

EXHIBIT A – Request for Amendment No. 1

APPLICANT INFORMATION

OAR 345-021-0010(1)(a)

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A.1 NAME AND ADDRESS OF APPLICANT AND CONTACT PERSON

OAR 345-021-0010(1)(a)(A) *The name and address of the applicant including all co-owners of the proposed facility, the name, mailing address and telephone number of the contact person for the application, and if there is a contact person other than applicant, the name, title, mailing address and telephone number of that person.*

Response: This exhibit provides the information required by Oregon Administrative Rules 345-021-0010(1)(a), in support of the Request for Amendment No. 1 of the Site Certificate for the Carty Generating Station. The applicant information provided in the Application for Site Certificate (ASC) remains valid, with the exception of the Contact Person, who is now:

Arya Behbehani
General Manager Environmental & Licensing Services
Portland General Electric Company
121 SW Salmon Street, 3WTC0403
Portland, OR 97204
503-464-8141
Arya.Behbehani@pgn.com

A.2 PARTICIPANT INFORMATION

OAR 345-021-0010(1) (a) (B) *The contact name, address, and telephone number of all participating persons, other than individuals, including but not limited to any parent corporation of the applicant, persons upon whom the applicant will rely for third-party permits or approvals related to the facility, and, if known, other persons upon whom the applicant will rely in meeting any facility standard adopted by the Council.*

Response: No change from the ASC.

A.3 CORPORATE INFORMATION

OAR 345-021-0010(1)(a)(C) *If the applicant is a corporation, it shall give: (i) The full name, official designation, mailing address, email address and telephone number of the officer responsible for submitting the application; (ii) The date and place of its incorporation; (iii) A copy of its articles of incorporation and its authorization for submitting the application; and (iv) In the case of a corporation not incorporated in Oregon, the name and address of the resident attorney-in-fact in this state and proof of registration to do business in Oregon*

Response: No change from the ASC, with the exception of the Responsible Officer, who is now:

Bradley Jenkins
Vice President Generation & Power Operations
Portland General Electric Company
121 SW Salmon Street, 1WTC1702
Portland, OR 97204
503-464-8928

A.4 MISCELLANEOUS INFORMATION

Response: Not applicable.

EXHIBIT B – Request for Amendment No. 1

FACILITY INFORMATION

OAR 345-021-0010(1) (b)

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B.1 INTRODUCTION

OAR 345-021-0010(1)(b) *Information about the proposed facility, construction schedule and temporary disturbances of the site.*

Response: This exhibit provides the information required by 345-021-0010(1)(b) in support of the Request for Amendment No. 1 of the Site Certificate for the Carty Generating Station (RFA). This exhibit addresses aspects of the facility, construction schedule, and temporary disturbances that would be modified under this RFA. The Application for Site Certificate provides information regarding the facility, construction schedule, and temporary disturbances of the Carty Generating Station as originally proposed.

This RFA includes:

1. Addition of a photovoltaic (PV) solar unit (the Carty Solar Farm); and
2. Removal of Site Certificate conditions related to archaeological resource site 35MW19, based on recent cultural survey reports.

Unit 1 began construction in January 2014 and was placed in service in late July 2016. Unit 2 and its related and supporting facilities, as described in the Application for Site Certificate, have not been constructed, and the construction timeline for Unit 2 required under Site Certificate Condition 4.3 has passed. Portland General Electric Company (PGE) is not requesting a construction timeline extension; therefore, Unit 2 and all related and supporting facilities that were previously approved but have not yet been constructed are no longer approved under the Site Certificate. The addition of Unit 3 was proposed in the previous version of this RFA submitted to the Oregon Department of Energy (Department) in August 2016, but that proposal has been withdrawn.

PGE defines the term “Carty Solar Farm” to include the following project components:

- Solar PV generation facility;
- Related or supporting facilities, including the interconnection transmission line¹ routes and interconnection options described in Section B.3;
- Temporary construction laydown and parking areas; and

¹ All references made herein to “transmission line(s),” “transmission facility(ies),” and “transmission system” are solely intended to be consistent with the terminology used in OAR 345 and should not be interpreted to suggest that such facilities are considered, by PGE, to be part of PGE’s “Transmission System,” as that term is defined in PGE’s Open Access Transmission Tariff, or that such designations as “transmission,” in this context, in any way makes them subject to the regulatory jurisdiction or control of the Federal Energy Regulatory Commission, unless the context makes clear otherwise.

- Several areas in the new portions of the amended Site Boundary where PGE currently does not propose permanent or temporary disturbances, but that are being included to accommodate potential small changes during the final project design stage.

PGE is requesting approval to use all these areas to construct the Carty Solar Farm. PGE has included all of these areas (and appropriate buffers) in the resource assessments described in the other exhibits for this RFA to help determine whether the project meets the applicable Oregon Energy Siting Facility Council (Council) standards.

The removal of Site Certificate conditions related to archaeological resource site 35MW19 is explained in Exhibit S of this RFA; all other exhibits in this RFA focus only on the addition of the Carty Solar Farm.

The following key terms are used in this RFA:

- **Amended Site Boundary** – the site boundary for the Carty Generating Station as amended under this RFA.
- **Carty Solar Farm** – project areas affected by this RFA, including the project components defined above.
- **Site Boundary expansion areas** – all areas included in the amended Site Boundary that were not included in the original Site Boundary, as described in the 2012 Site Certificate.

Figure B-1 provides an overview of the original Site Boundary for the Carty Generating Station and proposed Site Boundary expansion areas. Figure B-2 provides a project overview with the amended Site Boundary. In areas where the amended Site Boundary and Boardman Site Boundary overlap, Carty Generating Station activities would be governed by the Carty Generating Station Site Certificate, and Boardman activities would be governed by the Boardman Site Certificate.

Since the submittal of the previous version of this RFA to the Oregon Department of Energy Department in August 2016, PGE has modified its plans for the project. The RFA has been revised and is now being resubmitted. References to Units 2 and 3 are included in the supplemental reports appended to some RFA exhibits, but these units are no longer relevant to PGE's amendment request and are not incorporated into the evaluation of compliance with applicable Council standards.

B.2 DESCRIPTION OF THE PROPOSED FACILITIES

OAR 345-021-0010(1) (b)(A) *A description of the proposed energy facility, including as applicable:*

OAR 345-021-0010(1)(b)(A)(i) *The nominal electric generating capacity and the average electrical generating capacity, as defined in ORS 469.300.*

Response: The nominal electric generating capacity of the Carty Solar Farm is expected to be up to 50 megawatts (MW), allowing for a combined nominal electrical generating capacity of 500 MW for the Carty Generating Station.

To calculate the average electrical generating capacity of the proposed facilities, as amended, the factor applied to the peak generating capacity is 1.00, making the nominal and average electrical generating capacity the same.

OAR-345-021-0010(1)(b)(A)(ii) *Major Components, structures and systems, including a description of the size, type and configuration of equipment used to generate electricity and useful thermal energy.*

Response: The addition of the Carty Solar Farm is described below. The related or supporting facilities associated with the Carty Solar Farm are described in section B.3.

The Carty Solar Farm would consist of multiple solar arrays. Each solar array would consist of a series of PV modules connected to an inverter and supporting equipment necessary to effectively produce power; a typical array size for utility scale generation is approximately 2.0 MW of electricity under standard conditions. While the mounting system, final array size, dimensions, MW capacity, and number of arrays will be determined during detailed design and equipment selection/procurement, the overall solar unit would have a nominal capacity of approximately 50 MW.

PV modules produce power by converting incoming sunlight to direct current (DC) electrical power. PV modules are arranged in series circuits to effectively increase output voltage. These series circuits of PV modules are called “strings” in industry terms. The “string” is the basic building block of power conversion in the solar unit. The final module mix for the Carty Solar Farm would be selected to be well-suited for the environment in terms of durability and reliability.

The PV modules would be mounted on a racking system, which would be supported by driven piers (piles) directly embedded in the ground or other appropriate foundation determined during detailed design. The PV modules would then be fastened to the racking assembly and electrically

connected together in series strings. The strings would be routed to DC combiners at the ends of the array rows. Combiner output circuits would be routed underground to the inverter stations.

Inverter stations serve three primary purposes: (1) collect DC power in a central location, (2) convert the DC power from arrays into alternating current (AC) power, and (3) convert low-voltage AC power to medium-voltage AC power at the appropriate collector circuit potential. Each inverter station consists of DC collection equipment (including junction boxes and overcurrent protective devices), utility-scale inverters, and a low-to-medium-voltage transformer. The output power from the inverter stations is then fed to the AC collection system.

The AC collection system consists of a series of circuits, each of which can be isolated, that feed to breakers in the switchgear. The switchgear “busses” or combines power that is then transmitted to the utility interconnect.

Fencing would be installed around the perimeter of the Carty Solar Farm. Final fence configuration would be determined during detailed design but would likely consist of 8-foot chain link topped by an additional foot of barbed wire.

Access roads would be constructed along the interior of the array field, to allow for maintenance access to each of the inverter stations. See Figure B-5 for a detailed layout of the Carty Solar Farm.

OAR-345-021-0010(1)(b)(A)(iii) *A site plan and general arrangement of buildings, equipment and structures.*

Response: The following figures are provided at the end of this exhibit:

- Figure B-1 provides an overview of the Carty Generating Station location, with the original Site Boundary and proposed expansion areas.
- Figure B-2 provides a more detailed overview of the Carty Generating Station location, with the amended Site Boundary and proposed expansion areas.
- Figure B-3 shows the permanent and temporary disturbance areas associated with the Carty Solar Farm, as well as the disturbance areas for Unit 1 and its associated supporting and related facilities. Note that in some instances, temporary construction work spaces for the Carty Solar Farm are located in areas that were also used for temporary construction work spaces during construction of Unit 1.
- Figure B-4 shows the potential routes for the Carty Solar Farm transmission line interconnection options.
- Figure B-5 shows the detailed layout for the Carty Solar Farm.

OAR-345-021-0010(1)(b)(A)(iv) *Fuel and chemical storage facilities, including structures and systems for spill containment.*

Response: For the Carty Solar Farm, the inverter step-up transformers would be liquid-filled and contain approximately 640 U.S. gallons of cooling liquid each. The cooling liquid would be biodegradable, plant-based oil. Each containment basin would have sufficient volume to retain 110% of the liquid contents of the transformer during a 25-year storm event. If a common containment system is utilized for multiple transformers, it would be designed to retain 110% of the largest transformer during a 25-year storm event.

OAR-345-021-0010(1)(b)(A)(v) *Equipment and systems for fire prevention and control.*

Response: The equipment and operation expected for the Carty Solar Farm does not pose a significant fire concern. For the Carty Solar Farm, the equipment specified would meet all applicable national Electric Code and Institute of Electrical and Electronics Engineers standards. In addition, the Carty Solar Farm would be constructed to meet State of Oregon requirements (Oregon Fire Code 605.12) to reduce the risk of fire. The Carty Solar Farm inter-array and perimeter roads would act as fire breaks and be sized for emergency vehicle access per applicable fire codes. Any potential incipient fires would be controlled by trained Carty Operations staff. If needed, additional fire prevention measures would be coordinated with the local fire district.

OAR-345-021-0010(1)(b)(A)(vi) *For thermal power plants:*

OAR-345-021-0010(1)(b)(A)(vi)(I) *A discussion of the source, quantity and availability of all fuels proposed to be used in the facility to generate electricity or useful thermal energy.*

OAR-345-021-0010(1)(b)(A)(vi)(II) *Process flow, including power cycle and steam cycle diagrams to describe the energy flows within the system.*

OAR-345-021-0010(1)(b)(A)(vi)(III) *Equipment and systems for disposal of waste heat.*

OAR-345-021-0010(1)(b)(A)(vi)(IV) *The fuel chargeable to power heat rate.*

Response: The Carty Solar Farm is not a thermal power plant; therefore, this information is not applicable to the Carty Solar Farm.

OAR-345-021-0010(1)(b)(A)(vii) *For surface facilities related to underground gas storage, estimated daily injection and withdrawal rates, horsepower compression required to operate at design injection or withdrawal rates, operating pressure range and fuel type of compressors.*

Response: The Carty Solar Farm is not a surface facility related to underground gas storage; therefore, this information is not applicable to the Carty Solar Farm.

OAR-345-021-0010(1)(b)(A)(viii) *For facilities to store liquefied natural gas, the volume, maximum pressure, liquefaction and gasification capacity in thousand cubic feet per hour.*

Response: The Carty Solar Farm is not a facility to store liquefied natural gas; therefore, this information is not applicable to the Carty Solar Farm.

B.3 DESCRIPTION OF THE PROPOSED SUPPORTING FACILITIES

OAR 345-021-0010(1)(b)(B) *A description of major components, structures and systems of each related or supporting facility.*

Response:

Potential Routes for Carty Solar Farm Interconnection Options

Electrical energy produced by the Carty Solar Farm site would be collected and routed to the switchgear adjacent to the entry gate, near the northeast corner of the Carty Solar Farm. The combined output of the Carty Solar Farm would be routed from the switchgear through underground conductors to the northeast corner of the property, where the conductors transition from underground to overhead. The transmission line would continue overhead along the east side of the reservoir to one of the potential interconnection points described below. The Carty Solar Farm interconnection transmission line would be a 34.5-kilovolt (kV) line designed to carry a maximum load of 840 amperes (amps) at the summer emergency temperature of 212 degrees Fahrenheit. The line would be constructed on direct buried wood poles with polymer post insulators in a delta configuration. The phase spacing and clearances would be established per PGE's standards for 115 kV sub-transmission lines. The final transmission line configuration will be determined during detailed design. There are five potential transmission line routes from the Carty Solar Farm to reach three interconnection options (described below), and each route would be of the same approximate design (see Figure B-4). The interconnection transmission

line would be approximately 2.25 to 3 miles long, depending on the route selected. Table B-1 shows the aboveground and belowground lengths of each potential route.

Option 1: Grassland 500kV Interconnect

The proposed interconnection at the existing Grassland Switchyard would consist of adding a ring bus position to the existing 500 kV bus. A new 500/35kV 50 mega volt ampere (MVA) transformer would be connected to the new bus position. Circuit breakers (500kV and 35kV), disconnect switches, a voltage transformer, and other associated equipment would be added to connect and isolate the new interconnection. Protective relay panels would be added to the existing relay enclosure. The potential route for this interconnection option follows the northwestern edge of the Carty Reservoir and then heads west to the Grassland Switchyard. This is the only interconnection option would require buildout of the Grassland Switchyard (see description of Grassland Switchyard buildout below).

Option 2: Carty Unit 1 Isophase Interconnect

The proposed interconnection at Unit 1 would consist of modifying the existing combustion turbine isophase bus duct to allow for a new tap. A new 35/21kV 50MVA transformer would be connected to the new isophase bus duct tap. Circuit breakers (35kV), disconnect switches, and other associated equipment would be added to connect and isolate the new interconnection. Protective relay panels would be added as well. There are two route variants for this interconnection option: Route 2a extends north from the Carty Solar Farm, then west along the northeastern edge of the Carty Reservoir, then north to Unit 1, and Route 2b extends north from the Carty Solar Farm and then west through the Boardman Plant train loop to Unit 1.

Option 3: Boardman Plant Interconnect

The proposed interconnection at the Boardman Plant would consist of adding a new 500 kV substation in a straight bus arrangement. The new substation would be located just northwest of the existing Boardman Plant. For the Carty Solar Farm, a new 500/35kV 50MVA transformer would be connected to the new bus. Circuit breakers (500 kV and 35 kV), disconnect switches, a voltage transformer, and other associated equipment would be required to connect and isolate the new interconnection. Protective relay panels would be added to the existing relay enclosure. This option would require the use of an approximately 265- by 280-foot area located on the northwestern edge of the main Boardman Plant building, and immediately east of the proposed breaker switch and disconnect. There are two route variants for this option: Route 3a extends north from the Carty Solar Farm, then west along the northeastern edge of the Carty Reservoir, then north to the Boardman Plant, and Route 3b extends north from the Carty Solar Farm, then west through the Boardman Plant train loop, then south to the Boardman Plant.

Table B-1 Carty Solar Farm Potential Interconnection Transmission Line Route Lengths

Route and Variant #	34.5 kV Transmission Line Interconnection Option	Aboveground length (feet)	Belowground length (feet)
1	Grassland 500 kV	15,956	55
2a	Unit 1 Isophase	13,798	105
2b	Unit 1 Isophase	14,390	105
3a	Boardman Plant	11,996	55
3b	Boardman Plant	15,053	55

Key:
kV = kilovolt

Grassland Switchyard

The Grassland Switchyard was approved with a 15-acre permanent disturbance footprint in the 2012 Site Certificate and was constructed in 2015; however, the current constructed footprint covers only 8.5 acres. PGE plans to build out the switchyard perimeter fence line on the south and southwest sides to occupy an area up to the previously approved 15 acres to accommodate the addition of the Carty Solar Farm, if interconnection Option 1 is selected. No additional acres of permanent ground disturbance are requested at the Grassland Switchyard for the Carty Solar Farm. PGE expects that up to 7.5 acres would be needed for temporary laydown areas at the Grassland Switchyard for construction of the Carty Solar Farm (see Exhibit C, Table C-2). Final fence configuration would be similar to the existing switchyard perimeter fence, which consists of an 8-foot chain link topped by an additional foot of barbed wire. Build out of the switchyard would not result in a change to the original Site Boundary. Buildout of the switchyard would only be required if Option 1 for the Carty Solar Farm interconnection transmission line is selected.

Other Interconnecting Systems

The Carty Solar Farm would be fully integrated into the operations and maintenance of the overall Carty Generating Station; therefore, PGE would install interconnecting systems that would allow operation of the Carty Solar Farm with the existing Carty Generating Station. The connections may be accomplished by installing a fiber optic cable co-located with the transmission line—either strung aboveground on the same poles as the transmission line or, where necessary, installed underground (e.g. at fence and road crossings), or by installation of microwave towers. The decision to select fiber optic cable or microwave towers would be made during final detail design.

B.4 DIMENSIONS OF THE PROPOSED FACILITIES AND VISIBLE FEATURES

OAR-345-021-0010(1)(b)(C) *The approximate dimensions of major facility structures and visible features.*

The area of permanent ground disturbance for the Carty Solar Farm, not including the interconnect transmission line, would be approximately 3,400 by 4,600 feet, or 315 acres (see Exhibit C, Table C-1). The Carty Solar Farm would be accessed through an existing gravel road from the northeast corner.

The front (south, lower) side of the solar arrays with fixed tilt racking would maintain an 18-inch clearance from ground level. The highest point of the array (north, upper side) is planned to be approximately 6.5 feet from ground level, with a maximum possible height of approximately 10 feet.

An alternate mounting system would utilize a single-axis tracking system typically supported by steel posts. The modules would rotate along a north-south axis, with a rotational range -60° to $+60^{\circ}$ tracking the sun from east to west. The minimum clearance from the lower edge of the array to ground level, at maximum array tilt, is approximately 18 inches. Depending on the length of the chosen module, the average highest point of the tracker row should be approximately 7 feet from ground level, with a maximum possible height of approximately 10 feet above the ground.

The power inverter stations would collect DC power in a central location. Typical height of an inverter station is approximately 8 feet, with a maximum possible height of 10.5 feet.

The main switchgear would be installed near the entry gate and would require a small concrete slab foundation. The AC collection conductors would be routed underground from the inverter step-up transformers to the switchgear, which then feeds the plant energy to the interconnection location.

B.5 CORRIDOR SELECTION ASSESSMENT

OAR 345-021-0010(1)(b)(D) *If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a transmission line or pipeline that, by itself, is an energy facility under the definition in ORS 469.300, a corridor selection assessment explaining how applicant selected the corridor(s) for analysis in the application. In the assessment, applicant shall evaluate the corridor adjustments the Department has described in the project order, if any. The applicant may select any corridor for analysis in the application and may select more than one corridor. However, if applicant selects a new corridor, then applicant must explain why the applicant did not present the new corridor for comment at an informational*

meeting under OAR 345-015-0130. In the assessment, the applicant shall discuss the reasons for selecting the corridor(s).

Response: Not applicable.

B.6 TRANSMISSION LINES AND PIPELINE

OAR 345-021-0010(1)(b)(E) *For any pipeline or transmission line, regardless of size:*

OAR 345-021-0010(1)(b)(E)(i) *The length of the pipeline or transmission line.*

OAR 345-021-0010(1)(b)(E)(ii) *The proposed right-of-way width of the pipeline or transmission line, including to what extent new right-of-way will be required or existing right-of-way will be widened.*

OAR 345-021-0010(1)(b)(E)(iii) *If the proposed corridor follows or includes public right-of-way, a description of where the facility would be located within the public right-of-way, to the extent known. If the applicant proposes to locate all or part of a pipeline or transmission line adjacent to but not within the public right-of-way, describe the reasons for locating the facility outside the public right-of-way. The applicant must include a set of clear and objective criteria and a description of the type of evidence that would support locating the facility outside the public right-of-way, based on those criteria.*

Response: The transmission lines associated with this RFA include five potential routes from the Carty Solar Farm to reach three interconnection options, all located on private property (see Figure B-4). PGE is requesting that the Council approve all five potential routes as part of this RFA. All routes have been analyzed for potential impacts on sensitive resources to demonstrate that each route satisfies all applicable standards. These routes range from approximately 2.25 to 3 miles in length in total, depending on the route selected. For the approximately 0.6-mile portion located on non-PGE-owned land (see area at eastern edge of Carty Reservoir, depicted on Figure F-1 in Exhibit F), the transmission line would be located approximately in the center of a new 80-foot-wide right-of-way. No portions of the route follow or include a public right-of-way.

OAR 345-021-0010(1)(b)(E)(iv) *For pipelines, the operating pressure and delivery capacity in thousand cubic feet per day and the diameter and location, above or below ground, of each pipeline.*

Response: Not applicable.

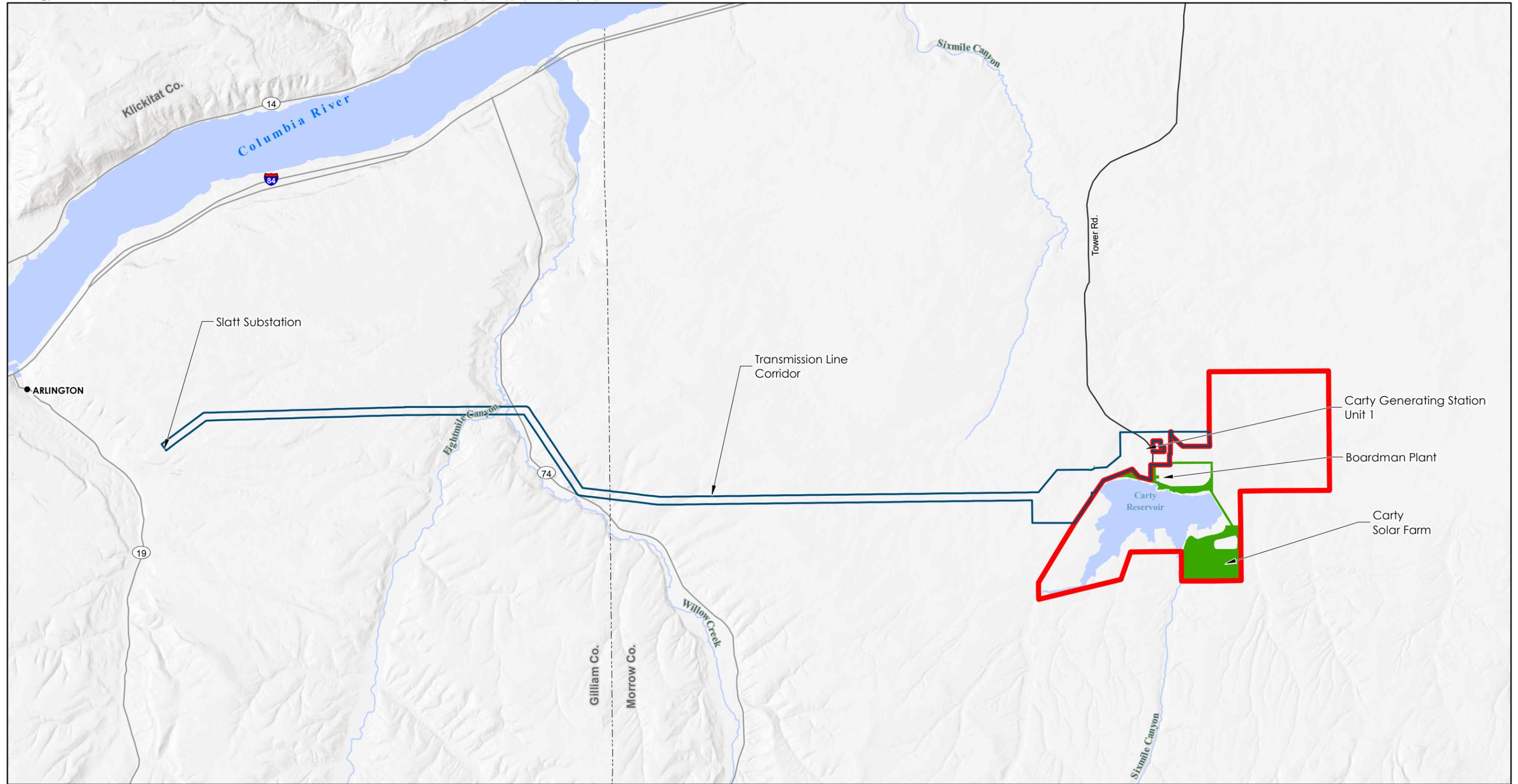
OAR 345-021-0010(1)(b)(E)(v) *For transmission lines, the rated voltage, load carrying capacity, and type of current and a description of transmission line structures and their dimensions.*

Response: The transmission line from the Carty Solar Farm would be 35 kV, 840 amps, AC mounted on wooden poles approximately 70 feet high, depending on location and span length. Specific dimensions of poles will be determined during detailed design.

B.7 CONSTRUCTION SCHEDULE

OAR 345-021-0010(1)(b)(F) *A construction schedule including the date by which the applicant proposes to begin construction and the date by which the applicant proposes to complete construction. Construction is defined in OAR 345-001-0010. The applicant shall describe in this exhibit all work on the site that the applicant intends to begin before the Council issues a site certificate. The applicant shall include an estimate of the cost of that work. For the purpose of this exhibit, “work on the site” means any work within a site or corridor, other than surveying, exploration or other activities to define or characterize the site or corridor, that the applicant anticipates or has performed as of the time of submitting the application.*

Response: The start date for construction of the Carty Solar Farm and supporting facilities has not been established but is expected to occur between 2019 and 2021; therefore, PGE requests up to three years to start construction. Project construction work for the Carty Solar Farm is expected to last approximately nine months and would consist of site preparation, site improvements, system installation, and system acceptance. PGE requests up to 24 months to complete construction once started to allow for construction or weather delays.



- Original Carty Generating Station Site Boundary
- Boardman Plant Site Boundary
- Carty Site Boundary Expansion Areas

Note: Portions of the Carty Site Boundary Expansion Areas are overlapping with Boardman Site Boundary Areas.

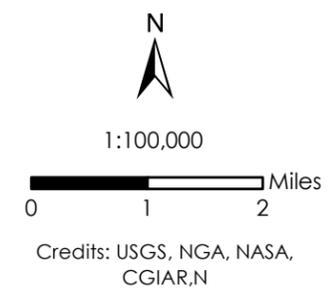
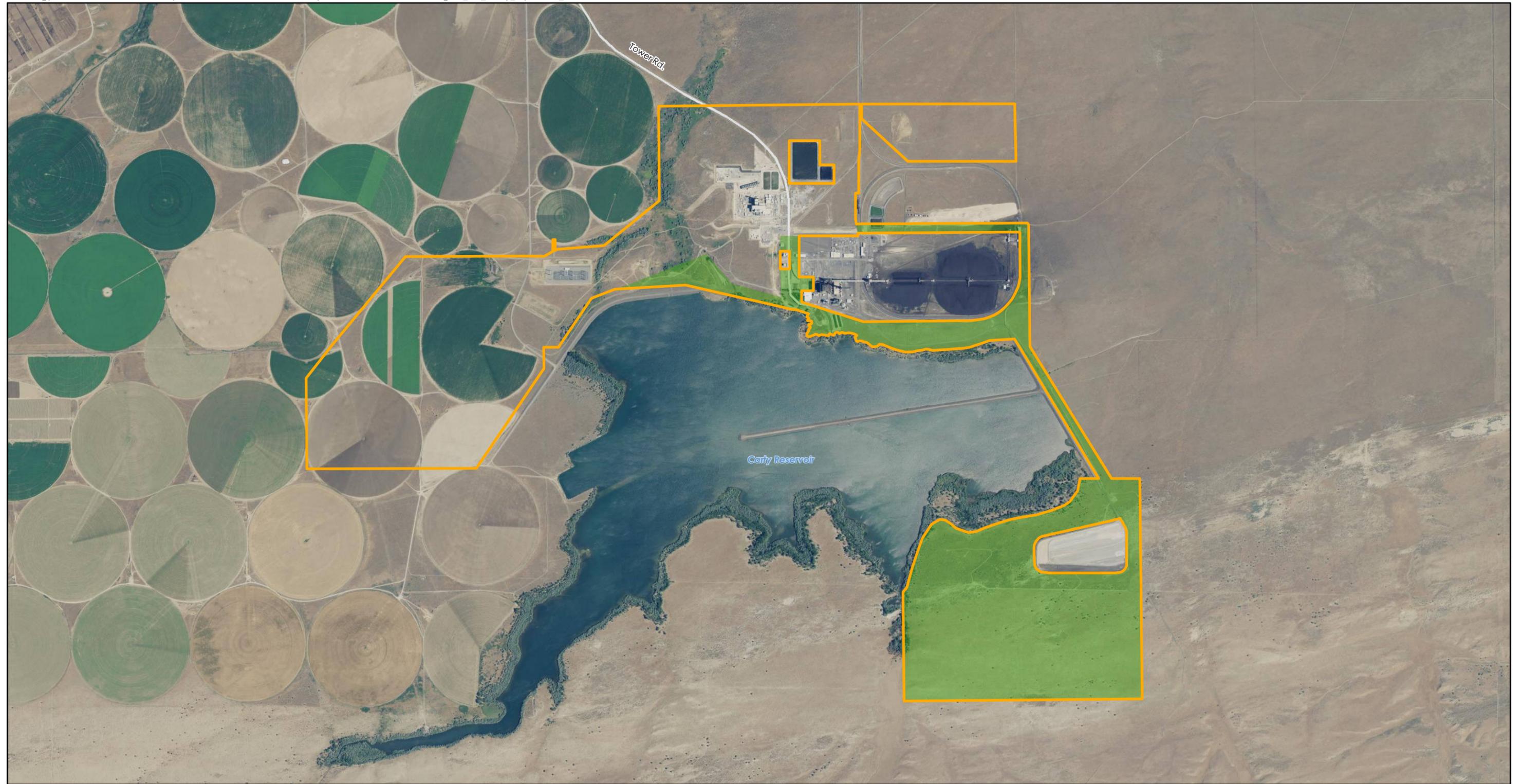


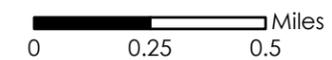
Figure B-1
Overview of Original
Site Boundary and Proposed
Expansion Areas



-  Amended Site Boundary
-  Carty Site Boundary Expansion Areas



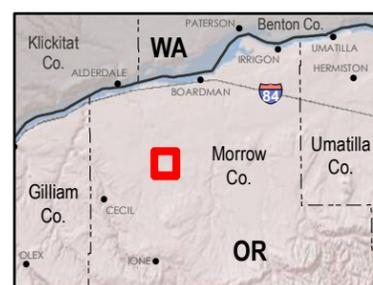
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Figure B-2
Site Overview and
Amended Site Boundary

Request for Amendment No. 1
Carty Generating Station Site Certificate
Portland General Electric Company
February 2018



- Transmission Line Options
- Amended Site Boundary
- Existing Permanent Feature
- Existing and Proposed Temporary Disturbance
- Proposed Permanent Feature

Note: this figure shows 80-foot wide temporary disturbance corridors along all potential transmission line routes; however, during final design the selected transmission line will be micro-sited within this corridor, and final disturbance acreages will be smaller.

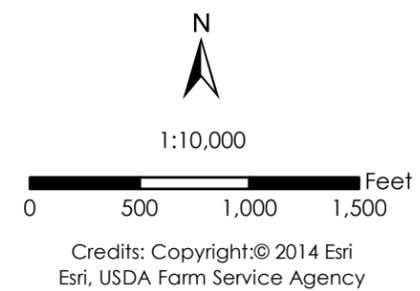
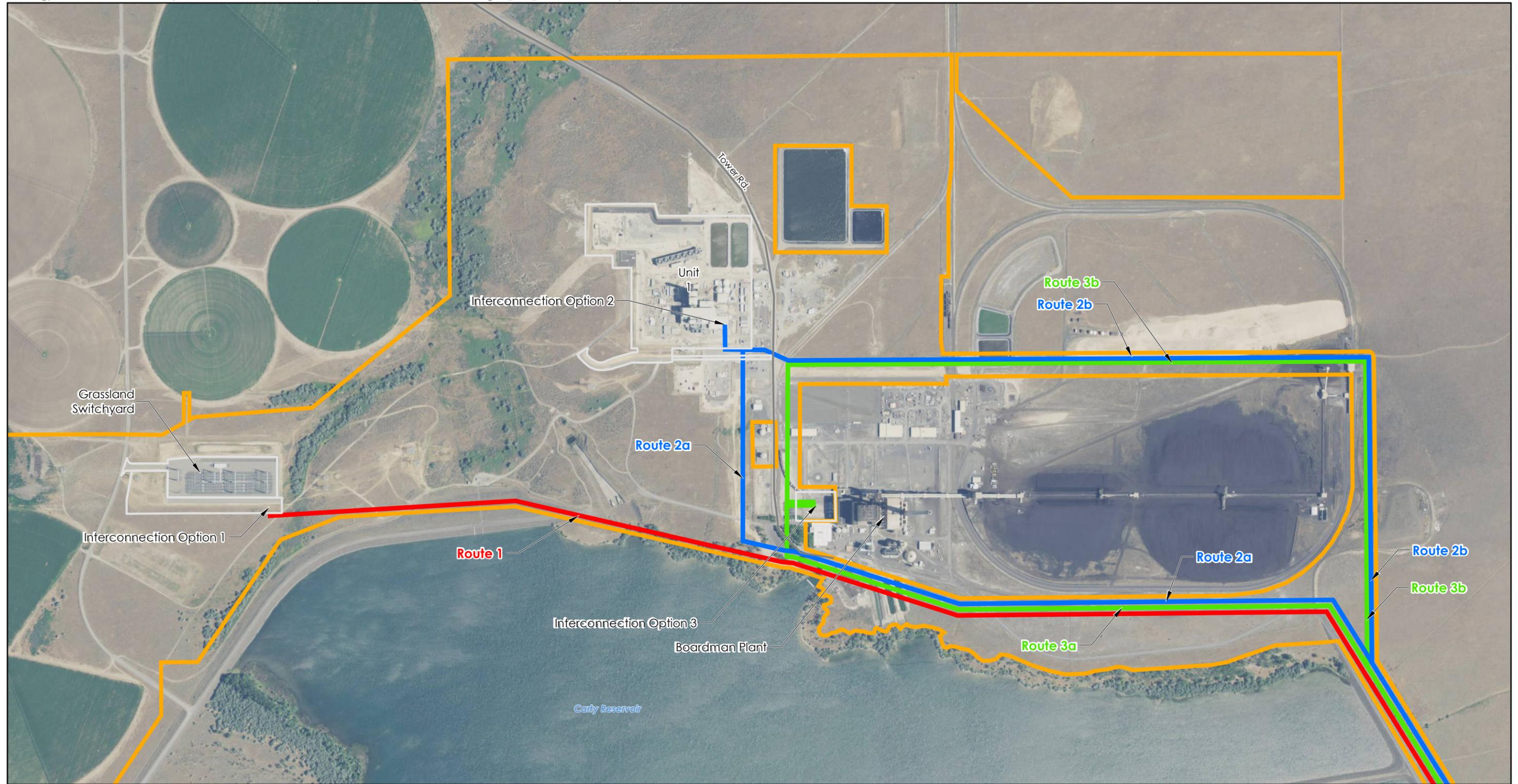


Figure B-3
Sheet 1 of 2
Carty Permanent Disturbance
and Temporary Construction
Work Space

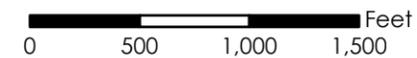


Transmission Line Options

- Route 1: to Grassland Switchyard
- Routes 2a and 2b: to Unit 1 Isophase
- Routes 3a and 3b: to Boardman Plant
- Amended Site Boundary
- Existing or Proposed Project Disturbance Areas

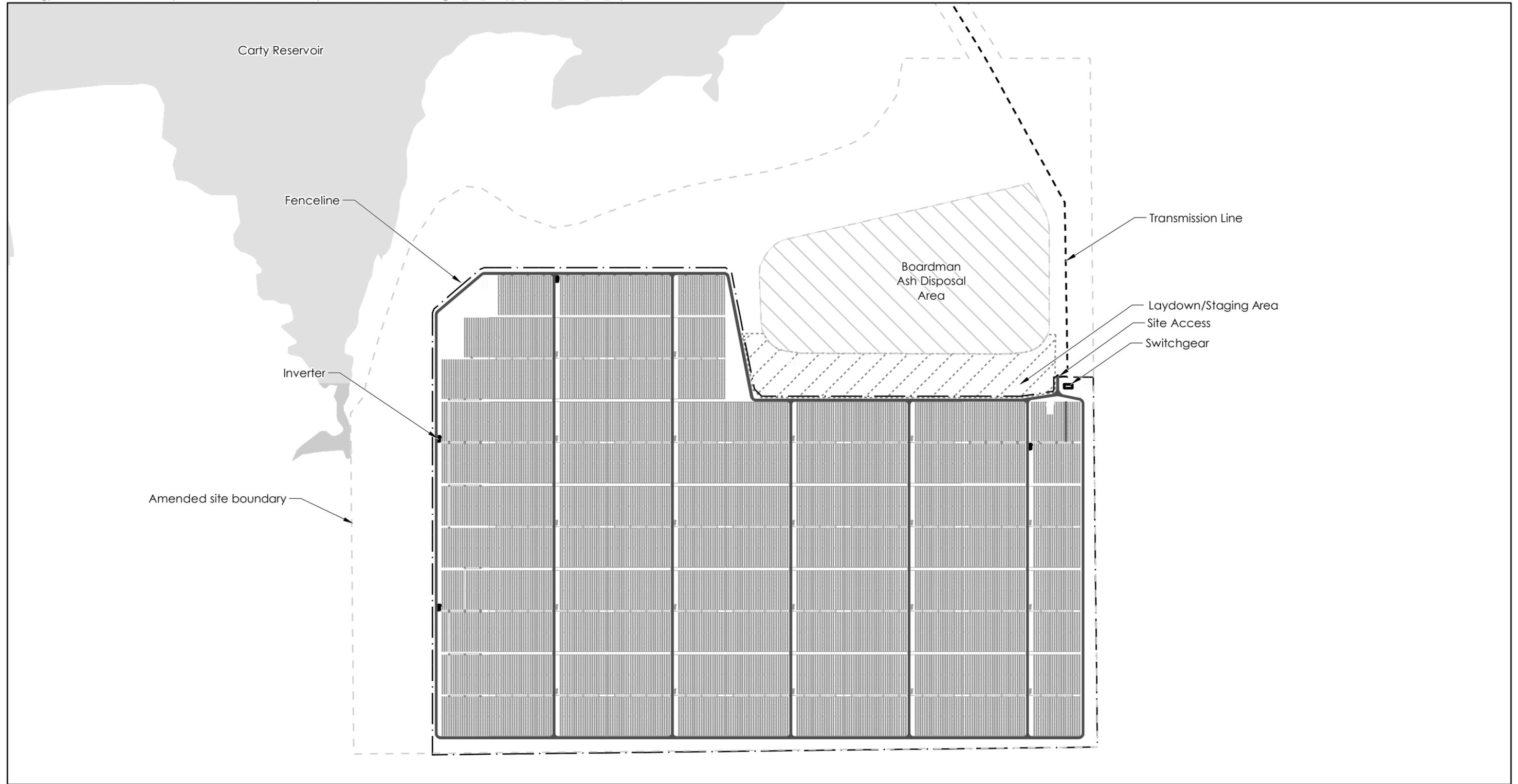


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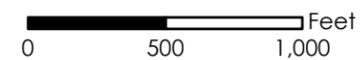


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Figure B-4
Sheet 1 of 2
Carty Solar Farm Interconnection
Options and Potential
Transmission Line Routes
Request for Amendment No. 1
Carty Generating Station Site Certificate
Portland General Electric Company
February 2018



1:8,000



Source: Blue Oak Energy

Figure B-5
Carty Solar Farm
Detailed Layout

Request for Amendment No. 1
Carty Generating Station Site Certificate
Portland General Electric Company
February 2018

EXHIBIT C – Request for Amendment No. 1

LOCATION

OAR 345-021-0010(1)(c)

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C.1 INTRODUCTION

OAR 345-021-0010(1)(c) *Information about the location of the proposed facility.*

Response: This exhibit provides the information required by Oregon Administrative Rules 345-021-0010(1)(c) in support of the Request for Amendment No. 1 of the Site Certificate for the Carty Generating Station (RFA). Information about the location of the proposed Carty Solar Farm (as defined in Exhibit B) is presented in the following maps and discussion.

C.2 MAPS

OAR 345-021-0010(1)(c)(A) *A map or maps showing the proposed locations of the energy facility site, all related or supporting facility sites and all areas that might be temporarily disturbed during construction of the facility in relation to major roads, water bodies, cities and towns, important landmarks and topographic features, using a scale of 1 inch = 2,000 feet or smaller when necessary to show detail.*

Response: Figure C-1 presents the proposed locations of the proposed Carty Solar Farm, as well as the locations of Unit 1 and the associated related or supporting facilities. Figures B-1 and B-2 (in Exhibit B) show the amended Site Boundary in relation to the original Site Boundary and the Boardman Plant Site Boundary.

C.3 LOCATION DESCRIPTION

OAR 345-021-0010(1)(c)(B) *A description of the location of the proposed energy facility site, the proposed site of each related or supporting facility and areas of temporary disturbance, including the total land area (in acres) within the proposed site boundary, the total area of permanent disturbance, and the total area of temporary disturbance. If a proposed pipeline or transmission line is to follow an existing road, pipeline, or transmission line, the applicant shall state to which side of the existing road, pipeline, or transmission line the proposed facility will run, to the extent this is known.*

Response:

C.3.1 Overall Facility Location

The Carty Solar Farm would be located approximately 13 miles southwest of Boardman, in Morrow County, Oregon. The proposed facility would be located in Township 2 north, Range 24 east, Sections 2, 3, 5, 10, and 11; and Township 3 north, Range 24 east, Sections 32, 33, 34, and 35, Willamette Meridian. The locations of the Carty Solar Farm components described and evaluated in this RFA are discussed below.

C.3.2 Amended Site Boundary

The amended Site Boundary encompasses approximately 1,581 acres, a reduction from the 2,400 acres described in the Application for Site Certificate. The Site Boundary area has changed for several reasons, including:

- Addition of the Carty Solar Farm; and
- Removal of the portion of the Site Boundary originally included for the approximately 18-mile 500-kilovolt transmission line connecting the Grassland Switchyard to the Bonneville Power Administration Slatt Substation; this transmission line was proposed as a related or supporting facility in the Application for Site Certificate but was not constructed, and the construction timeline has passed.

Withdrawal of the previously approved, but not yet constructed, Unit 2 would not result in changes to the Site Boundary.

C.3.3 Areas of Permanent Disturbance

Per Site Certificate Condition 10.3, prior to construction of Unit 1, the Grassland Switchyard, and other related or supporting facilities, Portland General Electric Company (PGE) consulted with the Oregon Department of Fish and Wildlife to determine the final acreage of permanent and temporary disturbance in order to calculate habitat mitigation; the acreage of permanent disturbance based on final design was 45 acres. Additional permanent disturbances anticipated for construction of the Carty Solar Farm are described below and shown in Table C-1. The total amount of permanent disturbance for the Carty Solar Farm is anticipated be up to approximately 321.5 acres.

- The generation facility portion of the Carty Solar Farm would occupy approximately 315 acres.
- The transmission line tower poles connecting the Carty Solar Farm to the point of interconnection is expected to result in approximately 0.01 acre of permanent disturbance, based on an estimate of 30 poles per mile and a 3-foot-diameter permanent footprint at each pole. In addition, two of the five potential transmission line routes for the Carty Solar Farm interconnection (Routes 3a and 3b) include an up to 2-acre area for a breaker switch and disconnect near the Boardman Plant.
- The Grassland Switchyard was approved with a 15-acre permanent disturbance footprint in the 2012 Site Certificate. The Grassland Switchyard was constructed in 2015 as part of Unit 1 construction; the current constructed footprint occupies approximately 8.5 acres. PGE plans to build out the switchyard perimeter fence line on the south and southwest sides to occupy an area up to the previously approved 15 acres, if interconnection Option 1 is selected. No additional acres of permanent ground

disturbance are requested under this RFA. Buildout of the switchyard would only be required if Option 1 for the Carty Solar Farm interconnection transmission line is selected.

Table C-1 Permanent Disturbance Areas for the Carty Solar Farm

Feature	Areas of Carty Solar Farm (acres)
Generation Facility Site	
Carty Solar Farm Generation Facility	315
Total Generation Facility Site	315
Transmission Facilities	
Grassland Switchyard ¹	6.5
Carty Solar Farm Interconnection Route 1: to Grassland Switchyard ²	<0.01
Carty Solar Farm Interconnection Route 2a: to Unit 1 ²	<0.01
Carty Solar Farm Interconnection Route 2b: to Unit 1 ²	<0.01
Carty Solar Farm Interconnection Route 3a: to Boardman Plant ^{2,3}	2.07
Carty Solar Farm Interconnection Route 3b: to Boardman Plant ^{2,3}	2.07
Total Transmission Facilities⁴	6.5
Total⁵	321.5

Notes:

¹The 2012 Site Certificate approved a 15-acre permanent disturbance footprint for the Grassland Switchyard; however, the currently constructed switchyard only occupies 8.5 acres. PGE would build out the switchyard to occupy an area up to the previously approved 15 acres, but only if Option 1 (i.e., using Route 1) for the Carty Solar Farm interconnection transmission line is selected.

²Assumes 30 poles/mile, with a 3-foot-diameter permanent disturbance area around each pole.

³Includes an approximately 265- by 280-foot area located on the northwestern edge of the main Boardman Plant building, for breaker switch and disconnect and other electrical equipment.

⁴Includes acreage for the potential route for the Carty Solar Farm interconnection that would require the most mitigation acres (i.e., Route 1)

⁵Includes acreage for the Carty Solar Farm generation facility site, the potential route for the Carty Solar Farm interconnection that would require the most mitigation acres (i.e., Route 1), and the acreage for the buildout of the Grassland Switchyard. Amounts <0.01 acres are negligible and are not included in the total.

C.3.4 Areas of Temporary Disturbance

During construction of the Carty Solar Farm, PGE identified approximately 101.4 acres that could be used for temporary disturbance, as shown in Table C-2. Temporary disturbances areas proposed for the Carty Solar Farm are described below and are depicted in Figure C-1.

- PGE has identified approximately 80 acres that could potentially be used for temporary construction laydown areas for construction of the Carty Solar Farm: up to 16.4 acres for a laydown area immediately north of the solar arrays, up to 34.9 acres of laydown and parking areas near the northeast edge of Carty Reservoir, and up to 28.4 acres of laydown and parking areas near Unit 1. PGE has identified multiple options to allow for flexibility during construction; however, the actual amount of temporary construction laydown area is expected to be less.
- Construction of the transmission line connecting the Carty Solar Farm to one of three potential interconnection options would temporarily disturb up to 20.2 acres, based on the maximum expected route of 3 miles (for transmission line Route 1), and assuming an average of 30 poles per mile, with a temporary disturbance around each pole of 80 by 100 feet, and a 10-foot-wide temporary vehicle access path (driving on vegetation) from pole to pole along the entire 3 miles of the transmission line. Note that Figure C-1 (and Figure B-3 in Exhibit B) shows 80-foot-wide temporary disturbance corridors along the potential transmission line routes; however, during final design the selected transmission line will be micro-sited within this corridor, and final disturbance acreages will be similar to what is described here.
- Construction activities at the Grassland Switchyard to expand the footprint to occupy up to the previously approved 15 acres could require the use of additional temporary work areas. PGE expects the need for up to 7.5 acres for temporary laydown area at the Grassland Switchyard for construction of the Carty Solar Farm.

Table C-2 Temporary Disturbance Areas for the Carty Solar Farm

Feature	Areas of Carty Solar Farm (acres)¹
Generation Facility Site	
Construction Laydown and Parking Areas ¹	79.7
Total Generation Facility Site	79.7
Transmission Facilities	
Grassland Switchyard	7.5
Carty Solar Farm Interconnection Route 1: to Grassland Switchyard ²	20.2
Carty Solar Farm Interconnection Route 2a: to Unit 1 ²	17.6
Carty Solar Farm Interconnection Route 2b: to Unit 1 ²	18.2
Carty Solar Farm Interconnection Route 3a: to Boardman Plant ²	15.1
Carty Solar Farm Interconnection Route 3b: to Boardman Plant ²	19.1

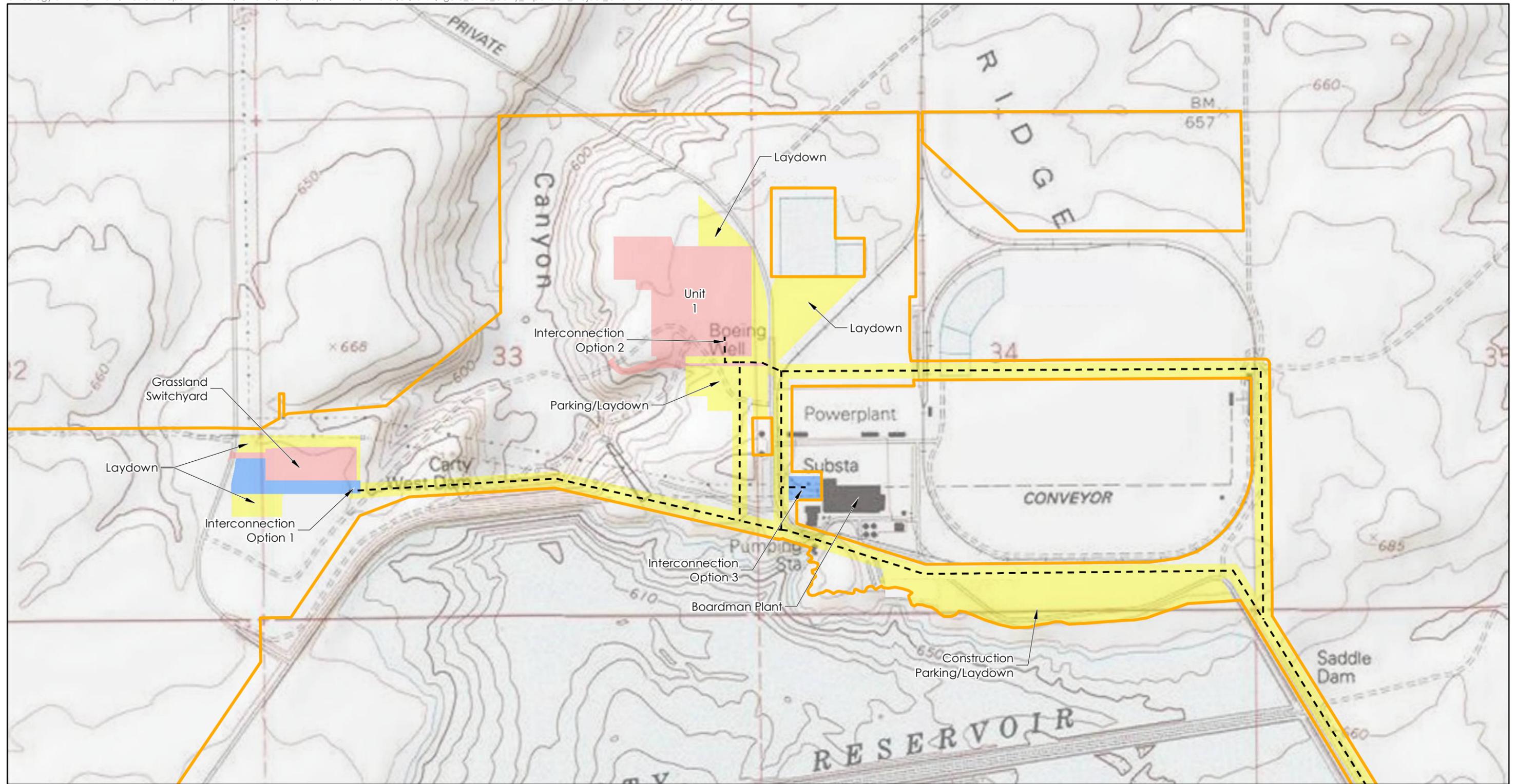
Table C-2 Temporary Disturbance Areas for the Carty Solar Farm

Feature	Areas of Carty Solar Farm (acres)¹
Total Transmission Facilities³	27.7
Total³	107.4

Notes:

- ¹ Includes laydown and parking areas at north edge of solar site and near northeast shore of Carty Reservoir, as well as three laydown areas near Unit 1.
- ² Assumes 30 poles per mile, with an 80- by 100-foot temporary disturbance area around each pole and a 10-foot-wide temporary vehicle access path along the entire transmission line.
- ³ For purposes of this acreage total, includes the potential route for the Carty Solar Farm interconnection that would require the most mitigation acres options (i.e., Route 1)

Actual permanent disturbance and temporary construction areas will be calculated based on detailed final designs. Per Condition 10.3 of the 2012 Site Certificate, PGE will consult with the Oregon Department of Fish and Wildlife prior to commencement of construction of the Carty Solar Farm to determine the final acreage of habitat mitigation required.



- Transmission Line Options
- Amended Site Boundary
- Existing Permanent Feature
- Existing and Proposed Temporary Disturbance
- Proposed Permanent Feature

Note: this figure shows 80-foot wide temporary disturbance corridors along all potential transmission line routes; however, during final design the selected transmission line will be micro-sited within this corridor, and final disturbance acreages will be smaller.

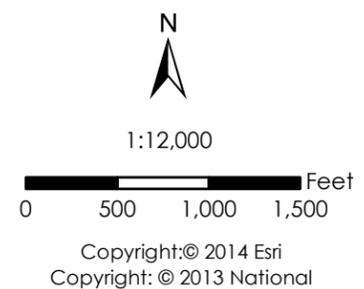
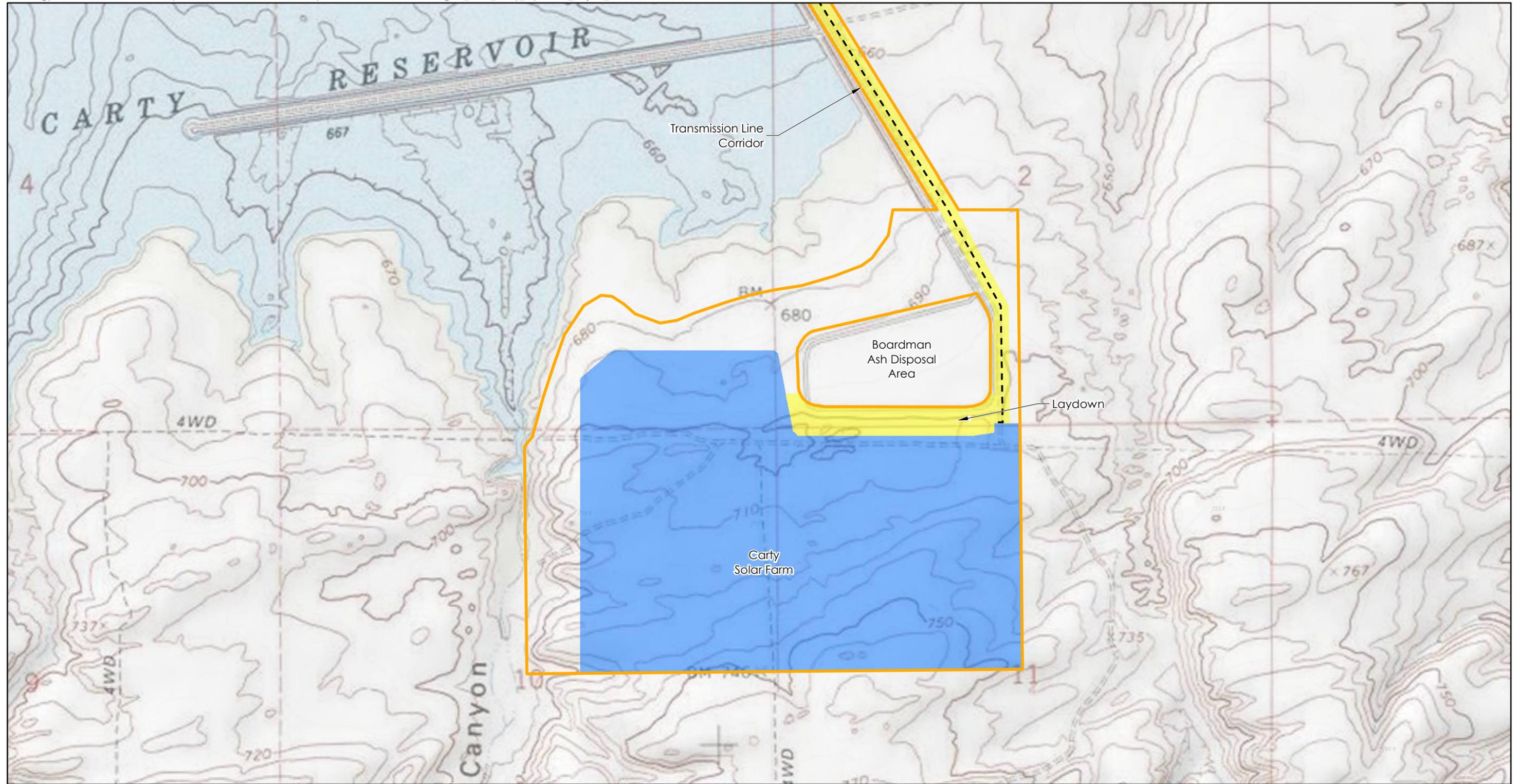


Figure C-1
Sheet 1 of 2
Carty Permanent Disturbance
and Temporary Construction
Work Space
Request for Amendment No. 1
Carty Generating Station Site Certificate
Portland General Electric Company
February 2018



- Transmission Line
- Amended Site Boundary
- Existing and Proposed Temporary Disturbance
- Proposed Permanent Feature

Note: this figure shows 80-foot wide temporary disturbance corridors along all potential transmission line routes; however, during final design the selected transmission line will be micro-sited within this corridor, and final disturbance acreages will be smaller.

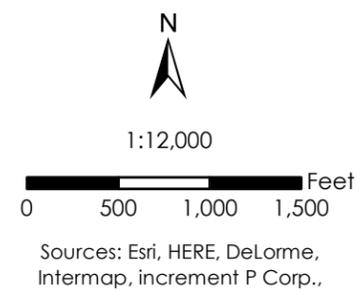


Figure C-1
Sheet 2 of 2
Carty Permanent Disturbance
and Temporary Construction
Work Space
Request for Amendment No. 1
Carty Generating Station Site Certificate
Portland General Electric Company
February 2018

EXHIBIT D – Request for Amendment No. 1

ORGANIZATIONAL EXPERTISE

OAR 345-021-0010(1)(d)

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Table D-1 Portland General Electric Company’s Generation Facilities D-1

D.1 INTRODUCTION

OAR 345-021-0010(1)(d) *Information about the organizational expertise of the applicant to construct and operate the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0010.*

Response: This exhibit provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(d) in support of the Request for Amendment No. 1 of the Site Certificate for the Carty Generating Station (RFA).

D.2 APPLICANT'S PREVIOUS EXPERIENCE

OAR 345-021-0010(1)(d)(A) *the applicant's previous experience, if any, in constructing and operating similar facilities.*

Response: Portland General Electric Company (PGE) is a fully integrated energy company based in Portland, Oregon, serving 863,000 customers in 51 cities. PGE generates electricity from plants we own, and purchases power on the wholesale market. We operate wholly and jointly owned hydroelectric, natural gas, coal, wind, and solar generating plants. For 129 years, PGE has been delivering energy to Oregonians. As documented in the Application for Site Certificate (ASC), PGE has significant experience in constructing, supervising the construction of, and operating generation projects. Table D-1 shows major projects that PGE currently operates.

Table D-1 Portland General Electric Company's Generation Facilities

Project Commercial Operation Date	Technology
Carty Generating Station Unit 1 (2016)	Natural Gas Combined-Cycle Combustion Turbine
Port Westward Generating Plant Unit 2 (2014)	Natural Gas Reciprocating Engines
Port Westward Generating Plant Unit 1 (2007)	Natural Gas Combined-Cycle Combustion Turbine
Beaver Generating Facility (1974, 1977)	Natural Gas and Distillate Oil Combined-Cycle Combustion Turbines
Beaver Unit 8 (2001)	Natural Gas Simple-Cycle Combustion Turbine
Coyote Springs Unit 1 (1995)	Natural Gas and Distillate Oil Combined-Cycle Combustion Turbine
Boardman Coal Plant (1980)	Coal (jointly owned)
Faraday (1907/1958)	Hydroelectric
North Fork (1958)	Hydroelectric
Oak Grove (1924)	Hydroelectric
River Mill (1911/1952)	Hydroelectric

Table D-1 Portland General Electric Company's Generation Facilities

Project Commercial Operation Date	Technology
Sullivan (1895)	Hydroelectric
Pelton (1957)	Hydroelectric (jointly owned)
Round Butte (1964)	Hydroelectric (jointly owned)
Tucannon River Wind Farm (2014)	Wind
Biglow Canyon Wind Farm (2007, 2009, and 2010)	Wind (Phases I, II, and III)
Baldock Solar Station (2012)	Solar
Portland Public Schools (2015)	Solar
Sunway 1 (2009)	Solar
Sunway 2 (2009)	Solar
Sunway 3 (2010)	Solar

Additional information about the solar and natural gas projects listed in Table D-1 is provided below to further demonstrate PGE's experience in constructing solar and large generating facilities.

Baldock Solar Station is a 1.5 megawatt (MW) facility located on Oregon Department of Transportation property adjacent to Interstate 5. The project consists of a ground-mounted fixed-tilt racking system and crystalline type modules. PGE managed the construction of the project and provides continuing operations and maintenance support. Construction of the facility took six months to complete.

Portland Public Schools is a cumulative 1.2 MW project spread across six Portland Public School rooftops. Construction and commissioning was originally expected to take three months, but was extended an additional three months due to delays in building permits being issued. Construction was performed at all six sites simultaneously; however, each site was completed at different times due to the size differences between them.

Coyote Springs Unit 1's capacity is approximately 240 MW. The site was originally configured for two units. Unit 1 was constructed in 1995 by PGE and is owned and operated by PGE. Overall construction took approximately two years. Unit 2 was constructed in 2003 by others, but is currently owned by Avista and operated and maintained by PGE.

Port Westward Generating Plant Unit 1 was constructed in 2007 with approximately 400 MW of capacity. Overall construction took approximately two and a half years and was completed on time.

Port Westward Generating Plant Unit 2 was completed in 2014 with approximately 225 MW of capacity. Overall construction took approximately 2 years and was completed on time. Between the completion of Unit 1 and the construction of Unit 2, the site certificate was amended to

extend the construction deadlines and to modify the Unit 2 description to a more flexible capacity technology.

Carty Generating Station Unit 1 was constructed in 2016 with approximately 440 MW of capacity. Overall construction took approximately 3 years. Construction took longer than originally expected due to a contractual default by the general contractor. The contractor was terminated and construction continued with PGE directly managing a team of contractors to complete the project within the Site Certificate construction completion timeline.

Although construction of the Carty Solar Farm is not expected to occur at the same time PGE is constructing any other generating facilities, PGE does have experience successfully constructing multiple generating facilities concurrently. Construction of Port Westward Generating Plant Unit 2, Tucannon River Wind Farm, and Carty Unit 1 had overlapping construction schedules (Port Westward May 2013 to December 2014, Tucannon River Wind Farm September 2013 to December 2014, and Carty Unit 1 January 2014 to December 2016).

D.3 QUALIFICATION OF APPLICANT'S PERSONNEL

OAR 345-021-0010(I) (d) (B) *the qualifications of the applicant's personnel who will be responsible for constructing and operating the facility, to the extent that the identities of such personnel are known when the application is submitted.*

Response: No change to the ASC.

D.4 QUALIFICATIONS OF KNOWN CONTRACTORS

OAR 345-021-0010(1)(d)(C) *The qualifications of any architect, engineer, major component vendor, or prime contractor upon whom the applicant will rely in constructing and operating the facility, to the extent that the identities of such persons are known when the application is submitted.*

Response: PGE has retained Blue Oak Energy for the preliminary engineering phase of this project. PGE will enter into a turnkey engineering, procurement, and construction contract (EPC Contract) with a qualified and credit-worthy contractor. PGE will draft an EPC Contract that will serve as the basis for negotiations with a vendor and plans to provide a Design Basis & Technical Specifications document in conjunction with the draft EPC Contract. PGE has extensive experience in preparing and negotiating such documents and in selecting EPC Contractors. PGE will supervise and will be extensively involved in overseeing the construction process.

D.5 APPLICANT'S PAST PERFORMANCE

OAR 345-021-0010(1)(d)(D) *The past performance of the applicant, including but not limited to the number and severity of any regulatory citations in constructing or operating a facility, type of equipment, or process similar to the proposed facility.*

Response: As noted in the ASC, PGE has successfully constructed natural-gas-fired generating facilities, including the Port Westward Generating Plant Unit 1, which began operations in 2007; Port Westward Generating Plant Unit 2, which began operations in 2014; and Carty Generating Station Unit 1, which was placed in service in July 2016.

PGE has been building and maintaining solar installations for many years. Currently, PGE maintains sites that total over 9 MW, both crystalline and thin film. These existing sites are instrumented more than typical commercial solar sites because PGE is intensely interested in learning from the installations. For example, PGE uses pyranometers to measure actual incident solar radiation and monitor some sites at the string level. This higher than normal level of instrumentation increases the knowledge base about optimizing solar power generation.

For this new proposed site, PGE would be networked with the on-site equipment to allow extensive alarming and monitoring, with appropriate alarm levels to alert staff to critical issues. Although this site would be a very large system, the technology is in many ways a scalable one—PGE is confident that we can maintain and manage the site with the highest level of professionalism and care.

PGE has not received any regulatory citations related to the construction or operation of any of our solar facilities.

Since submittal of the ASC through December of 2017, the following citations have been issued to PGE related to construction activities or operation of our natural gas plants:

- In November 2010, Clean Water Services notified PGE of a Notice of Apparent Violation of Ordinance 27 for failure to implement erosion control at Bull Mountain during construction. Enhanced erosion control measures were immediately installed at the area cited, and no fines were issued.
- In February 2011, PGE received a notice of a Water Pollution Control Facility Permit (WPCF) violation/warning letter as a result of an ash disposal berm overflow at the Boardman Coal Plant that occurred on December 29, 2010. PGE notified the Oregon Department of Environmental Quality (DEQ) of the event within the five-day notification requirement of the WPCF; DEQ was notified on December 30, 2010. The event was caused by water pooling in a low spot of the impermeable ash pile following a heavy rain storm. No environmental damage was discovered following the event. The issue was immediately resolved by raising the low spot in the berm. The long-term solution

involved an engineering evaluation and re-grading the ash pile so that water accumulates towards the interior of the pile, which utilizes the natural characteristics of the ash to pool water until it evaporates. PGE resolved the issue in March of 2011. No fines were issued.

- On April 30, 2012, PGE self-reported to DEQ a violation related to the auxiliary boiler site certificate limits. The event occurred on April 28, 2012, and PGE provided notification to DEQ within the notification requirement of 72 hours for noncompliance with conditions of the site certificate. The issue was resolved May 13, 2013. Initially, PGE brought in a vendor to tune the boiler and reduce nitrogen oxide (NO_x) emissions. However, ultimately, PGE amended the site certificate to remove the NO_x requirements, since the federally issued Title V permit sets emission limits for NO_x (i.e., air emissions are regulated by a federal permit, which is not governed by the site certificate). No fines were issued.
- On November 4, 2013, PGE received a \$4,000 Civil Penalty for a NO_x exceedance at the Port Westward Generating Plant that occurred on April 23, 2013. PGE notified DEQ of the exceedance within the notification requirement of one hour. Immediately following the event, the maximum ammonia injection rate within the automatic control system was increased, which allows automatic control of NO_x regardless of gas turbine performance. For a long-term solution, PGE worked with the Data Acquisition and Handling System vendor to develop additional alarms and additional procedures for when the ammonia injection system is to be placed into manual mode.
- On November 24, 2015, PGE received a Notice of Civil Penalty, Assessment and Order with a fine amount of \$7,200 for an exceedance of the three-hour rolling average limit of the Title V Operating Permit at the Port Westward Generating Plant that occurred on July 9, 2015. PGE notified DEQ within the notification requirement of one hour and implemented the corrective actions by August 2015. Corrective actions included preparation of additional procedures and training for plant staff.
- On July 8, 2015, the United States Environmental Protection Agency (EPA) conducted a site inspection at the Beaver Generating Plant and identified deficiencies in spill prevention, control, and countermeasure compliance. On December 9, 2015, the signed Expedited Settlement Agreement and associated documentation was sent to the EPA. On December 11, the EPA notified PGE of their appreciation for the “forthright follow-up work, and quite significant effort PGE has been put forth to come into compliance.” The financial penalty levied was \$2,025. Corrective actions included permanent closure of unused tanks and piping in accordance with spill prevention, control, and countermeasure rules, in-service tanks were inspected and tested in accordance with American Petroleum Institute Standards 653 and 570, and plant procedures for inspecting and monitoring were modified.

- On February 15, 2016, a backhoe rolled into Lake Simtustus during a construction project at Pelton Park (there were no injuries). This incident was reported to both state and federal agencies by PGE on February 15, 2016, even though at the time no sheen was observed. A plan for removal of the backhoe was developed and the backhoe was removed on February 17, 2016; part of the removal plan included placement of oil containment booms around the work area. When the backhoe was removed, a sheen was observed. PGE was fined \$1,600 for release of oil into Waters of the State.
- On April 25, 2016, PGE paid DEQ a \$21,600 penalty from the February 18, 2016, Pre-Enforcement Notice regarding Beaver Unit 8 for exceedances of carbon monoxide and NO_x limits over six days in the summer of 2015. The Mutual Agreement and Final Order for Beaver Unit 8 was executed by PGE and DEQ with an agreed-upon penalty, which addressed the exceedances that were a result of a change in averaging period methodology by DEQ. These exceedances were reported in the Title V report for Beaver Unit 8 and all of them related to DEQ's recent guidance that limits apply during startup and shutdown (which was not understood by PGE at the time of the exceedances).

D.6 APPLICANT WITH NO PREVIOUS EXPERIENCE

OAR 345-021-0010(1)(d)(E) *If the applicant has no previous experience in constructing or operating similar facilities and has not identified a prime contractor for construction or operation of the proposed facility, other evidence that the applicant can successfully construct and operate the proposed facility. The applicant may include, as evidence, a warranty that it will, through contracts, secure the necessary expertise.*

Response: Not applicable.

D.7 ISO CERTIFIED PROGRAM

OAR 345-021-0010(1)(d)(F) *If the applicant has an ISO 9000 or ISO 14000 certified program and proposed to design, construct and operate the facility according to that program, a description of the program.*

Response: Not applicable.

D.8 MITIGATION DEMONSTRATION

OAR 345-021-0010(1)(d)(G) *If the applicant relies on mitigation to demonstrate compliance with any standards of Division 22 or 24 of this chapter, evidence that the applicant can successfully complete such proposed mitigation, including past experience with other projects*

and the qualifications and experience of personnel upon whom the applicant will rely, to the extent that the identities of such persons are known at the date of submittal.

Response: PGE would rely on mitigation to demonstrate compliance with the standards of Divisions 22 and 24, specifically with regard to impacts on habitat. PGE plans to be responsible for managing the Carty Habitat Mitigation Area. PGE has successfully implemented similar mitigation for many projects in Oregon, including habitat mitigation for the Boardman Coal Plant and Carty Generating Station Unit 1, Biglow Canyon Wind Farm, and Port Westward Generating Plant. PGE's team of biologists has developed robust mitigation plans for habitat enhancement, working in coordination with the Oregon Department of Fish and Wildlife, and demonstrated thorough understanding of biological principles of habitat quality, protection, and enhancement. Additional details of similar mitigation projects is provided below.

Biglow Canyon Wind Farm

PGE manages a 12-acre Habitat Mitigation Area at the Biglow Canyon Wind Farm to mitigate for impacts of facility construction on wildlife habitat. The Habitat Mitigation Area has been placed under a conservation easement and PGE is conducting habitat enhancement measures for the benefit of wildlife and watershed values. Specific mitigation actions include rehabilitating approximately 12 acres of annual non-native grass to a perennial grass dominated site, fencing the perimeter to exclude livestock, managing the noxious weeds, enhancing a small spring, and creating a wildlife water source. Progress toward these objectives is reported in annual reports to Oregon Department of Energy as required by the site certificate.

Boardman Coal Plant

PGE manages and monitors an 880-acre conservation area under the Boardman Multi-Species Candidate Conservation Agreement with Assurances (MSCCAA). PGE has documented compliance with the MSCCAA's voluntary conservation commitments annually since commencement of the agreement in 2004. Monitoring activities include compliance monitoring to ensure protection of habitat in the conservation area and special habitats (such as ferruginous hawk nests) throughout the property and biological effectiveness monitoring of sensitive wildlife and vegetation (monthly raptor surveys, breeding bird surveys, Washington ground squirrel surveys, and vegetation mapping). Management actions have included annual noxious weed surveys and control and seeding of approximately 14 acres with native grasses following a 2008 wildfire. Wildlife monitoring requirements are also included in the Boardman Plant Terrestrial Monitoring Program. Annual compliance activities are reported in the following documents:

- PGE. 2016. Terrestrial Monitoring Program for the Boardman Coal-fired Plant & Multi-Species Candidate Conservation Agreement with Assurances. Annual Report for 2015. Portland General Electric Company. February 2016.

- PGE. 2015. MSCCAA Management Plan for the Washington Ground Squirrel, Ferruginous Hawk, Loggerhead Shrike, Sage Sparrow. Revision 2, March 2015.

Carty Generating Station Unit 1

PGE placed a conservation easement on the 78-acre Habitat Mitigation Area for Carty Generating Station Unit 1 and is monitoring and managing the area consistent with Wildlife and Habitat Monitoring and Mitigation Plan requirements. Monitoring and management activities conducted during the first year following the start of Unit 1 operation (2017) included Washington ground squirrel surveys, raptor nest surveys, breeding bird surveys, noxious weed survey and control, posting of information signs on sensitive resources and access control, modification of existing barbed wire fencing to wildlife friendly fence standards, and installation of vegetation monitoring photo points.

Port Westward Generating Plant

For mitigation at Port Westward Generating Plant Unit 1, PGE placed 19 acres under conservation easement and conducted a successful wetland mitigation on 1.5 acres. No monitoring or management was required for the conservation easement. Performance criteria for the wetland mitigation, including tree and shrub survival, wetland emergent vegetation percent cover, and invasive non-native plant species control, were documented to be successfully achieved at the end of the required five-year monitoring program.

- PGE. 2011. Wetland Mitigation Monitoring 2011 Annual Report. Port Westward Generating Project. ODSL Permit#25248-RF. November 2011.

PGE placed a conservation easement on an additional 9.1 acres as habitat mitigation for Port Westward Generating Plant Unit 2, planted approximately 3,000 trees and shrubs for Columbia white-tailed deer habitat, and controlled reed canary grass to facilitate tree and shrub establishment. Planting success was documented by an 85% survival of trees and shrubs after the first growing season.

- PGE. 2016. Revegetation and Invasive Species Monitoring Annual Report. Port Westward Generating Project Unit 2. Portland General Electric Company. December 2016.

Federal Energy Regulatory Commission Hydroelectric Projects

PGE has extensive wildlife and fisheries habitat mitigation requirements under the Pelton Round Butte and Clackamas River Hydroelectric projects. The company manages over 10,000 acres in the vicinity of the Pelton Round Butte project as mitigation for wildlife habitat impacts. Activities for both projects include revegetation and habitat improvement plantings, installation

and monitoring of wildlife habitat connectivity measures (such as fish ladder animal crossings and wildlife water guzzlers), wetland and spring enhancements, and invasive plant monitoring prevention and control. Successful compliance to date is documented as part of annual Terrestrial resources working group meetings and annual reports as required by the projects' Federal Energy Regulatory Commission licenses.

PGE has elected, and would continue to elect, to provide offset funds in an amount deemed sufficient to produce the reduction in carbon dioxide emissions necessary to meet the applicable carbon dioxide emission standards; therefore, PGE would not be relying on self-performing mitigation to demonstrate compliance with the carbon dioxide standard.

EXHIBIT E – Request for Amendment No. 1

PERMITS

OAR 345-021-0010(1)(e)

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Appendix E-2 Documentation of FAA Glare Analysis Determination of No Hazard

E.1 INTRODUCTION

OAR 345-021-0010(1)(e) *Information about permits needed for construction and operation of the facility.*

Response: This exhibit provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(e) in support of the Request for Amendment No. 1 of the Site Certificate for the Carty Generating Station (RFA). This exhibit addresses the changes in permits needed for the addition of the Carty Solar Farm (as defined in Exhibit B). The Application for Site Certificate (ASC) provides information regarding the permits for the Carty Generating Station as originally proposed.

E.2 IDENTIFICATION AND DESCRIPTION OF NECESSARY PERMITS

OAR 345-021-0010(1)(e)(A) *Identification of all federal, state and local government permits related to the siting of the proposed facility, a legal citation of the statute, rule or ordinance governing each permit, and the name, mailing address, email address and telephone number of the agency or office responsible for each permit.*

OAR 345-021-0010(1)(e)(B) *A description of each permit, the reasons the permit is needed for construction or operation of the facility and the applicant's analysis of whether the permit should or should not be included in and governed by the site certificate.*

Response: Table E-1 lists all permits that were required for the original project, as described in the ASC, that would require modification for the amended project or that are no longer needed, as well as all new permits that would be required for the amended project. Refer to the ASC for a description of existing permits that do not require modification for the amended project. The ASC provides a description of the previously acquired permits, and the regulatory basis, agency contacts, and rationale for each permit's need. The subsections below provide this information for required new permits and those requiring modification.

Table E-1 Permits for Construction and Operation of the Carty Generating Station as Amended

Permit Description	Agency	Permit Needed? – Description
Permits Governed by Site Certificate		
Energy Facility Site Certificate	Oregon Department of Energy	Yes – modification of existing permit
Water Pollution Control Facility Permit	Oregon Department of Environmental Quality	Yes – modification of existing permit
Application for Permit Amendment	Oregon Water Resources Department	Yes – new permit
Morrow County Land Use Permits (Conditional Use and Zoning Permits)	Morrow County Planning Department	Yes – new permit
Gilliam County Conditional Use Permit	Gilliam County Planning Department	No – permit no longer needed
Permits Not Governed by Site Certificate - Federal		
Notice of Proposed Construction (Form 7460-1)	Federal Aviation Administration	Yes – new permit
Notice of Actual Construction or Alteration (Form 7460-2)	Federal Aviation Administration	Yes – new permit
Coordination License (Microwave Tower)	Federal Communications Commission	Yes – new permit
Permits Not Governed by Site Certificate – Federally Delegated to State		
National Pollutant Discharge Elimination System Stormwater Permit	Oregon Department of Environmental Quality	Yes – new permit
Permits Not Governed by Site Certificate – Construction Details		
Local Building and Utility Permits	City of Boardman and Morrow County	Yes – new permits
Utility Permit/Access Permit	Morrow County	No – permit no longer needed
Natural Gas Pipeline and Transmission Line Safety Review	Oregon Public Utility Commission	No – no longer needed
Archaeological Artifacts Excavation Permit	State Historic Preservation Office	No – permit not anticipated to be needed
Load Transport Variance Permits	Oregon Department of Transportation	Yes – new permits

E.2.1 Permits Governed by Site Certificate

Permits that will be governed by the Site Certificate, i.e., state permits that are not federally delegated and that require modification or renewal under this RFA, are discussed below.

Permit: Energy Facility Site Certificate

Agency: Energy Facility Siting Council
Oregon Department of Energy
550 Capitol Street NE, First Floor
Salem, Oregon 97301
(503) 378-4040

Standards: Oregon Revised Statutes (ORS) 469.300 et seq., 469.501, 469.503, and 469.504
OAR 345-001; 345-021; 345-022; 345-024; 345-026-0048; and 345-027-0020,
0023 and 0028

Response: This RFA provides recommended changes to the language of the Site Certificate to reflect the amendments proposed by Portland General Electric Company (PGE), as described in the exhibits provided in the RFA. The information within the exhibits demonstrates that PGE has met applicable siting standards.

Permit: Water Pollution Control Facility Permit

Agency: Oregon Department of Environmental Quality
Administrative Office The Dalles Administration Office

700 NE Multnomah Street, 400 E Scenic Drive, Suite 307
Suite 600 The Dalles, OR 97058
Portland, Oregon 97232 (541) 298-7255
(503)229-5696

Standards: ORS 468.020, 065 and 070
ORS 468B.005 and 468B.055
OAR 340-071-0162
OAR 340, Div. 45

Response: Minor changes are required to PGE’s existing Water Pollution Control Facility (WPCF) permit to address the disposal of panel wash water. Prior to starting construction, PGE will submit a letter request for revision of the WPCF permit to allow solar panel wash water to be disposed of on the ground and allowed to evaporate or infiltrate as long as no soaps, detergents or chemicals are added. The current WPCF permit is included as Appendix E-1.

Permit: **Application for Permit Amendment**

Agency: Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301
(503) 986-0900

Response: PGE prepared an Application for Permit Amendment to add the Carty Solar Farm to the place of use for the existing Carty Generating Station water right permit (Permit Number S-54925). This Permit Amendment is required for PGE to use water from Carty Reservoir during construction of the Carty Solar Farm (primarily dust control). During operations panel wash water may be obtained from Carty Unit 1 (demineralized water). Panel wash water may also be obtained off site and trucked to the site.

Permit(s): **Morrow County Land Use Permits**

Agency: Morrow County Planning Department
205 Third Street NE
Irrigon, Oregon 97844
541-922-4624

Standards: Conditional Use Permit - Energy Facility within Exclusive Farm Use (EFU)
Article 3, Section 3.010, Exclusive Farm Use
Article 4, Supplementary Provisions
Article 6, Conditional Uses

Conditional Use Permit - Transmission Line
Article 3, Section 3.010, Exclusive Farm Use
Article 4, Supplementary Provisions
Article 6, Conditional Uses

Energy Facility within General Industrial (MG)
Article 3, Section 3.070, General Industrial Zone
Morrow County Comprehensive Plan
Applicable Statewide Planning Goals

Response: As discussed in the ASC, project impacts on Exclusive Farm Use land in excess of 20 acres in Morrow County require a Goal 3 exception. The analysis of land use provided in the ASC supported a finding by the Oregon Energy Facility Siting Council (Council) under “Plan B” that land use proposed for the Carty Generating Station was compatible with statewide planning goals. PGE herein requests that the Council provide a similar determination for the amended project described in this RFA. A zoning confirmation will be required prior to the issuance of building permits by Morrow County.

Permit: **Gilliam County Land Use Permits**

Response: The Carty Generating Station, as amended, would not have any elements that are located in Gilliam County. Therefore, no Gilliam County land use permits are required.

E.2.2 Permits Not Governed by Site Certificate: Federal Permits

Changes to federal permits or notifications related to the RFA are discussed below.

Permit: **Federal Aviation Administration (FAA) Notice of Proposed Construction (Form 7460-1)**

Agency: Federal Aviation Administration
Northwest Mountain Region
1601 Lind Avenue Southwest
Renton, WA 98057
(425) 227-2001

Standards: 14 Code of Federal Regulations, Part 77.7

Response: Notice is required to the FAA for certain types of facilities, such as stack heights that exceed a specified height (200 feet) or certain facilities in proximity to airports. PGE entered into discussions with the U.S. Navy regarding the nearby Boardman Bombing Range and associated flight paths to ensure that there are no significant impacts related to potential glare that could result from construction and operation of the Carty Solar Farm. The U.S. Navy requested that PGE notify the FAA of proposed construction through the FAA’s online notification system,

to allow the Navy to provide review and comment regarding glare analysis conducted by PGE. PGE filed a notice with the FAA on July 13, 2016, to address potential glare concerns for U.S. Navy for Carty Solar Farm, and a determination of no hazard was issued on September 22, 2016. Documentation of this determination is provided in Appendix E-2.

Permit: **Federal Aviation Administration Notice of Actual Construction or Alteration (Form 7460-2)**

Agency: Federal Aviation Administration
Northwest Mountain Region
1601 Lind Avenue Southwest
Renton, WA 98057
(425) 227-2001

Standards: 14 Code of Federal Regulations, Part 77.7

Response: Per the determination of no hazard issued on September 22, 2016, PGE must submit (via e-file) a Notice of Actual Construction or Alteration any time the project is abandoned or within five days after the construction reaches its greatest height.

Permit: **Federal Communications Commission Coordination License**

Agency: Federal Communications Commission
445 12th Street SW
Washington, DC 20554
(888) 225-5322

Standards: 47 Code of Federal Regulations, Part 101

Response: PGE must obtain a Coordination License prior to installing telecommunications microwave dishes.

E.2.3 Permits Not Governed by Site Certificate: Federally Delegated to State

Response: Two federally delegated permits were obtained for the Carty Generating Station. The modifications described in this RFA require an amendment to one of these permits, as discussed below.

Permit: **National Pollutant Discharge Elimination System Construction Stormwater Permit (NPDES)**

Agency: Oregon Department of Environmental Quality (DEQ)
Administrative Office
700 NE Multnomah Street, Suite 600
Portland, OR 97232
(503) 229-5582

Standards: ORS 468 and 468B; OAR 340-014, 340-041, 340-045, 340-052, and 345-055; Clean Water Act of 1977 (33 USC § 1251 et seq.); 40 CFR Parts 6, 122 and 124

Response: A new permit will need to be issued to cover construction of the Carty Solar Farm. A copy of the draft permit application is included as Appendix I-1 to Exhibit I. The draft permit application includes disturbance associated with the previously proposed Unit 2 and Unit 3 natural gas plants that have been withdrawn; however, DEQ has confirmed that the draft permit as previously submitted is sufficient for them to determine that they expect to be able to issue a 1200-C permit for the solar only portion of the project. Prior to starting construction, the 1200-C permit drawings will be updated after detailed design and submitted to DEQ for final approval. An acknowledgement letter from DEQ confirming receipt and providing the estimated date of review completion and issuance of the NPDES 1200-C permit is included as Appendix I-1 to Exhibit I.

E.2.4 Permits Not Governed by Site Certificate: Construction Details

Response: The local building and utility permits and notifications listed in Table E-1 do not fall under the jurisdiction of the Site Certificate. PGE or PGE's contractors will obtain such permits as needed. Refer to Exhibit E of the ASC for more information regarding the potential local building and utility permits listed in Table E-1.

E.3 PERMITS SUBJECT TO THE ENERGY FACILITY SITING COUNCIL

OAR 345-021-0010(1)(e)(C) *For any state or local government agency permits, licenses or certificates that are proposed to be included in and governed by the site certificate, evidence to support findings by the Council that construction and operation of the proposed facility will comply with the statutes, rules and standards applicable to the permit. The applicant may show this evidence: (i) In Exhibit J for permits related to wetlands (ii) In Exhibit O for permits related to water rights.*

Response: The ASC provides documentation of how the permits governed by the Site Certificate will comply with applicable statutes, rules, or standards. The supplemental information provided in this exhibit further describe how the modified or new facilities will comply. PGE does not anticipate impacts on wetlands for this project. Exhibit O of this RFA addresses water rights.

E.4 FEDERALLY DELEGATED PERMIT APPLICATION

OAR 345-021-0010(1)(e)(D) *For federally-delegated permit applications, evidence that the responsible agency has received a permit application and the estimated date when the responsible agency will complete its review and issue a permit decision.*

Response: Section E.2.3 identifies one new federally delegated permit that is required for the modifications proposed in the RFA: the National Pollutant Discharge Elimination System 1200-C Construction Stormwater Permit. The 1200-C permit application that PGE submitted to DEQ in 2016 is included in Appendix I-1 in Exhibit I of this RFA. In addition, Appendix I-1 includes a letter from DEQ acknowledging receipt of the application and estimating that DEQ would be able to issue the 1200-C permit within 30 days of receiving the site certificate from the Oregon Department of Energy and upon review of the final version of the Erosion and Sediment Control Plan (attached to the application).

E.5 THIRD-PARTY STATE AND LOCAL PERMITS

OAR 345-021-0010(1)(e)(E) *If the applicant relies on a state or local government permit or approval issued to a third party, identification of any such third party permit and for each: (i) Evidence that the applicant has, or has a reasonable likelihood of entering into a contract or other agreement with the third party for access to the resource or service to be secured by that permit; (ii) Evidence that the third party has or has a reasonable likelihood of obtaining, the necessary permit; and (iii) An assessment of the impact of the proposed facility on any permit that a third party has obtained and on which the applicant relies to comply with any applicable Council standards.*

Response: See response in Section E.6.

E.6 THIRD-PARTY FEDERALLY DELEGATED PERMITS

OAR 345-021-0010(1)(e)(F) *If the applicant relies on a federally-delegated permit issued to a third party, identification of any such third-party permit and for each: (i) Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit. (ii) Evidence that the responsible agency has received a permit application. (iii) The estimated date when the responsible agency will complete its review and issue a permit decision.*

Response: The Applicant is not relying on any third-party permits. Permits associated with temporary concrete batch plants are common permits that are obtained by a third party. However, PGE does not expect to need a temporary concrete batch plant and plans to obtain the approximately 500 cubic yards of concrete from existing local batch plants.

E.7 MONITORING PROGRAM

OAR 345-021-0010(1)(e)(G) *The applicant's proposed monitoring program, if any, for compliance with permit conditions.*

Response: PGE will comply with all site certificate conditions and requirements contained within specific monitoring plans related to the site certificate (e.g., Revegetation and Noxious Weed Control Plan, Wildlife Habit Monitoring and Mitigation Plan, etc.). In addition to compliance with specific Site Certificate requirements, PGE will comply with all permit conditions of permits obtained for the construction, operation, or retirement of the facility. PGE achieves regulatory compliance in a variety of ways, such as:

1. Implementation of a software-based compliance tracking system (currently, a system called Enablon). All environmental permit requirements are entered in the software with due date reminders, task owner, team members, and description of the requirements.
2. Implementation of a software-based work order system for operating PGE's generating facilities (currently, a system called Maximo). All required facility inspections, recurring tasks, or other requirements that are assigned to facility staff are entered into the Maximo worker order system with due dates, frequencies, responsible person, and any other necessary information to complete the required task.
3. For permit and site certificate requirements that do not have due dates, PGE develops a compliance tracking spreadsheet or table that is reviewed on a regular basis with the applicable staff based on the phase of the project and the activities occurring on site (e.g., construction staff or operations staff).

Appendix E-1

Water Pollution Control Facility

Permit



Oregon

Kate Brown, Governor

Department of Environmental Quality

Eastern Region - Pendleton Office

800 SE Emigrant Ave, Suite 330

Pendleton, OR 97801

Phone: (541) 276-4063

Fax: (541) 278-0168

Relay Service: 711

November 4, 2015

Mr. David Rodgers
Portland General Electric Co.
73334 Tower Road
Boardman, OR 97818

PERMIT ACTION

Re: WQ - Morrow County
PGE - Boardman Plant
WPCF 100189; File 70795

Dear Mr. Rodgers:

This permit action letter is intended to modify Portland General Electric's (PGE's) Water Pollution Control Facilities (WPCF) permit by removing a condition that requires PGE to apply for a solid waste permit.

DEQ issued WPCF Permit 100189 to PGE on May 2, 2013. At that time, DEQ anticipated that promulgation of EPA's Coal Combustion Residuals (CCR) Rules at a future date would require that PGE obtain a solid waste permit from DEQ's Land Quality Division. Accordingly, DEQ included a requirement in Schedule A, Condition 20 of the WPCF permit requiring PGE to apply for a solid waste permit, if and when PGE's coal ash becomes subject to the CCR Rule. However, the new rule, as promulgated, does not require that PGE have a solid waste permit. Therefore, by this letter, Schedule A, Condition 20 is modified as follows.

20. Management and disposal of Boardman Power Plant ash must be conducted in accordance with this permit and the Boardman Power Plant Ash Disposal Plan. Except as provided for in the Boardman Power Plant Ash Disposal Plan, disposal of wastes other than coal ash is prohibited in the ash disposal landfill. If management and disposal of coal ash becomes subject to requirements established by the Environmental Protection Agency or the Department during the term of this permit, or any administrative extension of the term of the permit, the new regulatory requirements control over any inconsistent provisions in the Boardman Power Plant Ash Disposal Plan and this permit. ~~At that time, the Permittee will be required to apply for a permit from the Department's Land Quality Division. If the Land Quality Division issues a permit, the ash disposal requirements in this permit will no longer apply.~~

All other conditions of the permit remain unchanged. If you have any questions regarding this permit action, please contact Carl Nadler at (541) 298-7255, ext. 227 or John Straughan at (541) 278-4611.

Sincerely,

Don Butcher
Water Quality Permit Manager

cc: Carl Nadler, DEQ
Lissa Druback, DEQ
John Straughan, DEQ
✓ Lenna Cope, PGE
Amber Chapman, PGE
Duane Kilsdonk, EFSC





Oregon

John A. Kitzhaber, MD, Governor

Department of Environmental Quality

Eastern Region - Pendleton Office

700 SE Emigrant Ave, Suite 330

Pendleton, OR 97801

Phone: (541) 276-4063

Fax: (541) 278-0168

Relay Service: 711

May 2, 2013

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

RECEIVED

MAY 6 2013

ENVIRONMENTAL SERVICES

Arya Behbehani-Divers
Portland General Electric Company
121 SW Salmon St., 3WTCBRO5
Portland, OR 97204

Re: Waste Disposal Permit
File No. 70795
Site Loc. PGE Boardman Plant
73334 Tower Rd., Boardman, Oregon
Morrow County

Enclosed is your renewed Water Pollution Control Facilities (WPCF) permit number 100189.

This permit will be considered the final action on permit application number 971051.

If you are dissatisfied with the conditions or limitations of this permit, you have 20 days to request a hearing. The request for a hearing must be made in writing and state the grounds for the request.

You are urged to carefully read the permit and take all possible steps to comply with conditions established. Should you have any questions regarding this permit please contact Carl Nadler in the Eastern Region – Columbia Gorge office at (541) 298-7255, ext. 227.

Sincerely,

Cheryll Hutchens-Woods
Water Quality Manager
Eastern Region

CHW:jmr
Enclosure

cc: Amber Chapman, PGE (w/enc.)
Sue Oliver, Oregon Department of Energy (w/enc.)



WATER POLLUTION CONTROL FACILITIES PERMIT

Department of Environmental Quality
Eastern Region
700 S.E. Emigrant Avenue, Suite 330, Pendleton, OR 97801
Telephone: (541) 276-4063
Issued pursuant to ORS 468B.050

FACILITY:

Portland General Electric Co.
121 SW Salmon St.
Portland, OR 97204

SOURCES COVERED BY THIS PERMIT:

<u>Type of Waste</u>	<u>Method of Disposal</u>
Industrial Wastewater	Seepage and Evaporation
Domestic Wastewater	Seepage and Evaporation
Coal Ash	Land Disposal

PLANT TYPE AND LOCATION:

Boardman Power Plant
(Coal-fired electricity generation)
Carty Generating Station
(Gas-powered electricity generation)

RIVER BASIN INFORMATION:

Basin: Umatilla
Sub-Basin: Middle Columbia / Lake Wallula
LLID: 1198031456823 RM 10
County: Morrow

Tower Road
Boardman, Oregon

Nearest surface stream which would receive
wastewater if it were to discharge: Sixmile Canyon

Treatment System Class: Level I

Issued in response to Carty Generating Station and Boardman Power Plant Application No. 971051 received September 11, 2009.

Pursuant to ORS 469.378, a land use compatibility determination is not required for this permit and the permit is conditioned on a land use determination by the Energy Facility Siting Council.

Cheryll Hutchens-Woods
Cheryll Hutchens-Woods, Water Quality Manager
Eastern Region

May 2, 2013
Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the Permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

	<u>Page</u>
Schedule A - Waste Disposal Limitations not to be Exceeded.....	2-5
Schedule B - Minimum Monitoring and Reporting Requirements.....	6-9
Schedule C - Compliance Conditions and Schedules.....	10-12
Schedule D - Special Conditions.....	13-16
Schedule E - Not Applicable.....	--
Schedule F - General Conditions.....	17-20

Unless specifically authorized by this permit, by another NPDES or WPCF permit, or by Oregon Administrative Rule, any other direct or indirect discharge to waters of the state is prohibited, including discharge to an underground injection control system.

SCHEDULE A

Waste Disposal Limitations

1. Direct discharge to surface waters is not permitted.
2. The Permittee must manage all wastewater in a manner that will prevent:
 - a. The creation of odors, fly and mosquito breeding or other nuisance conditions;
 - b. A violation of the Department's Groundwater Quality Protection Rules (Oregon Administrative Rules (OAR) Chapter 340, Division 40); and,
 - c. A violation of any permit-specific groundwater concentration limits, established pursuant to OAR 340-040-0030, which will be incorporated into this permit by modification.
3. All activities pertaining to the management, treatment, and disposal of the authorized wastes¹, as well as wastewater-derived solids from ponds, sumps and settling basins, must be conducted in accordance with the approved Operations, Monitoring and Maintenance (OM&M) Plan (see Schedule C, Condition 3), and any amendments to the plan approved in writing by the Department. No changes may be made in the approved OM&M Plan without written approval from the Department.
4. The Permittee must not exceed the minimum freeboard established by design specifications for all ponds and sewage lagoons.
5. Unless otherwise approved in writing by the Department, the Permittee is permitted to manage and dispose only the following wastes from operation of the Boardman Power Plant in Carty Reservoir:
 - a. Cooling water
 - b. Water treatment wastewater
 - c. Facility sumps and drains wastewater
 - d. Laboratory and sampling wastewater
 - e. Condensate and steam system blowdown
 - f. Equipment cleaning wastewater (excluding boiler cleaning wastewater until after submittal of a waste characterization and written approval from the Department)
 - g. Ash transport wastewater
 - h. Storm water (excluding storm water from the coal yard)
6. Unless otherwise approved in writing by the Department, the Permittee is permitted to manage and dispose only the following wastes from operation of the Carty Generating Station in Carty Reservoir:
 - a. Cooling water
 - b. Water treatment wastewater
 - c. Facility sumps and drains wastewater
 - d. Laboratory and sampling wastewater
 - e. Evaporative cooling wastewater
 - f. Equipment cleaning wastewater
 - g. Storm water

¹ Excluding Boardman Power Plant coal ash, which must be managed in accordance with the Ash Disposal Plan.

7. The following limitations² must not be exceeded in Carty Reservoir at the intake of the recirculation line from Carty Reservoir to the Boardman Power Plant:

Parameter	Limitations (Sample Maximum)
Chloride	100 mg/L
Sulfate	200 mg/L
Sodium	150 mg/L
Arsenic	0.01 mg/L
Boron	0.5 mg/L
Copper	0.1 mg/L
Cadmium	0.005 mg/L
Calcium	500 mg/L
Chromium	0.05 mg/L
Magnesium	250 mg/L
Bicarbonate Alkalinity	500 mg/L
Fluoride	1 mg/L
Nitrate	10 mg/L
Total Dissolved Solids (TDS)	500 mg/L
Mercury	0.002 mg/L
Zinc	0.1 mg/L
pH	9.4 s.u.
Oil sheen	No visible

8. The following limitations must not be exceeded in Carty Reservoir at the intake of the irrigation withdrawal pump, during withdrawal for irrigation:

Parameter	Limitations (Sample Maximum)
Total Dissolved Solids	320 mg/L
Arsenic	0.0063 mg/L
Chromium	0.0025 mg/L
pH	9.4 s.u.
Sodium Adsorption Ratio	1.66

9. Unless otherwise approved in writing by the Department, the Permittee is permitted to manage and dispose only the following wastes from operation of the Boardman Power Plant in the Boardman Lined Ponds, if disposal of such wastewater into Carty Reservoir would impair the use of the reservoir water for plant operation or it is required to maintain reservoir constituent concentrations below permit limitations after implementation of irrigation withdrawal action requirements that are required by Schedule B, Condition 2:
- Water treatment wastewater
 - Facility sumps and drains wastewater
 - Laboratory and sampling wastewater
 - Condensate and steam system blowdown
 - Equipment cleaning wastewater (excluding boiler cleaning wastewater until after submittal of a waste characterization and written approval from the Department)
 - Ash transport wastewater
 - Storm water

² Limitations are based on protection of wildlife and groundwater and may be modified after submittal of a Hydrogeologic Characterization Report (see Schedule C, Condition 5) and/or exceedance of a groundwater concentration limit (see Schedule A, Condition 2.c).

10. Unless otherwise approved in writing by the Department, the Permittee is permitted to manage and dispose only the following wastes from operation of the Carty Generating Station in lined ponds constructed in accordance with plans that are approved by the Department (see Schedule C, Condition 2):
 - a. Water treatment wastewater
 - b. Facility sumps and drains wastewater
 - c. Laboratory and sampling wastewater
 - d. Evaporative cooling wastewater
 - e. Equipment cleaning wastewater
 - f. Storm water
11. Equipment and vehicle wash water and storm water from the vehicle fueling and maintenance areas from the Boardman Power Plant must be disposed in the Boardman Power Plant's lined pond adjacent to the vehicle wash and fueling area. However, wash water derived from washing exterior surfaces only of vehicles and equipment may be disposed in storm water swales provided chemicals, soaps, and detergents are not used and washing is restricted to the exterior of the vehicle or equipment. Disposal of engine, transmission or undercarriage wash water is not permitted in storm water swales.
12. Vehicle wash water from the Carty Generating Station must be disposed in a lined pond constructed in accordance with plans that are approved by the Department (see Schedule C, Condition 2). However, wash water derived from washing exterior surfaces only of vehicles and equipment may be disposed in storm water swales provided chemicals, soaps, and detergents are not used and washing is restricted to the exterior of the vehicle or equipment. Disposal of engine, transmission or undercarriage wash water is not permitted in storm water swales.
13. The Permittee is permitted to manage and dispose of fire protection system wastewater and facility construction and commissioning wastewater in storm water swales or Carty Reservoir, provided chemicals, soaps, and detergents are not used.
14. Disposal of rinse water from concrete mixer trucks chutes and exteriors is permitted on site. Disposal of concrete mixer washout is not authorized by this permit.
15. Boardman Power Plant domestic wastewater (sewage) must be disposed in the Boardman Power Plant sewage lagoons. Carty Generating Station sewage is permitted to be disposed in the Boardman Power Plant sewage lagoons after reconditioning the clay liners or demonstrating clay liner integrity by conducting a leak test and submitting a long term plan to the Department to ensure the integrity of the clay lined cells (see Schedule C, Condition 2). The approved average dry weather design flow for the facility is 10,500 GPD.

16. Prior to overflow into the unlined evaporation/seepage cell, sanitary sewage must receive at least the equivalent of secondary treatment and disinfection and meet the following limitations:

Parameter	Limitations	
<i>E. coli</i> bacteria	Must not exceed 126 organisms per 100 ml monthly geometric mean. A single sample must not exceed 406 organisms per 100 ml ³	
	Annual Average (mg/L)	Maximum (mg/L)
NO ₃ -N	7	10
Total Nitrogen ⁴	10	15

17. Wash water from coal yard operations must be collected for treatment in the Boardman Power Plant coal yard ponds and reused in the coal yard. Wash water that floods sumps or basements in the coal yard buildings due to equipment failure and must be removed to repair the equipment may be pumped out of the basements or sumps and onto the coal pile or into storm water swales that remain inside the coal yard boundaries and do not discharge to Carty Reservoir.
18. Air pollution control wastewater may be approved for disposal in lined evaporation ponds, coal yard or ash disposal area after submittal of a waste characterization and written approval from the Department.
19. Storm water from the coal yard and ash disposal landfill must not be discharged to Carty Reservoir.
20. Management and disposal of Boardman Power Plant ash must be conducted in accordance with this permit and the Boardman Power Plant Ash Disposal Plan. Except as provided for in the Boardman Power Plant Ash Disposal Plan, disposal of wastes other than coal ash is prohibited in the ash disposal landfill. If management and disposal of coal ash becomes subject to requirements established by the Environmental Protection Agency or the Department during the term of this permit, or any administrative extension of the term of the permit, the new regulatory requirements control over any inconsistent provisions in the Boardman Power Plant Ash Disposal Plan and this permit. At that time, the Permittee will be required to apply for a permit from the Department's Land Quality Division. If the Land Quality Division issues a permit, the ash disposal requirements in this permit will no longer apply.

³ If a single sample exceeds 406 organisms per 100 ml, then five consecutive re-samples may be taken at intervals no greater than four-hours beginning within twenty-eight (28) hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 ml, a violation will not be triggered.

⁴ Total Nitrogen in this permit limitation equals Total Kjeldahl Nitrogen (TKN) + Nitrate Nitrogen (NO₃-N).

SCHEDULE B

Minimum Monitoring and Reporting Requirements (unless otherwise approved in writing by the Department).

1. **Facilities Monitoring**

The Permittee must monitor the facilities in accordance with the following Department approved plans: OM&M Plan, Groundwater Monitoring Plan, Ash Disposal Plan and Boardman Power Plant Water Quality Management Program, and any amendments to the plans and program approved in writing by the Department. Monitoring must include the following items and parameters:

a. Boardman Power Plant Sanitary Lagoons

Items and Parameters	Minimum Frequency	Sample Type/Action
Influent⁵		
Total flow (MGD)	Daily	Record
Flow meter calibration	Annually	Written verification
pH	2/week	Grab/field measurement
BOD ₅	Quarterly	Composite ⁶
TSS	Quarterly	Composite ⁶
Overflow to seepage cell⁷		
Total flow (MGD)	Daily	Record
Flow meter calibration	Annually	Written verification
Quantity chlorine used	Daily	Measurement
Chlorine residual	Daily	Grab
pH	2/week	Grab/field measurement
<i>E. coli</i> bacteria	Monthly	Grab
BOD ₅	Quarterly	Composite ⁶
TSS	Quarterly	Composite ⁶
TKN	Quarterly	Grab
NO ₃ -N	Quarterly	Grab
Lagoon Site		
Freeboard ⁸	Weekly	Measure and record
Perimeter inspection ⁹	Daily	Observation

⁵ Sample point is in discharge to lagoons, except that flow from Boardman Power Plant coal yard sewage collection system may be measured by monitoring domestic water usage of facilities that discharge wastes to the coal yard sewage collection system. And, except that BOD₅, TSS and pH monitoring results of domestic sewage from Boardman Power Plant power block may be deemed representative of BOD₅, TSS and pH from Boardman Power Plant coal yard sewage collection system.

⁶ Composite samples must consist of no less than 6 samples collected over a 24-hour period and apportioned according to the volume of flow at the time of sampling.

⁷ Required only when overflow occurs. Sample point is at overflow to seepage cell

⁸ Freeboard is measured from lowest point on containment structure

⁹ A perimeter inspection is a sight surveillance of the lagoon dikes looking for the presence of badgers, muskrats, ground hogs or other rodents whose burrowing activities could threaten the structural integrity of a dike.

b. Lined Evaporation Ponds (Boardman Power Plant and Carty Generating Station)

Items and Parameters	Minimum Frequency	Sample Type/Action
Each Pond ¹⁰		
Total Flow to pond (MG)	Quarterly	Record
Flow meter calibration	Annually	Written verification
As, Cd, Cr, Hg, TDS, Oil & Grease, TTHMs ¹¹ , pH	Quarterly	Grab
Freeboard	Weekly	Measure and record
Perimeter inspection	Daily	Observation

c. Carty Reservoir

Items and Parameters	Minimum Frequency	Sample Type/Action
Effluent ¹²		
Total flow (MG)	Monthly	Record
Flow meter calibration	Annually	Written verification
As, B, Cd, Ca, Cr, Cu, Fe, Mg, Hg, K, Na, V, Se, Zn, Bicarb Alk, Total Alk, Cl ⁻ , F ⁻ , NO ₃ , SiO ₂ , SO ₄ , TDS, Cond, pH, TTHMs	Monthly	Grab
Make-up water		
Total flow (MG)	Monthly	Record
Flow meter calibration	Annually	Written verification
Irrigation withdrawal ¹³		
TDS, As, Cr, pH, SAR	Twice Monthly, except as required by Schedule B, Condition 2	Grab
Carty Reservoir		
Water elevation	Monthly	Measure and record

d. Coal Ash

Items and Parameters	Minimum Frequency	Sample Type/Action
Ash transferred off site Bottom Economizer Fly	Annual	Record volumes and recipients
Ash disposed on site Bottom Economizer Fly	Annual	Record volumes

2. **Irrigation Withdrawal Action Requirements**

¹⁰ The Permittee must designate and maintain a sampling station at each pond from which representative samples may be collected, except that flow to Boardman Power Plant's two lined evaporation ponds may be measured at a single location downstream of all possible flow additions.

¹¹ Total trihalomethanes

¹² Sample point is in the recirculation line (intake) from Carty Reservoir to the Boardman Power Plant

¹³ Sample point is at intake to irrigation withdrawal pump

If irrigation withdrawal monitoring results indicate that a trigger level in the following table has been exceeded, the Permittee must:

- a. Report the results to the Department within ten (10) calendar days of receipt of the laboratory data;
- b. Immediately implement Operations, Monitoring and Management (OM&M) Plan (see Schedule C, Condition 3) procedures to decrease parameter concentrations in Carty Reservoir; and,
- c. Immediately begin monitoring the exceeded parameter(s) in accordance with the approved OM&M Plan until concentrations return to below trigger level(s).

Parameter	Trigger Level
Total Dissolved Solids	280 mg/L
Arsenic	0.0055mg/L
Chromium	0.0022mg/L
pH	9.0 s.u.
Sodium Adsorption Ratio	1.44

3. Groundwater Monitoring

The Permittee must monitor groundwater in accordance with a Department-approved Groundwater Monitoring Plan and any amendments to the plan approved in writing by the Department.

4. Groundwater Monitoring Resampling Requirements¹⁴

- a. If monitoring indicates that a concentration limit has been exceeded at a compliance point, the Permittee must immediately resample the monitoring well. The results of both sampling events must be reported to the Department within 10 calendar days of receipt of the laboratory data.
- b. If monitoring indicates a significant increase (increase or decrease for pH), as defined in the Groundwater Monitoring Plan, in the value of a parameter monitored, the Permittee must immediately resample unless otherwise approved in writing by the Department. If the re-sampling confirms a change in water quality, the Permittee must:
 1. Report the results to the Department within ten (10) calendar days of receipt of the laboratory data; and
 2. Prepare and submit to the Department within thirty (30) calendar days a plan for developing a preliminary assessment unless another time schedule is approved by the Department.

5. Monthly Reporting Procedures – Boardman Power Plant Sanitary Lagoons

Monitoring results must be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the Department's Eastern Region Pendleton Office by the 15th day of the following month.

Monitoring reports must identify the name, certificate classification and grade level of each principal operator designated by the Permittee as responsible for supervising the wastewater treatment system

¹⁴ OAR 340-040-0030(5) requires resampling after a significant increase (increase or decrease for pH). In addition, resampling is appropriate after a concentration limit exceedance and prior to a remedial investigation and feasibility study, which is required by OAR 340-040-0030(6).

during the reporting period. Monitoring reports must also identify the treatment system classification as found on page one of this permit.

Monitoring reports must include a record of all applicable equipment breakdowns and bypassing.

6. **Annual Reporting Requirements**

On or before March 1 of each calendar year, the Permittee must submit an annual facility monitoring report to the Department that summarizes all wastewater and ash facilities operations and monitoring results for the preceding year. Following approval, annual reporting and data analyses must be in accordance with the approved OM&M Plan, Groundwater Monitoring Plan, Ash Disposal Plan and Boardman Power Plant Water Quality Management Program, and any amendments to the plans and program approved in writing by the Department.

SCHEDULE C

Compliance Conditions and Schedules

1. **Boardman Power Plant Sewage Lagoons**

Prior to discharge of sanitary sewage from Carty Generating Station to the Boardman Power Plant sewage lagoons, the Permittee must submit a work plan to the Department to remove vegetation from the clay lined cells and either leak test the clay-lined cells¹⁵ or recondition them.

The leak test plan must be implemented in accordance with Department approval and the results must be submitted to the Department. If the Department gives written notification to the Permittee that reconditioning of the clay liners is required, the Permittee must submit a clay liner reconditioning work plan to the Department. The reconditioning plan must be implemented in accordance with Department approval.

In addition, prior to discharge of sanitary sewage from Carty Generating Station to the Boardman Power Plant sewage lagoons, the Permittee must submit a long term plan to the Department to ensure the integrity of the clay-lined cells. The plan may include evaluating system capacity requirements and modifying the system accordingly. The plan must be implemented in accordance with Department approval.

2. **Wastewater Treatment System Wastewater - Carty Generating Station**

Prior to discharge of wastewater treatment system wastewater to lined evaporation ponds that are proposed to be constructed for Carty Generating Station, a wastewater characterization must be submitted for Department review and approval.

3. **Operations, Monitoring and Management Plan**

Not later than 90 days after permit issuance, the Permittee must submit a facility Operations, Monitoring and Management (OM&M) Plan to the Department for review and approval. The plan must include, but is not limited to, management and disposal of wastewater-derived solids from ponds, sumps and settling basins, as well as procedures to decrease parameter concentrations in Carty Reservoir in the event of an irrigation withdrawal limit exceedance (see Schedule B, Condition 2).

The Permittee must review the OM&M Plan annually and submit a revised plan, whenever it is revised, to the Department for review and approval.

Following submittal of the plan or a revised plan, the Department will approve it, approve it with conditions, or disapprove it. If approved, the plan must be implemented in accordance with the Department approval. If disapproved, the Department will provide an approved plan or a minimum of 30 days to submit a revised plan.

¹⁵ Guidelines for estimating pond leakage are available from the Department at: <http://www.deq.state.or.us/wq/rules/div052/guidelines/estleak.pdf>. For ponds less than two acres, the following guidelines may be used: <http://www.deq.state.or.us/wq/rules/div052/guidelines/altestleak.pdf>. Use of the guidelines is recommended to expedite Department review and approval of the work plan.

4. Biosolids Management Plan

Prior to removal and beneficial reuse of accumulated sewage sludge, the Permittee must submit a Biosolids Management Plan to the Department and receive Department approval of the plan. The plan must be developed in accordance with Oregon Administrative Rule 340, Division 50, "Land Application of Domestic Wastewater Treatment Facility Biosolids, Biosolids Derived Products, and Domestic Septage". The plan must be implemented in accordance with the approval.

5. Hydrogeologic Characterization

Not later than 120 calendar days after permit issuance, unless otherwise approved in writing by the Department, the Permittee must submit to the Department, for review and approval, a work plan for completing a Hydrogeologic Characterization at the Boardman Power Plant/Carty Reservoir site. The work plan must address evaluation of conditions up- and down-gradient of each and every wastewater impoundment (including lined ponds, unlined settling basins and coal yard wastewater basins). The work plan must also address evaluation of Carty Reservoir as a source of potential impacts to groundwater from arsenic, vanadium and alkalinity in the immediate vicinity of the reservoir. The Permittee must implement the work plan as approved.

Prior to construction of any wastewater impoundment specifically for the Carty Generating Station, the Permittee must submit to the Department, for review and approval, a work plan for completing a Hydrogeologic Characterization in the vicinity of the proposed wastewater impoundment. The Permittee must implement the work plan as approved.

6. Groundwater Monitoring Plan

- a. Not later than ninety (90) days from Department approval of the Hydrogeologic Characterization, unless otherwise approved in writing by the Department, the Permittee must submit a Groundwater Monitoring Plan to the Department for review and approval. Upon Department approval, the Groundwater Monitoring Plan must be implemented.
- b. In conjunction with submittal of the Groundwater Monitoring Plan, the Permittee must propose a submittal date for a Water Quality Analysis Report. The proposed date for report submittal must be the earliest practicable date after completion of nine (9) quarters of groundwater monitoring (to enable the Permittee to establish background groundwater conditions).

7. Water Quality Analysis Report

Not later than the date approved by the Department under Schedule C, Condition 6.b., the Permittee must submit to the Department for review and approval a Water Quality Analysis Report. The Water Quality Analysis Report must include, but not be limited to identification of background and compliance wells, determinations of background groundwater quality, analyses of existing water quality data and existing impacts, and analyses of potential impacts from facility activities. Concurrent with submittal of the Water Quality Analysis Report, the Permittee must:

- a. Propose site-specific concentration limits pursuant to OAR 340-040-0030(3) for the Department's consideration; and,
- b. Apply for any concentration limit variances proposed pursuant to OAR 340-040-0030(4).

8. Not later than 90 days after burning coal from any new source other than western sub-bituminous, the Permittee shall submit a waste characterization of the resulting ash to the Department. The characterization must include: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc.
9. The Permittee is required to meet the compliance dates that have been established in this schedule, unless alternative compliance dates have been approved in advance in writing by the Department. Either prior to or not later than 14 calendar days following any lapsed compliance date, the Permittee must submit to the Department a notice of noncompliance with the established schedule. Any reports of noncompliance must include the cause of noncompliance.

SCHEDULE D

Special Conditions

1. Prior to constructing or modifying wastewater management, treatment and disposal facilities, detailed plans and specifications must be submitted to, and approved in writing by, the Department.
2. All biosolids must be managed in accordance with the Department-approved biosolids management plan and the site authorization letters issued by the Department. Any changes in solids management activities that significantly differ from the operations specified under the approved plan require the prior written approval of the Department.

There are no approved sites for application of the Permittee's biosolids as of the date of permit issuance. All new biosolids application sites must meet the site selection criteria set forth in OAR 340-050-0070 and must be located within Morrow County. Property owners adjacent to any newly approved application sites must be notified, in writing or by any method approved by the Department, of the proposed activity prior to the start of application. For proposed new application sites that are deemed by the Department to be sensitive with respect to residential housing, runoff potential or threat to groundwater, an opportunity for public comment must be provided in accordance with OAR 340-050-0030.

This permit may be modified to incorporate any applicable standard for biosolids use or disposal promulgated under section 405(d) of the Clean Water Act, if the standard for biosolids use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or controls a pollutant or practice not limited in this permit.

3. The Permittee must comply with Oregon Administrative Rules (OAR), Chapter 340, Division 49, "Regulations Pertaining To Certification of Wastewater System Operator Personnel" and accordingly:
 - a. The Permittee must have its wastewater system supervised by one or more operators who are certified in treatment system operation at grade level I or higher.

Note: A "supervisor" is defined as the person exercising authority for establishing and executing the specific practice and procedures of operating the system in accordance with the policies of the Permittee and requirements of the waste discharge permit. "Supervise" means responsible for the technical operation of a system, which may affect its performance or the quality of the effluent produced. Supervisors are not required to be on-site at all times.

- b. The Permittee's wastewater system may not be without supervision (as required by Special Condition 3.a. above) for more than thirty (30) days. During this period, and at any time that the supervisor is not available to respond on-site (i.e. vacation, sick leave or off-call), the Permittee must make available another person who is certified treatment system operation at grade level I or higher.
- c. The Permittee is responsible for ensuring the wastewater system has a properly certified supervisor available at all times to respond on-site at the request of the Permittee and to any other operator.
- d. The Permittee must notify the Department of Environmental Quality in writing within thirty (30) days of replacement or redesignation of certified operators responsible for supervising wastewater system operation. The notice must be filed with the Water Quality Division,

Operator Certification Program (811 SW Sixth, Portland, OR 97204). This requirement is in addition to the reporting requirements contained under Schedule B of this permit

- e. Upon written request, the Department may grant the Permittee reasonable time, not to exceed 120 days, to obtain the services of a qualified person to supervise the wastewater system. The written request must include justification for the time needed, a schedule for recruiting and hiring, the date the system supervisor availability ceased and the name of the alternate system supervisor(s) as required by 3.b. above.
4. An adequate contingency plan for prevention and handling of spills and unplanned discharges must be in force at all times. A continuing program of employee orientation and education must be maintained to ensure awareness of the necessity for good in-plant control and proper action in the event of a spill or accident.
 5. An environmental supervisor must be designated to coordinate and implement all necessary functions related to maintenance and operation of waste management, treatment, and disposal facilities. This person must have access to all information pertaining to the generation of wastes in the various process areas.
 6. The Permittee must notify the Department's Eastern Region office at (541) 276-4063 in accordance with the response times contained in the General Conditions of this permit in the event of any malfunction of the wastewater system to enable coordination of corrective action between the Permittee and the Department.
 7. **Monitoring Well Management/Maintenance**
 - a. The Permittee must protect and maintain each groundwater monitoring well identified in the Groundwater Monitoring Plan so that samples can be collected that are representative of actual conditions.
 - b. All monitoring well abandonment, replacement and installation must be conducted to comply with the Water Resources Department Rules (OAR Chapter 690, Division 240) and with the Department of Environmental Quality's Guidelines for Groundwater Monitoring Well Drilling, Construction, and Decommissioning. All monitoring well repairs, abandonments, replacements and installations must be documented in a report prepared by an Oregon-registered geologist.
 - c. If a monitoring well identified in the Groundwater Monitoring Plan becomes damaged or inoperable, the Permittee must notify the Department in writing within 14 days. The written notification must describe the problem that occurred and the remedial measures that have been taken to date to correct the problem. In addition, the Permittee must submit a written final report within 60 days following the notification, unless otherwise approved in writing by the Department, which must include a description of the problem, the remedial measures taken to correct the problem, and the measures taken to prevent recurrence. The Department can require the replacement of inoperable monitoring wells.¹⁶
 - d. All new and replacement monitoring well locations and designs related to the Groundwater Monitoring Plan must be approved in writing by the Department prior to well installation. Well logs and well completion reports must be submitted to the Department within thirty (30)

¹⁶ Monitoring well operability will be determined by the Department on a case-by-case basis.

days of well installation. Reports must include land survey drawings that depict actual location of all monitoring wells, land application areas, and surface waters.

- e. Modification and/or abandonment plans for any wells identified in the Groundwater Monitoring Plan must be submitted to and approved in writing by the Department prior to modification and/or abandonment of any existing monitoring well.

8. **Definitions**

Water treatment wastewater means wastewater derived from the Boardman Power Plant water treatment system, including wastewater from demineralization and regeneration of the demineralization media, make-up water demineralization (including regeneration) and condensate polishing (including regeneration), the raw water filter and activated carbon filter. It also includes Carty Generating Station neutralization tank wastewater and multi-media filtration wastewater.

Facility sumps and drains wastewater means wastewater from Boardman Power Plant and Carty Generating Station sumps and drains. Wastewater from the Boardman Power Plant pretreatment area sump, water treatment area sump, liquid waste sump, water treatment area floor drains and system shut-down drains are included in this category. An oil water separator provides treatment for wastewater from selected Boardman Power Plant facility sumps and drains.

Laboratory and sampling wastewater means wastewater from chemical waste drains and laboratory/sample room sink drains and includes discarded water samples, lab equipment wash water and spent reagents. The pH is approximately 9 s.u. and the volume is approximately 200 to 300 gallons per day.

Condensate and steam system blowdown means Boardman Power Plant boiler blowdown.

Equipment cleaning wastewater means wash water from cleaning the coal gallery and ash transport system, as well as boiler cleaning wash water, boiler acid cleaning wastewater and chemical cleaning wastewaters.

Equipment and vehicle cleaning wastewater means wastewater from cleaning heavy construction equipment, landscape maintenance equipment and on-road vehicles.

Ash transport wastewater means wastewater that overflows from the ash transport system to the settling ponds, including wastewater from the bottom ash handling system surge tank.

Evaporative cooling wastewater means Carty Generating Station cooling tower blowdown.

Fire protection system wastewater means fire suppression system test water that is sourced from the domestic water supply or Carty Reservoir.

Facility construction and commissioning wastewater means the following wastes from the construction of Carty Generating Station: water supply system testing and commissioning wastewater, hydrostatic testing wastewater, and water supply lines flushing wastewater.

Air pollution control wastewater means baking soda grinding wash water from the Boardman Power Plant. Volume is estimated to be between 50 to 200 gallons per day.

9. The Department may reopen the permit at any time to include new or revised waste disposal limitations, monitoring and reporting requirements, compliance conditions and schedules, and special conditions.

SCHEDULE F

WPCF GENERAL CONDITIONS – INDUSTRIAL FACILITIES

SECTION A. STANDARD CONDITIONS

1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and grounds for an enforcement action. Failure to comply is also grounds for the Department to modify, revoke, or deny renewal of a permit.

2. Property Rights and Other Legal Requirements

Issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other rights, or any infringement of federal, tribal, state, or local laws or regulations.

3. Liability

The Department of Environmental Quality or its officers, agents, or employees may not sustain any liability on account of the issuance of this permit or on account of the construction or maintenance of facilities or systems because of this permit.

4. Permit Actions

After notice by the Department, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including but not limited to the following:

- a. Violation of any term or condition of this permit, any applicable rule or statute, or any order of the Commission;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.

5. Transfer of Permit

This permit may not be transferred to a third party without prior written approval from the Department. The Department may approve transfers where the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of this permit and the rules of the Commission. A transfer application and filing fee must be submitted to the Department.

6. Permit Fees

The permittee must pay the fees required by Oregon Administrative Rules.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

At all times the permittee must maintain in good working order and properly operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to comply with the terms and conditions of this permit.

2. Standard Operation and Maintenance

All waste collection, control, treatment, and disposal facilities or systems must be operated in a manner consistent with the following:

- a. At all times, all facilities or systems must be operated as efficiently as possible in a manner that will prevent discharges, health hazards, and nuisance conditions.
- b. All screenings, grit, and sludge must be disposed of in a manner approved by the Department to prevent any pollutant from the materials from reaching waters of the state, creating a public health hazard, or causing a nuisance condition.
- c. Bypassing untreated waste is generally prohibited. Bypassing may not occur without prior written permission from the Department except where unavoidable to prevent loss of life, personal injury, or severe property damage.

3. Noncompliance and Notification Procedures

If the permittee is unable to comply with conditions of this permit because of surfacing sewage; a breakdown of equipment, facilities or systems; an accident caused by human error or negligence; or any other cause such as an act of nature, the permittee must:

- a. Immediately take action to stop, contain, and clean up the unauthorized discharges and correct the problem.
- b. Immediately notify the Department's Regional office so that an investigation can be made to evaluate the impact and the corrective actions taken, and to determine any additional action that must be taken.
- c. Within 5 days of the time the permittee becomes aware of the circumstances, the permittee must submit to the Department a detailed written report describing the breakdown, the actual quantity and quality of waste discharged, corrective action taken, steps taken to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or liability for failure to comply.

4. Wastewater System Personnel

The permittee must provide an adequate operating staff that is duly qualified to carry out the operation, maintenance, and monitoring requirements to assure continuous compliance with the conditions of this permit.

5. Public Notification of Effluent Violation

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (e.g., public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed in accordance with General Condition B.6. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

6. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from bypasses or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

- a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
- b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
- c. Ensure immediate notification to the public, health agencies, and other affected entities (including public water systems). The response plan must identify the public health and other officials who will receive immediate notification;
- d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
- e. Provide emergency operations: and
- f. Ensure that DEQ is notified of the public notification steps taken.

SECTION C. MONITORING AND RECORDS1. Inspection and Entry

The permittee must at all reasonable times allow authorized representatives of the Department to:

- a. Enter upon the permittee's premises where a waste source or disposal system is located or where any records are required to be kept under the terms and conditions of this permit;
- b. Have access to and copy any records required by this permit;
- c. Inspect any treatment or disposal system, practices, operations, monitoring equipment, or monitoring method regulated or required by this permit; or
- d. Sample or monitor any substances or permit parameters at any location at reasonable times for the purpose of assuring permit compliance or as otherwise authorized by state law...

2. Averaging of Measurements

Calculations of averages of measurements required for all parameters except bacteria must use an arithmetic mean; bacteria must be averaged as specified in the permit.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures specified in the most recent edition of **Standard Methods for the Examination of Water and Wastewater**, unless other test procedures have been approved in writing by the Department and specified in this permit.

4. Retention of Records

The permittee must retain records of all monitoring and maintenance information, including all calibrations, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. The Department may extend this period at any time.

SECTION D. REPORTING REQUIREMENTS1. Plan Submittal

Pursuant to Oregon Revised Statute 468B.055, unless specifically exempted by rule, construction, installation, or modification of disposal systems, treatment works, or sewerage systems may not commence until plans and specifications are submitted to and approved in writing by the Department. All construction, installation, or modification shall be in strict conformance with the Department's written approval of the plans.

2. Change in Discharge

Whenever a facility expansion, production increase, or process modification is expected to result in a change in the character of pollutants to be discharged or in a new or increased discharge that will exceed the conditions of this permit, a new application must be submitted together with the necessary reports, plans, and specifications for the proposed changes. A change may not be made until plans have been approved and a new permit or permit modification has been issued.

3. Signatory Requirements

All applications, reports, or information submitted to the Department must be signed and certified by the official applicant of record (owner) or authorized designee.

4. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) within 24 hours from the time the permittee becomes aware of the circumstances, unless a shorter time is specified in the permit. During normal business hours, the Department's Regional office must be called. Outside of normal business hours, the Department must be contacted at 1-800-452-0311 (Oregon Emergency Response System).

The following must be included as information that must be reported within 24 hours under this paragraph:

- a. Any unanticipated bypass that exceeds any effluent limitation in this permit;
- b. Any upset that exceeds any effluent limitation in this permit;
- c. Violation of maximum daily discharge limitation for any of the pollutants listed by the Department in this permit; and
- d. Any noncompliance that may endanger human health or the environment.

A written submission must also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:

- e. A description of noncompliance and its cause;
- f. The period of noncompliance, including exact dates and times;
- g. The estimated time noncompliance is expected to continue if it has not been corrected;
- h. Steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and
- i. Public notification steps taken, pursuant to General Condition B.6.

The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

SECTION E. DEFINITIONS

1. *BOD₅* means five-day biochemical oxygen demand.
2. *TSS* means total suspended solids.
3. *FC* means fecal coliform bacteria.
4. *NH₃-N* means Ammonia Nitrogen.
5. *NO₃-N* means Nitrate Nitrogen.
6. *NO₂-N* means Nitrite Nitrogen.
7. *TKN* means Total Kjeldahl Nitrogen.
8. *Cl* means Chloride.
9. *TN* means Total Nitrogen.
10. "*Bacteria*" includes but is not limited to fecal coliform bacteria, total coliform bacteria, and E. coli bacteria.
11. *Total residual chlorine* means combined chlorine forms plus free residual chlorine.
12. *mg/l* means milligrams per liter.
13. *ug/l* means micrograms per liter.
14. *kg* means kilograms.
15. *GPD* means gallons per day.
16. *MGD* means million gallons per day.
17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
18. *Composite sample* means a combination of samples collected, generally at equal intervals over a 24-hour period, and based on either time or flow.
19. *Week* means a calendar week of Sunday through Saturday.
20. *Month* means a calendar month.
21. *Quarter* means January through March, April through June, July through September, or October through December.

Appendix E-2
Documentation of FAA Glare Analysis
Determination of No Hazard



Mail Processing Center
 Federal Aviation Administration
 Southwest Regional Office
 Obstruction Evaluation Group
 10101 Hillwood Parkway
 Fort Worth, TX 76177

Aeronautical Study No.
 2016-ANM-2129-OE

Issued Date: 09/22/2016

Craig Armstrong
 Portland General Electric
 121 SW Salmon St.
 3WTCBR02
 Portland, OR 97204

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Solar Panel Carty Solar Farm
 Location: Boardman, OR
 Latitude: 45-40-28.60N NAD 83
 Longitude: 119-47-24.73W
 Heights: 700 feet site elevation (SE)
 10 feet above ground level (AGL)
 710 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part 1)
- Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory circular 70/7460-1 L.

This determination expires on 03/22/2018 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates , heights, frequency(ies) and power . Any changes in coordinates , heights, and frequencies or use of greater power will void this determination. Any future construction or alteration , including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

If we can be of further assistance, please contact our office at (202) 267-4525. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2016-ANM-2129-OE.

Signature Control No: 298472677-305359770

(DNE)

David Maddox
Specialist