

# **Request for Amendment 4 to the Site Certificate for the Carty Generating Station**

Submitted to:  
**Oregon Department of Energy**

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## Acronyms and Abbreviations

|                         |   |
|-------------------------|---|
| AC                      | alternating current                             |
| ASC                     | Application for Site Certificate                |
| BCP                     | Boardman Coal Plant                             |
| BESS                    | battery energy storage system                   |
| BPA                     | Bonneville Power Administration                 |
| Certificate Holder/ PGE | Portland General Electric Company               |
| CFR                     | Code of Federal Regulations                     |
| CGS/Facility            | Carty Generating Station                        |
| Council                 | Energy Facility Siting Council                  |
| CTG                     | Combustion Turbine Generator                    |
| DC                      | direct current                                  |
| Department              | Oregon Department of Energy                     |
| EPC                     | engineering, procurement, and construction      |
| ESCP                    | Erosion and Sediment Control Plan               |
| FAA                     | Federal Aviation Administration                 |
| GSU                     | generator step-up                               |
| HV                      | high-voltage                                    |
| ISU                     | inverter step-up                                |
| kV                      | kilovolt  |
| MW                      | megawatt  |
| NPDES                   | National Pollutant Discharge Elimination System |
| O&M                     | operations and maintenance                      |
| OAR                     | Oregon Administrative Rules                     |
| ODEQ                    | Oregon Department of Environmental Quality      |
| ODOE                    | Oregon Department of Energy                     |
| ODOT                    | Oregon Department of Transportation             |
| ORS                     | Oregon Revised Statute                          |
| PCS                     | power conversion station                        |
| PV                      | photovoltaic                                    |
| RFA                     | Request for Amendment                           |
| SCADA                   | supervisory control and data acquisition        |
| SPCC                    | Spill Prevention, Control, and Countermeasure   |

USC

U.S. Code

WPCF

Water Pollution Control Facility

## **1.0 Introduction**

### **1.1 Project Summary and Request**

The Portland General Electric Company (PGE or Certificate Holder) is submitting a Request for Amendment (RFA) 4 to the Site Certificate for the Carty Generating Station (CGS or Facility). The Facility is located approximately 13 miles southwest of Boardman, in Morrow County, Oregon (see Figure 1). As currently approved, the Facility is capable of generating up to 500 megawatts (MW) of electrical power. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and includes the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm) on 315 acres (0.49 sq. miles) located south of the Carty Reservoir.

In this RFA 4, the Certificate Holder is proposing to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW alternating current (AC) of nominal and average generating capacity by expanding into areas formerly used for PGE's Boardman Coal Plant (BCP) and maximizing the buildable area southeast of Carty Reservoir. As part of RFA 4, the Certificate Holder also proposes the addition of a battery energy storage system (BESS) to the Facility with the capability of storing up to 156 MW AC over a duration to be determined, in an area formerly used by the coal plant. The Certificate Holder proposes the 185 MW of solar generation in RFA 4 as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. Thus, the overall changes proposed with RFA 4 (including the BESS) are referred to throughout this request for amendment (i.e., this Division 27 document and the various exhibits included in Attachment 4) as the Amended Carty Solar Farm. If the Council approves the Fourth Amended Site Certificate, the Amended Carty Solar Farm will be the only authorized version of solar energy generation permitted at the Facility. Therefore, the use of Carty Solar Farm is being maintained within the Site Certificate itself (see Attachment 1) including the Site Certificate Conditions.

The proposed changes will increase the amount of non-emitting energy generation provided by the Facility, and with the addition of the BESS, will maximize reliability and customer value to deliver energy and capacity to PGE customers and to help achieve Oregon's ambitious decarbonization targets.

### **1.2 RFA 4 Layout**

The layout proposed for the Amended Carty Solar Farm and RFA 4 includes four main areas with infrastructure improvements: two separate solar areas; an area for BESS; and a proposed collector substation with overhead electrical connection between the proposed substation and existing transmission line dead-end structure remaining from the BCP. These four areas are identified on Figure 2.

The two solar areas will be fenced separately and are as follows:

- Northern Solar Area – solar modules, inverters, transformers, tracking systems, posts, underground collector lines, proposed access roads, and other associated equipment within

a perimeter fence located to the north of the Carty Reservoir in areas formerly used for the BCP.

- Southern Solar Area – solar modules, inverters, transformers, tracking systems, posts, underground collector lines, proposed access roads, and other associated equipment within a perimeter fence located to the southeast of the Carty Reservoir. This is the area approved for the 50-MW Carty Solar Farm by the Final Order on RFA 1.<sup>1</sup>

The BESS is proposed west of the Northern Solar Area, generally surrounding the proposed collector substation. The BESS is proposed in areas formerly used for the BCP and will include its own perimeter fence, separate from fencing for other areas.

The proposed collector substation location is west of the Northern Solar Area, in an area formerly used for the BCP. The substation will include its own perimeter fence, separate from fencing for other areas. The new solar energy generation facilities and the BESS will connect to the grid via existing CGS transmission infrastructure. The proposed substation will be built near an existing electrical transmission dead-end structure, which formerly served the BCP. The new substation will connect to the existing dead-end structure and then to the existing CGS Grassland Switchyard via the existing 500-kilovolt (kV) transmission line that formerly served the BCP. From the Grassland Switchyard, electrical energy from the Amended Carty Solar Farm will be routed to the existing Bonneville Power Administration (BPA) Slatt Substation through the existing 500-kV Grassland to Slatt transmission line (approximately 17 miles long).

### **1.3 Background and Procedural History**

The Facility site was originally used for PGE's BCP. PGE received an approved site certificate for the coal plant in March 1975. Commercial operation of the coal plant began in August 1980 and the plant ceased burning coal on October 15, 2020. Demolition of the plant was completed in December of 2023. The closure fulfilled a groundbreaking agreement PGE reached with stakeholders, customer groups, and regulators in 2010 to significantly reduce air emissions from power production in Oregon by ending operations at Boardman 20 years ahead of schedule and transitioning to cleaner energy resources.

The Oregon Energy Facility Siting Council (Council) originally issued a Site Certificate to PGE for the CGS, effective July 2, 2012.<sup>2</sup> The Facility, as originally approved, consisted of a natural gas-fueled combined-cycle electric power generating plant. The Site Certificate has since been amended three times as described below:

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<sup>1</sup> Final Order on Request for Amendment 1 to the Site Certificate for the Carty Generating Station (December 2018).

<sup>2</sup> Site Certificate for the Carty Generating Station (June 2012). Available at: [https://www.oregon.gov/energy/facilities-safety/facilities/Facilities\\_library/CGS\\_site\\_certificate\\_070212.pdf](https://www.oregon.gov/energy/facilities-safety/facilities/Facilities_library/CGS_site_certificate_070212.pdf).



- The Council issued Amendment 1 to the Site Certificate on December 14, 2018, to add the Carty Solar Farm, a photovoltaic solar energy generation facility with up to 50 MW of nominal generating capacity in one area to the south of the Carty Reservoir.<sup>3</sup>
- The Council issued Amendment 2 to the Site Certificate on November 19, 2020, to increase the CGS Site Boundary; incorporate existing related and supporting facilities formerly permitted under the BCP Site Certificate that are to remain in place for use within CGS once the BCP is demolished; and allow for the construction of a few new related or supporting facilities. The last of the new related or supporting facilities (a new administrative building) was completed in November 2023.<sup>4</sup>
- The Council issued Amendment 3 to the Site Certificate on July 22, 2022, to extend the construction commencement and completion deadlines for the 50-MW Carty Solar Farm by three years, with conditions requiring construction to commence by February 4, 2025, and requiring construction to be completed by February 4, 2028.<sup>5</sup>

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<sup>3</sup> First Amended Site Certificate for the Carty Generating Station (December 2018). Available at: [https://www.oregon.gov/energy/facilities-safety/facilities/Facilities library/2018-12-14-CGS-AMD1-Amended-Site-Certificate.pdf](https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2018-12-14-CGS-AMD1-Amended-Site-Certificate.pdf).

<sup>4</sup> Second Amended Site Certificate for the Carty Generating Station (November 2020). Available at: [https://www.oregon.gov/energy/facilities-safety/facilities/Facilities library/2020-11-19-CGS-AMD2-SIGNED-Second-Amended-Site-Certificate-Attachment-1.pdf](https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2020-11-19-CGS-AMD2-SIGNED-Second-Amended-Site-Certificate-Attachment-1.pdf).

<sup>5</sup> Third Amended Site Certificate for the Carty Generating Station (July 2022). Available at: <https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2022-08-07-CGS-AMD3-Site-Certificate.pdf>.

## 2.0 Amendment Required under OAR 345-027-0350 and Review Process under OAR 345-027-0351

### *OAR 345-027-0350 – Changes Requiring an Amendment*

*Except for changes allowed under OAR 345-027-0353, an amendment to a site certificate is required to:*

*(1) Transfer ownership of the facility or the certificate holder as described in OAR 345-027-0400;*

*(2) Apply later-adopted law(s) as described in OAR 345-027-0390;*

*(3) Extend the construction beginning or completion deadline as described in OAR 345-027-0385;*

*(4) Design, construct or operate a facility in a manner different from the description in the site certificate, if the proposed change:*

*(a) Could result in a significant adverse impact that the Council has not addressed in an earlier order and the impact affects a resource or interest protected by an applicable law or Council standard;*

*(b) Could impair the certificate holder's ability to comply with a site certificate condition;*  
*or*

*(c) Could require a new condition or a change to a condition in the site certificate.*

The changes the Certificate Holder proposes require an amendment under Oregon Administrative Rules (OAR) 345-027-0350(4)(a) and (c). The proposed changes in the Northern Solar Area will place the vast majority of the solar generation components, BESS, and proposed collector substation in areas formerly used for the BCP (see Figure 2). The Southern Solar Area is generally proposed where the 50-MW Carty Solar Farm was approved.<sup>6</sup> However, the Southern Solar Area changes are proposed to maximize the buildable area for solar generation by expanding the solar modules beyond the footprint approved for the 50-MW Carty Solar Farm. As part of RFA 4, the Certificate Holder is not relying on the approved 50-MW Carty Solar Farm. As described in Section 1.1, the Certificate Holder proposes the 185-MW Amended Carty Solar Farm in RFA 4 as a complete reconfiguration and not as an addition to the 50-MW approved Carty Solar Farm. All analyses provided in RFA 4 evaluate impacts from the entire 185 MW, not just the additional 135 MW (i.e., the difference between the proposed 185 MW and the approved 50 MW); the overall changes in RFA 4 are referred to as the Amended Carty Solar Farm.

The overall changes proposed by RFA 4 could result in impacts that have not previously been reviewed, including limited adverse impacts (e.g., modified footprint, additional solar modules, addition of BESS, proposed collector substation), that were not previously addressed by the Council

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<sup>6</sup> Final Order on Request for Amendment 1 (December 2018).

for the Facility. Therefore, these changes require modifications to the Facility description and new or modified conditions in the Site Certificate (see Attachment 1). Moreover, the Certificate Holder anticipates that the proposed changes may generate interest from reviewing agencies or from the public.

Based on the applicability of OAR 340-027-0350(4), the Certificate Holder anticipates the review process for RFA 4 to be Type A. Pursuant to OAR 345-027-0351(2), the Type A review process consists of the following OARs: OAR 345-027-0359, OAR 345-027-0360, OAR 345-027-0363, OAR 345-027-0365, OAR 345-027-0367, OAR 345-027-0371, and OAR 345-027-0375.

The requirements of OAR 345-027-0360 are addressed in the following sections and document attachments.

### **3.0 Certificate Holder Information – OAR 345-027-0360(1)(a)**

#### ***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0050(3) or (4), the certificate holder must submit a written preliminary request for amendment to the Department that includes the following:*

*(a) The name of the facility, the name and mailing address of the certificate holder, and the name, mailing address, email address and phone number of the individual responsible for submitting the request;*

#### **3.1 Name of the Facility**

The name of the Facility is Carty Generating Station and the Certificate Holder is Portland General Electric Company.

#### **3.2 Name and Mailing Address of the Certificate Holder**

Portland General Electric Company  
121 SW Salmon Street, 3WTC0403  
Portland, OR 97204

#### **3.3 Name and Mailing Address of the Individuals Responsible for Submitting the Request**

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## **4.0 Detailed Description of the Proposed Change – OAR 345-027-0360(1)(b)**

### ***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

\*\*\*

*(b) A detailed description of the proposed change, including:*

The Certificate Holder proposes various changes to the approved Facility as part of RFA 4. Table 1 provides a summary of those changes, and a more detailed description of the changes follows below the table. Section 4.1 provides a detailed project description of the Facility components, structures, systems, and related or supporting facilities included with RFA 4.

**Table 1. Approved and Proposed Facility Components**

| <b>Facility Component</b>             | <b>Approved Facility<sup>1</sup></b>   | <b>Proposed Modifications</b>   |
|---------------------------------------|--|---|
| Site Boundary                         | 4,997 acres <sup>2</sup>   | 5,249 acres (6% increase)   |
| Solar Photovoltaic Modules            | 198,450 modules occupying 315 acres  | 390,879 modules occupying 849.7 acres (includes total for single axis and fixed tilt racking systems) |
| Solar Inverter (quantity)             | 25   | 44  |
| Solar Step-up Transformers (quantity) | 25   | 44  |
| Underground Collector/Conductor line  | 121,792 feet   | 132,000 feet <sup>3</sup>   |
| Aboveground 34.5-kV electrical line   | Up to 3 miles <sup>4</sup>   | Up to 1 mile <sup>5</sup>   |
| Substation                            | Three interconnection options with various disturbance sizes up to 6.5 acres | One new collector substation (3.2 acres)  |
| Battery energy storage system (BESS)  | None   | 156 MW in up to 330 battery containers (6.2 acres)  |
| BESS inverters                        | None   | 58  |
| BESS transformers                     | None   | 30  |

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| Facility Component   | Approved Facility <sup>1</sup>   | Proposed Modifications  |
|--|--|---|
| Access Roads   | New Roads: All new access roads limited to gravel roads inside the perimeter fence and array field | New Roads: No change  |
|  | Existing Road Improvements: None needed  | Existing Road Improvements: No change                         |
| Operations and Maintenance (O&M) Building  | None proposed – O&M to occur using existing CGS infrastructure                                     | One new O&M building (0.9 acres)                              |
| Temporary Construction Areas (Staging, Laydown, Parking, etc.)   | Five areas up to 79.7 total acres  | One area approximately 21.4 acres                             |
| Temporary and Permanent Impacts for the Facility   | Temporary: 107.4 acres (RFA 1);<br>Permanent: 321.5 acres (RFA 1)                                  | Temporary: 37.2 acres;<br>Permanent: 859.9 acres <sup>6</sup> |
| <p>1. All values for the Approved Facility were approved in the Final Order on RFA 1 for the Carty Generating Station (addition of Carty Solar Farm) unless individually specified otherwise.</p> <p>2. The Final Order on RFA 2 amended the Site Boundary, which is the current Approved Site Boundary; RFA 3 did not request any changes.</p> <p>3. Length of underground collector line between the transformers and proposed collector substation.</p> <p>4. The Final Order on RFA 1 approved five different alternative routes for the 34.5-kV transmission line between the Carty Solar Farm and three different interconnection points. The five alternative routes ranged in length from 2.25 to 3 miles.</p> <p>5. RFA 4 proposes up to 1-mile of aboveground 34.5-kV collector line as part of the overall electrical cable collection system that connects the Southern Solar Area to an existing transmission line (via the proposed collector substation). This aboveground segment of 34.5-kV collector line is part of the overall electrical cable collection system consistent with OAR 660-033-0130(38)(f). The aboveground 34.5-kV collector line segment is proposed using the same pole design approved for RFA 1. However, the aboveground electrical line extending north from the Carty Solar Farm in RFA 1 was proposed and approved as a transmission line because three different interconnection design options were included.</p> <p>6. See Section 4.4.3 below.</p> |  |   |

**1. Amend the Site Boundary.** The Certificate Holder proposes to amend the Approved Site Boundary as shown on Figure 3. The Amended Site Boundary adds three areas and removes one area currently in the Approved Site Boundary. The three areas proposed for inclusion were not previously incorporated into the Approved Site Boundary because they were used extensively for the BCP. The Approved Site Boundary encompasses approximately 4,997 acres. RFA 4 increases the area within the Approved Site Boundary to approximately 5,249 acres, but reuses former coal plant areas for solar energy generation and does not result in expanding the outer limits of the Approved Site Boundary. A more detailed description of the changes proposed for the Amended Site Boundary is included below in Section 4.1.1.1.

All areas of ground disturbance associated with the improvements proposed with RFA 4 have been surveyed for biological and cultural resources. Section 4.4 provides a description of the anticipated worst-case scenario impacts associated with RFA 4.

**2. Increase maximum peak generating capacity from the photovoltaic solar energy generation and for the total Facility.** As part of integrating additional solar energy generation into the Facility, the Certificate Holder proposes to add up to 135 MW to the approved 50-MW solar energy generation facility, for a total amended solar generating

capacity of up to 185 MW. As a result, the Certificate Holder proposes an overall increase of 135 MW to the approved 500-MW energy generation facility (up to 450 MW from the natural gas fueled combined-cycle unit [Unit 1], and up to 50 MW from the solar PV generating unit). This results in a total amended Facility generating capacity of up to 635 MW.

- 3. Amend Facility description to include approximately 849.7 acres of photovoltaic solar energy generation.** The Certificate Holder proposes to increase the acreage of solar energy generation within CGS from the approved 315 acres to approximately 849.7 acres. The Carty Solar Farm was approved as 315 acres in one location to the south of the Carty Reservoir.<sup>7</sup> To maximize the renewable energy output at CGS by reusing areas made available by demolition of the BCP, the Certificate Holder proposes amending the layout by distributing the approximately 849.7 acres of solar energy generation in two separate locations: (1) 491.8 acres to the south of the Carty Reservoir to fully utilize the land inside the Approved Site Boundary in that area; and (2) 357.9 acres to the north of the Carty Reservoir to reuse an area made available by demolition of the BCP.
- 4. Add a BESS as a related and supporting facility.** As part of improving the reliability of the renewable energy provided by the solar generation components of CGS, the Certificate Holder proposes adding a BESS capable of storing up to 156 MW over a duration to be determined, for the purpose of stabilizing the solar resource. The Certificate Holder proposes an AC-coupled BESS concentrated in a single location adjacent to the proposed collector substation.
- 5. Apply uniform construction commencement and completion deadlines for all solar energy generation.** The Third Amended Site Certificate currently allows the construction of up to 50 MW of solar energy generation on approximately 315 acres south of the Carty Reservoir. With RFA 4, the Certificate Holder proposes a complete reconfiguration of solar modules, meaning there is complete distinction between the approved 50 MW and the proposed 185 MW. All analyses provided in RFA 4 evaluate impacts from the entire 185 MW, not just the additional 135 MW. In addition, the BESS is proposed to improve the reliability of the renewable energy provided by the solar energy generation components. Therefore, the Certificate Holder requests if the Council approves RFA 4, any authorization to build the previously approved 50-MW solar farm would be terminated and a new uniform construction commencement deadline be applied to the solar and BESS portions of CGS. As is standard for initial construction commencement deadlines, the Certificate Holder requests three years from the effective date of the Fourth Amended Site Certificate, and a construction completion deadline six years from the effective date of the Fourth Amended Site Certificate.

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<sup>7</sup> Final Order on Request for Amendment 1 (December 2018).

- 6. Make amendments to Site Certificate conditions.** The Certificate Holder proposes edits to existing Site Certificate Conditions as described below in Section 6.0 and proposed in redline on the Fourth Amended Site Certificate (Attachment 1). The proposed edits provide more clarity regarding responsibility, timing, and implementation for compliance.

## **4.1 Project Description**

The description of the Amended Carty Solar Farm is included as required to meet the submittal requirements of OAR 345-021-0010(1)(b) paragraphs (A) through (F). OAR 345 Division 22 does not provide an approval standard specific to Exhibit B.

Note that the proposed components for the Amended Carty Solar Farm are representative and technology advancements may alter their given specifications; however, these potential alterations are not anticipated to create an impact that has not already been addressed, mitigated through existing Site Certificate Conditions, or authorized by the Council with approval of RFA 4.

### ***4.1.1 Overview of Proposed Facility***

As currently approved, the Facility is an electrical generation facility capable of generating up to 500 MW of electrical power on 4,997 acres in Morrow County, Oregon. CGS consists of the operating 450-MW natural gas-fueled combined-cycle unit (Unit 1) and its associated components; the not-yet-constructed 50-MW Carty Solar Farm (Carty Solar Farm); the 500-kV Grassland to Slatt transmission line (approximately 17 miles long); the 230-kV BCP to Dalreed transmission line (approximately 16 miles long); the 34.5-kV BCP to the railroad crossing at Tower Road transmission line; and Carty Reservoir.

In RFA 4, the Certificate Holder proposes to amend the Third Amended Site Certificate to allow 135 MW of additional solar energy generation, amend the Facility's Approved Site Boundary to expand into areas formerly used for the BCP, and add BESS with the capability of storing up to 156 MW. The Certificate Holder proposes the Amended Carty Solar Farm with up to 185 MW AC of nominal and average generating capacity as defined in ORS 469.300(4)(c). The Amended Carty Solar Farm is proposed as a complete reconfiguration to the previously approved 50-MW Carty Solar Farm. If the Amended Carty Solar Farm is approved by the Council, the Certificate Holder's right to construct the approved 50-MW configuration would terminate.

The Amended Carty Solar Farm will generate electricity using solar modules wired in series and in parallel to form an array, which in turn is connected to electrical infrastructure. Additionally, the Facility will include a BESS for the purpose of stabilizing the solar resource. The Amended Carty Solar Farm will connect to the grid via a proposed collector substation and existing transmission line infrastructure, which used to serve the BCP. Ultimately, electrical energy will be sent to the existing BPA Slatt Substation through the existing 500-kV Grassland to Slatt transmission line (approximately 17 miles long). These components are all described in greater detail in Section 4.1.2.

This RFA 4 demonstrates that the Amended Carty Solar Farm will be designed, constructed, and operated consistent with the relevant Council siting criteria and standards.

#### *4.1.1.1 Definition of the Amended Site Boundary*

The Facility Approved Site Boundary is approximately 4,997 acres, which encompasses all approved CGS components described above.<sup>8</sup> The Certificate Holder proposes an Amended Site Boundary of approximately 5,249 acres by adding areas formerly used by the BCP (see Figure 3). Figure 3 shows that these areas currently exist as islands within, but not previously included in, the Approved Site Boundary for CGS. Thus, the addition of these areas does not result in expanding the outer limits of the Approved Site Boundary.

The differences between the Approved and Amended Site Boundary include the following (Figure 3):

1. Incorporate three areas not within any of the previously approved site boundaries so they can be used for siting solar modules. These areas were not included previously because they were used extensively for the BCP: two areas in the northeast located within the rail loop and used for coal plant operations, and a third area to the southeast of the Carty Reservoir used as the BCP Ash Disposal Area (and wholly within the area approved for the Carty Solar Farm in the First Amended Site Certificate).
2. Remove one area (approximately 88 acres) in the far northeast corner from the Approved Site Boundary. RFA 4 proposes removal because Washington ground squirrel was observed during field surveys in this area, and PGE has no future plans to develop it.

The modifications to the Approved Site Boundary as described above do not result in an expansion of the Approved Site Boundary's outer limits, and in fact retract the site boundary in the northeast corner.

#### *4.1.1.2 Amended Site Boundary for RFA 4*

Consistent with OAR 345-027-0360(3), the Oregon Department of Energy (ODOE) concurred with the Certificate Holder's use<sup>9</sup> of the site boundary area shown on Figure 3 to establish study area boundaries for RFA 4 under OAR 345-001-0010(35) and the boundary to develop the property owner list and map under OAR 345-027-0360(1)(f) for RFA 4. This site boundary subject to RFA 4 incorporates the overall changes to the Approved Site Boundary described directly above in Section 4.1.1.1 but excludes the 500-kV Grassland to Slatt transmission line (approximately 17 miles long) and 230-kV BCP to Dalreed transmission line (approximately 16 miles long). ODOE concurred with excluding the transmission lines from the site boundary area on Figure 3 and property owner list and map because they are existing infrastructure, and no changes are proposed to them as part of RFA 4. Therefore, this version of the site boundary is referred to for the remainder of RFA 4,

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<sup>8</sup> Final Order on Request for Amendment 2 to the Site Certificate for the Carty Generating Station (November 2020).

<sup>9</sup> Sarah Esterson, Senior Policy Advisor at ODOE, pers. comm., e-mail message, September 7, 2023.



including throughout the various exhibits in Attachment 4, as the “Amended Site Boundary” since it is used for all of the RFA 4 analyses, and is the site boundary area specific to the components that are the subject of the RFA 4 evaluation.

#### ***4.1.1.3 Site Plan and General Arrangement***

The layout for the Amended Carty Solar Farm with the general arrangement of buildings, equipment, and structures is shown in Figure 2. As noted above, this layout is provided for analysis purposes; although the final design may differ from the preliminary site plan provided, the actual solar equipment and layout selected will not exceed the impacts analyzed.

#### ***4.1.2 Major Components, Structures, and Systems***

Solar energy will be generated by using multiple arrays of solar panels connected to electrical infrastructure. The term “array” refers to solar panels wired in series and in parallel. Solar panels generate electricity by means of a photovoltaic (PV) effect, whereby the materials in the panels absorb the sun’s energy in the form of photons and release electrons. The capture of these free electrons produces an electrical current that can be collected and supplied to the electrical power grid. The solar panels, known in the industry as modules, will be installed to form module blocks.

The major components of the proposed solar energy generation system include the solar modules, racking systems, posts/piles, and related electrical equipment (i.e., inverters and transformers). These components are combined to form a solar array. The layout of the solar array can vary depending on project size, technology, topography, and other constraints. Therefore, PGE seeks to permit a range of technology to preserve design flexibility. The solar modules and associated equipment, as well as the precise layout of the solar array and related or supporting facilities, have not yet been finalized. Because technology is changing rapidly, this RFA 4 analyzes impacts associated with the largest anticipated footprint and the actual solar equipment and layout selected will not exceed the impacts analyzed.

As described in Section 1.2 above, the solar array is proposed in two separate areas: the Northern Solar Area and Southern Solar Area. Each area will be enclosed by its own perimeter fence. The maximum solar array fence line area depicted for the Northern and Southern solar areas includes the solar energy generation system components (i.e., modules, inverters, transformers, tracking systems, posts, underground collector lines, and other associated equipment) (see Figure 2). The BESS, proposed collector substation, and connection between the proposed substation and existing dead-end structure will each be individually fenced separately from the two solar areas. The area inside the solar fence line for both the Northern and Southern solar areas is all considered permanent impact (see Section 4.4). The substrate on the ground inside the solar array fence line will be a mix of gravel where needed for maintenance and access roads or where gravel already exists, and vegetation.

During final design, PGE will consider all solar technologies available to ensure the most efficient and productive solar array layout. Although changes in the exact layout and technology could occur, the actual solar array equipment and layout selected will not exceed the impacts analyzed.

Therefore, the following description of major components is based on the best available design information at this time and the largest anticipated footprint but may not reflect the final design.

PGE proposes to construct the Amended Carty Solar Farm over the course of approximately 24 months (see Section 4.1.5).

#### *4.1.2.1 Solar Modules and Racking*

Solar modules use mono- or poly-crystalline cells to generate electricity by converting sunlight into direct current (DC) electrical energy. The electrical energy generation from one module varies by module size and the number of cells per module. As technology evolves, final module specification can be in flux until late in the design and development process. The modules used in current preliminary site design each have a nameplate rating of 545 watts (W) and measure 7.4 feet by 3.7 feet by 1.4 inches. Solar modules consist of a crystalline cellglass with an antireflective coating, a metal frame, and factory installed “quick connect” wire connectors. The modules will be connected in series to form rows or strings. The rows of modules are then connected via combiners, cables, and switchboards. The configuration of multiple rows (the array) can vary depending on the module technology, topography, spacing, mounting equipment, and other design criteria, which are subject to change during detailed design by the engineering, procurement, and construction (EPC) contractor. Each string of panels using the single-axis tracking system described below is expected to be separated by at least 10 to 15 feet of open space that will be either graveled (e.g., for access roads) or revegetated. Each string of panels using the fixed tilt tracking system described below is expected to be separated by approximately 25 to 30 feet. Spacing between strings of panels will depend on the racking configuration and manufacturer’s specifications, which will be determined during detailed design.

Figure 2 depicts the solar layout developed for purposes of analyzing impacts, using approximately 390,879 modules arranged in one-, two-, or three-string racks and 14,477 strings. Again, solar modules are proposed in both the Northern and Southern solar areas. The actual number of modules will vary depending on the module technology, energy output, spacing, mounting equipment, phase of the Facility, and other design criteria, which are subject to change during detailed design. The impact analysis throughout RFA 4 assumes all areas within the solar fence line for the Northern and Southern solar areas will be permanently impacted. See Section 4.4.3 for disturbance calculations.

#### *4.1.2.2 Racking Systems*

Strings of solar modules are expected to be mounted on fixed-tilt systems in the area formerly used for the BCP Ash Disposal Area and on single-axis tracker systems for all other areas where panels are proposed as part of RFA 4 (see Figure 2). The single-axis tracker system optimizes electricity production by rotating the solar modules to follow the path of the sun throughout the day.

### **Single-Axis Tracking System**

The length of each single-axis tracker string may vary by topography and the number of modules that the tracker can hold. The actual number of tracker systems and modules will depend on the racking system selected. The depicted layout in Figure 2 assumes 27 modules per one-string rack, 54 modules per two-string rack, and 81 modules per three-string rack. The drive unit for the tracking system can control a single row or multiple rows of modules through a series of mechanical linkages and gearboxes. As the solar modules tilt throughout the day, the height of their top edges will shift accordingly, anticipated to be approximately 9 to 12 feet in height from the ground surface. The visual impact analysis in this RFA 4 uses a maximum top edge height of 12 feet. Each set of modules are expected to be mounted approximately 5 feet off the ground on a single-axis tracker that rotates 60 degrees to the east and west. The tracker system and associated posts are expected to be specifically designed to withstand wind, snow, and seismic loads anticipated at the site.

### **Fixed Tilt System**

The length of each fixed tilt string may vary by topography and the number of modules that the racking can hold. The actual number of racking systems and modules will depend on the racking system selected. The depicted layout in Figure 2 assumes 54 modules per two-string rack. The top edge of the solar modules on the fixed tilt system is anticipated to be approximately 9 to 12 feet in height from the ground surface. The visual impact analysis in this RFA 4 uses a maximum top edge height of 12 feet. Each set of modules is anticipated to be mounted approximately 2 to 5 feet above the ground surface. The racking system and associated concrete ballast foundations for the fixed tilt system, are expected to be specifically designed to be compatible with the synthetic cap installed on the BCP Ash Disposal Area and to withstand wind, snow, and seismic loads anticipated at the site.

#### *4.1.2.3 Foundations*

### **Posts**

Each single-axis tracking string will be supported by multiple steel posts, which could be hollow steel sections, screw piles, or pile-type posts. Post depth could vary depending on soil conditions, but the posts are typically installed 5 to 9 feet below the surface and extend approximately 5 feet above grade. Posts at the end of tracker rows (exterior) are usually installed to greater depth to withstand acclimate weather including high wind conditions. In some soil conditions, concrete grouting may be used as backfill, as required. For the purposes of RFA 4, PGE assumes that approximately 72,000 posts will be installed for the single-axis tracker system and that all of the posts may require pre-drilling and/or concrete grouting as backfill. The actual number of posts and foundation installation method may vary depending on the final tracker system, ground coverage ratio, topography, height of the solar modules, and site-specific geological conditions. Post locations will be determined during detailed design of the tracker system and future geotechnical investigations.

### **Concrete Ballast**

Each fixed-tilt string is anticipated to be supported on concrete ballasted racking systems in the BCP Ash Disposal Area, as the disposal area is capped with a liner system(s). Therefore, direct-driven, post-style systems cannot be used. For the purposes of RFA 4, PGE assumes that approximately 9,750 posts will be installed and supported on concrete ballast for the fixed-tilt strings. The actual number of posts and foundation geometry may vary depending on the final racking system, ground coverage ratio, landfill topography, and height of the solar modules.

#### *4.1.2.4 Cabling*

The solar modules produce DC electrical current. Cables will collect and aggregate the DC before it is converted to AC by the inverters and sent to the proposed collector substation. Cables will connect to inverters via either a combiner box or a harness technology.

If combiner box technology is used, low-voltage cabling will connect the solar modules of each tracker string in parallel and combine at a single combiner box. Cabling from multiple combiner boxes will connect to a single inverter, which will convert the DC to AC and connect to the buried AC collection system. For example, the cabling system for the site plan shown on Figure 2 connects 27 modules in series per string, 54 modules (two strings), or 81 modules (three strings) per tracker rack, for approximately 660 combiner boxes. A larger DC cable will run between each combiner box and then to the module block inverter. This cable will hang underneath the modules. Cabling can be mounted to the tracker system, placed in cable trays, or buried. The buried cables associated with the solar array are located within the solar array fence line area and are included in the estimated total permanent impact associated with the solar array (i.e., no temporary impacts are calculated for buried cable inside the solar array fence line area).

Using harness technology involves an aboveground aluminum trunk system that combines the functionality of cable assemblies, combiner boxes, and fusing into one system. If harnesses are used, the amount of cabling will be similar to the amount of cabling used with combiner box technology, but the cables would be above ground, attached in parallel to the panel racking.

#### *4.1.2.5 Inverters*

The solar modules will be arranged into blocks, with each block connecting via collector lines to a modular inverter enclosure. In order to be sent to the electrical grid, the DC electrical current collected from the solar modules must be converted into AC electrical current before connecting to the proposed collector substation. Inverters convert DC to AC in accordance with electrical regulatory requirements. Inverters employ several advanced control systems, switching algorithms, and ancillary services for both the input and output stages. Low-voltage cabling will link each solar module to inverters. Each solar inverter will be positioned on the same concrete pad next to a step-up transformer. The combination of the inverters and transformers is sometimes referred to as a power conversion station (PCS). Figure 2 depicts a solar site plan with 44 PCS to convert the DC from the modules to AC. The final number of inverters will vary depending on the actual generation

output of the solar array. In addition to inverters proposed for the solar array, the BESS will include 58 inverters to convert DC power from each BESS to AC power. The inverters for solar and BESS are anticipated to be approximately 6 to 9 feet in height.

The inverter specification will comply with the applicable requirements and standards of the National Electric Code and Institute of Electrical and Electronics Engineers standards.

#### ***4.1.2.6 Inverter Step-Up Transformers***

The AC power from the inverters will be routed to inverter step-up (ISU) transformers. The ISU transformers will increase the output voltage from the inverter (typically 660 volts) to the collector substation feed voltage (34.5-kV AC). For the purposes of analysis, the site plan in Figure 2 shows 44 PCS. Each ISU transformer will contain approximately 640 gallons of mineral or biodegradable oil. From the step-up transformers, the AC electricity is aggregated via underground 34.5-kV cables to the underground collector lines (see Section 4.1.3 below). In addition to ISU transformers proposed for the solar array, the BESS will include 30 ISU transformers to increase the output voltage from the inverter (typically 660 volts) to the substation feed voltage (34.5-kV AC). The transformers for solar and BESS are anticipated to be approximately 6 to 10 feet in height.

One generator step-up (GSU) transformer is expected to be located at the proposed collector substation to step up power from 34.5 kV to 500 kV. See Section 4.1.3.2 for additional information on the collector substation.

### ***4.1.3 Related or Supporting Facilities***

Related or supporting facilities consist of 34.5-kV electrical collector lines; a proposed collector substation; connection from the proposed substation to the existing BCP transmission dead-end structure; BESS; an operations and maintenance (O&M) building; a communication and supervisory control and data acquisition (SCADA) system; service roads, perimeter fencing, and gates; and temporary construction area. As noted earlier, PGE is requesting flexibility for the solar modules and various associated equipment. Therefore, the following descriptions are based on the best available information at this time.

#### ***4.1.3.1 Collector Lines***

The transformers will connect the generation output of the solar modules to the high-capacity 34.5-kV collector lines, the majority of which will be within the solar perimeter fencing. The collector lines will carry power to the proposed collector substation.

The collector lines will be buried to a minimum of 3 feet, with junction splice boxes positioned intermittently along the lines for maintenance access. In this maximum footprint layout for analysis, approximately 25 miles of 34.5-kV collector line will be installed underground between the transformers and collector substation (Figure 2).

One segment of collector line will be installed aboveground. This segment will extend from the perimeter fence on the north side of the Southern Solar Area, along the eastern shore of the Carty Reservoir, to a point just south of the Northern Solar Area where the line will go back underground until entering the proposed collector substation (Figure 2). The aboveground segment will be approximately 1-mile long, in the center of a new 80-foot-wide right-of-way, using the support pole design approved for this same segment of line in RFA 1. The aboveground line will be constructed on direct buried wood poles with polymer post insulators in a delta configuration. The phase spacing and clearances will be established per PGE's standards for 115-kV sub-transmission lines. Each support pole will be buried up to approximately 12 feet in the ground and will extend to a height of up to approximately 70 feet above ground. Approximately 30 support poles will be installed, spaced approximately 140 feet apart, depending on specific site conditions.

The majority of the underground collector lines will be installed inside the Northern and Southern solar area fence lines. Again, all areas within the solar area fence lines are considered permanent impact (Figure 2). For the purposes of calculating impacts, for underground collector line segments that are outside of the solar fence lines, the Certificate Holder assumes a temporary impact corridor approximately 25 feet wide for trench installation. There will be permanent impacts only in the locations of the support poles for the aboveground segment described above. Aside from the pole footprints, there will be no permanent impacts associated with the collector line corridor for the aboveground segment. Installation of the aboveground segment will require installation areas around each pole location encompassing 80 feet by 100 feet of temporary impact. In addition, a 10-foot-wide temporary vehicle access path will be required from pole to pole along the entire 1-mile-long segment. Temporary impacts from collector line construction will be restored and revegetated following construction in accordance with the Amended Revegetation and Noxious Weed Control Plan (Exhibit P, Attachment P-2). Section 4.4.3 presents the temporary and permanent impacts of the collector lines where they are outside of the solar fence lines.

#### *4.1.3.2 Collector Substation*

Energy generated by the Amended Carty Solar Farm will be sent via the 34.5-kV collection system to the proposed collector substation. The new substation will step up the energy from 34.5-kV to 500-kV and then interconnect with the existing transmission system remaining from the BCP (Figure 2). The collector substation will be located in area formerly used for the BCP on the west side of the Northern Solar Area and next to the BESS. The substation will be approximately 3.2 acres of graveled and fenced area. The impact analysis throughout RFA 4 assumes the 3.2 acres within the substation fence line will be permanently impacted. See Section 4.4.3 for disturbance calculations.

The collector substation will have one GSU to step up the electrical output. Additional substation equipment may include a 34.5-kV switch, 34.5-kV feeder breakers, 500-kV breaker, 500-kV switch, surge arrestors, control enclosure, metering equipment, grounding, and associated control wiring. The height of specific pieces of equipment within the substation fence line will range between approximately 6 and 20 feet above the ground surface.

The collector substation is proposed adjacent to an existing electrical transmission dead-end structure for a 500-kV transmission line, which used to serve the BCP. The new substation will connect to the existing dead-end structure, which is 100 feet tall, via new lines that will be approximately 300 feet in length. On the existing dead-end structure, old switch components and operators will be replaced with new equipment, but there will be no modifications made to the structure. Once connected to the existing dead-end structure the energy will be conveyed through the existing BCP 500-kV transmission line to the existing Grassland Switchyard. From the Grassland Switchyard, electrical output from the Amended Carty Solar Farm will be routed to BPA's existing Slatt Substation through the existing 500-kV Grassland to Slatt transmission line (approximately 17 miles long).

#### *4.1.3.3 Battery Energy Storage System*

The precise scope of the BESS will be determined by the EPC contractor during detailed design prior to start of construction and is dependent on several factors, including but not limited to the availability and cost-effectiveness of suitable systems. As stated earlier, all technology described is preliminary and, while final design may differ, impacts will not exceed those analyzed in this RFA 4.

The BESS will be designed with the capability of storing up to 156 MW over a duration to be determined based on final design and technology, using Li-ion technology (see subsections below for a detailed description of the proposed BESS equipment). The components associated with 156 MW of BESS will include 264 containers, 44 inverters, and 22 ISU transformers. The batteries and associated equipment would be periodically augmented as needed to maintain 156 MW of energy storage capability over the life of the BESS (20 years), taking into account natural degradation of the batteries over time.

The augmentation will require an increase in the total quantity of containers, inverters, and transformers. Augmentation will result in up to 330 containers, 58 inverters, and 30 ISU transformers. Figure 2 shows the containers, inverters, and transformers associated with 156 MW and full augmentation. The impact analyses and modeling included throughout RFA 4 assesses the total number of BESS containers, inverters, and transformers associated with full augmentation.

PGE proposes to construct the BESS as a concentrated AC-coupled BESS park in a single location (see Figure 2). The system will use a series of modular containers. Each container will be placed on a concrete slab-on-grade foundation and the BESS park area is expected to be surfaced with stone aggregate. Each container will be approximately 33 feet in length, 6 feet in width, and 10 feet in height. The containers are rated for outdoor environments and holds the batteries and a battery management system. The Li-ion system includes a fire prevention system and cooling units placed either on top of the containers or along the side. See Section 4.1.4 below and Exhibit V for fire prevention and control methods.

At full augmentation, the AC-coupled BESS park will also include 58 inverters to convert DC power from each BESS to AC power and 30 transformers to increase the output voltage from the inverter to the substation feed voltage (34.5 kV AC).

Figure 2 shows that the containers and the associated inverters and transformers are grouped into three separately fenced areas within the BESS park. The total fenced area for BESS is approximately 6.2 acres, which is considered permanent disturbance. See Section 4.4.3 for temporary and permanent disturbance calculations.

### **Battery Type – Lithium-ion Batteries**

Currently, Li-ion batteries are the most common type of utility-scale BESS technology, although other technologies are used and are being developed. Li-ion batteries are a type of rechargeable battery where lithium ions, suspended in an electrolyte, move from negative to positive electrodes and back when recharging. A variety of chemistries fall under the “Li-ion” term, each with varying performance, cost, and safety characteristics (Energy Storage Association 2022). Li-ion batteries experience degradation of performance over their useful lifespan, which depends on several factors including battery technology, rate/number of charge and discharge cycles, and temperature. Li-ion batteries typically have an expected useful life of 20 years. Li-ion batteries are generally used in utility-scale applications when rapid, short-term (minute) deployments of power are needed. For example, Li-ion batteries can smooth the fluctuating generation from solar arrays, which can vary based on time of day and cloud cover, to deliver consistent and predictable power to the grid.

Li-ion battery systems are modular systems in which each module contains multiple smaller battery pouch cells. The cells are the primary containment for the gel or liquid electrolyte materials. The module containing the cells is relatively small, generally about the size of a desktop computer processor, and serves as leak-proof secondary containment. The cells are contained within a module, which is collected in a pack, and then wired into a string, and finally into the full modular unit. The quantities per modular unit could change based on the most current model procured for the Facility, but the general framework is typical for utility-scale Li-ion systems. Again, the BESS will be designed with the capability of storing up to 156 MW over a duration to be determined based on final design and technology.

### **Battery Energy Storage System Equipment**

The BESS design will include, but not be limited to, the following elements:

- BESS equipment, including batteries and racks or containers, inverters, isolation transformers, and switchboards;
- Balance of plant equipment, which may include medium-voltage and low-voltage electrical systems, HVAC or liquid cooling systems, building auxiliary electrical systems, and network/SCADA systems;
- Cooling system, which may include a separate chiller plant integrated into a purpose-built enclosure with the battery racks, chillers, pumps, and heat exchangers; and



- High-voltage (HV) equipment, including a step-up transformer, HV circuit breaker, HV current transformers and voltage transformers, a packaged control building for the HV breaker and transformer equipment, HV towers, structures, and HV cabling if underground or conductors if overhead.

The battery containers will be placed on slab-on-grade concrete foundations. Each container holds the batteries, a battery management system, and a fire prevention system. Cooling units will be placed either on top of the containers or along the side. By connecting multiple containers, the BESS can be scaled to the desired capacity during detailed design by the EPC contractor.

#### **Battery Energy Storage System Operations and Maintenance**

The batteries and other materials for the BESS will be manufactured off-site and transported to the Facility by truck. As applicable, defective or decommissioned parts will be disposed of or recycled in compliance with 49 Code of Federal Regulations (CFR) 173 Subpart E, which regulates the transportation of batteries.

The O&M activities typically consist of minimal procedures that do not require tampering with the battery cell components. For the purposes of analysis, it is assumed the Li-ion battery system could require replacement of the batteries on average every 20 years.

The BESS will be stored in completely contained, leak-proof modules, which will be inspected monthly according to the manufacturer's recommendations.

#### ***4.1.3.4 Operations and Maintenance Building***

One new O&M building is proposed to be approximately 20,000 square feet (0.5 acres) with additional area for parking, maneuvering, and buffer (Figure 2). The pre-fabricated metal building will include approximately 10,000 square feet of office space and 10,000 square feet of warehouse space. The building will be approximately 20 feet in height and resemble the other existing buildings in the Facility. The building will include parking, electricity, heating, ventilation, and air conditioning (HVAC), potable water, and a sewer connection for toilets. The potable water will be obtained from the Facility's existing potable water system, with an expected usage of approximately 250 gallons per day (gpd). The potable water is supplied by an existing well located within the Approved Site Boundary. The sanitary sewer will be collected and treated by the Facility's existing sanitary septic system. Once the number of additional employees is determined, if the existing system capacity is not sufficient a septic system alteration permit would be obtained from the Umatilla County Public Health Department, which issues alteration permits for septic systems in Morrow County, to increase the capacity of the existing septic system..

#### ***4.1.3.5 Communication and SCADA System***

A communication system consisting of fiber optic and copper communication lines will connect the solar areas, BESS, and substation to the SCADA control rooms and to the internet service provider. The control rooms located within the proposed O&M building and proposed collector substation

will have the capability of communicating with the existing CGS control room and with PGE offices in Portland.

These communication lines as well as the on-site sensors will be buried or overhead within a cable management system. Where buried, the communication lines are placed above the collector lines in the same trench and, where overhead, run alongside the collector lines/conductors. This communication system allows each solar string, BESS, and the substation to be monitored by a SCADA system, in the control rooms or PGE Portland offices as described above. This system monitors these components for variables such as meteorological conditions, critical operating parameters, and power output. The solar array is controlled and monitored via the SCADA system, and can be controlled remotely. SCADA software is tuned specifically to the needs of each project by the solar module manufacturer or a third-party SCADA vendor. This system will be monitored 24 hours per day, 7 days per week.

#### *4.1.3.6 Internal Access Roads, Perimeter Fencing, and Gates*

The Amended Carty Solar Farm will utilize existing access roads to the extent practicable. The Amended Carty Solar Farm will be accessed from U.S. Interstate 84 (I-84), which generally runs east to west approximately 10 miles to the north. From I-84, construction and operations personnel will travel south on Tower Road and then into the Facility site along existing access roads. Once constructed, the Northern and Southern solar areas will include new internal access roads. Approximately 9.9 miles of new access roads are expected to be constructed within the solar perimeter fencing to access infrastructure (see Figure 2). Existing roads outside the solar areas are not anticipated to require improvements or alterations.

All newly constructed roads within the solar areas will be graveled to meet load requirements for all equipment. These internal access roads are expected to be approximately 14 feet in width.

The locations of specific access points and gates will depend on the final configuration of the solar areas and related infrastructure. The perimeter fencing will have lockable vehicle access gates, a minimum of four access gates total (three gates for the Northern Solar Area and a minimum of one gate for the Southern Solar Area); additional gates may be included for emergency exits or for removal of wildlife. Chain-link perimeter fencing, up to 8 feet in height, will enclose each of the two solar areas and the BESS park as shown on Figure 2. Chain-link perimeter fencing, up to 11 feet in height, will enclose the proposed collector substation. The top of the fencing for the solar areas, BESS, and proposed substation will include an additional 1-foot of razor or barb wire. The length of proposed fence will total approximately 14.7 miles (77,794 feet) of fence.

#### *4.1.3.7 Temporary Construction Area*

During construction, one temporary construction area (laydown area) will be used to support construction, store supplies and equipment, and facilitate the delivery and assembly of materials and equipment (Figure 2). The construction area is approximately 21.4 acres and may contain up to five temporary aboveground 1,000-gallon diesel tanks located within designated secondary containment areas. Depending on the pre-existing ground surface conditions, the construction area will consist of either a crushed gravel surface that will be removed following construction, crushed

gravel surface that will remain following construction because that was the pre-existing surface condition, or vegetation that is left in place for which the need to revegetate would be evaluated following construction. Additional temporary construction areas may be used as determined by the EPC, but these would be within the solar areas considered permanent disturbance; therefore, maximum impact is evaluated in RFA 4.

#### **4.1.4 Other Systems and Information**

##### **4.1.4.1 Fuel and Chemical Storage**

The Amended Carty Solar Farm will not require fuel or chemicals for the generation of electricity. During construction, small quantities of a few hazardous materials may be utilized or stored in the temporary construction yards. Such materials may include herbicides, insecticides, paint, cleaners, or solvents. None will be present in substantial, reportable quantities, and all materials will be handled in accordance with state and federal standards. When not in use these would be stored in a secure location within the temporary construction yards.

Fuels would be the only hazardous material that may be stored in substantial quantities on-site during construction. The Certificate Holder anticipates that up to 5,000 gallons of diesel fuel may be kept on-site for fueling of construction equipment. The diesel fuel will be stored in up to five 1,000-gallon temporary, aboveground tanks in the temporary construction area, within an area that provides for secondary containment. Secondary containment and refueling procedures for on-site fuel storage will follow the Spill Prevention, Control, and Countermeasure (SPCC) Plan. Secondary containment will be compliant with requirements in 40 CFR §112.7(c), which requires secondary containment for all aboveground, buried, and partially buried containers. Fuels would be delivered to the temporary construction yards by a licensed specialized tanker vehicle. The fuel tanks are expected to be filled once per month.

There will be no substantial quantities of lubricating oils, hydraulic fluid for construction equipment, or other hazardous materials maintained on-site during construction. Lubricating oil or hydraulic fluids for construction equipment will be brought in on an as-needed basis for equipment maintenance by a licensed contractor using a specialized vehicle, and waste oils removed by the same maintenance contractor. Dielectric oils for the transformers will similarly arrive on an as-needed basis and transferred into the receiving components, such that none would be stored on-site. Potentially hazardous substances will not be permanently present within the construction areas in quantities that exceed Oregon State Fire Marshal Reportable Quantities (see Exhibit G).<sup>10</sup>

During operations, qualified oil-filled equipment, including the substation GSU transformer, will contain oil. The ISU transformers will contain biodegradable oil.

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<sup>10</sup> "Reportable quantity" refers to the amount of hazardous substance that has to be released into the environment before the U.S. Environmental Protection Agency requires notification of the release to the National Response Center pursuant to the Comprehensive Environmental Release, Compensation, and Liability Act, also known as Superfund. These numerical designations are listed under 49 Code of Federal Regulations 172.101 Appendix A, Table 1 and Table 2.

The primary chemical storage during operations is expected to be the GSU transformer in the substation, which will use oil for cooling. The GSU transformer is expected to be a ground-mounted unit constructed on a concrete pad with secondary spill containment traps designed to minimize the possibility of accidental leakage. The concrete catchment system is typically sized to contain the amount of oil inside the transformer plus deluge water and required freeboard. Transformers typically use mineral oil or seed oil that is considered nontoxic. Transformer coolant does not contain polychlorinated biphenyls (PCBs) or compounds listed as extremely hazardous by the U.S. Environmental Protection Agency (EPA). The small quantity and nontoxic nature of the oils combined with the fact that the transformer is expected to be included in secondary containment on a concrete pad will minimize risk effects of potential spills on soil. In the unlikely event of a spill, PGE will follow response measures outlined in its construction or operations SPCC Plan. As part of this plan, equipment containing oil or hazardous materials will be regularly monitored for leaks, and measures will be put in place if any are found to quickly control and remove spills. ISU transformers will use smaller quantities of biodegradable oil and will not require secondary containment.

Small quantities of lubricants, degreasers, herbicides, or other chemicals may be stored in the proposed O&M building. Storage of these chemicals will follow label instructions. No underground storage tanks are expected to be installed at the proposed O&M building. No extremely hazardous materials (as defined by 40 CFR 355) are anticipated to be produced, used, stored, transported, or disposed of for the Amended Carty Solar Farm during operations.

While not considered an extremely hazardous material, electrolyte solution will be contained within the BESS for the Li-ion battery technology. Li-ion battery systems are modular systems that contain multiple smaller battery cells. The cells are the primary containment for the gel or liquid electrolyte materials. The module containing the cells is relatively small, generally about the size of a desktop computer processor, and serves as leak-proof secondary containment. Modules are placed in anchored racks within the steel containers. The risk of leaking is very low because battery cells are hermetically sealed. Electrolyte can only escape (as vapor) in the unlikely case that a battery cell ruptures, though it would be contained in the BESS steel container. Note that used Li-ion batteries can sometimes be considered hazardous waste by the EPA and will be disposed of according to the most current guidelines at end of life. See Section 4.1.3.3 for additional description and discussion of the BESS.

As further described in Exhibit G, PGE will prepare and maintain an SPCC Plan to outline preventative measures and practices to reduce the likelihood of an accidental spill, and to expedite the response to and remediation of a spill, should one occur.

#### *4.1.4.2 Fire Prevention and Control*

Exhibit V provides information on wildfire risks and prevention and describes the Certificate Holder's existing Wildfire Mitigation Plan. This section provides a summary of these topics.

Solar facilities do not pose a significant fire risk. The greatest risk of fire is during construction, when welding and metal cutting will take place, and vehicles and construction equipment may be used in areas of tall, dry grass. In order to prevent fires from occurring, the construction contractor will implement a number of systems and procedures. These will include requirements to conduct welding or metal cutting only in areas cleared of vegetation, and to keep emergency firefighting equipment on-site. Construction workers will keep vehicles on roads during the dry months of the year, unless offroad activities are required for emergency purposes, in which case fire precautions will be observed. Construction workers will be prohibited from parking vehicles in areas of tall, dry vegetation to prevent fires caused by contact with hot mufflers or catalytic converters. Fire extinguishers and shovels will be kept in all vehicles. In the event of a large fire, emergency responders will be dispatched.

Fire prevention specific to solar arrays is dependent on proper installation and maintenance of electrical equipment to prevent short-circuits and consequent sparking, and reduction in fuel to reduce the chance of fire spreading. PGE will employ qualified employees to install and maintain electrical equipment. The solar array will have shielded electrical cabling, as required by applicable code, to prevent electrical fires. All electrical equipment will meet National Electrical Code and Institute of Electrical and Electronics Engineers standards and will not pose a significant fire risk. With proper maintenance and safety checks, the electrical collection system and 300-foot-long transmission line are unlikely to cause a fire. The substrate on the ground inside the solar array fence line will be gravel where needed for maintenance and access roads or where gravel already exists, and vegetation where gravel isn't needed or already present. Weeds will be managed in accordance with the weed management procedures described in the Amended Revegetation and Noxious Weed Control Plan (see Exhibit P, Attachment P-2). Additional fire prevention and response measures for the Facility as a whole—including best management practices related to worker activities, maintenance of fire suppression equipment, and coordination with the local fire district—are described in Exhibit U.

The existing roads providing access to and throughout the Facility, as well as new roads proposed within the Northern and Southern solar area fence lines, are sufficiently sized for emergency vehicle access in accordance with 2019 Oregon Fire Code requirements, including Section 503 and Appendix D - Fire Apparatus Access Roads. Specifically, the new roads proposed within the solar area fence lines will be 14 feet in width. The areas immediately around the O&M building, proposed substation, and BESS will be graveled, with no vegetation present. See Exhibit U for additional discussion of fire prevention measures and coordination with local emergency responders.

Smoke/fire detectors will be placed around the site and tied to the SCADA system and will contact local firefighting services. The proposed O&M building will have basic firefighting equipment for use on-site during maintenance activities, such as shovels, beaters, portable water for hand sprayers, fire extinguishers, and other equipment.

### **Battery Energy Storage System**

The following paragraphs summarize the information pertinent to fire prevention and control for a BESS with Li-ion technology.

The chemicals used in Li-ion batteries are nontoxic but do present a flammability hazard. Li-ion batteries are susceptible to overheating and require cooling systems dedicated to each BESS enclosure, especially at the utility scale (LAZARD 2021). The gas released by an overheating Li-ion cell is mainly carbon dioxide. The electrolyte solution, usually consisting of ethylene or propylene, may also vaporize and vent if the cell overheats (Battery University 2022).

The Certificate Holder will implement the following fire prevention and control methods to minimize fire and safety risks for the Li-ion batteries proposed for the BESS:

- The batteries will be stored in completely contained, leak-proof modules.
- The lithium-ion battery system will be kept in a temperature-controlled facility with individual battery modules isolated to prevent the spread of fire if it were to occur.
- Ample working space will be provided around the battery energy storage system for maintenance and safety purposes.
- 24-hour monitoring of the BESS will be implemented and will include shutdown capabilities.
- Transportation of Li-ion batteries is subject to 49 CFR 173.185 – Department of Transportation Pipeline and Hazardous Material Administration. This regulation contains requirements for prevention of a dangerous evolution of heat, prevention of short circuits, prevention of damage to the terminals, and prevention of batteries coming into contact with other batteries or conductive materials. Adherence to the requirements and regulations, personnel training, safe interim storage, and segregation from other potential waste streams will minimize any public hazard related to transport, use, or disposal of batteries.
- Design of the BESS will be in accordance with applicable Underwriters Laboratories (UL 2023; specifically, 1642, 1741, 1973, 9540A), National Electric Code, and National Fire Protection Association (specifically 855) standards, which require rigorous industry testing and certification related to fire safety and/or other regulatory requirements applicable to battery storage at the time of construction.
- Additionally, the Certificate Holder will employ the following design practices, as applicable to the available technology and design at time of construction:
  - Use of Li-ion phosphate battery chemistry, which is a more thermally stable Li-ion cathode chemistry;
  - Employment of an advanced and proven battery management system;
  - Qualification testing of battery systems in accordance with UL 9540A (Revision 4);

- Installation of fire sensors, smoke and hydrogen and/or CO detectors, alarms, emergency ventilation systems, cooling systems;
- Employment of fire control panels with 24-hour battery backup;
- Installation of doors that locked with restricted access to authorized personnel only;
- Installation of thermal insulation sheets between each individual battery cell;
- Implementation of locks and fencing to prevent entry of unauthorized personnel;
- Installation of remote power disconnect switches; and
- Clear and visible signs to identify remote power disconnect switches.

### ***4.1.5 Construction Schedule***

Construction is planned to begin in Q4 of 2025 (mobilization) and continue through Q4 of 2027 for a duration of approximately 24 months. Additional engineering and geotechnical investigations may occur prior to issuance of the Amended Site Certificate. As defined in ORS 469.300(6), surveying and exploration activities (such as geotechnical investigations) are excluded from the definition of construction work. No other construction work is anticipated to begin prior to issuance of the Amended Site Certificate.

#### ***4.1.5.1 Construction Schedule Amendment Request***

Existing Site Certificate Condition 4.1(ii) in the Third Amended Site Certificate requires that construction of the 50-MW Carty Solar Farm begin by February 4, 2025 (Council 2022). This construction commencement date was set through a prior extension approved by the Council for the 50-MW Carty Solar Farm with the Third Amended Site Certificate. Per OAR 345-027-0385(4), certificate holders are permitted to request two amendments to extend the deadline for beginning construction of a facility or portions of the facility. However, as described below the Certificate Holder is not submitting RFA 4 as a request for amendment to extend construction deadlines under OAR 345-027-0385; therefore, the extension limits within OAR 345-027-0385 are not triggered by RFA 4.

The Third Amended Site Certificate currently allows the construction of up to 50 MW of solar energy generation on approximately 315 acres south of the Carty Reservoir (Council 2022). With RFA 4, the Certificate Holder proposes a complete reconfiguration of solar modules, meaning there is complete distinction between the approved 50 MW and the proposed 185 MW. Analysis provided in RFA 4 is for the entire 185-MW solar farm, not just the additional 135 MW. In addition, the BESS is proposed to improve the reliability of the renewable energy provided by the solar energy generation components. Therefore, the Certificate Holder requests if the Council approves RFA 4, any authorization to build the previously approved 50-MW solar farm would be terminated and a new uniform construction commencement deadline be applied to this new solar and BESS project within the overall Facility. As is standard for initial construction commencement deadlines, the Certificate Holder requests three years from the effective date of the Fourth Amended Site

Certificate, and a construction completion deadline six years from the effective date of the Fourth Amended Site Certificate.

Condition 4.1(ii) and 4.2(ii) are proposed to be modified as follows:

4.1. *The certificate holder shall:*

\*\*\*

ii *Begin construction of the Carty Solar Farm **within three years after the effective date of the amended site certificate, or MONTH DAY, 20XX. Under OAR 345-027-037(11) the amended site certificate is effective upon execution by the council Chair and the certificate holder ~~by February 4, 2025.~~***  
[AMD1; AMD3; AMD4]

4.2. *The certificate holder must:*

\*\*\*

ii *Complete construction of the Carty Solar Farm **within six years of the effective date of the amended site certificate, or MONTH DAY, 20XX ~~by February 4, 2028.~~** The certificate holder shall promptly notify the Department of the date of completion of construction of the Carty Solar Farm and its supporting facilities.*  
[AMD1; AMD3; AMD4]

## **4.2 Effect of Proposed Changes on the Facility – OAR 345-027-0360(1)(b)(A)** ***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

\*\*\*

*(b) A detailed description of the proposed change, including:*

*(A) A description of how the proposed change affects the facility;*

The approved Facility includes 50 MW of solar energy generation. RFA 4 proposes to increase the output from solar energy generation at CGS from 50 MW to approximately 185 MW by expanding into areas formerly used for the BCP and maximizing use of the buildable area on PGE-owned property southeast of Carty Reservoir. The proposed changes will increase the amount of renewable energy generated at CGS proposed mainly through reuse of areas formerly occupied by the coal power plant, and with the addition of BESS, will maximize reliability and customer value, to deliver energy and capacity to PGE customers and to help achieve Oregon’s ambitious decarbonization targets.



As detailed in the following sections and in the attachments, the proposed changes will not result in any significant impacts to resources. In most cases, impacts to resources resulting from the proposed changes will be similar to what has already been approved for the Facility.

The Certificate Holder can still comply with all Site Certificate Conditions previously adopted by the Council for the Facility with the changes proposed in Attachment 1. Ultimately, the proposed changes will maximize use of the latest technology to minimize impacts, while supporting renewable energy production in the region and helping the state meet its renewable energy goals.

A summary of proposed changes to the Facility is provided in Table 1, most significant of which are increases in the following: permanent and temporary acreages used for solar energy generation, solar modules, inverters, and step-up transformers. The changes result in a reduction in the mileage of aboveground transmission line and include the addition of BESS.

### **4.3 Applicable Laws and Council Rules – OAR 345-027-0360(1)(b)(B)**

#### ***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

*\*\*\**

*(b) A detailed description of the proposed change, including:*

*(B) A description of how the proposed change affects those resources or interests protected by applicable laws and Council standards, and*

In general, the proposed changes for RFA 4 do not affect the resources or interests protected by applicable laws and Council standards in a substantially different way than what the Council already approved for the Facility. The Certificate Holder has reviewed and considered current local, state, and federal law in developing the layout proposed with RFA 4. No laws were identified that would prohibit the proposed changes requested in RFA 4. Compliance with applicable laws is integrated into the existing and proposed modified Site Certificate Conditions, including conditions related to pre-construction biological surveys, preparation of an archaeological monitoring plan, the National Pollutant Discharge Elimination System (NPDES) 1200-C permit, and consultation with the Oregon Department of Fish and Wildlife and Department of Geology and Mineral Industries, among others. The proposed changes do not alter the Certificate Holder's ability to comply with the Site Certificate Conditions for the Facility except as noted in the exhibits (Attachment 4) and the proposed condition modifications (Attachment 1). Ultimately, although the Facility may be operated in a different manner than previously approved by the Council as a result of RFA 4, substantial changes to the Third Amended Site Certificate are not necessary to incorporate and meet Council standards and other applicable laws. The exhibits provided in Attachment 4, further demonstrate how the proposed changes would continue to comply with Council standards and are consistent with the Council's previous findings for the Facility.

#### **4.4 Location of the Proposed Change – OAR 345-027-0360(1)(b)(C)**

##### ***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

\*\*\*

*(b) A detailed description of the proposed change, including:*

*(C) The specific location of the proposed change, and any updated maps and/or geospatial data layers relevant to the proposed change;*

The Facility description in Sections 4.4.1 through 4.4.3 below is included as required to meet the submittal requirements of OAR 345-021-0010(1)(c), paragraphs (A) through (C). OAR 345 Division 22 does not provide an approval standard specific to Exhibit C.

##### **4.4.1 Facility Location**

The Facility continues to be located entirely in rural Morrow County, approximately 13 miles southwest of Boardman, Oregon, as shown on Figure 1. The Facility is located in the following Public Land Survey System sections: Township 2 north, Range 24 east, Sections 2, 3, 4, 5, 8, 9, 10, and 11; and Township 3 north, Range 24 east, Sections 32, 33, 34, and 35, Willamette Meridian. The Certificate Holder proposes to add approximately 252 acres of land to the Approved Site Boundary by expanding to include areas previously used for the BCP. However, the increase in area does not result from expanding the outer limits of the Approved Site Boundary. Sections 1.2 and 4.0 describe the Certificate Holder's more specific plans for the proposed changes within the Site Boundary.

##### **4.4.2 Specific Location of Major and Supporting Facilities**

The following figures show the specific location of the major and supporting facilities proposed with RFA 4.

- Figure 1 is a vicinity map showing the location of the Facility in relation to nearby cities and towns, county boundaries, public roads, and other geographic features.
- Figure 2 provides the preliminary site plan for RFA 4 and is the basis for the permanent and temporary disturbance calculations in Table 2.
- Figure 3 displays the proposed changes to the Approved Site Boundary for the Facility, which constitute the Amended Site Boundary, as well as the Site Boundary used for RFA 4 evaluation.
- Figure 4 shows the location of the Facility in relation to other energy generation facilities that are known to be permitted at the state or local level within 10 miles of the Amended Site Boundary.

Updated geospatial data layers used to create the maps in RFA 4 will be provided to ODOE on request.

#### ***4.4.3 Permanent and Temporary Disturbance Areas***

Table 2 provides a maximum impact scenario for permanent and temporary disturbances associated with RFA 4, as well as any assumptions used to calculate these impact amounts. The individual component disturbance areas (for solar areas, BESS, temporary construction area, etc.) were calculated using preliminary design data and represent the Certificate Holder's best estimate of preliminary impacts for each component. Because this analysis uses the largest anticipated footprint, the final equipment and layout selected will not exceed the impacts analyzed.

Table 2 presents the impact by disturbance type. However, some disturbance types may overlap by the nature of their development. Therefore, the last row in the table provides the disturbance area with any development overlap removed. For purposes of analysis, the Certificate Holder considered a total solar area that will occupy approximately 849.7 acres enclosed within the two separately fenced areas, using the proposed solar technology. This entire solar area is considered permanently disturbed and includes all solar components (i.e., modules, inverters, transformers, tracking systems, posts, underground collector lines, internal access roads, and other associated equipment). All other permanent impacts are listed as separate line items and include permanent impacts from the collector substation, BESS, aboveground collector line poles, and O&M building. Any temporary disturbance impacts will only occur outside of the perimeter fencing for the solar areas, BESS, and collector substation and include temporary impacts from the underground collector lines, aboveground collector line, installation of perimeter fencing, construction of the O&M building, and use of the temporary construction area. This layout represents the maximum scenario for purposes of analyzing land use and habitat impacts.

**Table 2. Permanent and Temporary Disturbances**

| Disturbance Type                                 | Permanent<br>(Acres) | Temporary<br>(Acres) |
|--|----------------------|----------------------|
| Solar Areas (Northern and Southern) <sup>1</sup> | 849.7                | 4.9                  |
| Underground 34.5-kV Collector Lines <sup>2</sup> | 0                    | 4.5                  |
| Aboveground 34.5-Collector Line <sup>3</sup>     | 0.005                | 6.3                  |
| Collector Substation <sup>4</sup>                | 3.2                  | 0.2                  |
| Battery Energy Storage System <sup>5</sup>       | 6.2                  | 0.6                  |
| O&M Building <sup>6</sup>                        | 0.9                  | 0.5                  |
| Temporary Construction Area <sup>7</sup>         | 0                    | 21.4                 |
| <b>TOTAL<sup>8</sup></b>                         | <b>859.9</b>         | <b>37.2</b>          |

1. Permanent disturbance includes all area inside the perimeter fence for both the Northern and Southern solar areas (Northern is 357.9 acres; and Southern is 491.8 acres). Temporary disturbance is for installation of the solar area fence line and assumes a 6-foot temporary disturbance corridor on the outer side of the fence multiplied by the linear footage of fence for temporary workspace to install the fence. Assumes an approximate total of 71,808 feet of solar fence.
2. Temporary disturbance assumes a 25-foot temporary disturbance corridor for all collector line located outside the solar perimeter fence to accommodate trench width, vehicle traffic, and equipment laydown.
3. Permanent disturbance assumes 30 poles for the 1-mile segment of aboveground collector line, with a 3-foot-diameter permanent disturbance area around each pole. Temporary disturbance assumes 30 poles, with an 80-foot by 100-foot temporary disturbance area around each pole and a 10-foot-wide temporary vehicle access path along the entire 1-mile-long segment.
4. Permanent disturbance includes all area inside the perimeter fence for the proposed collector substation. Temporary disturbance is for the installation of the substation fence line and assumes a 6-foot temporary disturbance corridor on the outer side of the fence multiplied by the linear footage of fence for temporary workspace to install the fence. Assumes an approximate total of 1,472 feet of substation fence. The acreage within the fence includes the 300-foot-long line connecting the proposed substation to the existing dead-end structure to the existing 500-kV transmission line, both remaining from the Boardman Coal Plant.
5. Permanent disturbance includes all area inside the perimeter fence for the BESS park. Temporary disturbance is for the installation of the BESS fence line area and assumes a 6-foot temporary disturbance corridor on the outer side of the fence multiplied by the linear footage of fence for temporary workspace to install the fence. Assumes an approximate total of 4,514 feet of BESS fence.
6. Permanent disturbance for 20,000 square foot building (permanent disturbance includes additional area for parking, maneuvering, and buffer. Temporary disturbance is for construction of the building and assumes a 25-foot temporary disturbance corridor located around the permanent disturbance footprint.
7. Temporary disturbance for one central construction area. No permanent disturbance, the construction area will be reclaimed following construction. Additional temporary construction areas may be used as determined by the EPC, but these would be within the solar areas and are already accounted for as permanent disturbance.
8. Totals eliminate any overlap of features (e.g., overlapping temporary workspace, disturbance types within fence line(s), etc.).

## **5.0 Division 21 Requirements – OAR 345-027-0360(1)(c)**

### ***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

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*(c) References to any specific Division 21 information that may be required for the Department to make its findings;*

The Certificate Holder has addressed applicable specific Division 21 information in response to Division 27 requirements and in exhibits included in Attachment 4. Exhibit labeling reflects the requirements of OAR 345-021-0010. However, not all exhibits apply to solar and BESS so some are not included (see Table 3).<sup>11</sup>

**Table 3. Division 21 List of Exhibits for RFA 1**

| <b>Exhibits</b>   |   |
|---|---|
| A – Applicant Information (See Sections 3.0, 5.1-5.3)               | P – Fish and Wildlife Habitats and Species          |
| B – Project Description (See Section 4.0)                           | Q – Threatened and Endangered Species               |
| C – Property Location and Maps (See Section 4.4)                    | R – Scenic Resources                                |
| D – Organizational Information (See Section 5.3)                    | S – Historic, Cultural, and Archeological Resources |
| E – Permits Needed for Construction and Operation (See Section 5.4) | T – Recreation                                      |
| F – Property Ownership (See Section 8.0)                            | U – Public Services                                 |
| G – Material Analysis   | V – Wildfire Prevention and Risk Mitigation         |
| H – Geologic Hazards Evaluation                                     | W – Waste Management                                |
| I – Soil Evaluation   | X – Site Restoration                                |
| J – Wetlands and Other Jurisdictional Waters                        | Y – Noise   |
| K – Land Use  | AA – Electric and Magnetic Fields                   |
| L – Protected Areas   | CC – Additional Statutes, Rules, and Ordinances     |
| M – Financial Analysis  | DD – Specific Standards                             |
| O – Water Use   |   |

<sup>11</sup> Exhibits not applicable to RFA 4 are Exhibit N – Non-generating Facility Information, Exhibit Z – Cooling Towers, and Exhibit BB – Other Information.

Together, this document and the exhibits provide the necessary information for ODOE to make its findings, and based on those findings, that the Council can find that the Facility, as proposed, continues to comply with the requirements of the Oregon Energy Facility Site Statutes, ORS 469.300 to 469.520.

### **5.1 Other Participants – OAR 345-021-0010(1)(a)(B)**

No other participants are anticipated at this time, with the exception of potential third-party permits that will be obtained by the construction firm for build-out of the Amended Carty Solar Farm. These third-party permits include permits for construction materials, transporting materials to the site, and other building-related permits that are typically obtained immediately prior to construction activities. See Section 5.4.3 for all anticipated third-party permits.

### **5.2 Other Affiliations – OAR 345-021-0010(1)(a)(C) through (F)**

The Portland General Electric Company is a corporation and the information required by OAR 345-021-0010(1)(a)(C) is provided in Section 3.0. The information required by OAR 345-021-0010(1)(a)(D) through (F) is not applicable to PGE.

### **5.3 Organizational Expertise – OAR 345-021-0010(1)(d)**

PGE is a fully integrated energy company based in Portland, Oregon, serving over 900,000 customers in 51 cities. PGE generates electricity from plants it owns, and purchases power on the wholesale market. PGE operates wholly and jointly owned hydroelectric, natural gas, wind, and solar generating plants. For over 130 years, PGE has been delivering energy to residents of the state of Oregon. PGE has significant experience in constructing, supervising the construction of, and operating generation projects.

The Council previously found that the Certificate Holder has the ability to design, construct, operate, and retire the Carty Solar Farm, in compliance with all Council standards and conditions, as required by the Organizational Expertise standard.<sup>12</sup> The standards under OAR 345-022-0010<sup>13</sup> have not changed since the Final Orders on Amendment 1 and 3. Specifically, the Council found that the Certificate Holder has demonstrated, through construction of previous energy facilities, that it is capable of designing and constructing the Carty Solar Farm in compliance with Site Certificate Conditions.<sup>14</sup> When the Third Amended Site Certificate to the CGS was approved by the Council, the Certificate Holder operated a combination of six natural gas facilities, seven hydro-electric facilities, three wind facilities, and five solar facilities with a nameplate capacity of approximately 9 MW<sup>15</sup> (see Table 4 below). In Exhibit D to RFA 1 and Section 6.2 in RFA 3, the Certificate Holder also

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<sup>12</sup> Final Order on Request for Amendment 1, p. 20 and 21 (December 2018).

<sup>13</sup> Oregon Administrative Rules Database. Available at: <https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=77076>.

<sup>14</sup> Final Order on Request for Amendment 1, p. 19 (December 2018), and Final Order on Request for Amendment 3, p. 13 (July 2022).

<sup>15</sup> Request for Amendment 3 to the Site Certificate, p. 12 (June 2022), and Final Order on Request for Amendment 3, p. 12 (July 2022).

identified violations and citations issued between 2010 and 2017 in RFA 1 and from December 2017 to January 2022 in RFA 3 in constructing or operating a facility, type of equipment, or process similar to the proposed facility.<sup>16</sup> These violations were promptly identified and resolved immediately. None of the violations were issued by the Council or to CGS. In Section 6.2 in RFA 3, the Certificate Holder identified violations and citations issued between December 2017 to January 2022; the Certificate Holder had one warning letter issued in constructing or operating a facility, type of equipment, or process similar to the Carty Solar Farm and implemented corrective actions immediately.<sup>17</sup> For these reasons, the Council found that the Certificate Holder demonstrated the ability to construct and operate the Carty Solar Farm in compliance with existing and amended Site Certificate Conditions.<sup>18</sup>

For the period from January 2022 to January 2024, PGE was issued one pre-enforcement notice by the Oregon Department of Environmental Quality (ODEQ) for the Biglow Canyon Wind Farm for releases of oil. The pre-enforcement notice was a follow-up to an inspection conducted by ODEQ on April 12, 2023, at the request of ODOE. PGE responded to ODEQ within the requested timeframe and provided evidence that the oil releases observed during the inspection had been cleaned up prior to receiving the pre-enforcement notice by replacing the gravel at affected wind turbine gravel pads. The response to ODEQ was provided to ODOE, and PGE provided on October 13, 2023, a report in the format required by OAR 345-029-0010(3) at ODOE's request. The pre-enforcement notice was referred to ODEQ enforcement for potential enforcement action; to date ODEQ has taken no enforcement action regarding the pre-enforcement notice.

The proposed amendments to Conditions 4.1(ii) and 4.2(ii) to establish new construction start and completion deadlines for the Carty Solar Farm do not alter the organizational expertise needed for the Certificate Holder to comply with Council standards and conditions of the Site Certificate. Table 4 lists major projects that PGE currently operates. Since the Council's approval of Amendment 1 in December 2018,<sup>19</sup> the Certificate Holder has added one new wind resource, Wheatridge Renewable Energy Facility I, to their energy generation portfolio and retired one coal facility from their energy generation portfolio.

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<sup>16</sup> Revised Request for Amendment 1, Exhibit D, p. D-4 (February 2018), Request for Amendment 3 to the Site Certificate, p. 12 (June 2022).

<sup>17</sup> Request for Amendment 3 to the Site Certificate for the Carty Generating Station, p. 13 (February 2022), Request for Amendment 3 to the Site Certificate, p. 12 (June 2022).

<sup>18</sup> Final Order on Request for Amendment 1, p. 20 (December 2018) and Final Order on Request for Amendment 3, p. 13 (July 2022).

<sup>19</sup> Final Order on Request for Amendment 1 (December 2018).

**Table 4. Portland General Electric Company's Generation Facilities**

| <b>Project Name (Commercial Operation Date)</b>            | <b>Technology</b>  |
|--|--|
| 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 Turbine |
| Beaver Unit 8 (2001)                                       | Natural Gas Simple-Cycle Combustion Turbine                      |
| Coyote Springs Unit 1 (1995)                               | Natural Gas and Distillate Oil Combined-Cycle Combustion Turbine |
| Faraday (1907/1958)  | Hydroelectric  |
| North Fork (1958)  | Hydroelectric  |
| Oak Grove (1924)   | Hydroelectric  |
| River Mill (1911/1952)                                     | Hydroelectric  |
| Sullivan (1895)  | Hydroelectric  |
| Round Butte (1964)   | Hydroelectric (jointly owned)                                    |
| Pelton (1957)  | Hydroelectric (jointly owned)                                    |
| Wheatridge Renewable Energy Facility I (2018) <sup>1</sup> | Wind   |
| Tucannon River Wind Farm (2014)                            | Wind   |
| Biglow Canyon Wind Farm (2007, 2009, and 2010)             | Wind (Phases I, II, and III)                                     |
| Portland Public Schools (2015)                             | Solar  |
| Baldock Solar Station (2012)                               | Solar  |
| Sunway 3 (2010)  | Solar  |
| Sunway 2 (2009)  | Solar  |
| Sunway 1 (2009)  | Solar  |
| <b>Retired After Amendment 1</b>                           |  |
| Boardman Coal Plant (1980/retired 2020)                    | Coal (jointly owned)   |
| 1. Added since Amendment 1.                                |  |



The Certificate Holder has not received any regulatory citations for any solar facilities. The CGS is currently operated in compliance with its respective Site Certificate Conditions and in a manner that protects public health and safety. Given the Certificate Holder's successful expansion of their renewable energy generation portfolio, their successful operation of the CGS in compliance with Site Certificate Conditions, their demonstrated ability to restore the Carty Solar Farm to a useful, non-hazardous condition (see Conditions 15.1 through 15.7),<sup>20</sup> the Council may conclude that the Facility, as amended by RFA 4, will continue to comply with OAR 345-022-0010.

There are no circumstances that would alter the basis for the Council's earlier findings regarding PGE's organizational expertise. Therefore, Council may rely on its previous findings that PGE continues to have the organizational expertise to construct, operate, and retire the Facility in compliance with Council standards and Site Certificate Conditions.

#### **5.4 Required Permits – OAR 345-021-0010(1)(e)**

This section provides information about permits that the Certificate Holder will need for construction and operation of the Amended Carty Solar Farm to meet the submittal requirements of OAR 345-021-0010(1)(e) paragraphs (A) through (G). While OAR 345 Division 22 does not provide an approval standard specific to Exhibit E, permits identified in Table 5 (OAR 345-021-0010(1)(e)(A) and (B)) are identified in each applicable exhibit included in Attachment 4. The changes proposed with RFA 4 do not require any new permits, nor any new Site Certificate Conditions for permits, which were not previously considered by the Council.

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<sup>20</sup> Second Amended Site Certificate for the Carty Generating Station (November 2020).

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Table 5. Permits

| Permit   | Agency Name and Contact  | Authority   | Description   |
|--|--|---|---|
| <b>Federal Permits</b>   |  |   |   |
| Notice of Proposed Construction or Alteration (Form 7460-1)                | Federal Aviation Administration (FAA)<br><br>Attn: Dan Shoemaker, Airspace Specialist<br>Seattle Obstruction Evaluation Group<br>1601 Lind Avenue SW<br>Renton, WA 98057<br>(425) 227-2791<br>Dan.shoemaker@faa.gov                        | Federal Aviation Act of 1958 (14 U.S. Code [U.S.C.] § 44718);<br>14 Code of Federal Regulations (CFR) § 77      | Description: Required for construction or alterations that may affect navigable airspace (e.g., pertaining to potential glare from the Facility's solar arrays), or for construction of structures within specified distances of runways or helipads. No permit is issued by the FAA. The Certificate Holder used the FAA Notice Criteria Tool to confirm that the Amended Carty Solar Farm does not exceed notice criteria for the FAA. The Certificate Holder entered into discussions with the U.S. Navy regarding the nearby Boardman Bombing Range and associated flight paths prior to RFA 4, to ensure that there are no significant impacts related to potential glare that could result from construction and operation of the Amended Carty Solar Farm. The Navy confirmed that the previously completed glint/glare study was adequate for the Amended Carty Solar Farm. The Certificate Holder has begun the Department of Defense's Military Aviation and Installation Assurance Siting Clearinghouse Informal Review Process to confirm there is no impact to the nearby Boardman Bombing Range; the response will be provided to ODOE when received. This federal process is not within the jurisdiction of the Energy Facility Siting Council (Council) and therefore should not be included in the Site Certificate. |
| <b>State Permits Not Federally Delegated</b>                               |  |   |   |
| Energy Facility Site Certificate   | Oregon Department of Energy and Energy Facility Siting Council<br><br>Attn: Sarah Esterson, Senior Policy Advisor<br>550 Capitol Street NE<br>Salem, OR 97301<br>(800) 221-8035<br>sarah.esterson@energy.oregon.gov                        | Oregon Revised Statute (ORS) 469.300 et seq.; Oregon Administrative Rules (OAR) Chapter 345, Divisions 1, 21-24 | Description: This Site Certificate is the subject of this amendment request.  |
| Individual Industrial Water Pollution Control Facility (WPCF) Permit, WPCF | Oregon Department of Environmental Quality (ODEQ), Eastern Region<br><br>Attn: Patty Isaak, Permit Coordinator for Eastern Region<br>800 SE Emigrant Avenue, Suite 330<br>Pendleton, OR 97801<br>(541) 278-4605<br>Patty.Isaak@state.or.us | ORS 468B; OAR Chapter 340, Division 45  | Description: Addendum 1 to the Facility's Water Pollution Control Facility (WPCF) Permit (Permit No. 100189) allows: (1) wastewater disposal through evaporation and seepage of construction wastewater; and (2) the disposal of wash water for operational solar panel wash water. The WPCF permit is governed and incorporated into the Site Certificate. See Section 5.4.1 below for further details.  |
| Water Right Permit or Water Use Authorization                              | Oregon Water Resources Department, Water Rights Section, District 5<br><br>Attn: Greg Silbernagel, District 5 Watermaster<br>116 SE Dorion Avenue<br>Pendleton, OR 97801<br>(541) 278-5456<br>Greg.M.Silbernagel@oregon.gov                | ORS 537 and 540.505-589; OAR 690, Divisions 310, 340, and 410   | Description: Water for construction and decommissioning will be obtained by a third-party contractor through a limited water use license to be applied for prior to starting construction. The proposed source of water for the limited water use license will be Carty Reservoir storage under PGE Certificate 86056. Water for operations will be obtained from the Carty Reservoir under PGE's existing water permit and/or certificated water right. Potable water used by operational personnel at the O&M building will be obtained from the Carty potable water system sourced from an existing on-site well or a private provider. The Facility, as amended in RFA 4, does not need a groundwater permit, surface water permit, or water right transfer. See Section 5.4.1 below for further details.   |

| <b>Permit</b>   | <b>Agency Name and Contact</b>  | <b>Authority</b>  | <b>Description</b>   |
|---|---|---|--|
| Archaeological Excavation Permit  | Oregon Parks and Recreation Department,<br>State Historic Preservation Office<br><br>Attn: John Pouley, State Archaeologist<br>725 Summer Street NE, Suite C<br>Salem, OR 97301<br>(503) 480-9164<br>John.Pouley@opr.d.oregon.gov | ORS Chapters 97, 358, and 390; OAR Chapter 736,<br>Division 51  | Description: Ground-disturbing activity that may affect a known or unknown archaeological resource on public or private lands requires a permit issued by the Oregon Parks and Recreation Department. If the permit is needed, the Certificate Holder will obtain it from the State Historic Preservation Office and therefore this permit should not be included in and governed by the Site Certificate.   |
| Oversize Load Movement Permit/Load Registration   | Oregon Department of Transportation (ODOT)<br><br>Attn: Thomas Lapp, Permit Specialist<br>ODOT District 12<br>1327 SE Third Street<br>Pendleton, OR 97801<br>(503) 278-3450<br>Thomas.Lapp@odot.state.or.us                       | ORS 818.030; OAR Chapter 734, Division 82   | Description: Authorization for oversized loads. Movement of construction cranes and other equipment and materials may require this permit. If needed, the Certificate Holder's third-party contractor will obtain this permit and load registration from ODOT and therefore this permit should not be included in and governed by the Site Certificate.  |
| <b>State Permits Federally Delegated</b>  |   |   |  |
| National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Discharge General Permit 1200-C | ODEQ, Eastern Region<br><br>Attn: Patty Isaak, Permit Coordinator for Eastern Region<br>800 SE Emigrant Avenue, Suite 330<br>Pendleton, OR 97801<br>(541) 278-4605<br>Patty.Isaak@state.or.us                                     | Clean Water Act, Section 402 (33 U.S.C. § 1342); 40 CFR § 122; ORS 468 and 468B; OAR Chapter 340, Division 45   | Description: An NPDES permit is required for construction activities that will disturb one or more acres of land and has a potential to impact Waters of the State. The Certificate Holder will obtain this permit for RFA 4 directly from ODEQ and it should not be included in and governed by the Site Certificate. A draft Erosion and Sediment Control Plan to be included in the application for the NPDES permit is included as Attachment I-1 to Exhibit I.  |
| <b>Local Permits</b>  |   |   |  |
| Conditional Use Permit and Zoning Permit  | Morrow County Planning Department<br><br>Attn: Tamra Mabbott, Planning Director<br>P.O. Box 40<br>205 Third Street NE<br>Irrigon, OR 97844<br>(541) 922-4624<br>tmabbott@co.morrow.or.us  | Morrow County Comprehensive Plan; Morrow County Zoning Ordinance Article 1, Section 1.050; Article 3, Section 3.010(C)-(D) and 3.010(K)(3); Article 6 | Description: The Certificate Holder elects to obtain a Council determination under ORS Chapter 469.504(1)(b). Under ORS 469.401(3), following issuance of the Site Certificate, the County, upon the Certificate Holder's submission of the proper application and fee, shall issue the permits addressed in the Site Certificate, subject only to the conditions set forth in the Site Certificate and without hearings or other proceedings. Because the Council will make the land use determination, this permit should be included in and governed by the Site Certificate. |

| Permit                          | Agency Name and Contact  | Authority                                       | Description   |
|---------------------------------|--|---|---|
| Building Permit                 | City of Boardman Building Department<br>(provides services for building projects<br>within Morrow County)<br><br>Attn: Glenn McIntire, Building Official<br>200 City Center Circle<br>P.O. Box 229<br>Boardman, OR 97818<br>(541) 626-7011<br>mcintireg@cityofboardman.com | ORS 455; OAR Chapter 734, Division 51           | Description: A building permit is required prior to beginning construction. Morrow County does not have its own building department, so relies on the City of Boardman Building Department for review and approval of all building permits in the county. A building permit will be obtained by the third-party contractor prior to construction of each component for which a building permit will be required; therefore, this permit should not be included in and governed by the Site Certificate. |
| Oversize Load Movement Permit   | Morrow County Public Works<br><br>Attn: Eric Imes, Public Works Director<br>P.O. Box 428<br>Lexington, OR 97839<br>(541) 989-9500<br>eimes@co.morrow.or.us   | Morrow County Zoning Ordinance Section 4.010(B) | Description: This permit will be required to transport loads that exceed standard size and/or weight limits on county roads. If required, this permit will be obtained by the construction contractor prior to construction. Therefore, this permit should not be included in and governed by the Site Certificate.   |
| Septic System Alteration Permit | Umatilla County Public Health Department<br>(provides septic system services for projects<br>within Morrow County)<br>200 SE 3 <sup>rd</sup> Street<br>Pendleton, OR 97801<br>(541) 278-6394<br>Health@umatillacounty.net  |   | Description: If the existing CGS septic system capacity is not sufficient a septic system alteration permit would be obtained from the Umatilla County Public Health Department, which issues alteration permits for septic systems in Morrow County, to increase the capacity of the existing septic system. If required, this permit will be obtained by the construction contractor prior to construction. Therefore, this permit should not be included in and governed by the Site Certificate.    |

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#### **5.4.1 Permit Applications Not Federally Delegated – OAR 345-021-0010(1)(e)(C)**

The changes proposed under RFA 4 are covered under the terms and conditions of the Facility's Water Pollution Control Facility (WPCF) Permit (100189) issued May 2, 2013. ODEQ approved Addendum 1 to WPCF Permit 100189 on January 24, 2019, to allow construction and operation of a photovoltaic solar generating unit at the CGS site. The issuance of Addendum 1 to WPCF Permit 100189 addressed Site Certificate Condition 10.28(ii) requiring PGE to demonstrate that ODEQ has issued a modified WPCF Permit 100189 that specifically addresses solar panel wash water. Addendum 2 to the WPCF Permit 100189 was issued on November 5, 2020, as part of RFA 2; however, none of the modified permit conditions in Addendum 2 are related to solar.

The WPCF permit and Addendum 1 and Addendum 2 expired on April 30, 2023, but remain in effect until ODEQ acts on PGE's renewal application, which was submitted to ODEQ on February 28, 2023. The renewal application primarily requests that ODEQ remove permit conditions that were applicable only to the operation of the Boardman Coal Plant. The renewed WPCF permit will retain Condition 21 in Schedule A and Condition 1(e) in Schedule B, which allows for management and disposal of solar panel wash water by evaporation or infiltration as long as no soaps, detergents, or chemicals are added and outlines required monitoring after panel washing events.

As described in the Final Order for RFA 3, the WPCF authorizes wastewater disposal through evaporation and seepage of construction wastewater and the disposal of wash water for operational solar panel wash water.<sup>21</sup> Under Site Certificate Condition 10.28(ii) in the Third Amended Site Certificate, solar panel wash water is permitted to be discharged through evaporation or infiltration into the ground at the point of application and the use of chemicals, soaps, detergents, and heated water is prohibited. The Final Order on RFA 3 describes that the WPCF permit is governed and incorporated into the Site Certificate.<sup>22</sup> Because the permit already includes conditions related to construction stormwater and solar panel wash water, no WPCF permit modifications are proposed as part of RFA 4.

*(i) In Exhibit J for permits related to wetlands; or*

The Amended Carty Solar Farm has been sited such that no impacts to wetlands and Waters of the State or of the U.S. are anticipated. Therefore, no permits related to wetlands are required. Please see Exhibit J for further details, in accordance with OAR 345-021-0010(1)(e)(C)(i).

*(ii) In Exhibit O for permits related to water rights.*

Water for construction and operation will be obtained from the Carty Reservoir under PGE's existing water right. Water used for construction will be sourced from the Carty Reservoir under PGE's existing water right and obtained by a third-party contractor through a limited water use

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<sup>21</sup> Final Order on Request for Amendment 3, p. 77 (July 2022).

<sup>22</sup> Final Order on Request for Amendment 3, p. 77 (July 2022).

license.<sup>23</sup> Site Certificate Condition 2.14 will continue to apply, which requires evidence prior to construction that a limited water use license has been obtained from the Oregon Water Resources Department by the Certificate Holder's third-party contractor. Water for solar panel washing during operations will also be obtained from the Carty Reservoir under PGE's existing water right.<sup>24</sup> As described in the Final Order for RFA 3, potable water used by operational personnel at the O&M building will be obtained from the Carty potable water system sourced from an existing onsite well, or a private provider.<sup>25</sup> Please see Exhibit O for further details.

The changes proposed with RFA 4 do not affect the Certificate Holder's ability to comply with the Site Certificate, and OAR Chapter 690 Divisions 310 and 380. The Council may conclude that the Facility, as amended in RFA 4, does not need a groundwater permit, surface water permit, or water right transfer.

#### ***5.4.2 Permit Applications Federally Delegated – OAR 345-021-0010(1)(e)(D)***

The U.S. Environmental Protection Agency has delegated authority to the ODEQ to issue NPDES stormwater discharge permits for construction and operations activities. The Certificate Holder previously provided an application for NPDES 1200-C Construction Stormwater Discharge General Permit and an associated Erosion and Sediment Control Plan (ESCP) as Appendix I-1, Exhibit I, in RFA 1. The Certificate Holder will obtain an updated NPDES permit prior to construction via the ODEQ's Your DEQ Online platform.<sup>26</sup> The draft updated ESCP, which forms the basis for the updated ODEQ NPDES 1200-C Construction Stormwater Discharge General Permit, has been provided as Attachment I-1 to Exhibit I. The Certificate Holder anticipates that this permit will be pursued during preconstruction and that confirmation of permit receipt and a permit decision from ODEQ will be received prior to the start of construction. Construction work will be conducted in compliance with the ESCP approved under the NPDES 1200-C permit, which is consistent with Site Certificate Condition 9.1. In addition, the Certificate Holder will complete monitoring of the best management practices implemented under the NPDES 1200-C permit to ensure there are no significant potential adverse impacts to soil consistent with Site Certificate Condition 9.4.

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<sup>23</sup> Water necessary for construction would be obtained by a third-party contractor through a limited water use license to be applied for prior to starting construction. The proposed source of water for the limited water use license would be Carty Reservoir storage under PGE Certificate 86056. (Revised Request for Amendment 1 to the Site Certificate, Exhibit O, Appendix O-1 [February 2018] and Request for Amendment 3, p. 51 [June 2022]).

<sup>24</sup> Water use for operations would come from an existing PGE held permit and/or certificated water right (Permit S-54925; 3,736 acre-feet per year from Carty Reservoir) and/or (Certificate 86057; 135.0 cubic feet per second from Columbia River or Carty Reservoir) which already cover all necessary Place of Use areas for operations. (Revised Request for Amendment 1 to the Site Certificate, Exhibit O, Appendix O-1 [February 2018]).

<sup>25</sup> Final Order on Request for Amendment 3, p. 70 (July 2022).

<sup>26</sup> <https://ordeq-edms-public.govonlinesaas.com/pub/login?web=1>.



**5.4.3 Third Party State or Local Permits – OAR 345-021-0010(1)(e)(E)**

*(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;*

*(iii) An assessment of the impact of the proposed facility on any permits that a third party has obtained and on which the applicant relies to comply with any applicable Council standard;*

The Certificate Holder has experience working in various permitting regimes across Oregon and typically relies on its construction contractors to obtain third-party permits. The Certificate Holder maintains relationships with reputable construction firms with successful track records and reasonable likelihood of securing permits and completing compliant work. For each permit identified, the Certificate Holder has worked with contractors familiar with constructing or operating renewable energy facilities, and who are knowledgeable of the requirements for applications and activities under such permits. The Certificate Holder will select the same, or similar, contractors who have the necessary experience to likely obtain the necessary permits.

The Certificate Holder may rely on its third-party contractors to obtain the following permits as listed in Table 5 and summarized below in Table 6.

These permits are routine and common permits in Oregon and are not dependent on a unique resource or location. The contractors would be responsible for acquiring these permits prior to construction.

**Table 6. Potential Third-Party State or Local Permits**

| Permit Name   | Facility Phase             | Description   |
|---|----------------------------|---|
| Oregon Water Resources Department, Water Right Permit, or Water Use Authorization | Construction and Operation | Water for construction and decommissioning will be obtained by a third-party contractor through a limited water use license to be applied for prior to starting construction. The proposed source of water for the limited water use license will be Carty Reservoir storage under PGE Certificate 86056.   |
| ODOT Oversized Load Movement Permit/Load Registration                             | Construction               | Movement of construction cranes and other equipment and materials may require an oversize load movement permit/load registration.   |
| Morrow County (City of Boardman Building Department) Building Permit              | Construction               | A building permit is required prior to beginning construction. Morrow County does not have its own building department, so relies on the City of Boardman Building Department for review and approval of all building permits in the county. A building permit will be obtained by the third-party contractor prior to construction of each component for which a building permit will be required. |

| Permit Name  | Facility Phase | Description  |
|--|----------------|--|
| Morrow County Public Works<br>Oversize Load Movement<br>Permit | Construction   | This permit will be required to transport loads that exceed standard size and/or weight limits on county roads. If required, this permit will be obtained by the construction contractor prior to construction.  |
| Septic System Alteration<br>Permit                             | Construction   | If the existing CGS septic system capacity is not sufficient a septic system alteration permit would be obtained to increase the capacity of the existing septic system. If required, this permit will be obtained by the construction contractor prior to construction. |

**5.4.4 Third Party Federally Delegated Permits – OAR 345-021-0010(1)(e)(F)**

The Certificate Holder is not relying on any third-party federally delegated permits. The Certificate Holder will directly obtain the NPDES 1200-C permit from ODEQ. Additionally, permits associated with temporary concrete batch plants (i.e., Basic Air Containment Discharge Permit; Clean Air Act [42 U.S.C. Section 7401 et seq.]; 40 CFR Parts 50, 51, and 52; ORS Chapters 468 and 468A; OAR Chapter 340, Division 216) are also common permits that are obtained by a third party. However, the Certificate Holder does not expect to need a temporary concrete batch plant and plans to obtain concrete from existing local batch plants.

**5.4.5 Monitoring – OAR 345-021-0010(1)(e)(G)**

To the extent that monitoring may be required for any permit conditions, monitoring programs are discussed in the specific exhibit to which the permits pertain. The Certificate Holder will comply with monitoring requirements imposed by the Council and other jurisdictions responsible for granting permits or authorizations for the Facility.

**6.0 Site Certificate Revisions – OAR 345-027-0360(1)(d)**

***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

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*(d) The specific language of the site certificate, including conditions, that the certificate holder proposes to change, add or delete through the amendment;*

A redlined Site Certificate is included as Attachment 1. Generally, the proposed changes to language in the Site Certificate fall into three categories. The conditions in Category 1 are discussed further in the appropriate exhibit (see Attachment 4). The conditions in Categories 2 and 3 are clarifications that are summarized below, and the proposed changes are presented in Attachment 1.

- 1) **Modifications to incorporate the Certificate Holder’s proposed amendments to the Carty Solar Farm in RFA 4.** These changes include amending the Facility description to incorporate the Amended Site Boundary, increasing the peak generating capacity for solar energy generation, increasing the area of solar photovoltaic energy generation, adding battery energy storage, and modifying the construction start and completion dates. Additionally, the Facility description was modified to remove related or supporting facilities that were authorized by Amendment 2 but were not built by the construction start and completion timelines in the Second Amended Site Certificate, and therefore are no longer authorized to be constructed. The Site Certificate Conditions affected in this category include:
- 4.1(ii), 4.2 (ii) to update construction start and completion deadlines.
  - 5.3 to require submittal of a final parking lot plan for the Carty Solar Farm O&M building.
  - 5.5 to require consultation with Morrow County Weed Control Supervisor and obtain approval of the Revegetation and Noxious Weed Control Plan prior to construction of Facility components approved in Final Order on RFA 4.
  - 6.26 to be deleted because the three route options for the 34.5-kV transmission line are no longer necessary as part of the amendments to the Carty Solar Farm. There are below ground and aboveground 34.5-kV collector lines and a 300-foot transmission line that are included in the Facility description, and therefore already part of what is authorized to be constructed.
  - 7.2 to include reference to BESS.
  - 8.8 to reflect RFA 4.
  - 10.1 to clarify which portions of the condition are applicable to Unit 1 and Carty Solar Farm.
  - 15.1 to reflect new retirement cost estimates for the Carty Solar Farm.
- 2) **Modifications to remove obsolete language related to the now retired and demolished Boardman Coal Plant.** The Site Certificate Conditions affected in this category include:
- 10.24 to remove reference to the BCP and sewage lagoons that were demolished.
  - 10.30 to delete the condition because the settling ponds, vehicle wash water pond, and coal yard ponds referenced were all removed during the BCP demolition.
- 3) **Modifications requested by either ODOE or the Certificate Holder for clarity, scrivener error correction, or to reflect updated information.** ODOE has requested modification to conditions to which the Certificate Holder has agreed and has included in

RFA 4. The Certificate Holder has also proposed minor edits. The Site Certificate Conditions affected in this category include:

- 5.4(i)(ii) to clarify which portions of the condition are applicable to Unit 1 and Carty Solar Farm.
- 6.17 to clarify which portions of the condition are applicable to Unit 1 and Carty Solar Farm and correct reference to the appropriate Site Certificate Condition (from 6.26 to 6.27).
- 6.25 to be deleted based on recommendation by ODOE following review of the CGS 2022 annual report and review of similar conditions in other site certificates issued by the Council. The intent of the condition appears to be to make sure waste is appropriately disposed of and type/quantity of waste is reported for the wasteshed. Condition 6.24 (which requires the use of franchised solid waste hauler or otherwise compliance with the Morrow County Solid Waste Management Ordinance) and Condition 2.3 (which requires compliance with local ordinances and state law) are sufficient to ensure proper disposal. State laws require waste to be disposed of only at permitted waste disposal facilities; those permitted waste disposal facilities have requirements as part of their permits to accurately report the type and weight of each material, broken down by wasteshed of origin; and that information is reported to ODEQ annually. Therefore, Condition 6.25 is not necessary.
- 6.27 to update OAR reference in Division 27.
- 8.7 to update the Boardman Rural Fire Protection District to Boardman Fire Rescue District to reflect name change.
- 10.7 to clarify which portions of the condition are applicable to Unit 1 and Carty Solar Farm, and clarify requirements.
- 10.14 to clarify which portions of the condition are applicable to Unit 1 and Carty Solar Farm. In the Final Order on RFA 1 stated that “Previously imposed conditions that are amended through this amendment request, but that include differing requirements for existing operational components and proposed components include a delineation format, where a roman number “i” indicates the requirements of the condition apply to operating components, or Unit 1 and its related or supporting facilities; and, roman numeral “ii” indicates that requirements of the amended condition apply to proposed components, or Carty Solar Farm and its related or supporting facilities.” However, for Condition 10.14 the delineation format appears to have inadvertently removed WAGS requirements from the Carty Solar Farm. Revisions to 10.14 are suggested to clarify that WAGS requirements are applicable to the Carty Solar Farm.
- 10.15 to correct when the speed limit of 10 mph is required. As written the condition states the speed limit applies from one hour before sunset to one hour after sunrise. The correct timeframe is from one hour before sunrise to one hour after sunset.

- 10.29 to clarify description of the septic system.
- 11.6 to clarify which portions of the condition are applicable to Unit 1 and Carty Solar Farm.

## 7.0 Other Standards and Permits – OAR 345-027-0360(1)(e)

### ***OAR 345-027-0360 Preliminary Request for Amendment***

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

*\*\*\**

*(e) A list of all Council standards and other laws, including statutes, rules and ordinances, applicable to the proposed change, and an analysis of whether the facility, with the proposed change, would comply with those applicable laws and Council standards. For the purpose of this rule, a law or Council standard is “applicable” if the Council would apply or consider the law or Council standard under OAR 345-027-0375(2); and*

A list of statutes, administrative rules, and local government ordinances relevant to amending the Site Certificate for the Facility is provided in Attachment 4, Exhibit CC. No additional statutes, rules, or ordinances need to be added based on the proposed changes.

Council standards relevant to RFA 4 include Division 22 (General Standards for Siting Facilities) and Division 24 (Specific Standards for Siting Facilities). Division 23, which applies to non-generating facilities, does not apply to solar power generating facilities. Similarly, inapplicable provisions of Division 24 (e.g., standards applicable to gas plants, gas storage, non-generating facilities) are not discussed.

The Facility as amended by RFA 4 would comply with applicable laws and Council standards. The proposed changes to the Facility do not alter the basis for the Council’s earlier findings for the Facility. The primary purpose of RFA 4 is to increase the amount of non-emitting energy generation provided by the facility, and the addition of battery storage to maximize reliability and customer value and to help achieve Oregon’s ambitious decarbonization targets. Table 7 identifies Council standards and other laws reviewed as part of RFA 4 and their applicability to RFA 4. The Facility will comply with all existing applicable Site Certificate Conditions, with proposed modifications as identified in Attachment 1. The appended exhibits (see Attachment 4) contain the information necessary for the Council to find that the Facility, with the proposed changes, continues to meet the standards of the relevant laws.

**Table 7. Standards and Laws Relevant to Proposed Amendment**

| <b>Standard</b>  | <b>Applicability &amp; Compliance</b>   |
|--|---|
| OAR 345-022-0000<br>General Standard of Review         | Applicable and complies. The Council previously found that the Facility complies with the General Standard of Review. The Facility continues to comply with the requirements of the Oregon Energy Facility Siting statutes and standards adopted by the Council. The changes proposed with RFA 4 will not result in any significant impacts to resources. In most cases, impacts to resources resulting from the proposed changes will be similar to what has already been approved for the Facility. RFA 4 does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions.                   |
| OAR 345-022-0010<br>Organizational Expertise           | Applicable and complies. The Council has previously found that the Certificate Holder has the ability to construct, operate, and retire the Facility. RFA 4 does not alter the basis for the Council’s prior findings regarding organizational expertise and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Section 5.3 above for accompanying analysis.   |
| OAR 345-022-0020<br>Structural Standard                | Applicable and complies. RFA 4 does not alter the basis for the Council’s prior findings regarding the structural standard and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit H in Attachment 4 for accompanying analysis.   |
| OAR 345-022-0022<br>Soil Protection                    | Applicable and complies. Permanent and temporary disturbance will occur as a result of the components proposed in RFA 4 including the solar modules, BESS, and proposed substation. However, RFA 4 does not alter the basis for the Council’s prior findings regarding soil protection and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit I in Attachment 4 for accompanying analysis.   |
| OAR 345-022-0030<br>Land Use                           | Applicable and complies with updated Morrow County zoning code. The Amended Carty Solar Farm, as proposed, will not force a significant change in accepted farm practices, nor will it significantly increase the cost of farm practices. RFA 4 includes a request for a Goal 3 exception to allow inclusion of the solar energy generation facility on agricultural land but does not otherwise alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit K in Attachment 4 for accompanying analysis.  |
| OAR 345-022-0040<br>Protected Areas                    | Applicable and complies. Visual, noise and traffic impacts were reviewed for the proposed changes. RFA 4 does not alter the basis for the Council’s prior findings regarding protected areas and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit L in Attachment 4 for accompanying analysis.   |
| OAR 345-022-0050<br>Retirement and Financial Assurance | Applicable and complies. With the proposed changes, the Certificate Holder is still able to restore the site to a useful, nonhazardous condition following permanent cessation of construction or operation of the Facility. RFA 4 does not alter the basis for the Council’s prior findings regarding retirement and financial assurance and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibits M and X in Attachment 4 for accompanying analyses.   |
| OAR 345-022-0060<br>Fish and Wildlife Habitat          | Applicable and complies. The amended site boundary is in areas surveyed for fish and wildlife habitat as documented in Exhibit P. The Amended Wildlife and Habitat Monitoring and Mitigation Plan has been updated to address the layout of the Amended Carty Solar Farm and will be finalized after final design to account for impacts per Condition 10.1. RFA 4 does not alter the basis for the Council’s prior findings regarding fish and wildlife habitat and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit P in Attachment 4 for accompanying analysis. |

**Request for Amendment 4  
for Carty Generating Station**

| <b>Standard</b>   | <b>Applicability &amp; Compliance</b>   |
|---|---|
| OAR 345-022-0070<br>Threatened and Endangered Species                             | Applicable and complies. The Facility will be constructed within the amended site boundary where impacts to threatened and endangered species have been reviewed. RFA 4 does not alter the basis for the Council’s prior findings regarding threatened and endangered species and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit Q in Attachment 4 for accompanying analysis.  |
| OAR 345-022-0080<br>Scenic Resources  | Applicable and complies. The ASC reviewed visual impacts for the Facility on Scenic Resources. The components proposed in RFA 4 including the solar modules, BESS, and proposed substation do not alter the basis for the Council’s prior findings regarding scenic resources and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit R in Attachment 4 for accompanying analysis.  |
| OAR 345-022-0090<br>Historic, Cultural and Archaeological Resources               | Applicable and complies. A cultural resources survey was conducted in October 2023 for all areas where ground disturbance may occur as part of RFA 4. Some of these areas had previously been surveyed in 2016. No new cultural resources were identified. Cultural resources will be protected per Site Certificate conditions and an Archaeological Monitoring Plan. RFA 4 does not alter the basis for the Council’s prior findings regarding historical, cultural, or archeological resources and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit S in Attachment 4 for accompanying analysis.                |
| OAR 345-022-0100<br>Recreation  | Applicable and complies. RFA 4 does not alter the basis for the Council’s prior findings regarding recreation areas and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit T in Attachment 4 for accompanying analysis.  |
| OAR 345-022-0110<br>Public Services   | Applicable and complies. The proposed changes are not anticipated to substantially increase the demand of public services generated by the Facility. RFA 4 does not alter the basis for the Council’s prior findings regarding public services and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit U in Attachment 4 for accompanying analysis.   |
| OAR 345-022-0115<br>Wildfire Prevention and Risk Mitigation                       | OAR 345-022-0115 is a new standard introduced in 2022 and therefore was not previously addressed in the original Application for Site Certificate or subsequent amendments for the approved Facility. The design, construction, and operation of the Facility, taking into account mitigation, is not likely to result in significant adverse impacts to areas subject to a heightened risk of wildfire or high-fire consequence areas addressed under OAR 345-022-0115. PGE has a Wildfire Mitigation Plan that has been approved by the Oregon Public Utility Commission in compliance with OAR 860, Division 300. See Exhibit V in Attachment 4 for accompanying analysis. |
| OAR 345-022-0120<br>Waste Minimization  | Applicable and complies. The Certificate Holder has plans to minimize the generation of solid waste and wastewater and to recycle or reuse solid waste and wastewater generated by the Amended Carty Solar Farm. RFA 4 does not alter the basis for the Council’s prior findings regarding waste minimization and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit W in Attachment 4 for accompanying analysis.  |
| OAR 345-024-0010<br>Public Health and Safety Standards for Wind Energy Facilities | These standards do not apply.   |

**Request for Amendment 4  
for Carty Generating Station**

| <b>Standard</b>   | <b>Applicability &amp; Compliance</b>  |
|---|--|
| OAR 345-024-0015<br>Siting Standards for<br>Wind Energy<br>Facilities | These standards do not apply.  |
| OAR 345-024-0090<br>Transmission Lines                                | Applicable and complies. RFA 4 does not alter the basis for the Council’s prior findings regarding transmission line standards and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit DD in Attachment 4.   |
| OAR 340-035-0035<br>Noise   | Applicable and complies. The Certificate Holder modeled noise generating components proposed with RFA 4 and the results show the Facility will comply with noise requirements in OAR 340-035-0035. RFA 4 does not alter the basis for the Council’s prior findings regarding noise and does not alter the Certificate Holder’s ability to comply with the Site Certificate conditions. See Exhibit Y in Attachment 4 for accompanying analysis.  |
| Removal-Fill Law  | Applicable and complies. A removal-fill permit is not needed for the Facility because the Facility will not temporarily or permanently impact waters of the state. RFA 4 does not alter the basis for the Council’s prior findings regarding the removal-fill law and does not alter the Certificate Holder’s ability to comply with the Site Certificate conditions. See Exhibit J in Attachment 4 for accompanying analysis.   |
| Water Rights  | Applicable and complies. The anticipated construction water demand from the amended facility will be more than the amount previously anticipated for the Facility as currently approved; however, the water sources remain the same as for the approved Facility and the existing water permits and certificates can accommodate the additional water use. RFA 4 does not alter the basis for the Council’s prior findings regarding water rights and does not alter the Certificate Holder’s ability to comply with the Site Certificate Conditions. See Exhibit O in Attachment 4 for accompanying analysis. |



## 8.0 Property Owners of Record – OAR 345-027-0360(1)(f))

### *OAR 345-027-0360 Preliminary Request for Amendment*

*(1) To request an amendment to the site certificate required by OAR 345-027-0350(3) or (4), the certificate holder shall submit a written preliminary request for amendment to the Department that includes the following:*

*\*\*\**

*(f) A list of the names and mailing addresses of property owners, as described in this rule:*

*(A) The list must include all owners of record, as shown on the most recent property tax assessment roll, of property located:*

*(i) Within 100 feet of property which the subject of the request for amendment, where the subject property is wholly or in part within an urban growth boundary;*

*(ii) Within 250 feet of property which is the subject of the request for amendment, where the subject property is outside an urban growth boundary and not within a farm or forest zone;  
or*

*(iii) Within 500 feet of property which is the subject of the request for amendment, where the subject property is within a farm or forest zone; and*

*(B) In addition to incorporating the list in the request for amendment, the applicant must submit the list to the Department in an electronic format acceptable to the Department.*

A property owner list and accompanying map is provided as part of Attachment 3. An updated list will be provided when requested by ODOE in order to be current at the time the RFA is finalized.

## 9.0 Conclusion

As detailed above, the proposed changes to the Facility will utilize the latest technology to improve grid reliability, while continuing to provide critical renewable energy for the state. Based on this submittal and attached exhibits (see Attachment 4), the Facility, as modified by RFA 4, continues to comply with the requirements of the Oregon Energy Facility Site Statutes, ORS 469.300 to 469.520, and all other applicable Oregon statutes and administrative rules within the Council's jurisdiction. Moreover, the existing and amended Site Certificate Conditions ensure that the Facility will continue to comply with the applicable laws, standards, and rules. For these reasons, the Certificate Holder respectfully requests approval of RFA 4.

## 10.0 References

- Battery University. 2022. BU-304a: Safety Concerns with Li-ion. February 2022.  
[http://batteryuniversity.com/learn/article/safety\\_concerns\\_with\\_li\\_ion](http://batteryuniversity.com/learn/article/safety_concerns_with_li_ion).
- Council (Oregon Energy Facility Siting Council). 2022. Third Amended Site Certificate for the Carty Generating Station. Energy Facility Siting Council, Salem, Oregon. July 2022. 2022-08-07-CGS-AMD3-Site-Certificate.pdf (oregon.gov).
- Energy Storage Association. 2022. Lithium Ion (LI-ION) Batteries.  
<http://energystorage.org/energy-storage/technologies/lithium-ion-li-ion-batteries>.
- LAZARD. 2021. Lazard's Levelized Cost of Storage—Version 7.0.  
<https://www.lazard.com/media/451882/lazards-levelized-cost-of-storage-version-70-vf.pdf>.
- UL Solutions. 2023. UL 9540A Test Method. Available online at: <https://www.ul.com/services/ul-9540a-test-method>

# Figures

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# **Attachment 1. Redlined Site Certificate**

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## **Attachment 2. Articles of Incorporation**

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## **Attachment 3. Property Owner List**

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## **Attachment 4. Division 21 Exhibits**

Exhibits G-DD are provided as individual files

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