of construction.
General Monitoring	Every year for the first 5 years post planting/weed treatment. If success is achieved at year 5, monitoring may be reduced to every fifth year (in years divisible by 5) thereafter for the life of the Facility.
Washington Ground Squirrel Monitoring	During the first, third, and fifth years after construction of the Carty Solar Farm with proposed RFA 4 changes, and every fifth year (in years divisible by 5) thereafter for the life of the facility.

Task	Schedule
Raptor Nest Monitoring	In accordance with WHMMP.
Additional Raptor Nest Opportunities	Annually for a period of 5 years, and every fifth year (in years divisible by 5) thereafter for the life of the facility.
General Weed Inventory, Control and Monitoring	During construction and in preparation for sagebrush planting, then every year for the first 5 years following implementation of initial enhancement. Long-term monitoring will be conducted every fifth year thereafter (in years divisible by 5) for the life of the Facility, concurrent with Washington ground squirrel monitoring. Control and monitoring of specific noxious weed occurrences will be conducted more frequently (at least every 2 years) in areas prioritized based on the 5-year monitoring results.
Annual Grass Treatment	Initial treatment during construction, in preparation for sagebrush planting, with follow up spot applications as necessary.
Shrub Planting	Fall of the first year of operations or one year after initial annual grass planting.
Sagebrush Habitat Monitoring	Every year for the first 5 years following implementation of initial enhancement and then every fifth year (in years divisible by 5) thereafter for the life of the facility.
Pollinator Habitat Enhancement	Native forbs will be seeded or planted to enhance pollinator habitat if vegetation monitoring does not demonstrate an increase in native forb cover within 5 years of annual grass treatment.

10.0 Amendment of the HMP

This HMP may be amended from time to time by agreement of the Certificate Holder and EFSC, or ODOE, acting within its delegated authority of EFSC under ORS 469.402. Such amendments may be made without amendment of the site certificate. EFSC authorizes ODOE to agree to amendments to this HMP. ODOE shall notify EFSC of all amendments, and EFSC retains the authority to approve, reject, or modify any amendment of this plan agreed to by ODOE.

11.0 References

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ODA (Oregon Department of Agriculture). 2025. Oregon Noxious Weed Profiles. Noxious Weed Control Program. https://www.oregon.gov/oda/weeds/oregon-noxious-weeds/Pages/default.aspx.

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ODFW. 2026. Priority Wildlife Connectivity Areas. https://oregonconservationstrategy.org/success-story/priority-wildlife-connectivity-areas-pwcas/.

Prather, T., T. Miller, A. Hulting, and E. Peachey. 2019. Control of Problem Weeds. In: Peachey, E. editor. Pacific Northwest Weed Management Handbook. Oregon State University. Corvallis, OR. P. Y-1 to Y-58.

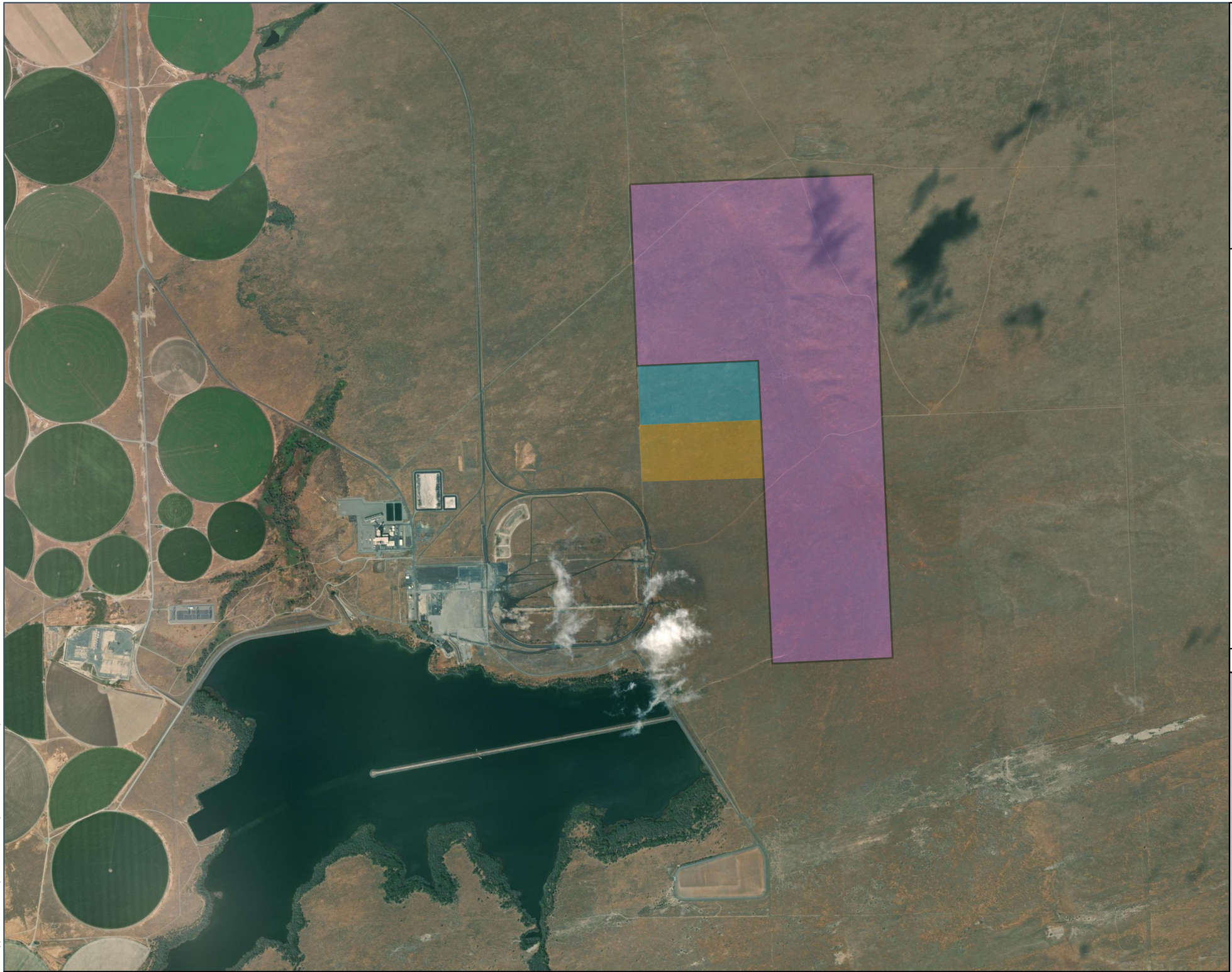
Figures

(Figure 2 to be provided during pre-construction finalization)

Carty Generation Station Solar Facility

Figure 1
Habitat Mitigation Area

Morrow County, OR



- Carty Unit 1 HMA (78 acres)
- Proposed Carty Solar HMA (~880 acres)
- Biglow Solar HMA (75 acres accounts for both Phases)

PGE

Reference Map

N

1:25,000

WGS 1984 UTM Zone 10N

0 2,500 5,000 US Feet

Not For Construction

Earthstar Geographics, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and

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Attachments

(to be provided during pre-construction finalization)